

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

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29, Industrial Suburb, II Stage, Tumkur Road, Gorguntapalya, Yeshwantpur, Bangalore- 560 022. Dated: 24/10/2017

FAX: 080-23371027 / 23373287 Tel: 080-23371027 / 23375366 / 67 Email ID: ro.bangalore@ibm.gov.in No. 279/1094/2017/BNG

To:

M/s MSPL Limited, Baldota Enclave, Abheraj Baldota Road Hosapete -583 203, Bellari District, Karnataka State

Sub: Approval of Mining Plan including Progressive Mine Closure Plan in respect of Karadikola Iron Ore Mine ML No. 2487 (Auctioned Block of M/s Lakshminarayana Mining Company) over an area of 86.12 Ha (As per CEC). in Karadikola Village, Sandur Taluk, Bellari District, Karnataka State of M/s MSPL Limited submitted for approval under rule 16 of MCR, 2016 - Private/ Fresh/Forest / Cat. A - FM /Captive.

Ref: 1. Your letter No. MSPL (KIOM)/IBM/2017-18/1 dated. 21.09.2017

2. This office letter of even number dated11.10.2017

3. Your letter No. MSPL (KIOM)/IBM/2017-18/2 dated. 13.10.2017

Sir,

In exercise of the powers conferred by clause(b)of sub-section(2) of section 5 of the Mines and Minerals (Development & Regulation) Act,1957 read with Govt. of India order No.S.O.445(E) dated 28.04.1987 and S.O.1857 (E)dtd.18/05/2016 and subsequent delegation of powers vide letter No.T-43014/MP/CGBM/2013 dated 25.09.2017, I hereby approve the Mining Plan including Progressive Mine Closure Plan in respect of Karadikola Iron Ore Mine ML No. 2487 (Auctioned Block of M/s Lakshminarayana Mining Company) over an area of 86.12 Ha (As par CEC). in Karadikola Village, Sandur Taluk, Bellari District, Karnataka State of M/s MSPL Limited. This approval is subject to the following conditions:

- 1. The 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 execution of lease.
- 3. It is clarified that the approval of your aforesaid 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 Minerals (Other than Atomic and Hydro Carbon Energy Minerals) 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. The execution of Mining Plan shall be subjected to vacation of prohibitory orders / notices, if any.

Contd...2

No. 279/1094/2017/BNG

- 7. The Approval 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.
- 8.The Approval 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.
- 9. The Approval 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.
- 10. 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.
- 11. 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.
- 12. 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.
- 13. 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.
- 14. An yearly report shall be submitted to this office before 1^{st} July of every year setting forth the extent of protective and rehabilitative works carried out as envisaged in the approved mine closure plan.
- 15. The Mining Plan is approved for proposals contained therein and as applicable from the date of execution of the lease for the mining activities to be carried out within the mining lease hold.
- 16. The Mining Plan is approved for total Mineral Reserves of 9.473 Million Tonnes of Iron ore and the proposals are valid for the following period with respective production capacity.

	Production In Tonne(ROM Iron Ore	
I	5,10,138	
II	5,10,048	
III	509,940	
IV	5,10,084	
V	5,10,192	

Encl: One copy of approved Mining Plan alongwith Progressive Mine Closure Plan.

Yours faithfully,

(Panka) Killshrettha) Regional Controller of Mines Indian Bureau of Mines.

No. 279/1094/2017/BNG

Copy for kind information to:

- 1. The Director of Mines & Geology, Govt. of Karnataka, Bangalore, along with a copy of the approved Mining.
- 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. Shri S.Shivakumar, Qualified Person, AGM Exploration, M/s MSPL Limited, Baldota Enclave, Abheraj Baldota Road, Hosapete-583 203, Brllari District, Karnataka State

5. Mine file / Guard file

Encl: As above

Regional Controller of Mines Indian Bureau of Mines.

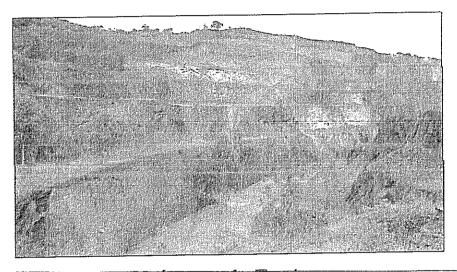


MINING PLAN

(Including Progressive Mine Closure Plan

Karadikolla Iron Ore Mining Block M/s. Lakshminarayana Mining Campany ML No. 2487

Submitted under Rule 16(1) of MCR 2016
By Preferred Bidder M/s. MSPL LIMITED



Volume -1: lext

ML Area: 86.12 Ha LOI: No: DMG/MLS/CCA/12/2487/2016-17/5963 Dated 26 OCT 2016

Opencast, Category 'A' Fully Mechanized
Proposed for 'Captive Mine'
Total area: 86.12 Ha
Forest Area: 86.12 Ha
Name of the Forest: Sandur Reserve Forest
Reg No: IBM / 199 / 2011

Prepared By

S.Shivakumar M.Sc.Geology

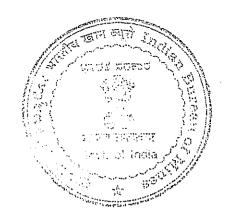
Qualified Person October 2017

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MINING PLAN OF
KARADIKOLLA IRON ORE MINING BLOCK

0.0 INTRODUCTION:

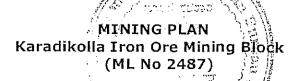
- **0.1 MSPL LIMITED** is a leading mining company in Ballari Hosapete region in private sector and engaged in mining of iron ore for last six decades. We have introduced state of art systems / method in mining. So that iron ore deposits are systematically and scientifically developed to produce iron ore. Company has setup a 1.2 MTPA of Pellet Plant at Koppal, near Hosapete.
- **0.2** Karadikolla Iron Ore Mining Block of by preferred bidder M/s. MSPL Limited, erstwhile M/s. Lakshminarayana Mining Company (ML. No. 2487) is situated in NEB Rage of Sandur taluk, Ballari district. The Government of Karnataka has issued a Letter of Intent for grant of Mining lease for this auctioned block over an extent of 86.12 Ha for a period of 50 years to the MSPL Limited **Ref: Annexure 1.**
- **0.3** The extent of this mining block was 175.63 ha when originally granted on 21-05-1963 to M/s. Lakshminarayana Mining Company. Subsequently the lease was renewed twice; first renewal was from 21-05-1983. The second renewal was granted from 21-05-2003 for period of 20 years. The lease is valid up to 20-05-2023. However, at the time of second renewal, the area was reduced to 105.22 Ha. The balance area of 70.41 Ha was surrendered to Karnataka Forest Department. The lease has been worked for nearly 48 years, at the time of closure in July 2011 as per the Hon'ble Supreme Court by order dated 29.07.2011 imposed complete ban on mining operations and transportations in the areas of Bellary, Chitradurga and Tumkur districts, Karnataka.
- **0.4** The Hon'ble Supreme Court has directed the Government of Karnataka to formulate Reclamation & Rehabilitation Plan (R & R) for the mine affected districts viz., Ballari, Chitradurga and Tumkur. The study was entrusted to Indian Council of Forestry Research and Education (ICFRE), Dehradun, by the Government of Karnataka, vide letter No. DMS/MLS/R&R/2011-12, dated 27.12.2011.
- **0.5** On the basis of classification of mines Hon'ble Supreme Court ordered dated 18.04.2013 C-category mines area cancelled and to go for auction of all C- category leases.

্ Indian Bureau of Mir**res,** আনসং চন্দ্ৰৱাore - 550 e2**2**

This Mining Plan is approved subject to the conditions / stipulations individed in the Mining Plan approval letter No. ...279/1094/2019/BN 6 Date...24/10/4

1





- **0.6** The Central Empowered Committee (CEC) has classified the leases in different categories based on level of illegalities found. This mine was classified under "C Category", by the Joint Team of CEC. The area under lease deed is 105.22 ha and after digitizing, it is **86.12 ha**. As per the recommendations of CEC Joint Survey Team, an area of 47.21 ha has been identified as encroachment area, comprising of mine pit (13.03 ha), OB dumps (17.11 ha) and others (17.07 ha).
- **0.7** The Mineral Exploration of India Limited (MECL) carried out detailed exploration by large scale mapping, drilling during 23.08.2014 to 04.10.2014 in Karadikolla iron ore mining block (ML No 2487).
- **0.8** The Commissioner & Director, Department of Mines & Geology, as per the Mines & Minerals (Development & Regulations) Amended Act, 2015 and the Mineral Auction Rules, 2015 issued the notification and notice invited tender dated 22nd December 2015 for grant of mining lease for M/s. Lakshminarayana Mining Company, ML No 2487 block. The e-auction process was conducted in accordance with the Mineral (Auction) Rules, 2015.
- **0.9** The e-auction process was conducted in accordance with the mineral auction rules 2015 and the tender document for the said mineral and M/s. MSPL Limited declared as the "**Preferred Bidder**" in accordance with Rule 9(4)(b)(iii) of Mineral (Auction) Rules, 2015. The Government of Karnataka has issued a Letter of Intent for grant of Mining lease for this auctioned block over an extent of 86.12 Ha for a period of 50 years to the MSPL Limited.
- **0.10** ICFRE has initiated the R & R plan preparation of Karadikolla Iron Ore Mine of M/s. MSPL Limited (ML No. 2487), situated in NEB range of Sandut taluk, Ballari district, Karnataka state in association with domain experts as well as in consultation with the district administration of Ballari district and the Department of Mines and Geology, Govt. of Karnataka. Accordingly, studies were undertaken in Karadikolla Iron Ore Mine (ML No. 2487), classified by the CEC under 'C' Category mines.

As per letter no-61/CEC/SC/2012-Pt II dated 20.08.2015, CEC is in view that with regard to the category- C mining leases it may be appropriate that while the R & R Plans for the areas found to be under illegal mining pit / overburden dump etc. are prepared and finalized before auction, the SEMP and MPAP has been prepared and finalized by the **Preferred bidder** provide the data to the ICFRE particular with





regard to extent, location of the identified for overburden dumps and the infrastructure facilities such as conveyor system, railway siding and slurry pipeline that are planned to be developed. The same has been conveyed by the Government of Karnataka.

Accordingly, after the e-auction preferred bidder M/s. MSPL Limited conducted the survey, geological mapping, and detailed exploration by reverse circulation drilling to fulfill the UNFC norms, the reserves/resources are re-estimated and ore to overburden ratio has been estimated. Based on the recent exploration data provided by the preferred bidder, again a team of experts from ICFRE with the help of domain experts undertook a detailed field inspection of Karadikolla Iron Ore Mine on 07.06.2017, verified the updated surface plan, geological plan & sections. The R & R Plan of Karadikolla Iron Ore Mine of M/s. MSPL Limited (ML No. 2487) of erstwhile M/s Lakshminarayana Mining Company of 86.12 ha. area has been prepared by ICFRE & same has been approved by CEC vide their letter No. F.No.2-61/CEC/SC/2017-Pt.III dated17.08.2017.Ref: Annexure 2.

As per the approved R & R Plan of Karadikolla Iron Ore Mine, the annual permissable production limit of the mine based on reserves, waste dumps, infrastructure facilities and EC capacity have been worked to **0.51**, **0.71** and **1.35** and **1.80** MTPA respectively. Out of the above creteria, feasible production capacity based on reserve i.e. **0.51** MTPA is the lowest and the same may be considered as the permissable production capacity of the mine for the next 20 years.

The mining plan is being prepared in the context under Rule 16 (1) of MCR 2016, for the 5 year period.

The following items/particulars observed as per the approved R & R and also considered while preparation of Mining Plan are given below:



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table 1

Table 1				
Si No.	Item/Particulars	As per approved R & R Plan/Records.		
1	Mining Lease	1) The lease was granted originally for a period of 20 years on 21.05.1963 for an area of 175.63 Ha under ML No 123. 2) First renewal was accorded for 175.63 Ha for a period of 20 years on 23.03.1983 w.e.f. 21.05.1983 under ML No 1876. 3) Second renewal was granted under ML No 2487 only for 105.22 Ha for 20 years w.e.f. 21.05.2003 vide G.O. No. FEE 2002, dated 02.09.2003. The lease was valid upto 20.05.2023. However, at the time of second renewal the area was reduced to 105.22 Ha. The remaining area 70.41 Ha was surrendered to Forest department. 4) This Mining Block has been auctioned by Government of Karnataka and issued a Letter of Intent for grant of Mining Block for this auctioned block over an extent of 86.12 Ha for a period of 50 years to the MSPL Limited. Vide letter No DMG/MLS/CCA/12/2487/2016-17/5963 dated 26.10.2016.		
2.	Mining Plan	1) The Mining Plan was prepared under 24 A of MCR, 1960 for renewal of mining lease for a period of 7 years from 2001-02 to 2007-08, with a production capacity of about 0.85 MTPA . was approved <i>vide</i> the letter no. MP/BLR/Fe-28/SZ dated 30-01-2002. 2) Subsequently Scheme of Mining (including Progressive Mine Closure Plan) was prepared under Rule 12 of MCDR, 1988 for a capacity of 1.80 MTPA and it was approved <i>vide</i> letter No. MS/BLR/Fe-130/SZ dated 18/02/2009 for the period 2008-09 to 2012-13. 3) The Mining Plan has to be obtained afresh by the "Preferred Bidder" to be submitted under Rule 16 (1) of MCR 2016. By considering the recent exploration and MECL data provided in the tender document.		
3	Environmental Clearance	The Environmental Clearance (EC) for a production of 1.80 MTPA was obtained <i>vide</i> the letter no. J-11015/480/2006-IA, II (M) dated 21/03/2007.		
4	Forest Clearance	Forest clearance was granted <i>vide</i> letter no.8-39/2003-FC (Pt) dated 08/5/2003 and 7/8 th July/2003 for 20 years and coterminus with the mining lease.		





And the second and the second		The approach road to ML No.2487 via sideapur village situated on SH-49 Sandur – Hosapete road Partly covers in forest and partly revenue. Presently M/s. Chowgule & Company is utilizing siddapur road and M/s. MSPL Limited also wanted to utilize the same road for mines transportation purpose. M/s. MSPL Limited will take statuary clearances as per the requirement.	
5	Lease Area	86.12 Ha in Forest land.	
6	Blocks	North block, Middle block & South block.	
7	Method of Working	Opencast, Mechanised mine.	
8	Location of workings	North, Middle & South Blocks.	
9	Production Proposed	0.51 MTPA as per the approved R & R Plan based on Reserve capacity.	
10	Waste Generation	Generation of total waste estimated as per R & R is 7847632 tons during the life of mine.	
11	Dumps	A total 18 no of dumps have been identified within & outside the ML area. 1) Out of them, 9 dumps i.e 7 inactive (ID1 to ID7), 1 active & 1 BHQ/SG1 are lying within the lease area and 2) 9 encroached dumps (EID1 to EID7,EID 7A & EID8) are lying outside the lease area. 3) Besides, three waste dumps (PD1,PD2 & PD3) and backfilling area (BF-1) have been proposed for the accomodation of waste during next plan period. Active Dumps: It is proposed to dispose the waste on AD1,PD1,PD2,PD3 & Backfilling for first five years & upto conceptual plan period.	
12	Reclamation & Rehabilitation measures	 Engineering measures have been proposed based on hydrological condition within and outside the lease area along with the cost. Biological measures for dumps, mine pit, haul roads have been suggested suitable species. 	
13	R & R Cost	Rs. 761.792 Lakhs (761.80 Lakhs) Excluding cost SMP,BMP,Monitoring and implementation of R & R capacibulding, infrastructue etc.,	



MINING PLAN
Karadikolla Iron Ore Mining Block
(ML No 2487)

Table No 2

SI No	Items	Fotal Cost in Lakhs
1	Cost of afforestation of area under encroachment	1
2	Cost of engineering structures for OB dump management	465.267
3	Cost of engineering structures for surface water management	85.525
4	Cost of Afforestation of the ML area at the conceptual stage.	137.230
5	Cost of afforestation of area under haul road.	3.840
6	Afforestation of area under green belt.	13.120
	imanagement Plan (BMP), Monitoring and implementation of R & R plan, capacity building, infrastructure etc.	As per the guidelines issued by CEC, in respect of "Category-C" mine, the entire amount received by way of penalty etc. may be transferred to SPV for the purpose of taking up various ameliorative and mitigative measures in district Ballari or as decided by task force to be constituted as per the recommendation of Macro-level EIA report and the direction of Hon'ble Supreme Court of India for Implementation of R & R plan and EMP.
	Grand Total	Rs. 761.792 Lakh
		(Rs. 761.80 Lakh) Excluding cost of items at serial No. 7 proposed above

The cost proposed of R & R is indicative and may vary based on actual dimensions of the proposed engineering structures, common schedule rate of Govt. of Karnataka and local field conditions.

- 0.11 Forest clearance was granted vide letter no.8-39/2003-FC (Pt) dated 08/5/2003 and 7/8th July/2003 for 20 years and co-terminus with the mining lease.
- **0.12** A fresh mining plan is prepared in the context of under Rule 16(1) of MCR 2016.

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MINING PLAN

Karadikolla Iron Ore Mining Block

(ML No 2487)

1.0 GENERAL:

a) Name and Address of the Applicant

Table No.3

Name of Applicant/ lessee/Rule 45 registration no.	Preferred Bidder M/s. MSPL LIMITED/ Not applicable.		
Address	MSPL LIMITED, Baldota Enclave, Abheraj Baldota Road, Hosapete		
District	Ballari		
State	Karnataka		
Pin code	583 203		
Phone	08394 - 232003,005		
Fax	08394 -232333		
Mobile No	9900256797		
Email id	medavenkataiah@mspllimited.com / email@mspllimited.com.		

b) Status of applicant/lessee: Public Limited Company.

(i)The resolution of the company, (ii) Address and ID proof of the executive director of the company, (iii) Registration certificate (IV) A copy of list of Board of Directors and address/contact numbers with e-mail id are given & is enclosed as **Annexure 3.**

c) Mineral which is included in the prospecting license (For Fresh grant):

Iron ore (for Fresh grant)

- **d)** Mineral which is included in the Letter of Intent/lease deed: Iron Ore (Hematite)
- e) Mineral which is the applicant/lessee intends to mine: Iron ore (Hematite)
- f) Name of Qualified Person under rule 15(1) of MCR, 2016 or a Person employed under sub rule (2) of Rule 55 of MCDR, 2017 (Applicable for Scheme of Mining only) preparing Mining Plan:



MINING PLAN

Karadikolla Iron Ore Mining Block

(ML No 2487)

Address:

Sri. S. Shivakumar

M.Sc. Geology

AGM (Exploration)

M/s MSPL Limited,

Baldota Enclave

Abheraj Baldota Road

Hosapete - 583203

Phone: 09900256783

E-mail: shivakumar.s@mspllimited.com

Educational Qualification: Post Graduate in Geology

Professional Experience: 33 years after obtaining the degree.

Copies of certificates are enclosed as Annexure 4.

2.0 LOCATION AND ACCESSIBILITY

a) Lease Details (Existing Mine):

Name of mine: Karadikolla Iron Ore Mine

Lat / Long of the any boundary point:

Point 'A': (1 st pillar)

: N 15° 11' 04.9", E 76° 28' 51.9"

Date of grant of lease

: LOI has been issued. Yet to be executed.

Period/Expiry Date

: 50 Years / w.e.f. Date of execution

Name of Preferred bidder : M/s. MSPL LIMITED

Postal Address:

M/s MSPL Limited,

Baldota Enclave,

Abheraj Baldota Road,

Hosapete - 583 203,

Ballari District, Karnataka,

Phone: (08394) 232003,

Fax : (08394) 232333,

E-mail: medavenkataiah@mspllimited.com



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

b) Details of applied/lease area with location map (fresh area/mine)

Table No 4

Forest		Non-fores	st .	
Sandur Forest	Reserved	Area (Ha): 86.12 Ha (As per CEC)	(i)waste land, (ii)grazing land, (iii)agriculture land, (iv)others (specify)	Area (Ha) : Nil

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Total lease area: A fresh area 86.12 Ha (As per CEC survey) for preparation of mining plan.

District & State: Ballari & Karnataka

Taluk: Sandur

Village: Karadikolla village, Siddapur

Whether the area falls under Coastal Regulation Zone (CRZ): No

Existence of public road/railway line, if any nearby and approximate distance:

Sandur-Hosapete State Highway road SH 49 is 5 kms at Siddapura village.

Toposheet No. with latitude & longitude of all corner boundary point/ pillar: D43E8 (57 A/8) and D43E12 (57 A/12). Latitude & Longitudes are in datum WGS 84

Table No 5

SI.No	ML corner boundary point	Latitude	Longitude
1	BP-A	N 15° 11' 04,9"	E 76° 28' 51.9"
2	ВР-В	N 15° 09' 45.8"	E 76° 30' 02.4"
3	BP-C	N 15° 09' 40.5"	E 76° 29' 59.3"
4	BP-D	N 15° 10' 52.7"	E 76° 28' 47.4"

Latitude and longitude of boundary corner points will be maintained as per the rule 12(V) of MCR 2016, the CEC sketch is enclosed **Plate No I**.





c) Attach a general location map showing area and access routes. It is preferred that the area be marked on a Survey of India topographical map or a cadastral map or forest map as the case may be. However, if none of these are available, the area may be shown on an administrative map.

Refer Key plan Plate No II.

3.0 <u>DETAILS OF APPROVED MINING PLAN / SCHEME OF MINING (if any)</u>

3.1 Date and reference of earlier approved MP/SOM: Not Applicable The details of earlier approved Mining Plan of erstwhile lessee of M/s. Lakshminarayana Mining Company (ML No 2487) are given below: (Source: R & R Plan).

Table No 6

MP/SOM	Under MCR/MCDR	Period	Letter No. and Date of approval
Mining Plan	MCR 1960	2001-02 to 2007-08	MP/BLR/Fe-28/SZ dated 30.01.2002
Scheme of Mining	MCDR 1988	2008-09 to 2012-13	MS/BLR/Fe-130/SZ dated 18.02.2009

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

Not applicable.

There is no modifications in the earlier approved mining plan/scheme of mining as per R & R records.

3.3 Review of earlier approved proposal (if any) in respect of exploration, excavation, reclamation etc.:

Not Applicable.

3.4 Status of compliance of violations pointed out by IBM:

Not Applicable.



MINING PLAN
Karadikolla Iron Ore Mining Block
(ML No 2487)

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

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The Hon'ble Supreme Court by order dated 29.07.2011 imposed complete ban on mining operations and transportation in the areas of Ballari, Chitradurga and Tumkuru districts.

3.6 In case the MP/SOM is submitted under rule 11 of the MCDR 2017 or under rule 17(3) of MCR 2016 for approval of modification, specify reason and justification for modification under these rules.

Not Applicable

3.7 Status:

After the e-auction preferred bidder M/s. MSPL Limited is proposed to conduct detailed exploration by reverse circulation drilling to fulfill the UNFC norms. Accordingly submitted Form-J for notice of sinking of boreholes under rule 47 of MCDR 1988 for reverse circulation drilling programme planned vide our letter no MSPL/KIOM/IBM/16-17 dated 15.02.2017 Ref **Annexure 5**.

MSPL conducted the survey, geological mapping, drilling, bulk density tests by NABL laboratory, the reserves/resources are re-estimated and ore to overburden ratio has been estimated.

Based on the recent exploration data provided by the preferred bidder, again a team of experts from ICFRE with the help of domain experts undertook a detailed field inspection of Karadikolla Iron Ore Mine on 07.06.2017, verified the updated surface plan, geological plan & sections.

The R & R Plan of Karadikolla Iron Ore Mine of M/s. MSPL Limited (ML No. 2487) of erstwhile M/s Lakshminarayana Mining Company of 86.12 ha. area has been prepared by ICFRE & same has been approved by CEC. The proposal of reclamation and rehabilitation measures will be taken up as per the approved R & R Plan.





1.0 **GEOLOGY AND EXPLORATION:**

a) Topography, drainage pattern, vegetation, climate, rainfall data of the area applied area/mining lease area:

The ML area is a part of hilly terrain of Ballari - Hosapete region in Karnataka State. Two elongated ridges trending NNW -SSE, separated by a valley characterize the ore bearing terrain. Road from Sandur passes through the valley in NW direction and NH-13 near Hosapete. The north-eastern ridge is known as NEB range. The area consideration i.e. Karadikolla Iron Ore Mine lease covers part of this range. The south-western ridge is known as Ramandurga Range. This also contains iron ore.

The highest altitude of the range in the leasehold area is 980 m above MSL in the north-western part. The lowest altitude is 830 m above MSL in the north-western part. The physiographic disposition of the area has been primarily caused by regional influence dominated by isoclinals folds axis trending NNW -SSE subsequently by the process of weathering and denudation. There are no major nallas, streams.

The drainage pattern of the area is sub-dendritic in nature. Half of the run-off within the buffer zone drains to-wards northeast. The half part of the run-off flow towards SW. The mine drainage is conveniently manageable as rainfall in the region is low. The rainwater run-off is guided by the hill slopes channels. There is no perennial water course within lease or surrounded area within 10 km. Within the lease area the natural drains carry only the run-offs while it is raining.

Ballari district is also known for hot summer & very dry weather for a major part of the year, and the temperature varies between 22° C and 43° C. The climate of the area is tropical with hot and warm weather prevailing most of the year.

The meteorological data was collected from the meteorological monitoring station located at the Tungabhadra Dam where daily records of temperature, rainfall, humidity are maintained, since establishment in 1979. The area has quite low annual rainfall averaging 667 mm over last 24 years.

b) Regional Geology with reference to the lease area:

The Ballari – Hosapete region forms a part of the 'Sandur Schist Belt', referable as, the "Dharwars", a group of Precambrian schistose rocks of Mysore. The lithological units include green stones which are the metamorphosed basic igneous rocks



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

occupying the valley regions, with phyllite -"quartzite's forming the canoe-shaped amphitheater of hills, trending NNW-SSE and enclosing Sandur. The phyllite are locally shale and the quartzite are of the nature of banded hematite jasper, and banded hematite quartzite, interred bedded with each other. The banded hematite jasper, the important source rocks for the iron ores in the area are prominent in the northern and western part of the ranges, where as the associated shale become prominent in the southern and eastern parts of the area. The iron ores form a capping over the quartzite and shale and overlie a sequence of manganiferous phyllitic rocks. Lateritisation is widespread in most of the flat topped ridges. Structurally, the Sandur hills form a tightly folded synclinorium, plunging gently to NNW and the hill ranges broadly delineate the folded limbs of synclines, with close repetition of strata due to minor folds. The strike of the ore bodies is generally parallel to the trend of the hill ranges; the dips are often steep, being vertical at number of places. Opposing dips towards NE and SW are found as in the ramandurg and NEB ranges respectively. The general sequences of rock formations found in the area are as given below:

Soil Cover Laterite/ Lateritised ore Banded Ferruginous Quatzite/Jasper Ferruginous shale and Phyllite and Iron ore formation

The Ballari-Hosapete region covers part of the highly folded and metamorphosed Dharwarian formations (Archean) of the Karnataka State. The hill ranges and contained valleys in the region constitute the "Sandur Synclinorium" with aerial trend of NW-SE to NNW-SSE. The strata have been tightly folded into isoclinals anticlines and synclines in the synclinorium. The weathering and denudation cycles have subsequently carved out valleys in the anticlines and hills in the syncline. The iron ore deposits of Ballari-Hosapete constitute part of Ramanadurg range of the "Sandur Synclinorium". The ore bearing localities, south of Ballari-Hosapete railway line comprises of Ramanadurg, Kumaraswamy, Donimalai, Thimmappanagudi and Devadarigudda sections along the eastern and western regions of the Sandur hills.

c) Geology of the area, shape & size of the ore deposit, disposition various lithounits indicating structural features if any etc.,

The lease area occupied by part of the NEB range which exposes rocks of Donimalai formation. The stratigraphic sequence of the mines area comprises Laterite, Friable iron ore, Ferruginous shale, BHJ & Gabbro. The ore body is associated with



MINING PLAN Karadikoka Iron Ore Mining Block (ML No 2487)

Ferruginous-phyllite, banded hematite jasper and from ore bands are compact in nature and formed on hill ranges.

There are six prominent friable iron ore bands occurring consistently. The strike of iron ore band is in line with strike of the country rock ranging N 70° W – S 70° E to N 50° W – S 50° E with dip of 80° to 85° due east. Minor variations in dip and strike are seen due folding. At some place strike joints are also noticed, no major Fold & Fault are observed in the lease area, the Banded hematite jasper play major role of mineralization of friable iron ore, and there are two processes for enrichment & mineralization of Iron ore formation.

- 1. Removal of Silica from BHQ / BHJ.
- 2. Segregation of Iron ore minerals.

The geological mapping and detailed exploration carried out in the leasehold area various lithological unit are traced out.

Laterite / soil

Iron Ore (Friable)

Banded hematite jasper/ Banded hematite quartzite

Shale

Gabbro

Laterite / soil: Laterite capping is seen both mineralized and non mineralized area, the thickness of lateralization varies from 1 to 5 m.

Iron Ore (Friable): Elongated iron ore bands are found on hill terrain, the trends of the hill range is NW-SE direction. The mineralized ore body was formed by secondary enrichment due to leaching and replacement of silica from BHQ. The depth persistence of mineralization zone has been established by Diamond core drilling and RC drilling. On the basis of mapping/drilling six major iron ore bands are identified. The Wt. Avg. of iron ore bands in the lease area is <55% Fe, and details of mineralized friable iron ore bands occurs in the lease area is as tabulated below.





Table No 7

Bands	Cumulative strike length (m)	Av.Width (m)	Depth (m)	Grade Fe %			
Α	615	55	20-50	54.91			
A1	5 ₹ 5	100	20-65	48.64			
В	745	30	20-40	57.43			
С	265	50	70-90	60.99			
D	90	35	40-50	56.03			
E	200	110	10-70	61.70			
	Wt. Avg.Fe%						

Shale: These are cherry red to brown in color, they generally fallow the non mineralized ore body but they contains considerable amount of iron oxide (FeO).

d)

(i) Name of prospecting / exploration agency : MECL & MSPL Limited.

(ii) Address: MSPL Limited, Hosapete-583 201, Ballari District, Karnataka State

(iii) Phone: 08394-232003, Fax: 08394-232333

e-mail: medavenkataiah@mspllimited.com

- 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.

The extensive mining operations were carried out by earlier lessee in North block, Middle block & South Block and existing pit dimensions are given in below table.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table No 8

·				· · · · · · · · · · · · · · · · · · ·
Block	Length(m)	Width (m)	Top mRL	Bottom mRL
North	1550	330	977	892
Middle	730	250	985	870
South	8 20	210	955	845

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

The drilling was taken up to estimate the iron ore reserves, MECL conducted core drilling and RC drilling involving 1643.50 m in 56 boreholes, 1605 samples were analysed.

MSPL also conducted RC drilling to fulfill the UNFC norms and insitu bulk density tests and re-estimated the reserves / resources as per UNFC classification.

The summary of diamond Core drilling boreholes and RC drilling boreholes that have been drilled at the spacing of less than 100 m interval and between two consecutive holes, along strike interval drilled by MECL & MSPL Limited so far is tabulated below.

Table No 9

	No of Bo	oreholes	Tota		
Year	Core	RC	Core	RC	Prospected by
	drilling	drilling	drilling	drilling	
2014-15					
(23.08.14 to	11	45	333.50	1310.00	MECL
04.10.2014)					
2016-17					
(06.02.2017		34	·	1198.00	MSPL
to		34		1190.00	IVIDEL
26.02.2017)					
TOTAL	11	79	333.50	2508.00	

Source: MECL exploration data as provided along with the tender document during e-auction process.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

The details of bore holes are marked on Surface plan, Geological plan/ cross sections. Please refer Surface plan, Geological plan and cross section & Longitudinal section. The details of drilled boreholes by MECL & MSPL is enclosed as **Annexure 6 & 7** respectively.

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iii) Details of samples analysis indicating type of samples (surface/sub-surface from pits/trenches/boreholes etc.) Complete chemical analysis for entire strata for all radicals may be undertaken for selected samples from a NABL accredited Laboratory or Government laboratory or equivalent. Entire mineralization area may be analyzed meter wise with 10% of check samples. (At least for 10% of total samples may be analyzed in accordance to BIS and reports from NABL accredited/other government laboratory).

Complete chemical analysis of entire strata for all radicals were analysed at MECL laboratory. Selected samples were also analyzed at JNRDC laboratory. (Source MECL report)

MSPL conducted detailed exploration by RC drilling, the meter wise samples analyzed in MSPL Laboratory. The 10% of check samples were analyzed in CHAITHANYA GEO CHEM which is NABL accredited laboratory is enclosed as **Annexure 8.**

iv) Expenditure incurred in various prospecting operations by MSPL Limited.

Table	Νo	10

Year	RC Drilling	No of samples	Expenditure in Rs.
	in meter	analysed.	
2016-17	1198	_	4917350
		444 radicals	102120
		Total	5019470

f) The surface plan of the lease area may be prepared on a scale of 1: 1000 or 1: 2000 with contour interval of maximum of 10 m depending upon the topography and size of the area duly marked by grid lines showing all features indicated under Rule 32(1)(a) of MCDR 2017.

The surface plan of the lease area has been prepared on a scale of 1:2000 is enclosed as **Plate No. III.**

g) For preparation of geological plan, surface plan prepared on a scale of 1: 1000 or 1: 2000 scale specified under Para 1.0 (f) of Part A of the format may be taken



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

as the base plan. The details of exploration already carried out along with supporting data for existence of mineral, locations, proposed exploration, various lithounits along with structural features, mineralized/ ore zone with grade variation if any may be marked on the geological plan along with other features indicated under Rule 32(1)(b) of MCDR 2017.

C 10.52

After the e-auction Preferred Bidder M/s. MSPL Limited conducted the survey, geological mapping, and detailed exploration by reverse circulation drilling to fulfill the UNFC norms, bulk density tests by approved NABL laboratory. The geological mapping of the lease hold area was tentatively divided as North block, Middle block & South block. The Iron ore exploration in the area was carried out in all the three blocks systematically by diamond core drilling & RC drilling by MECL & MSPL exploration data incorporated & updated the geological map.

The Geological plan of the lease area has been prepared on a scale of 1:2000 is enclosed as **Plate No IV**.

h) Geological sections may be prepared on natural scale of geological plan at suitable interval across the lease area from boundary to boundary.

The Geological cross sections (CS) of the lease area has been prepared by considering the MECL borehole data & MSPL borehole data and updated on a scale of 1:1000 is enclosed as **Plate No V** & Longitudinal Sections (L.V) on 1:1000 is enclosed as **Plate No VI**.

i) Broadly indicate the future programme of exploration with due justification (duly marking on Geological plan year wise location in different colors) taking into consideration the future tentative excavation programme planned in next five years as in table below:-

The summary of the exploration carried out so far as explained in above para and data incorporated for preparation the mining plan. The friable iron ore mineralized area occupied in 22 Ha and it is covered under G1 level of exploration. The complex nature of mineralization of this mining block few bore holes are proposed to drill to ascertain to continuity of mineralization. By taking into consideration the future tentative excavation programme planned in next five years is given below.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table No 11

111

3	10010 110 22			المواجع المعوا	
	Year	No.of	Grid	Totals 3	Remarks
		Boreholes(Interval	Meterage	
		Core / RC /			
		DTH)			
1	I	1	<100 m	30	Proposed Backfilled area
		<u> </u>			(PBH-1 - DTH)
		3			Contact zone at Shale &
	II	(50 m each)	<100 m	150	BHQ (PBH – 2 to 4 - RC)
	III	1	<100 m	90	Continuity of C and D
	112			80	band (PBH-5 - RC)
	IV	-		-	-
	V	-	-	-	-
	Total	5		260	

j) Reserves and Resources as per UNFC with respect to the threshold value notified by IBM may be furnished in a tabular form as given below: (Area explored under different level of exploration may be marked on the geological plan and UNFC code for area considered for different categories of reserve/ resources estimation may also be marked on geological cross sections).

Submit the feasibility/Pre-feasibility study report along with the financial analysis for economic viability of the deposit as specified under the UNFC field guidelines may be incorporated.

FC code for categorization of reserves/resources is marked on geological plan and tions. Feasibility report along with financial analysis for economical viability to oduce 0.510 MTPA is enclosed as **Annexure 9.**

- k) Furnish detailed calculation of reserves/resources section wise
- 1. Geological & net geological reserve have been estimated by MECL. Mineable reserves have not been estimated. Bulk density of 3.50 t /Cu.m. Considered for calculation purpose by MECL, the details of reserves is as tabulated below.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table No 12

	<u> </u>	West-		
	Geological	Net Geological	Mineable	
11	10966554	9869898	8036917	
12	1196014	1076413	876507	
21	4181240	3763116	3064252	
	16343808	14709427	11977676	
Fe%	52.91%			
	11 12 21 Fe%	12 1196014 21 4181240 16343808	12 1196014 1076413 21 4181240 3763116 16343808 14709427	

2. Updated the geological plan & cross sections the reserves/resources calculation cross section method, band wise, category wise reserves/resource as on 01.10.2017 (Under UNFC Category) the ore & development quantities are given in **Annexure 10.**

I) Mineral Reserves/Resources:

Mineral Resources: (Mineral resources may be estimated purely based on level of exploration, with reference to the threshold value of minerals declared by IBM).

Reserves estimated by conducting detailed exploration (G1) involves the detailed three dimensional delineation of a regular deposit achieved through sampling such as bench sampling, spot sampling, bore hole sampling and updated the geological plan & cross sectional method, bulk density tests were conducted by SGS approved NABL laboratory Ref **Annexure 11**, the calculation of reserves/resources cross section wise, band wise, category wise reserves/resource as on 01.10.2017 (under UNFC Category) is given below.

Table 13

Reserves/Resources in million	Grade (Wt.Avg. Fe%)
tons	
Reserves (111) 9.473	54.44
Resource (211) 2.031	
(333) 1.239	
Grand total 12.743	
-	_
_	_
*	-
	Reserves (111) 9.473 Resource (211) 2.031 (333) 1.239



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Resources and Reserves within the lease may be arrived after applying results feasibility study and economic evaluation of deposit based on various factors such as:

Entire lease area has been explored fully. All the samples were analyzed Wt.Avg. 54.44% Fe. There is no sub grade mineral.

a) Mining Method : Open Cast Mining

Recovery factor : 100% Mining losses : Nil Processing losses : Nil

b) Cut-off grade, Ultimate pit depth proposed.

The quality of the iron ore reserves of the lease area is having Wt.Avg.Fe is 54.44% Fe. The ultimate pit depth is proposed to work up to 840 m RL.

- c) Mineral/ ore blocked due to benches, barriers, pillars, road, railway, river, nala, reservoir, electric line and other statutory barriers etc, under forest; sanctuaries etc. where necessary permissions are not available.
- 1) Geological & net geological reserve have been estimated by MECL. Mineable reserves have not been estimated. Bulk density of 3.50 t /Cu.m. Considered for calculation purpose by MECL, the details of reserves are given in above para.
- 2) Based on the recent detailed exploration data conducted by MSPL & considering the MECL data, the area where the bore holes are drilled at 100 m interval, the reserves are categorized as proved reserves (111) to the lowest depth. Some reserves are beyond ultimate pit limit and are categorized as measured mineral resources (211). Beyond the lowest depth the drilled bore hole the resources are classified as Inferred Mineral Resource (333). The reserves/resources calculation by cross section method, band wise, category wise are re-estimated as on 01.10.2017 (under UNFC Category).

Four bulk density tests were conducted by SGS approved NABL laboratory, the avg. bulk density considered 3.6 t /Cu m for calculation purpose.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table-No 14

	UNFC Code		Quantity in million tons	Grade %Fe
A. Total Mineral Reserve				
Proved Mineral Reserve .	111		9.473	
Probable Mineral Reserve	121 122	and	-	
	Sub	Total	9.473	
B. Total Remaining Resources				
Feasibility Mineral Resource	211		2.031	
Prefeasibility Mineral Resource	221 222	and	-	54,44
Measured Mineral Resource	331		-	
Indicated Mineral Resource	332		-	
Inferred Mineral Resource			1.239	
Reconnaissance Mineral Resource			-	
	Sub '	Гotal	3.270	
Total Reserve (111) + Resources(211+	12.743			

-<u>Note:</u> It may not be 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.



MINING PLAN
Karadikolla I on Ore Mining Block
(ML No 2487)

2.0- MINING

A. OPEN CAST MINING:

Briefly describe the existing as well as proposed method for excavation with all design parameters indicating on plans/sections.

Existing: Earlier lessee mining was done by fully mechanized open cast method by using HEMM equipment like excavators, drilling, loading tippers. The existing bench slope is 50° to 70°. The Top most RL is 977 and the bottom most is 909 mRL. There are two existing approach road enters to ML area from north side via PK halli village and other one south side of via siddapur village. The gradient of these two haulage roads is 1 in 16. The approach to respective workings 1 in 10. There are three mining pits namely Pit-1, Pit-2 & Pit-3.

The pit-1 having a length of 490 m with an avg. width of 80 m, it has three benches with top most RL is 938 mRL and bottom most bench as 921 mRL, and varying in height from 4 m to 11 m.

The pit-2 having a length of 360 m with an avg. width of 90 m, it has five benches with top most RL is 942 mRL and bottom most bench as 909 mRL, and varying in height from 4 m to 10 m.

The pit-3 having a length of 600 m with an avg. width of 330 m, it has eleven benches with top most RL is 977 mRL and bottom most bench as 913 mRL, and varying in height from 2 m to 22 m.

The operations involved mining of the ore and waste by drilling and blasting. Ore excavated from the mine was taken to the mobile crushing and screening plant in the ML area for screening and sizing. The finished products i.e. calibrated lump ore and fine ore were loaded in to tippers and dispatched to the stockyard before dispatching to domestic steel industry / loading in to the railway wagons. Waste was dumped in the designated places.

Proposed: The existing geometry of the benches are irregular, it is proposed to work fully mechanized and maintain the height of the bench is 9 m and width of bench will be 9 - 10 m with road gradient maintained at 1:16. Pit slope angle will be at 40° to 55° and bench slope angle will be 85°. It will be maintained as per statutory requirement, the benches are being providing with connecting ramps which is having the gradient 1:16 with hair pin curves and in cases where the bench



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

to bench connection at the bottom/face, the gradient is 1:10 will be mentioned for a distance of not exceeding 100 m as per the statutory requirements.

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The lease area has been divided into 3 blocks namely, North block, Middle block & South Block.

North block: This block is having a length of 1550 m with a width of 330 m. There are total of 8 benches with top RL as 977 m and bottom most RL as 892 m. Benches are not systematically developed and is having a height varying from 2 m to 22 m, as some benches being very narrow, have collapsed and merged into each other. There are two inactive dumps (ID-1 & ID-2) located in the North Block.

Middle Block: It extends for a length of 730 m and has an average width of 250 m. No mine working benches is observed there. There is 1 sub-grade stack and 3 OB dumps namely SG-2, AD-1, ID-3 &ID-4 located in the Block.

South Block: This block is having a length of 820 m and a width of 210 m. There are total 6 benches with top RL as 957 m and bottommost RL as 909 m. Benches are not systematically developed and its height is varying from 4 m to 10 m. There are 3 inactive dumps located in Southern side (ID-5. ID-6 & ID-7).

The advance of benches will be extended towards north & south making pits during the first five year period.

It is proposed to work in north block for mining and allied activities between coordinates E 659000 to 660200 N 1677800 to 1679200. It is proposed to work in south block between coordinates E 660600 to 661200 N 1676700 to 1677400. The exploitation will under these blocks for five year plan period.

Karadikolla Iron Ore Mine is being operated by open cast mining method with high mechanization comprising of hydraulic excavators and dumpers combinations. There is no change in proposal method of excavation.

b) Indicate year-wise tentative excavation in cubic meters indicating development, ROM, pit wise as in table below.

As per approved R & R, the production capacity has been fixed by CEC as 0.510 MTPA. Accordingly, the year wise in-situ tentative excavation is proposed for the first five years is as follows:



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

I .- In-situ Tentative Excavation :

Table No 15

			Total			ROM (Cu	m)		ROM/
	Year	Pit No.	Tentative Excavation , (Cum)	Top Soii (Cum)	OB/SB/IB (Cum)	Ore (Cum)*	Mineral Reject (Cum)	Mineral Reject	Waste Ratio (in Cum)
Transport	1	2	3	4	5	6	7	8	9
n wild will demand the design	· I		251065	-	109360 (218720 tons)	141705 (510138 tons)	-	_	1:0.77
William Walles	II	North,	193260	-	51580 (103160 tons)	141680 (510048 tons)	-	-	1:0.36
	III	Middle & South	279410	-	137760 (275520 tons)	141650 (509940 tons)	-	_	1:097
	IV	blocks	204910	-	63220 (126440 tons)	141690 (510084 tons)	-	_	1:0.45
	V		204750	-	63030 (126060 tons)	141720 (510192 tons)	_	_	1:0.44
	Total		1133395	-	424950 (849900 tons)	708445 (2550402 tons)	-	_	1:0.60

^{*}Tentative tonnage of the ore may be arrived by computing approximate bulk density and recovery factor as these data are variable and may be established on time series.

Year wise section wise production and development the period I,II,III,IV & V is enclosed as **Annexure 12(A) to 12 (E)**. The details of Year-wise opening reserves, pit-wise / mRL, Production and Balance reserves is enclosed as **Annexure 12(F)**.

II. Dump re-handling (for the purpose of recovery of mineral):

There is no proposal for dump re-handling (for the purpose of recovery of mineral).

c) Enclose individual year wise development plans and sections showing pit layouts, dumps, stacks of mineral reject, if any, etc., in case of 'A' category mines. Composite development plans showing pit layouts, dumps, stacks of mineral reject if any, etc., and year wise sections in case of 'B' category mines.

It is proposed to work in north block for mining and allied activities between coordinates E 659000 to 660200 N 1677800 to 1679200. It is proposed to work in south block between coordinates E 660600 to 661200 N 1676700 to 1677400. The exploitation will under these blocks for five year plan period.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table No 16

Tubio .					
Year		Blocks			
	North B	lock (mRL)	South I	Block (mRL)	Dumps
	Тор	Bottom	Тор	Bottom	
I	952	938	933	884	PD1,PD2 & PD3
II	970	938	950	925	PD2,PD3 & BF1
III	965	938	947	911	PD2,PD3 & BF1
IV	956	938	947	902	PD2,PD3 & BF1
V	970	938	947	884	PD2,PD3 & BF1

Yearly pit wise development plan proposed for the next five years is depicted on plans and sections. Refer **Plate No. VII A to E.** and year wise, section wise and band wise production and developments for the five years.

I year: It is proposed to work in north block and south block for ore and waste in S8,S9,S10,S11,S24,S25,S26,S27,S28 & S29 sections. The bottom of the RL is in north block 938 and top of the RL is 952. In south block the bottom of the RL is 884 and top RL is 933. It is proposed to maintain 9 m height, 9-10 m width and bench slope will 85°. The generated disposed on proposed dumps PD-1, PD-2 & PD-3.

II year: It is proposed to work in north block and south block for ore and waste in S8,S9,S10,S11,S24,S25,S26,S27,S28 & S29 sections. The bottom of the RL is in north block 938 and top of the RL is 970. In south block the bottom of the RL is 925 and top RL is 950. It is proposed to maintain 9 m height, 9-10 m width and bench slope will 85°. The generated disposed on proposed dumps PD-2, PD-3 & BF-1.

III year: It is proposed to work in north block and south block for ore and waste in S8,S9,S10,S11,S24,S25,S26,S27,S28 & S29 sections. The bottom of the RL is in north block 938 and top of the RL is 965. In south block the bottom of the RL is 911 and top_RL is 947. It is proposed to maintain 9 m height, 9-10 m width and bench slope will 85°. The generated disposed on proposed dumps PD-2, PD-3 & BF-1.

IV year: It is proposed to work in north block and south block for ore and waste in S8,S9,S10,S11,S24,S25,S26,S27,S28 & S29 sections. The bottom of the RL is in north block 938 and top of the RL is 956. In south block the bottom of the RL is 902 and top RL is 947. It is proposed to maintain 9 m height, 9-10 m width and bench slope will 85°. The generated disposed on proposed dumps PD-2, PD-3 & BF-1.



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V year: It is proposed to work in north block and south block for ore and waste in \$8,\$9,\$10,\$11,\$24,\$25,\$26,\$27,\$28 & \$29 sections. The bottom of the RL is in north block 938 and top of the RL is 970. In south block the bottom of the RL is 884 and top RL is 947. It is proposed to maintain 9 m height, 9-10 m width and bench slope will 85°. The generated disposed on proposed dumps PD-2, PD-3 & BF-1.

It is proposed to dump in Proposed Dump no PD1,PD2 & PD3. Back filling BF1 in south block pit after the exhaustion of the ore body from the second year onwards in section S25, entire area will be exploited during first year and after prior approval of IBM will be taken before commencement of back filling.

The overburden mainly consists of shale, gabbro & BHQ/BHJ is generated (424950 Cu m \times BD (2) = 849900 tonnes ie 0.849 million tonnes) will be disposed on proposed dump no PD1,PD2,PD3 & BF1 back filling in south block. The year wise waste generated is as follows:

Table No 17

Year	Development	
: :	Cu m	Tonnes
I	109360	218720
II	51580	103160
III	137760	275520
IV	63220	126440
V	63030	126060
Total	424950	849900

d) Describe briefly giving salient features of the proposed method of working indicating category of mine.

Karadikolla Iron ore mine is "A" category fully mechanized mine it is proposed to operate by opencast mining method. The height of the bench is 9 m and width of bench will be 9 - 10 m with gradient maintained at 1:16. Pit slope angle will be at 40° to 55° and bench slope angle will be 85°. Presently the mining area has been divided into three blocks namely North block, Middle block and South block. The present RL are in the north block minimum mRL is 938 and maximum mRL is 952, In the middle block the mRL is 930 and maximum mRL is 960 mRL. In the south



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

block-minimum mRL is 884 and maximum mRL is 933. The advance of benches will be extended towards north & south making pits during the first five year period.

It is proposed work near mine boundaries with M/s. Chowgule within 7.5 m, common boundary with an adjacent lessee the binding agreement will be made under rule 111 of MMR 1961 before start of common boundary working.

It is proposed to handle the (maximum quantity) for ore and waste is considered for calculation purpose, ore is 510192 tons (141720 Cu.m) and waste is 275520 tons (137760 Cu.m) respectively is considered for Drilling, Blasting, Excavation, Hauling & Transportation of Ore & Over Burden.

Drilling calculation: Considered 100% drilling & blasting is necessary.

Ore =Burden & Spacing = 3 m X 3.5 m

Yield /m of drilling = $37.8 \text{ tons} (3 \times 3.5 \times \text{bulk density } 3.6 \text{ tons/Cu m})$

Drilling required for ore = 510192/37.8 tons/cum of drilling

= 13497 m+ 10% sub grade Drilling (1350 m of drilling) Total meters drilling in ore

=14847 m.

Development = Burden X Spacing = 3.5 m x 4 m

Yield /m of drilling

= $28 \text{ tons} (3.5 \times 4 \times \text{bulk density } 2 \text{ tons/Cu m})$

Drilling required for Development = 275520/28=9840+10% sub grade drilling (984)

Total mtrs drilling in Development =10824 m.

BLASTING: - After Completion of drilling operation, depends on the requirement, the blasting area will be decided. In this process, normally explosives (slurry explosives, ANFO, LOX etc.,) will be filled in drilled holes and blasted by using delay detonators, card relays. We will also follow certain parameters of charge per meter of drilling in different strata. It varies from 2.4 to 3.5 kg per m from strata to strata and area to area.

The maximum charge of explosives per delay is usually 100 to 150 kgs. Delay detonators / card relays are being used to maintain delay in between holes/rows. This is being done to achieve better fragmentation and to reduce ground vibrations. Secondary blasting is the process of blasting for further reduction of size of boulders



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

generated during primary blasting. Rock breaker mounted on hydraulic excavator will be used to avoid plaster and pop shooting.

Court, of India.

Explosive Required:

 $Ore_{-} = Drill meters \times 3.5 kgs/m = 14847 \times 3.5 = 51964 kgs$

Dev = Drill meters x 2.4 kgs/ $m = 10824 \times 2.4 = 25978 \text{ kgs}$

Powder factor

Ore = 10.8 tons/kg

Development = 11.6 tons/kg

Magazine:

Presently we are not having magazine licence, it will process for grant of magazine licence, Ammonium nitrate,LOX licence etc. We will use explosives by outsource depends on requirement. Explosives are arranged from authorized dealers as and when required as per stipulated conditions.

EXCAVATION: After blasting, the ore/waste will be in loose/fragmented stage. MSPL will engage HEMM like, hydraulic excavators having bucket capacity ranging from 1.0 m3 to 3.0 m3 to excavate the loose ore/waste and loading into tippers/dumpers. These hydraulic excavators are of HSD operated and having all safety features with AC cabins. Proper care will be taken to avoid mixing of ore and waste during excavation of contact zones.

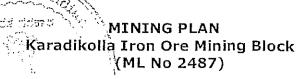
HAULING & TRANSPORTATION OB and ORE: Ore and OB will be transported by using 16 Tonnes Tippers or 30 Tonnes Dumpers.

Ore: - Ore will be transported from blasting face to mobile crusher/stock nearer to crusher, The stock yard material will be again loaded by loaders/excavators to Tippers / Dumpers and will be fed to the crusher.

The mobile crusher will be located on the hill top and it crushes 100% -10mm is produced out of the crushing and screening plant. The product which is coming out from crushers will be loaded to the tippers / dumpers and it will be transported and unloaded in to the designated stock piles. The external tippers will utilised for the dispatch of products from stock piles/crushers.

Waste: - Waste will be loaded by hydraulic excavators to 16 Tonne Tippers/30 Tonne Dumpers and it will be transported to the designated dump yards for systematic dumping.





-Calculations:

- 1. Maximum quantity of the of ore to be handled for the period 510192 tons (141720 Cu.m) per annum.
- 2. Maximum quantity for the of Waste to be handled for the period 275520 tons (137760 Cu.m) per annum•

Assumptions & considerations:

- 1. No. of effective Mine working days -280 days
- 2. No. of hours working

-12 hrs (2 shifts)

- 3. Average Capacity of Excavator -275 TPH of ore and 150 cu.mts of waste per hour (it varies depends on machine model)
- 4. Average drill capacity

-15 m per hour (It changes depends on strata)

- 5. Actual working hours of machine per day 7 hrs
- 6. Yield per mt of drilling: ORE-37.8 tons and WASTE -28.0 tons
- 7. Powder factor expected: Ore=9.8 t/Kg, OB=10.6 t/Kg.

The requirement of machinery has been calculated by considering the 80-90% availability of machinery and all parameters as discussed above is given in table.

Table No 18

Items	No.of days	Capacity	No.of machi nes	No.of hours	Capacity per year	Remarks
Excavators	-					
-Excavators-ore	280	275 TPH	1	6	509940 tons	
Excavators- Waste	280	275 TPH	1	6	275520 tons	Capacity per year will change year to year as per area of working
Rock breaker			1			
Excavator for Weigh bridge	280	100 TPH	1	6		To adjust weighment to 16 tonnes/10 tonnes
Excav-Crusher feeding	250	150 TPH	1	6		



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Excav-Dump / /Env & Misc.works		150 TPH	1	6		
Excavator-Spare			1	The management of the beautiful and the second seco		Stand by machinaries.
Dumpers	280	30 tonners	18	6		including spare capacity
Tippers	280	16 tonners	2	6		Internal movement/other works – including spair
Drill	280	30 mts/hr	3	6	201600 mts (124173 mts)	
Wheel Loaders	280	150 TPH	5	6		Mine pit , stock yards & product loading
Water Tankers			4			
Mobile C&S plant	250	150 TPH	2	6	509940 tonnes	Design capacity is 150 TPH. 92 % of crushing capacity considered.
Road grader			1			

^{*} Requirement of machinery calculated based on assumptions and it may change depends on practical conditions area and year.

As per the requirement of machinery it will be hired / capitalized for the operation of the mine.

Recovery factor: The geomorphologic setup of the iron ore deposit has been well established in this sector. The mining parameters are also extensively recorded through the open cast mine. Therefore, the confident level of mining operation in the area is quite high, hence we have considered as 100% mine able reserves, the mining loss and processing loss.

e) Describe briefly the layout of mine workings, pit road layout, the layout of faces and sites for disposal of overburden/ waste along with ground preparation prior to disposal of waste, reject etc. A reference to the plans and sections may be given. UPL or ultimate size of the pit is to be shown for identification of the suitable dumping site.

It is proposed to maintain the height of the bench is 9 m and width of bench will be than 9-10 m with gradient maintained at 1:16. Pit slope angle will be at 40° to 55° and bench slope angle will be 85°. The present RL are in the north block minimum



Karadikolla Iron Ore Mining Block (ML No 2487) MINING PLAN

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south making pits during the first five year period. maximum mRL is 933, mRL is 938 and maximum mRL is 952, and maximum mRL is 960 mRL. In the south block minimum mRL is 884 and The advance of benches will be extended towards north & The the middle block the some book the minimum mRL is 930

south block between coordinates E 660600 to 661200 N 1676700 to 1677400. The exploitation will under these blocks for five year plan period. coordinates E 659000 to 660200 N 1677800 to 1679200. It is proposed to work in proposed to work in north block for mining and allied activities between

waste. It is proposed to dump in PD1,PD2 & PD3. BF1 back filling in south block pit after the exhaustion of the ore body from the second year onwards in section S25. The overburden mainly consists of shale, phyllite, gabbro & BHQ/BHJ is treated as

for future mining & allied activities for the conceptual period and screening plant and stock yards for the first five years. This dump will be used dumping area has been proposed for infrastructures like buildings, mobile crushing boreholes drilled in this area indicates that it is an non mineralised area. Dump-AD1(4.25 Ha): This is located in middle block, there are two

proposed the details of proposed dump and back filling area is tabled below: These three areas are located in south block and in north block. Back filling is also ultimate pit slope, identified three dumping areas which are in non mineralised zone. Proposed Dump details: Based on the recent exploration data and considering the

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No 19

2.41	28°	1000	1	South block	BF1
8.30	28°	400	60	North block	PD3
5.30	28°	450	50	North block	PD2
1.33	28°	130	15	South block	PD1
Area (Ha)	Angle	Width (m) Angle	Height (m)	Location	Proposed Dump No

back filling. The proposals dumping of waste shall be done in lifts/berms each of 10 southern slopes by retreating method in proposed dump PD1,PD 2, & PD3 and BF 1 Million Cu m) will be disposed of on above ground from lower contours towards During the five years plan period the waste generation is 424950 Cu.m (0.425



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m-height and width about 8 m with overall slope angle 28°, maximum height is 60 m. Yearly generation of waste and location of disposal is furnishing below.

Table No 20

	PD 1	PD 2	PD 3	BF 1	
	(in Cu m) 🔹	(in Cu m)	in (Cu m)	(in Cu m)	
	(E 660900-	(E 659300-	(E 659000-	(E 660800-	
	E 660200	E 659700	E 659300	E 661000	
	N 1676900-	N 1678200 -	N 1678700-	N 1677080-	Total
Year	N 1677100)	N 1678600)	N 1679250)	N 1677250)	(in Cu m)
I	76140	9966	23254	0	109360
II	0	13437	31353	6790	51580
III	0	37401	87269	13090	137760
IV	0	15417	35973	11830	63220
V	0	6021	14049	42960	63030
Total	76140	82242	191898	74670	424950

Inactive Dump details:

There are 7 inactive dumps (ID-1 to ID-7) within the lease area and there are 9 encroached dumps (EID-1 to 7A & EID-8) located outside the lease area as per the CEC map.

Table No 21

	=				
Dump No	Location	Height (m)	Angle	Area (Ha)	Remarks
ID-1	North	45-50	45-55°	1.49	Proposed for future mining
ID-2	North	20-25	50°	0.56	Proposed for future dumping
ID-3	Middle		Re	claimed by a	fforestation
					Engineering measures are
ID-4	Middle	70-120	60°	5.89	proposed for stabilization
ID-5	South	2-7	50-60°	0.29	Proposed for future mining
ID-6	South	40-50	50°	2.51	Proposed for future mining
ID-7	South	15-20	-	0.46	Proposed for future mining



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f) Conceptual mine planning upto the end the lease period taking into consideration the present available reserves and resources describing the excavation, recovery of ROM, disposal of waste, back filling of voids, reclamation and rehabilitation showing on a plan with few relevant sections.

The conceptual mining plan has been prepared upto the life of mine by considering the following and showing the conceptual plan and sections is enclosed as **Plate No. VIII.**

Anticipated life of the mine:

The updated category wise reserves and resources as on 01.10.2017 is 9.473 MMT and 3.270 MMT respectively. However at the present rate of production capacity 0.510 MTPA, the life of the mine will be 19 years. Whereas LOI issued has been for period of 50 years.

Depth persistence and feasibility of mining:

The friable iron ore deposit at this mine occurs as reef at the top of the hill. Although the depth of the deposit ranges from 10 to 80 m.

Adequacy of Exploration:

Exploration carried out by MECL:

Geological mapping of lease area for 86.12 Ha. A total of 56 boreholes drilled, out of which 11 boreholes for diamond core drilling and 45 boreholes for reverse circulation (RC) non core drilling, 28 geological cross sections have been prepared, bulk density considered 3.50 t/Cu m is considered for calculation purpose and the reserves were estimated and given in Table 11.

Exploration carried out by MSPL:

MSPL conducted detailed exploration and drilled 34 Nos of reverse circulation (RC) drilling non-core boreholes, that have been at the spacing of less than 100 m interval and between two consecutive holes.

Based on the recent detailed exploration data conducted by MSPL & considering the MECL data, the area where the bore holes are drilled at 100 m interval, the reserves are categorized as proved reserves (111) to the lowest depth. Some reserves are



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beyond ultimate pit limit and are categorized as measured mineral resources (211). Beyond the lowest depth the drilled bore hole the resources are classified as Inferred Mineral Resource (333). The reserves/resources calculation by cross section method, band wise, category wise are re-estimated as on 01.10.2017 (under UNFC Category).

Four bulk density tests were conducted by SGS India Private Limited approved NABL laboratory, the avg. bulk density considered 3.6 t /Cu m for calculation purpose. The updated category wise reserves and resources as on 01.10.2017 is 9.473 MMT and 3.270 MMT respectively.

Production and Development:

The annual capacity of the production 0.510 MTPA as per the approved R & R plan. The ore benches are first worked and extended across and along the strike. Side burden will be removed as benches advances, first the production will be taken up in North & South block at higher RLs. The friable ore deposit of the south block will be exhausted partly during this five years period, and back filling will be taken place on 2^{nd} year onwards.

For the conceptual period it is proposed to exhaust first south block then north block for back filling will be taken place to reclaim the mined out area, ultimately the height and width of the benches are about $9\ m\ \&\ 5-9\ m$, with haul road width more than $10\ m$ with gradient maintained at 1:16. Pit slope angle is maintained at 40° to 55° and bench slopes are 85° . To win the blocked ore $2.031\ MMT$ under 211 category additional area is required, accordingly we are requesting the state government in future.

Adequacy of land for Disposal of Waste:

At present one active dump (AD1) it is proposed for infrastructures like buildings, crushing and screening plants and stock yards for the first five years. This dump will be used for future mining/dumping and other allied activities for the conceptual period. Based on the recent drilling exploration data and considering the ultimate pit slope, identified three dumping areas which are in non mineralised zone. These three areas are located in south block and in north block namely PD1, PD2, PD3 & BF1. The waste generated was dumped on these proposed dumps. The overburden mainly consists of shale, gabbro & banded hematite jasper.



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There are 7 inactive dumps (ID-1 to ID-7) within the lease area some of the inactive dumps will be utilized for future mining and allied activities and some of them partly used and partly stabilized as per approved R & R Plan. There are 9 encroached dumps (EID-1 to 7A & EID-8) located on the surrounding lease area will be stabilized as per R & R plan.

There are three proposed dumps PD1,PD2 & PD3 are situated in north & south block nearer to our proposal excavation these are used only to reduce the haulage distance and cost of waste transportation and to accommodate proper dumping in scientific manner. The height of the dump would be maintained in such a way that individual terrace slope will not exceed 43° and overall slope would be less than 28° with the horizontal, for ensuring maximum stability.

- 1) The total generation of other waste upto the life of the mine is 3.923 Million Cum.
- 2) The proposed dump PD1,PD2 & PD3 capacity is 0.900 Million Cu.m
- 3) The total generation of waste will not be able to accommodate in the proposed active dumps, the extra quantity of the waste will be back filled in the mined out area in BF1 & BF2, after exhaustion of the ore.
- 4) During the first five years plan period the total generation waste will be handled 0.429 Million Cum. It is proposed to dump PD1,PD2,PD3 & BF1.
- 5) For life of the mine the total generation waste will be handled 3.494 Million Cu.m. It is proposed to dump PD2,PD3, BF1 & BF2 & AD1.

Table No 22

(in Million Cu m)

Period	PD 1	PD 2	PD 3	BF1	AD 1 & BF2	Total
First five years	0.080	0.082	0.192	0.075	0	0.429
Life of mine	0	0.148	0.398	0.395	2.553	3.494
Grand Total	0.080	0.230	0.590	0.470	2.553	3.923

The proposals dumping of waste shall be done in lifts/berms each of 10 m height and width about 8 m with overall slope angle 28°, maximum height is 60 m.



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Biological Reclamation:

Biological measure when implemented with results in the establishment of system that will be self-sustaining. As vegetation climax involves succession, any hindrance causes an imbalance in nature's operational process.

To implement biological measures all the operational activities are planned in well in time.

In Karadikolla mine it is proposed to carry out the afforestation near processing plants, along the road side and near office premises there by creating the green belt, biological reclamation is carried out on inactive dump slopes by using coco-soil erosion control blankets and spreading of grass seedlings on dump slopes to prevent erosion of dump during rainy season.

Optimum exploitation:

For the optimum exploitation of the mineral systematic exploration, proper pit design, utilization of sub grade minerals & systematic and scientific disposal of waste generated are the governing factors, detailed exploitation programme is already discussed in earlier Para, for proper pit design parameters considered are, ultimate pit slope angle of 40° to 55°, and bench slope angle 85°, height and width of the benches 9m & 5-9m, road width more than 10 meters with gradient of 1:16 where as at smaller distance where two benches are required to be connected 1:10. Separate benches will formed in ore and waste.

Utilization of mineral:

The mineral produced will be used for captive consumption. The detailed specification end-use at mine & at plants are given in para 5 & 6.

Reclamation & Rehabilitation measures:

Reclamation & Rehabilitation measures will be implemented as per the approved R & R plan is enclosed as **Annexure 13 (a) to (e).**

Landuse pattern at conceptual planning upto the lease period along with mode of rehabilitation is given below.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table 23

			AREA (Ha)	
PARTICULARS •	EXISTING	1ST FIVE YEARS	CONCEPTUAL	MODE OF REHABILIATION
AREA UNDER MINING	47.41	30.89	27.00	BENCH PLANTATION
Overburden Dumps			J.	
ACTIVE DUMP (AD-1)	4.25	0.00	2.51	AFFORESTED
PROPOSED ACTIVE DUMP (PD-1, PD-2 & PD-3)	0.00	14.93	14.93	AFFORESTED
INACTIVE DUMP (Excluding safety zone)	11.20	9.34	6.17	AFFORESTED
BHQ DUMP (Excluding safety zone)	2.20	1.33	0.46	WILL REMAIN SAME
OADS (Excluding roads within the pit & dump & including safety zone)	2.30	4.22	2.15	AVENUE PLANTATION
INFRASTRUCTURE	0.05	2.00	2.00	WILL REMAIN SAME FOR WATCH & WARD
MINERAL STOCK	2.80	8.39	4.00	AFFORESTED
SAFETY ZONE (7.5 m)	4.39	5.10	5.10	PLANTATION
PLANTATION / NATURAL VEGETATION AREA (Excluding Safety Zone)	6.38	4.55	1.28	WILL REMAIN SAME
BACKFILLING	0.00	2.41	19.00	PLANTATION
OTHERS	5.14	2.96	1.52	WILL REMAIN SAME
	86.12	86.12	86.12	,



MINING PLAN
Karadikolla Iron Ore Mining Block
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-Waste management:

 T_0 prevent dump run off during rainy season, grass seeds will be spread, gully plugs, settling pits will be constructed at critical points. It is proposed to construct at different places across the nalla gully plugs, check bunds and earthen bunds within and outside the lease as per the approved R & R plans.

In active dumps: (Within lease)

ID-1 (1.49Ha): It is located in north block below the weigh bridge towards NW side. There are three terraces observed. The average height of the dump varies from 45-50 m and its slope angle is $45^{\circ}-50^{\circ}$, although at some places it varies more than 60° . The dump is severely eroded and deep gullies and rills are formed. The OB materials are breeched anto natural nala. Two boreholes have been drilled during the detail exploration and indicate the presence of iron ore body. As this area is falling within the UPL and has been proposed for mine workings in future, the OB material has to be re-handled to proposed dumps.

ID-2 (0.56Ha): This dump is located in north block towards SW corner of the ML area below the cliff. It is a small dump and its height is approximately 20-25 m and slope angle is 50°. No bio-engineering measures have been made. This dump is merged with ID-1. As this area is proposed for future mining, the OB material has to be re-handled to proposed dumps.

ID-3 (1.55Ha): It is located in middle block. This dump is fully reclaimed by afforestation.

ID-4 (5.89 Ha): This dump is located in middle block. The top portion is vegetated with *Acacia auriculiformis*, *Casuarina equisetifolia* and *Eucalyptus* spp. The dump slopes are not vegetated. No bio-engineering measures have been made. Its total height is about 70 -120 m and slope angle is 60°. The OB materials are severely eroded and breached into the forest and arrested the flow of natural nala towards western side. There is a retension wall observed below the dump and is to be strengthened. The part of the sloped area of the dumps are used for future mining & allied activities based on the ultimate pit proposal and proposal for haulage road connecting to south block. The engineering measures are proposed to stabilize the dumps.

ID-5 (0.29 Ha): It is a small dump and is located in south block. The height varies from 2-7 m and slope angle is 50°- 60°. No bio-engineering measures have been done. This dump is proposed to re-handled for future mining and allied activities as it is falling within the UPL.



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ID-6 (2.51 Ha): The inactive dump is located in southern block. The height of the dump varies from 40 -50 m and its slope angle is 50°. Deep gullies and rills are observed at some places and some quantity is eroded into nala and out of lease area (0.36 Ha). One terrace is observed along the slope and its lower slope is partially vegeted. No engineering measures have been done. Some part of the dump is proposed to be re-handled as it is falling within the UPL.

ID-7 (0.46 Ha): It is located in south block. The approximate height of the dump is 15-20 m. The OB is rolled down into the nala/forest. A toe wall is found at the bottom of the dump and is completely filled with breached OB material. Some part of dump top portion has to be re-handled for future mining and allied activities. The bottom portion is partially vegeted.

EID-7A: It is small dump located in south block. The height varies from 2-5 m and slope angle is 30°- 40°. Garland drain is to be constructed below the toe wall for a length of 90 m with 2 m top width, 1m bottom width and 1m height.

Active Dumps (Within lease):

AD-1 (4.25 Ha): This is located in middle block. The detailed exploration carried out in this area (boreholes) indicates that is a non mineralized zone. Accordingly this area has been proposed for infrastructures like buildings, crushing and screening plants & stock yards. Further this area will be used for mining and allied activities in the future at the conceptual period. Engineering measures are proposed to stabilize the dump.

BHQ/SG-1 (2.20 Ha+0.36 Ha):

This dump is located in north block. Its 2.20 Ha area is falling within the lease area and 0.36 Ha area outside the lease. The dump has to be re-handled for future mining and allied activities. Engineering measures are proposed outside the slope area for its protection.

Proposed Active dumps (PD-1, PD-2, PD-3 & Backfilling-BF1):

Based on the recent exploration data and ultimate pit limit of the lease area, three dumping areas in south block & north bloc, which are non-mineralised zones have been proposed for future dumping of the waste. Backfilling is also proposed in D band pit and partially in E band pit.



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pp1- (1-33 Ha): Toe length of the dump is 135 m. A toe wall is to be constructed at the toe of waste dump with 1.7 to 2 m top width 1.7 to 2 m bottom width and 0.15 to 3 m height constructed in hard soil mixed with boulders including hard rock, Plain cement concrete & RR stone masonry. Garland drain is to be constructed below the toe wall for a length of 155 m with 2 m top width, 1 m bottom width and 1 m height. Manual terracing followed by Geo-textile /coir mat and suitable vegetation on steep sliding part of the OB dumps.

Std. of inual

pD2- (5.30 Ha): Toe length of the dump is 450 m. A toe wall is to be constructed at the toe of waste dump with 0.5 to 1.7 m top width, 0.5 to 2 m bottom width and 0.15 to 3 m height constructed in hard soil mixed with boulders including hard rock, Plain cement concrete & RR stone masonry. Garland drain is to be constructed below the toe wall for a length of 470 m with 2 m top width, 1m bottom width and 1m height. Manual terracing followed by Geo-textile /coir mat and suitable vegetation on steep sliding part of the OB dumps.

PD3- (8.30 Ha): Toe length of the dump is 760 m. A toe wall is to be constructed at the toe of waste dump with 0.5 to 1.7 m top width, 0.5 to 2 m bottom width and 0.15 to 3 m height constructed in hard soil mixed with boulders including hard rock, Plain cement concrete & RR stone masonry. Garland drain is to be constructed below the toe wall for a length of 780 m with 2 m top width, 1m bottom width and 1m height. Manual terracing followed by Geo-textile /coir mat and suitable vegetation on steep sliding part of the OB dumps.

Encroached in active dumps (out side the Lease):

EID-1 (0.11Ha): A small dump is located in north block, adjacent todown below the crushing plant area. No engineering measures have been made. Deep rills and gullies have been observed and the OB material have breached into the forest. The height of the dump varies from 10-30 m and slope angle is 50°. Gap plantation has to be done on this dump along with engineering measures.

Toe length of the dump is 100 m. A toe wall is to be constructed at the toe of waste dump with 1.0 to 3 m top width, 3.0 to 3.5 m bottom width and 0.15 to 2 m height constructed in hard soil mixed with boulders including hard rock, Plain cement concrete & RR stone masonry. Garland drain is to be constructed below the toe wall for a length of 206 m with 2 m top width, 1m bottom width and 1m height.

EID-2 (0.35 Ha): This dump is located in the north block below the SG-1 dump. The height of the dump varies from 10-15 m. The dump is partially stabilised. No engineering measures have been done.



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FID-3 / SG-2 (2.92 Ha): This dump is beated in middle block. It is entirely outside ML area as encroachment. As it is a large-size dump, it should be protected from further erosion by providing engineering measures.

Cryt. or India,

EID-4 (2.50 Ha): It is located in middle block below the ID-4. The height of dump varies 20-30 m and its slope angle is about 60°. The top flat portion of the dump is vegetated and its slopes not protected adequately. However, a retention wall is constructed and its toe almost completely breached by the runoff from the dump sediments are slided into the natural nala on the western side. Deep rills and gullies have been formed at many places on its slopes. Engineering measures are proposed to stabilize the dump.

EID-5 (9.51 Ha): The dump is located in north block and completely located outside the ML area.

EID-6 (0.25 Ha): It is a small dump located in south block. The height varies from 2 to 7 m and slope angle is 50° to 60°. No bio-engineering measures have been done.

EID-7 (0.34 Ha): It is a small dump and is located in between middle and south block. Its height varies from 2-7 m and slope angle is 50°-60°. No bio-engineering measures have been done.

EID-7A (0.06 Ha): It is small dump located in south block. Its height varies from 2-5 m and slope angle is 30°-40°. No-bio-engineering measures have been done.

EID-8 (0.71 Ha): It is located in south block in ML area of M/s. Chowgule & Co. Its height varies from 15-20m. The area was under civil dispute and now surveyed and demarkated to M/s. Chowgule & Co (ML No.2546).

It is proposed to construct engineering measures for dump management and surface water management as per the approved R&R plan. The details of engineering measures are as follows.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table – 24 :- Dump Management Plan

編成。 11な	TOEWALL / R	ETAINING WALL	-		
	DRY	MASONARY	GARLAND		
	TOP WIDTH - 1m	TOP WIDTH - 0.5m	TOP WIDTH - 2m	GTW	CEO TEXTERNE (III.)
LOCATION	BTM WIDTH - 3m	BTM WIDTH - 1.5m	BTM WIDTH - 1m		GEO-TEXTTILE (Ha)
	Height - 2m	Height - 3m	Height - 1m		
	Length (m)	Length (m)	Length (m)	Length (m)	
EID-1	100	0	206	0	0.00
EID-2	171	0	180	0	0.00
SG-1	181	0	193	0	0.00
SG-2 / EID-3	364	0	678	0	0.00
EID-7	90	0	100	0	0.00
.EID-6	0	200	210	0	0.00
EID-4	0	682	700	315	2.00
ID-7	0	170	260	0	0.00
EID-7A	80	0	0	0	0.00
ID-4	250	0	305	0	3.25
AD-1	310	0	320	0	2.00
ID-6	0	0	310	0	1.61
PD-3	0	760	780	0	10.00
PD-2	0.	450	470	0_	5.30
PD-1	0	135	155	0	1.33
EID-5	0	1060	0	0	0.00
TOTAL	1546	3457	4867	315	25.49

Table - 25 : Surface Water Management

PARTICULAR	LBCD	GCD	RWHP	SMCD	SST	ST	BWCD	LWCD
_N1	3	2	2	1	1	0	0	0
N2 (A)	2	5	2	0	0	0	0	0
·N2 (B)	2	0	0	0	0	0	0	0
N3 (A)	3	4	2	0	0	0	0	0
N3 (B)	2	1	0	0	0	0	0	0
N4	2	4	1	0	0	0	0	0
N5	2	2	1	1	0	1	0	0
N6 (A)	3	1	0	0	0	0	0	0
N6 (B)	0	4	0	0	0	0	0	0



MINING PLAN Karadikolfa Iron Ore Mining Block (ML No 2487)

6147				1	160	1 - 1 - 1	1	1	1
-N7		1	0	0.	F 7EO	0	0	0	0
N8		1	1	1	1	0	1	0	0
N9		1	1	1	0	0	0	0	0
ID-6		0	· O	0	0	1	0	0	0
SG-2 / E	:ID-3	0	0	0	0	1	0	0	0
EID-1		0	. 0	0	0	1	0	0	0
ALL WA	STE								
DUMPS	_	0	0	0	0	0	0	180	100
TOTAL		22	25	10	3	4	2	180	100

Control of dust:

For controlling the generation of dust during drilling and blasting, It is proposed for wet drilling to be practiced. Dust generation due to haulage of heavy earth moving machinery to be controlled by spraying of water on haulage roads, dust generation points in crushing, screening and plants. Greenbelts will be formed along hauling road side and at dump yards.

Control on Noise:

For controlling the noise pollution the following measures are proposed to be adopted:

- a) All HEMM are now complying with Euro II norms. For controlling the noise generated due to HEMM regular maintenance and greasing of movable parts will be adopted.
- b)—While drilling wet drilling to be practiced and while blasting millisecond delay detonators will be used.
- c) At crushing & screening plants regular oiling and greasing to be carried out.
- <u>d)</u> Ear plugs to be supplied to all the persons working in noise prone areas. There is no continuous exposure to high noise levels.
- e) Roaster system of working will be implemented.

Prevention of water pollution:(surface water)

- a) Gully plugs/settling ponds to be constructed to prevent dump runoff during monsoon.
- b) Dümp slopes will be stabilized by plantation.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

c) Desiltation of gully plugs to be carried out during dry season.

As per approved R & R plans: The runoff during heavy down pour (during high intensity rainfall) causes soil erosion. Control of erosion is important both during mining and post mining rehabilitation programme. The major objective of rehabilitation—is to establish an adequate cover of vegetation to stabilize the site and control erosion. Measures to protect the soil from water erosion should carried out on watershed.

Drainage from out side catchments area above lease area must be diverted into adjoining natural channels through diversion of drains/catch water drains. Erosion control in natural channels should be controlled by constructing silt retaining and grade stabilization structures like gabion check dams, stone masonry check dams, earthen check dams, silt settling tanks and debris basins. Check dams retain silt behind it and allow the water to flow in the downstream. Due to retaining of silt, channel gradient is reduced. Reduced channel gradient reduces flow velocity and consequently silt carrying capacity of flowing water is reduced. By adopting these grades stabilizing structures the channel is converted into benches which results in reduction of equivalent channel gradient appreciably. This will result in better plant growth. Engineering measures is the first line of defense in controlling erosion and it helps the vegetation to come up at faster pace.

As per the above suggestion it is proposed to construct log wood check dam, brushwood check dams, loose boulder check dams, wire crate/gabion check dam, earthen check dam, rainwater harvesting pit and stone masonry will be constructed at suitable place with measurement as per the approved R & R plans.

Afforestation:

Afforestation of the mined out and other available areas which are not fragmented but are degraded due to mining activity is the main component of re-vegetation process to mitigate the negative impacts of the mining on environment. Afforestation may lead to restoration of the ecosystem relatively to pre-mining period.

Afforestation will be carried out as per suggestions given in the approved R & R plans. The species recommended for soil moisture conservations and slope stabilization, nitrogen fixing species for nitrogen enrichment, hydro seeding species, suitable species for OB dumps and mine pit stabilization will be planted.



MINING PLAN
Karadikolfa Iron Ore Mining Block
(ML No 2487)

Biodiversity Conservation Plan:

There is no plan for preserve the Biodiversity conservation.

B. <u>UNDERGROUND MINING</u>

Not Applicable.

3. MINE DRAINAGE

a) Minimum and maximum depth of water table based on observations from nearby wells and water bodies.

The drainage pattern of the area is sub-dendritic in nature. The nallas are seasonal in nature and remain dry most of the time, except during short period of rainfall. A total of 7 primary seasonal nalas are originating from southern side and 5 nalas from nothern side of ML area. All the nalas drain towards the downstream of Tungabhadra dam. Half of the runoff within buffer zone drains towards NE. The half part of the runoff flow towards SW.

The mining operations for iron ore are located on hill top. The mine drainage is convinently managable as rain fall in the region is low (average 667 mm per Annum). All rain waters flows down the hill slopes by way of either direct run off or percolates through strata. There are numerous seasonal water courses along hill slopes, which drain out rain water falling over the area, These water courses have water only during rains or few hours after heavy rain fall.

Since the mine located in hilly area, the ground water table is well below mine working levels. Even when iron ore mining will reach its bottom most level the situation will be same. The ground water table is 470 m, hence there like to be very little on impact on ground water regime due to mining.

b) Indicate maximum and minimum depth of workings.

The maximum RL is 970 m and the minimum RL is 880 m of mine workings during the plan period. The maximum RL is 970 m and the minimum RL is 840 m of mine workings upto the life of mine.





MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

c) Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged.

The rain water may get accumulated at lower benches, the water does not percolate within reasonable limit.

There is no ground water will be encountered in the mine pit.

d) Describe regional and local drainage pattern. Also indicate annual rain fall, catchments area and likely quantity of rain water to flow through the lease area, arrangement for arresting solid wash off etc.

The Ballari-Hosapete region covers part of the highly folded and metamorphosed Dharwarian formations (Archean) of the Karnataka State. The hill ranges and contained valleys in the region constitute the "Sandur Synclinorium" with aerial trend of NW-SE to NNW-SSE. The drainage pattern of the area is sub-dendritic in nature. Half of the run-off within the buffer zone drains to-wards northeast. The half part of the run-off flow towards SW. The mine drainage is conveniently manageable as rainfall in the region is low (average 667 mm per annum). The rainwater run-off is guided by the hill slopes channels.

The Mine is located in low rain fall hilly terrain area with average rain fall of about 667 mm annually. There are no major nallahs, streams or river in the buffer zone area.

Within the lease area, there are water run-offs only when it is raining. It is proposed to constructed a large number of gully plugs and bunds to arrest the water at the bottom of hills so that suspended solids carried and settled before water flows further down slopes. The quality of water overflowing these gully plugs/bunds is regularly monitored during the rainy season and except for a rare very heavy rainfall.

4.0 STACKING OF MINERAL REJECT / SUB GRADE MATERIAL AND DISPOSAL OF WASTE.

a) Indicate briefly the nature and quantity of top soil, overburden / waste / BHQ and Mineral Reject to be disposed off.



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There is no top soil, the overburden consists of ,Shale, Gabbro, BHQ/BHJ, the generation of waste and location of disposal is furnishing below.

It is expected to produce (424950 Cum) 849900 tonnes shall be stocked separately. Year wise generation of wastes and location of disposal is furnishing below.

Table No 26

In Cu.m

	PD 1 (in Cu m)	PD 2 (in Cu m)	PD 3 in (Cu m)	BF 1(in Cu m)	
Year	(E 660900- E 660200 N 1676900- N 1677100)	(E 659300- E 659700 N 1678200 - N 1678600)	(E 659000- E 659300 N 1678700- N 1679250)	(E 660800- E 661000 N 1677080- N 1677250)	Total (in Cu m)
I	76140	9966	23254	0	109360
II	0	13437	31353	6790	51580
III	0	37401	87269	13090	137760
IV	0	15417	35973	11830	63220
V	0	6021	14049	42960	63030
Total	76140	82242	191898	74670	424950

b) The proposed dumping ground within the lease area be proved for presence or absence of mineral and be outside the UPL unless simultaneous back filling is proposed or purely temporary dumping for a short period is proposed in mineralized area with technical constraints & justification.

Based on the recent exploration data and considering the ultimate pit slope, identified three dumping areas which are in non mineralised zone. These three areas are located in south block and in north block. Back filling is also proposed, the details of proposed dump and back filling area is tabled below:

Table No 27

Proposed Dump No	Location	Height (m)	Width (m)	Angle (°)	Area (Ha)
PD1	South block	15	130	28°	1.33
PD2	North block	50	450	28°	5.30
PD3	North block	60	400	28°	8.30
BF1	South block	66	220	28°	2.41





c) Attach a note indicating the manner of disposal of waste, configuration and sequence of year wise build-up of dumps along with the proposals for protective measures.

During the five years plan period the waste generation is 424950 Cu.m (0.425 Million Cu m) will be disposed of on above ground from lower contours towards southern slopes by retreating method in proposed dump PD1,PD 2, & PD3 and BF 1 back filling. The proposals dumping of waste shall be done in lifts/berms each of 10 m height and width about 8 m with overall slope angle 28°, maximum height is 60 m. The year-wise details of R&R proposal for protective measures are given in below.

Table No 28

Year	Toe wall Length (m) TOP WIDTH - 0.5m	Garland drain Length (m) TOP WIDTH - 2m
	BTM WIDTH - 1.5m	BTM WIDTH - 1m
	Height - 3m	Height - 1m
I	269	281
II	269	281
III	269	281
IV	269	281
V	269	281

Year wise protective measures for active and inactive dumps are implemented as per the approved R & R.

5.0 <u>USE OF MINERAL AND MINERAL REJECT</u>

The following are to be furnished in the interest of mineral conservation.

a) Describe briefly the requirement of end-use industry specifically in terms of physical and chemical composition.

The total ROM ore produced from this mine will be crushed and screened, the ore will be dispatched to MSPL Pellet Plant for its captive use. Physical specification of ore is 100% -10 mm, the chemical composition of processed ore with Wt. Avg. less than 55% Fe.



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b) Give brief requirement of intermediate industries involved in up gradation of mineral before its end-use.

Not Applicable.

c) Give detail requirement for other industries, captive consumption, export, associated industrial use etc.,

Not Applicable.

d) Indicate precise physical and chemical specification stipulated by buyers.

Not Applicable.

e) Give details of processes adopted to upgrade the ROM to suit the user requirement.

There is no process to upgrade the ROM at mine site. It will be upgrade in MSPL pellet plant as per the plant requirement.

6.0 PROCESSING OF ROM AND MINERAL REJECT

a) If processing/ beneficiation of the ROM or Mineral Reject is planned to be conducted, briefly describe nature of processing / beneficiation. This may indicate size and grade of feed material and concentrate (finished marketable product), recovery etc.

Processing of ROM: Mobile crushing and screening plant (150 TPH)

ROM comes to the crushing & screening plant through the trucks and gets delivered to grizzly. Oversize of grizzly flows directly to one number jaw crusher. Jaw crusher product passes through one triple deck screen (40mm, 20mm, & 10mm opening), with the lowest deck as 10 mm. -10 mm material from this screen is diverted to product stockpile, whereas the -20mm+10mm goes to one number tertiary crusher. +20 mm material goes to one number secondary crusher. The product of secondary crusher goes to same triple deck screen and follows path as described above.

Product of tertiary crusher goes to one vibrating screening of 10 mm. -10 mm material reports to the product stockpile, whereas +10mm material goes back to tertiary crusher. Thus product of 100% -10mm is produced out of the crushing and



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screening plant. The product which is coming out from crushers will be loaded to the Tippers / Dumpers and it will be transported and unloaded in to the designated stock piles. The external tippers will utilised for the dispatch of products from stock piles/Crushers. There is no beatification process at mine site.

Give a material balance chart with a flow sheet or schematic diagram of the processing procedure indicating feed, product, recovery and its grade at each stage of processing.

Mobile crushing & screening for processing of iron ore, the plant flow sheet showing processing indicates feed quantity, grade & material balance are given as **Annexure 14.**

c) Explain the disposal method for tailing or reject from the processing plant.

There is no tailing or reject from the processing plant.

d) Quantity and quality of tailing / reject proposed to be disposed, size and capacity of tailing pond, toxic effect of such tailing, if any with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailing dam.

There is no rejects or tailing.

e) Specify quantity and type of chemicals if any to be used in the processing plant.

No chemicals are used in the processing plant.

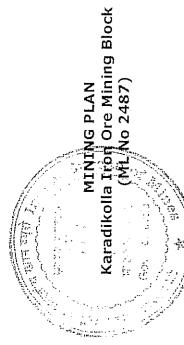
f) Specify quantity and type of chemicals to be stored on site / plant.

No chemicals stored on site / plant.

g) Indicate quantity (Cum per day) of water required for mining and processing and sources of supply of water, disposal of water and extent of recycling. Water balance chart may be given.

There is no requirement of water in processing of ROM.





7:0 OTHER

Describe briefly the following:

a) Site Services:

Workshop, Store, First Aid room, Canteen, Mine office, Computer section, etc. Major site services are proposed at the mine are listed below.

b) Employment Potential:

Table No 29

Highly Skilled	30
Skilled	55
Semi-skilled	35
Un-skilled	10
Contract	I
Highly Skilled	1
Skilled	_
Semi skilled	1
Total	130

Statutory employment w.r.t. MMR, 1961 & MCDR, 2017 are as mentioned below

Table No 30

Mining Engineer	 1
Geologist	Π
Mines Manager	
Asst Mines Manager	2
Mine Foreman	9
Mine Mate	5
Blasters	2
Engineers & others	2
Total	24

Indirect employment: 500 (Indirect employment will be provided as transportation of ore from mine to pellet plant, loading at railway siding & miscellaneous)



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OF 23 RULE UNDER **CLOSURE** PLAN MINE PROGRESSIVE MCDR'2017 8.0

1,1 Environment Base line information:

Based on the recent exploration data, ultimate pit limit, the existing land use pattern indicating the area already degraded due to mining, roads, processing plant, workshop, township etc in a tabular form.

Table No 31

able No 31		
SI No	Head	Area (Ha)
Y ~-l	Area under Mining	47.41
	Overburden dumps	
2	Active Dump (AD-1)	4.25
m	Proposed Active Dump (PD-1, PD-2 & PD-3)	0.00
4	Inactive Dump (Excluding safety zone)	11.20
Ŋ	BHQ dump (Excluding safety zone)	2.20
9	Mineral Stock	2.80
	Infrastructure	0.05
∞	Roads (Excluding roads within the pit & dump &	2.30
6	Safety zone (7.5 m)	4.39
10	Plantation / Natural Vegetation (Excluding Safety Zone)	6.38
, 	Back filling	00.00
12	Others	5.14
	Total	86.12



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Water regime, quality of air, ambient noise level, flora, climatic conditions.

Water Regime:

The mine is located in low rain fall hilly terrain area with average rain fall of about 667 mm annually. There are no major nallahs, within the ML area. There are no perennial water courses within the lease or surrounding area within 10 km. Within the lease area there are water runoffs only when it is raining. The management is proposed to construct as per the approved R & R gully plugs and bunds to arrest the water at the bottom of hills so that suspended solids carried and settled before water flows further down slopes.

The quality of water overflowing these gully plugs/bunds is regularly monitored during the rainy season and except for a rare very heavy rainfall, The material accumulated behind the gully plugs and bunds is cleaned every year before monsoon.

The requirement of water for the mine will be purchased from outside. There is no acid mine drainage. Hydrological study is not required as ground water table is far below.

Quality of Air:

Monitoring of Air quality done by the earlier lessee at 4 stations during March 2008 to May 2008 for 12 weeks. The parameters monitored by the lessee were SPM,RPM,SO2 and NO2. The stations monitored were 3 in buffer zone and 1 in core zone. The details are given as per the approved R & R Plan (EIA/EMP Report,2011).

Table 32

Monitoring of SPM (ug/m3)

sı	Particulars		Location					
No		Siddapura	Papinayakanhalii	Joga Village	Core zone			
1	98 Percentile	153.0	151.0	156.0	150.0			
2	Average 12 week	128.3	120.6	118.0	131.9			
3	Permissible 24 hrly	200.0	200.0	200.0	500.0			
4	Permissable Annual Average	180.0	180.0	180.0	360.0			
5	Min.Value	92.0	48.0	49.0	97.0			
6	Max.Value	179.0	170.0	160.0	165.0			



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Table 33 Monitoring of RPM (ug/m3)

SI	Particulars		Locat	ion	
No		Siddapura	Papinayakanhalli	Joga Village	Core zone
1	98 Percentile	75.0	82.0	82.0	80.0
2	Average 12 week	66.5	67.4	66.6	68.3
3	Permissible 24 hrly	100.0	100.0	100.0	150.0
4	Permissable Annual Average	120.0	120.0	120.0	150.0
5	Min.Value	50.0	48.0	49.0	52.0
6	Max.Value	94.0	88.0	85.0	83.0

All the values of SPM and RPM were found to be below prscribed limits. The SO2 were in the range of 9.0 μ m3 to 25 μ m3 which was far below 24 hrly average limit. The annual average was also very much below of prescribed limit of 40 μ m3. NO2 was in the range of 12 μ m3 to 25 μ m3. This was again for below the 24 hrly limit of 80 μ m3.

It is proposed to monitor ambient air quality stations in buffer zone at three stations in siddapur, papinayanakanahalli & Joga villages. There are five stations in within the core zone dumping, drilling and loading, haulage road and at mobile crushing & screening-plant-as-per-the-approved-R & R

Ambient Noise Level:

The Noise was monitored during EIA at foru surrounding village during the month of May to September 2007. Noise was in the range of 66.7 d(B)A to 76.57 d(B)A and these values were prescribed limit of Noise pollution (Regulation & Control) Rules 2000. The night time noise at the four surrounding village was 30.0 d(B)A to 41.2 d(B)A and it was also found to be well below the prescribed limit of 45 d(B)A. The noise level in the working mine were between 66.0 d(B)A to 113.6 d(B)A and these values are lower than the values prescribed by DGMS.

It is proposed to monitor noise level monitoring stations four in buffer zone i.e. Siddapur, Sushilanagar, Joga & Papinayakanahali villages and three in core zone i.e. near drilling, machinery & mine office as per the approved R & R Plan.

Flora: Natural vegetation

The vegetation occurring in the area belongs to southern tropical dry deciduous forests according to Champion and Seth Classification of Forest Types of India 1968.



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The area falls under the mixed deciduous sub-classification. According to the classification made by Legris and Pascal (1982), the area falls under deciduous climax forests. According to this classification these forests do not have potentiality of secondary moist decidious forests. The canopy is open and the majority of the trees shed their leavessuring the dry months. The flowering and fruiting are generally far advanced before the first flush of new leaves appears with the showers in April – May.

Govt, of India

The dominant tree species found in the area are Anogeissus latifolia, Boswellia serrata, Chloroxylon sweitenia, Schleichera oleosa, Wrightia arborea, Grewia orbiculata and Grewia tiliifolia. Few climbers and twiners like Celastrus paniculata, Cocculus hirsutus, Aristolochia indica, Asparagus racemosus, Cardiospermum halicacabum, Dioscorea pentaphylla, D. oppositifolia, are also observed. The ground flora is chiefly seasonal. The dominant grasses include species like Andropogon pumilus, Apluda mutica, Brachiaria eruciformis, Chrysopogon fulvus, Cymbopogon citratus, C. martini, Cynodon dactylon, Heteropogon contortus etc. chiefly occurring herbs include Acalypha indica, Achyranthes aspera, Aerva lanata, Crotalaria albida, Bidens biternata, Blepharis maderaspatana, Justicia simplex, Leucas aspera, Cassia occidentalis, Leucas cephalotes etc. Dendrophthoe falcata and few other species of Loranthaceae grow as parasites on tree branches, while Striga asiatica occur as root parasite associated with grasses.

It is opencast mine operating in the forest land. Vegetation in and around the mine area under study is fairly dense. Some of the tree species found growing are Acacia chundra. Anogeissus latifolia. Bridelia retusa. Buchanania lanzan. Cassia fistula and Mallotus philippensis. The shrubs occuring are: Calotropis gigantea, Cipadessa bacciferra, Grewia hirsuta, Helicteres isora, Phyllanthus reticulants, Securinega virosa etc. Some of the frequently distributed climbers include Cocculus hirsutus and Ichnocarpus frutescens. Some of the herbacceous species in the mine lease area are: Aerva lanata, Agerantum conyzoides, Leucas aspera and Vernonia cinerea. Arthraxon hispidas, Chrysopogon fulvus, Cymbopogon flexuosus, Cymbopogon martini and Oplismemus composites are the commonly growing grass species of the area. Common weeds like Parthemium hysterophorus and Chromolaema odorata which are invasive in nature are also found in this mine lease area.

The species planted by the lessee include Agave americana, Azadirachta indica, Cassia siamea, Casuarina equisetifolia, Eucalptus spp., Leucaena leucocephala. Pongamia pinnata, Syzygium cummi, Tecoma stans and Tectona grandis.



MINING PLAN
Karadikola Iron Ore Mining Block
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Climate:

Ballari district is a part of the northern maidan region with an extensive undulating plateau. The district is also known for hot summer & very dry weather for a major part of the year, and the temperature varies between 22°C and 43°C. The climate of the area is tropical with hot and warm weather prevailing most of the year. The prominent wind direction is from South west to North east. The relative humidity of the region varies from 38% to 95%

Rainfall:

The area experiences low rainfall, the average of 24 year period (1981 – 2004) is 667 mm. The precipitation is spread mainly over the five-month period of June to October. Months from December to March are comparatively dry with negligible rainfall. Maximum rainfall was recorded during one 24 hr period (153.8 mm) on 27.08.1988. The annual rainfall in Sandur varies from 443 mm to 1420 mm with an average rainfall of 870 mm. The rainfall is mostly (60.22%) confined to the period from June to September, during the south-west monsoon. During the north-east monsoon (October to November) the taluk receives 22.21% of the annual rainfall, and another 17.57% of rainfall occurs as sporadic in other months of the year. The rainfall data for period 2001 to 2010 are prescribed in the table. Year 2001 experienced maximum yearly rainfall of 1420.3 mm with September and October and October mont receiving 406.2 mm and 278 mm rainfall respectively. The minimum rainfall (443.4 mm) was recorded during 2003.

Table 34: Monthly rainfall (mm) Data of Sandur Taluk during 2001-2010

	Year	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
-	2001	0	0	0	144	87.4	102.4	115.4	269.6	406.2	278	14.8	2.50	1420.3
	2002	0	52.5	0	1.7	137	73 <i>.</i> 3	138.7	82.1	117.2	127	3.4	0	733.3
	2003	0	0	0	16.6	0	59.7	24.3	109	68	158	7.8	0	443.4
	2004	0	0	0	22.4	33.2	132	135.6	69.2	168.2	68.8	5.4	0	634.8
-	2005	23	1	1	43.4	83.2	70	302.1	163	119.8	146.2	15.6	0	968.3
	2006	0	0	17	38.8	200.4	48.3	56.4	52.6	170.2	36	49	0	668.7
	2007	0	0	52	37	38	130.8	12.6	52.8	301.5	0	6	0	583.9
	2008	0	1.8	158.6	19.6	52.6	87.1	39.8	134.4	315.2	95	105.6	0	1009.7
	2009	0	0	0	42.4	80.5	49.6	62.7	160.6	204.7	328.8	107.6	16.4	1053.3
	2010	0	0	0	61.2	110.8	90.2	104.4	316.8	127.2	156	224.8	0	1191.4
	Total	23	55.3	181.8	427.1	823.1	843.8	992	1410.1	1998.2	1393.8	540	18.9	870.71
	Avg	2.3	5.53	18.18	42.71	82.31	84.38	99.2	141.01	199.82	139.38	54	1.89	870.71
: -	%	0.26	0.64	2.00	4.91	9.45	9.69	11.39	16.19	22.94	16.01	6.20	0.22	100.00



Temperature:

The summers are usually hot and dry in the Sandur/Hosapete area. The highest recorded temperature during the year is usually above 40° C in April and May. The winters are usually mild with temperature usually above 13° C during the months of December, January and February. The lowest temperature recorded was 12° C during 1991, 1996 and 2002. The April and May are hottest months when maximum temperatures are usually above 40° C while December, January & February maximum temperatures rarely exceeds 35° C and minimum temperature are usually below 17° C.

Relative Humidity:

The relative humidity in the area varies from season to season. The maximum humidity is above 70% throughout the year. The minimum humidity varies considerably over a wide range of 20% to 70%. The months of January to April and December every year, the minimum relative humidity recorded is usually between 20% to 30%.

Wind Direction and Wind Velocity:

Wind velocities are usually below 5 km per hour except during per-monsoon and early monsoon months. During the latter months wind velocities as high as 20 km-per hour have been recorded. Wind direction except during pre-monsoon and monsoon months is from NW-NWW. During the pre-monsoon and monsoon months wind direction is usually from SW - SWW.

Source: EIA & EMP report of the BRH mine presented for EC clearance.

Human settlements:

There are 11 villages within of 10 km radius of the lease area. However, there is no village within 3 Kms of the lease area. The nearest village is Siddapur located in SW. The population of these villages according to 2001 census ranges from 553 to 4795. Papinayakanahalli is the largest village with population 4795, Ramgad village with a population of 553 is the smallest village.

The demographic profile of the villages coming under the buffer zone of this mine lease is given the names, distances, direction and population of villages present in the buffer zone is as follows.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table 35

SL. No.	VILLAGE	DIST (Km)	DIRECTION	Population
<u> </u>	Gundlavaddigere	7.20	NE	784
2	Kakubalu	6.50	NE	2732
3	Bylavaddigeri	8.80	NE	2231
4	Daulatpur	8.50	SE	2178
5	Ramgad	5.50	SW	553
6	Siddapur	3.00	SW	1118
7	Jaisingpur	6.00	NW	1814
8	Papanayakanahalli	7.80	N	4795
9	Joga	6.50	NE	1390
10	Vaddarahalli	7.90	NE	988
11	Bhavihalli	5.30	S	3833
-			TOTAL	22416

Public buildings, places of worship and monuments:

The world famous Hampi ruins which is a world Heritage Site lies within 50 km of mining lease. However, the major Tungabhadra Dam lies within 20 kilometers of the lease.

There are a number of old temples in Hosapete Town as well as in a few large Villages. But none of them is declared as a monument

Indicate any sanctuary is located in the vicinity of leasehold

There is no sanctuary is located in the lease area.

8.2 Impact Assessment: Attach an Environmental Impact Assessment Statement describing the impact of mining and beneficiation on environment on the following:

Environmental impacts of mining have been well-documented and voluminous literature exists on this topic. The impacts of mining arises because various operations carried out during the process of mining such as digging the ground, top



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soil removal etc. The impacts on some of the important components of the environment are summarized below:

i. Land area indicating the area likely to be degraded due to quarrying, dumping, roads, workshop, processing plant, tailing pond/dam, township etc.

The mine lease area is located in the forest land. The forest areas adjoining the mine have good natural vegetation with many characteristic dry deciduous species. The landscape of this terrain has been modified to some extent due to mining activities. The disposal of waste materials was carried out in the mine lease area in an unscientific manner, resulting in erosion of the waste materials. The mining has also affected the catchment areas of a number of natural streams/nalas, which are seasonal. Erosion from the mine lease area resulted in loading of sediments (including chemical pollutants) to nearby water-body.

Since the entire mining lease area 86.12 Ha was broken & is located in the forest land, the direct impact on ecology and biodiversity is inevitable. The ecology of the mine area has been much disturbed due to mining and transportaation activities. Therefore, preservation of biodiversity of the surrounding areas, reclamation of the mined out area and proper afforestation using species are to taken up to restore the ecology.

The environmental monitoring stations are proposed to monitor regularly for Air, Water & Noise as per the approved R & R Plan. The locations area shown in Environment Plan. **Refer Plate No IX.**

ii. Air quality

The atmospheric pollutants are hazardous to all the living organisms in the biosphere. The dust produced during mechanized opencast mining and allied activities is high and it can affect human beings, plants & animals an around the area. Therefore, strict mitigation measures are absolutely essential to ensure unpolluted, clean environment and maintain sustainability of the ecosystem.

The impact on ambient air quality due to mining operations is well within the prescribed limit. As per air quality monitoring carried out at stipulated as KSPCB.

It is proposed to monitor ambient air quality in buffer zone at three stations & five stations in within the core zone as per the approved R & R.



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MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

iii. Water quality

impacts are envisaged in respect of surface water quality:-Since opencast mining was carried out in the lease area. The following

- Soil erosion
- Run-off from the working and roads

flows down the slopes during and after rainfall. Water use at mine is mainly used for circulated with cleaning of muck occasionally. spraying There are no water bodies and perennial water courses in the lease area. Water only haul roads. The quantities used were small so far and water was re-

It is proposed to monitor water quality as per the approved R & R.

iv. Noise levels

Si T three in core zone as per the approved R & R Plan. proposed to monitor noise level monitoring stations four in buffer zone and

Vibration levels (due to blasting)

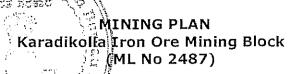
danger from blasting vibration causing-any-damage There is no public or private building within 1 km sites of blasting. Hence there is no

- ≤. Water regime: Ground water table in the area is around 500 m RL
- ≦: Acid mine drainage: There is no acid mine drainage
- viii. Surface subsidence : Not applicable
- ix. Socio-economics

education, employment and income generation, so as to bring up their status in the drinking water and enhancing the status of women, As the basic facilities in the villages surrounding the mine area are meager, there is society. much scope for improving the educational facilities, health care, supply of by empowering them with safe

followings are provided in several villages MSPL group already adopted 18 villages in Hosapete, Sandur and Koppal taluks. The





- 1) RO system established in several villages to provide pure drinking water.
- 2) A total 2067 toilets has been constructed in certain villages.
- 3) A total of 115 Self Help Groups for women's provided.
- 4) Computer training classes conducted and issued instruments in several villages.
- 5) Tailoring training and issued 74 sewing machines.
- x. Historical monuments etc.

There are no historical monuments in lease area or within 10 Km thereof.

8.3 Progressive reclamation Plan:

To mitigate the impacts and ameliorate the condition, describe year wise steps proposed for phased restoration, reclamation of lands already / to be degraded in respect of following items separately for 5 years period.

8.3.1. Mined-Out Land:

Describe the proposals to be implemented for reclamation and rehabilitation of mined-out land including the manner in which the actual site of the pit will be restored for future use. The proposals may be supported with yearly plans and sections depicting yearly progress in the activities for land restoration/ reclamation/rehabilitation, afforestation etc, called "Reclamation Plan".

There is a proposal construction of engineering measures to the proposed dumps within the lease. There is proposal for mined out are in the first five years. The R&R measures inside & outside the lease for first five years is furnished in **Refer Plate No X**.

8.3.2. Topsoil Management:

There is no generation of topsoil as mining was proposed within the existing pit.

8.3.3. Tailings Dam Management: The steps to be taken for protection and stability of tailing dam, stabilization of tailing material and its utilization, periodic desilting measures to prevent water pollution from tailings etc, arrangement for surplus water overflow along with detail design, structural stability studies, the



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

embankment seepage loss into the receiving environment and ground water contaminant if any may be described.

Not applicable.

8.3.4. Acid mine drainage, if any and its mitigative measures.

There is no pyrite in the ore. So there is no chances of acid mine drainage.

8.3.5. Surface subsidence mitigation measures through back filling of mine voids or by any other means and its monitoring mechanism.

It is proposed partly back filling in south block pit during the year first five year plan period. The entire ore will exploited/exhausted during first year, from the second year it is proposed for back fill. The area will be reclaimed by afforestation after the life the mine.

The information on protective measures for reclamation and rehabilitation works year wise may be provided as per the following table.

Table No 36

SUMMARY OF YEARWISE PROPOSAL FOR ITEM NO. 8.3

				Proposed		
Items	Details	I	II	III	IV	V
	Area Afforested (Ha)	3.45	3.45	-	-	-
Dump	No. of Saplings Planted	5,000	5,000	-	_	-
Management (Out side Lease)	Cumulative no of plants	<u>-</u>		-	**	-
(001 5.00 2005)	Cost including watch and care during the year (lacs)	5.99	5.99	-	-	-
	Area available for rehabilitation (Ha)	12.88	12.88	-	-	-
	Afforestation done (Ha)	-	-	-	-	-
Management of worked out	No. of saplings planted in the year	*	-	-	-	-
benches	Cumulative no. of plants	-	4		-	-
(Out side Lease)	Any other method of rehabilitation (specify		-	-		-
	Cost including watch and care during the year (lacs)	22.41	22.41	49	_	-



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	taria di Uniform Degli	T .	70m v	100m x	100m x	100m x
	Void available for Back		70m x 40m x	60m x	60m x	60m x
	filling (L x B x D) pit wise/ stops wise	- Salas Season States	18m	9m	9m	9m
			Filled by	Filled by	Filled by	Filled by
	Void filled by waste/tailing	-	waste	waste	waste	waste
Reclamation and			There is	There is	There is	
Rehabilitation by	Afforestation on the back		no	no	no	There is
back filling	filled area .	-	proposal.	proposal.	proposal.	no proposal.
	Rehabilitation by marking			Ť		
	water reservoir	-		-	-	-
	Any other means (specify)	-	-	-		_
Rehabilitation of	Area available (Ha)	-	-	_	-	-
waste land within	Area rehabilitated	-	-	_	<u> </u>	-
lease	Method of rehabilitation	-	-	-	-	-
Others (specify)					<u> </u>	

8.4. Disaster Management and Risk Assessment: This may deal with action plan for high risk accidents like landslides, subsidence flood, inundation in underground mines, fire, seismic activities, tailing dam failure etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of lessee to meet such eventualities and the assistance to be required from the local authority may also be described.

The Manager of the mine will be responsible person in case of disaster. He has a mobile phone and these numbers are displayed at the mines. Name and contact no of the person to be contacted in case of emergency is given below.

Table No 37

Name	Contact No	Nearest Hospital	Nearest Police station
P. Nagaraj	7760581122	Hosapete – 15 Km	Sandur – 15 Km

In an opencast mine risk to general public (work safety is taken care of by the Mines Act,1952 and Regulations and Rules etc. framed there under), from the following.

- Failure of external overburden dumps
- Failure of mine bench slopes.
- Fly rocks from blasting operations.
- Chemical spills.
- Fire in bulk fuel storage.



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MINING PLAN
Karadikolia Iron Ore Mining Block
(ML No 2487)

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- Plying of trucks etc. on public roads
- Failure of water impounded at higher elevations.

factors aforesaid is given below. is located on hill top and slopes, which do not have any pathways used by villagers. restricted. There is no question of any one inadvertently approaching the area, as it entry of unauthorized personnel (vehicles) in to the mining and industrial areas is At Karadikolla there is no risk to public on account of the factors listed above, An assessment of the risk at Karadikolla Iron Ore Mine due to each of the above

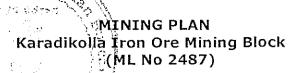
- biologically reclaimed before mining operations over. rains and dumps are not stabilized. The rain fall in the area is very meager and this has not affected any of the general, failure of external overburden dump is dumps so far. The major portion of dumps possible, if there will be
- very stable The ore and surrounding strata is quite compact and hard. Hence benches
- iii) The accidental fly rocks. blasting since there is so are designed that there are no fly rocks in normal situation no villages 윽 bastis nearby, there ß. ПО
- Hence, there is no risk involved due to chemical spills. iv) No chemicals are used in iron-ore-mining operations or beneficiation-process
- danger from this to public life and property. that of the Karadikolla iron ore mine and other surrounding mines. Thus, there is no roads, to carry ore to siding for dispatch. There is no traffic on these roads except v) Only 10-12 toners dumpers ply on public roads, which are essentially public

8.5 Care and maintenance during temporary discontinuance:

An emergency plan for the situation of temporary discontinuance due to court order mining operations expected to re-open in near future. indicate measures of care, statutory requirements or any other unforeseen circumstances maintenance and monitoring of status of discontinued

deal with the unforeseen circumstances which may be created due to temporary closure of the mine ıs a fresh mining lease, the following protective measures would be taken to





- i) All heavy earth moving mining machinery deployed in various blocks of Karadikolla iron ore mine will be withdrawn and brought to the safe place so that these do not get buried due to bench collapse, if any, and get damaged during discontinuance. These will be subjected to preventive maintenance.
- ii) The entries to the pits in various blocks will be fenced off with display of notice boards at the fence prohibiting entry into the pits by unauthorized persons.
- iii) Pit boundaries would be fenced and high berms will be provided to prevent cattle's entering the pit.
- iv) At the entrance and strategic points in the mine areas, sentries and watchman would be deployed to guard the sensitive/important mine area, explosive magazine and other sensitive stores and services. They would be provided with mobile phones/walk-talkies to contact mine authorities/police/fire station etc., for help during emergency.
- v) The mine area would be kept well illuminated during night time.
- vi) Audible warning sirens would be established at strategic points to be used during emergency so that prompt help can be received from proper sources and protective measures are immediately taken by all personnel available.
- vii) Managerial, Supervisory and competent persons of the mine would be engaged else where in other mines of the company as per the needs.

8.6 Financial Assurance:

The financial assurance can be submitted in any encashable form preferably a Bank Guarantee from a Scheduled Bank as stated in Rule 27(1) of Mineral Conservation and Development Rules, 2017 for five years period expiring at the end of validity of the document. The amount calculated for the purpose of Financial Assurance is based on the CCOM's Circular no.4 dated 2006 as below. The financial assurance plan is enclosed as **Plate No XI**.



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Table indicating the break-up of areas in the Mining Lease for calculation of Financial Assurance

5. 15.22 E

Annexure to Circular No. 4/2006

Table 38

	. 30					
SL.No	Head	Area put on use at start of plan (In Ha)	Additional requirement during plan period (In Ha)	Total (In Ha)	Area Considered as fully reclaimed & rehabilitated (In Ha)	Net area considered for calculation (In Ha)
L		А	В	C=(A+B)	D	E=(C-D)
1	Area under mining	47.410	0.000	30.890	0.000	30.890
2	Storage for top soil	0.000	0.000	0.000	0.000	0.000
3	Waste Dump Site					
	(i) Active Dump (AD-1)	4.250	0.000	0.000	0.000	0.000
	(ii) Proposed Active dump (PD-1, PD-2 & PD-3)	0.000	14.930	14.930		
	(iii) Inactive Dump (Excluding safety zone)	11.200	0.000	9.340	0.000	9.340
	(iii) BHQ Dump (Excluding safety zone)	2.200	0.000	1.330	0.000	1.330
	(iv) Backfilling	0.000	2.410	2.410		
4	Mineral storage	2.800-	5.590	8.390	0.000	8.390
5	Infrastructure (Workshop, administrative buildings etc.)	0.050	1.950	2.000	0.000	2.000
6	Roads	2.300	1.920	4.220	0.000	4.220
7	Railways	0.000	0.000	0.000	0.000	0.000
8	Tailing pond	0.000	0.000	0.000	0.000	0.000
9	Effluent Treatment Plant	0.000	0.000	0.000	0.000	0.000
10	Mineral Separation Plant	0.000	0.000	0.000	0.000	0.000
11	Township area	0.000	0.000	0.000	0.000	0.000
12	Others (to specify)					
	(i) 7.5 m to be left along the ML boundary	4.390	0.710	5.100	0.000	5.100
	(ii) Plantation / Natural Vegetation area	6.380	0.000	4.550		
	(ii) others	5.140	0.000	2.960	0.000	2.960
	GRAND TOTAL	86.120	27.510	86.120	0.000	86.120



MINING PLAN Karadikolla Iron Ore Mining Block (ML No 2487)

Note: Based on the recent exploration data and ultimate pit limit entire landuse of mining and allied activities the column A & B, the changes have been considered under each head and given in column C. Please refer FA plan plate XI.

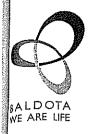
The financial assurance is not applicable under Rule 27(1) of MCDR 2017, this mining block granted through auction or the mining lease granted under the provisions of clause (b) or sub-clause (c) of subsection (2) of section 10 A where the Mine Development and Production Agreement has been signed between the lessee and the State Government.

3. Strival Chay

S. SHIVAKUMÁR

M.Sc.Geology Qualified Person This Mining Plan is accorded subject to the conditions / stipulations indicated in the Mining Plan approval terrar No. ... 279/1094/2017 BNG Date... 29/10/2017

Regional



Corp. Office: Baldota Enclave, Abheraj Baldota Road, Hosapete - 583203, Karnataka. India.

Office: +91 8394 232002, 232003, Fax: +91 8394 232333, 232444

Email:email@mspllimited.com url:www.mspllimited.com

Regdroffice: Baldota Bhavan, 117, Maharshi Karve Road, Mumbai - 400020. India.

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CONSENT LETTER / UNDERTAKING / CERTIFICATE FROM THE APPLICANT

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01. The Mining Plan in respect of Karadikolla Iron Ore Mining Block (ML No 2487) over an area of 86.12 Ha (As per CEC survey) in Siddapur village, P.O Sandur, Sandur taluk, District Ballari, State Karnataka, under rule 16(1) of MCR 2016 has been prepared by S.Shivakumar M.Sc. Geology.

This is to request the Regional Controller of Mines, Indian Bureau of Mines Bengaluru, to make any further correspondence regarding any correction of Mining Plan with the said **Qualified Person** & his address below:

Sri. S. Shivakumar AGM (Exploration) M.Sc. Geology M/s MSPL Limited, Baldota Enclave Abheraj Baldota Road Hosapete – 583 203 Phone: 09900256783

E-mail: shivakumar.s@mspllimited.com

We hereby undertake that all modifications/updating as made in the said in the Mining plan by the said **Qualified Person** be deemed to have been made with our knowledge and consent and shall be acceptable on us and binding in all respects.

02. It is certified that the **CCOM Circular No-2/2010** will be implemented and complied with when an authorized agency is approved by the State Government.



Corp. Office: Baldota Enclave, Abheraj Baldota Road, Hosapete - 583203. Karnataka. India. Office: +91 8394 232002, 232003, Fax: +91 8394 232333, 232444

Email:email@mspllimited.com url:www.mspllimited.com

Regd. Office: Baldota Bhavan, 117, Maharshi Karve Road, Mumbai - 400020. India.

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03. It is certified that the Progressive Mine Closure plan of Karadikolla iron ore mining block (ML No 2487) by Preferred Bidder M/s. MSPL Limited over an area of 86.12 ha complies with all statutory rules, Regulations, Orders Made by the Central or State Government, Statutory organisations, Court etc which have been taken in to consideration and wherever any specific permission is required the lessee will approach the concerned authorities.

the information furnished in the **Progressive Mine Closure Plan** is true and correct to the best of our knowledge and records.

04. "The provisions of Mines Act, Rules and Regulations made there under have been observed in the Mining Plan over an area of 86.12 ha (As per CEC survey) in Ballari district in Karnataka State belonging to Karadikolla Iron Ore Mine, where specific permissions are required, the applicant will approach the D.G.M.S. Further, standards prescribed by D.G.M.S in respect of miners' health will be strictly implemented".

16EEHOSAPETE 10-08-2017

> Venkataiah Ne Director



CERTIFICATE FROM QUALIFIED PERSON

The provisions of the Mineral Conservations and Development Rules 2017 have been observed in the preparation Mining Plan for Karadikolla Iron Ore Mining Block (ML No 2487) over an area of 86.12 ha (As per CEC survey) by Preferred Bidder M/s. MSPL Limited in Siddapur village, P.O. Sandur, Sandur taluk, district Ballari of Karnataka State and whenever specific permissions are required, the applicant will approach the concerned authorities of Indian Bureau of Mines.

All Plan & Section are prepared based on Lease sketch as provided by the CEC/ Government of Karnataka

The information furnished in the above Mining Plan including progressive mine closure plan is true and correct to the best of our knowledge.

S. Shivallow.

M.Sc. Geology

PLACE: HOSAPETE DATE: 10-08-2017

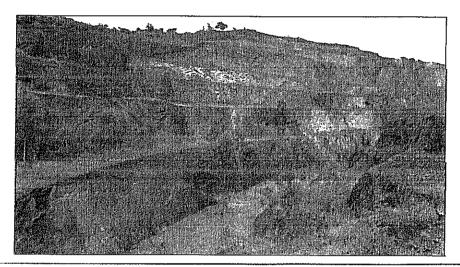


MINING PLAN

(Including Progressive Mine Closure Plan)

Karadikolla Iron Ore Mining Block
M/s. Lakshminarayana Mining Company
ML No. 2487

Submitted under Rule 16(1) of MCR 2016 By Preferred Bidder M/s. MSPL LIMITED



Volume -2: Annexures

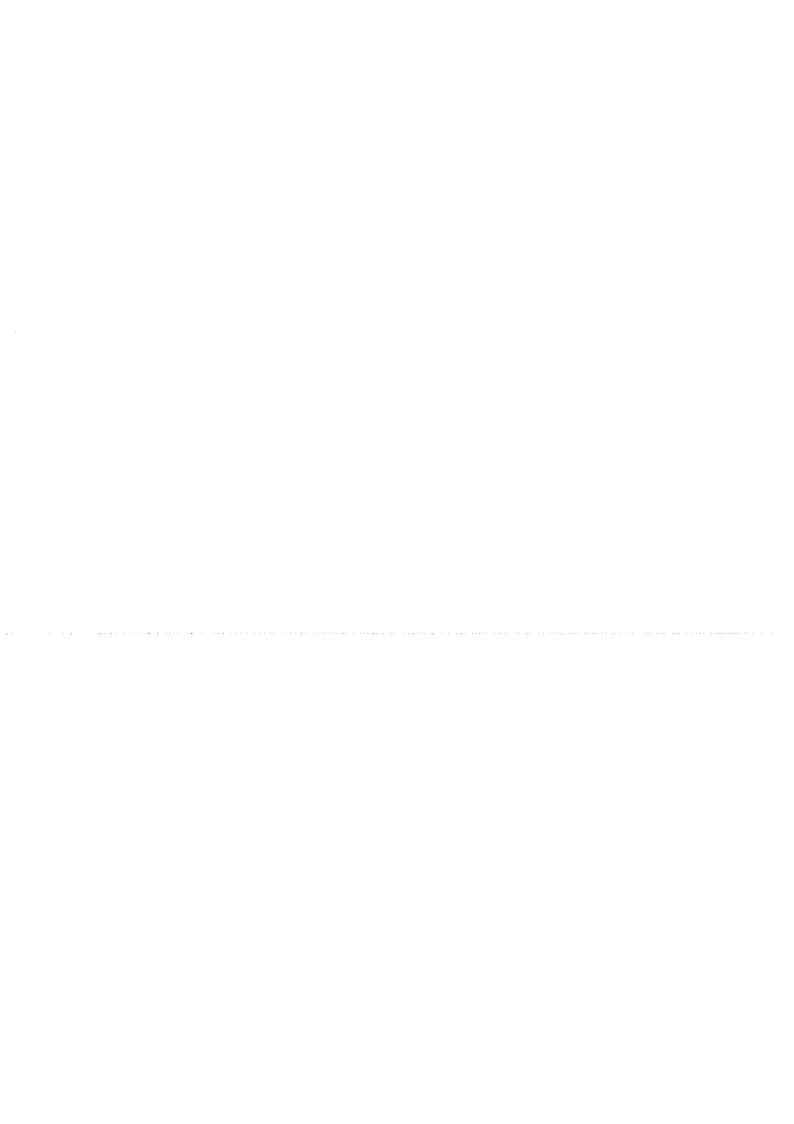
ML Area: 86.12 Ha LOI: No: DMG/MLS/CCA/12/2487/2016-17/5963 Dated 26 OCT 2016

Opencast, Category 'A' Fully Mechanized
Proposed for 'Captive Mine'
Total area: 86.12 Ha
Forest Area: 86.12 Ha
Name of the Forest: Sandur Reserve Forest
Reg No: IBM / 199 / 2011

Prepared By

S.Shivakumar M.Sc.Geology

Qualified Person October 2017



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LIST OF ANNEXURES

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ANNEXURF

No:DMG/MLS/CCA/12/2487/2016-17/506

Office of the Commissioner and Director Department of Mines and Geology, KhanijaBhavan, Race Course Road Bangalore-1 Date: 26.10.2016 Email id: dir-mines@karnataka.gov.in

To. MSPL Limited, Baldota Bhavan, 117, Maharshi Karve Road, Mumbai $-400\,020$.

OB OCT 2016

Sub: Letter of Intent with reference to e-auction dated 03.10.2016 for grant of iron ore mining lease for "M/s Lakshminarayana Mining Company M L No: 2487" Block in Karadikolla village, Sandur Taluka, Bellary District over an extent of 86.12 Hectare Area of Forest Land of NEB Range.

1. Background:

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- The Commissioner & Director. Department of Mines and Geology. Karnataka. 1.1. pursuant to the Supreme Court judgments and orders in Samaj Parivartana Samudaya and Ors. Vs. State of Karnataka and Ors in W.P.(C) 562 of 2009, the Mines and Minerals (Development and Regulation) Act, 1957 (the "Act") and the Mineral (Auction) Rules, 2015 (the "Rules"), issued the notification and notice inviting tender dated 22nd December 2015for grant of mining lease for "M/s Lakshminarayana Mining Company M L No: 2487" Block located in Bellary District of Karnataka (the "Tender Document"). The e-auction process was conducted in accordance with the Mineral (Auction) Rules, 2015 and the Tender Document for the said mineral block and M/s MSPL Limited was declared as the "Preferred Bidder" in accordance with Rule 9(4)(b)(iii) of the Mineral (Auction) Rules. 2015.
- The upfront payment for "M/s Lakshminarayana Mining Company M L No: 2487 1.2. " Block is Rs. 8,16,10,298 /- (Rupees Eight Crores Sixteen Lakhs Ten Thousand Two Hundred Ninety Eight Only), As required under Rule 10(1) of the Mineral (Auction) Rules, 2015, M/s MSPL Limited has deposited the first instalment of the upfront payment, being ten percent of the upfront payment, of Rs 81,61,030/-(Rupees Eighty One Lakhs Sixty One Thousand and Thirty Only) through Demand Draft (DD) bearing No 422214 dated:18.10.2016, which was received on 21.10.2016.



- 2. Grant of Letter of Intent
- 2.1. Accordingly, pursuant to Rule 10(2) of the Mineral (Auction) Rules, 2015, the Government of Karnataka is issuing this letter of intent for grant of mining lease for "M/s Lakshminarayana Mining Company M L No: 2487" Block for iron ore in Karadikolla village, Sandur Taluka, Bellary District over an extent of 86.12 Hectare Area of Forest Land of NEB Range to M/s MSPL Limited for a period of 50 years.
- 3. Conditions
- 3.1. M/s MSPL Limited shall be designated as the "Successful Bidder" and subsequently be granted the mining lease only upon satisfactory completion of all the requirements under the Act, the rules made there under and the Tender Document.
- 3.2. For reference, the current requirements under the Rules and the Tender Document for declaration of M/s MSPL Limited as the "Successful Bidder" and subsequent grant of the mining lease are reiterated below. It is clarified that the requirements mentioned below are only for reference and in the event of any change in Applicable Law, the requirements under the modified law, shall be applicable.
 - (a) Declaration of the "Successful Bidder":

M/s MSPL Limited shall be considered to be the "Successful Bidder" upon:

- i. continuing to be in compliance with all the terms and conditions of eligibility;
- ii. payment of the second instalment of the Upfront Payment which is

 Rs 81,61,030/-(Rupees Eighty One Lakhs Sixty One Thousand and Thirty

 Only), as per the Tender Document:
- iii. furnishing the Performance Security pursuant to the Auction Rules, valid for the period specified in the Mine Development and Production Agreement (MDPA), for an amount equal to Rs. 8,16,10,298 /- (Rupees Eight Crores Sixteen Lakhs Ten Thousand Two Hundred Ninety Eight Only). Pursuant to sub-rule (1) of Rule 12 of the Auction Rules, the Performance Security shall be adjusted every five years so that it continues to correspond to 0.50% of the reassessed value of estimated resources determined in accordance with the Auction Rules. In such case, bank guarantee constituting the Performance Security shall be substituted with another bank guarantee of the same value issued in accordance with Clause 10.2 of the Tender Document, which is for the revised amount or if the Performance Security has been provided through a security deposit, additional amount towards security deposit shall be provided:

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iv. satisfying the conditions specified in clause (b) of suff-section (2) of section 5 of the Act with respect to a mining plan;

v. having cleared all dues to the Government of Karnataka arising from mining activity that the Preferred Bidder has undertaken in Karnataka in the past, if such dues have been determined to be payable by him in terms of the extent provisions of the MMDR Act, 1957 and the rules framed there under, along with an undertaking that he shall also clear all dues that the Government of Karnataka determines in future, payable by him in terms of the extant provisions of the MMDR Act, 1957 and the rules framed there under, to the Government of Karnataka arising from mining activity undertaken by him in Karnataka in the past, if such dues have not been determined; and

vi. having paid the actual expenses incurred by the Government of Karnataka on mine exploration, preparation of Provisional R&R Plans, survey, construction of pillars and DGPS survey within 60 days of issue of letter of intent. This amount is equal to Rs 4,94,12,169/-(Rupees Four Crores Ninety Four Lakhs Twelve Thousand One Hundred Sixty Nine Only).

The above activities shall be completed by the Preferred Bidder in accordance with the timelines mentioned in the Tender Document.

(b) Signing of the Mine Development and Production Agreement (MDPA)

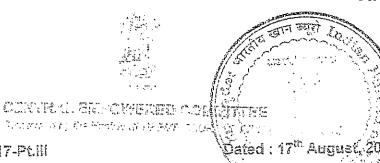
M/s MSPL Limited shall sign the Mine Development and Production Agreement with the Government of Karnataka upon obtaining all consents, approvals, permits, no-objections and the like as may be required under Applicable Law for commencement of mining operations.

(c) Grant of mining lease

Subsequent to execution of the MDPA, M/s MSPL Limited shall pay the third instalment of the Upfront Payment which is Rs. 6,52,88,238 (Rupees Six Crores Fifty Two Lakhs Eighty Eight Thousand Two Hundred Thirty Eight Only). Upon such payment the Government of Karnataka shall grant the mining lease to M/s MSPL Limited within a period of 30 days from the date of payment. The date of the commencement of the period for which a mining lease is granted shall be the date on which a duly executed mining lease is registered.

- 4. Validity
- 4.1. This letter of intent is valid for a period of Three years from the date of its issuance, within which time all the above conditions must be fulfilled and the Mining Lease Deed must be executed between M/s MSPL Limited and the Government of Karnataka. In case M/s MSPL Limited is unable to fulfil all or any of the above conditions, then it may submit an application to Government of Karnataka, requesting for further extension. It is in the sole discretion of the Government of Karnataka to extend the validity of this letter of intent after M/s MSPL Limited submits the reasons/justification for non-compliance with any of the conditions; which shall be due to events beyond the control of M/s MSPL Limited.
- 4.2. If the Government of Karnataka is satisfied that a longer period is required to enable M/s MSPL Limited to satisfy all or any of the above conditions, it may extend the validity of this letter of intent for such period or periods as the Government of Karnataka may specify.
- 4.3. It is amply clarified that M/s MSPL Limited is obligated to make Annual Payments as per the provisions of the Tender Document.

COMMISSIONER, Department of Mines & Geology, Karnataka



F.No. 2-61/CEC/SC/2017-Pt.III

Τo

The Chief Secretary
Government of Karnataka
Vidhan Soudha,
Bengaluru- 560001

Sub: Preparation and implementation of the Reclamation and Rehabilitation Plan of the mining lease falling in District Beliary, Karnataka

Sir

The CEC hereby gives its concurrence to the Reclamation and Rehabilitation Plan of the following mining lease, prepared through the ICFRE, by the State of Karnataka:

S.No.	Name of the Mining Lease	ML No.	Permissible annual production of Iron Ore Mine	Permissible Annual Production of Mn Ore
	M/s. MSPL Ltd. erstwhile M/s. Lakshminarayana Mining Co. (LMC)	2487	0.51 MMT	0.51 MMT

it is requested that immediate action for the implementation of the Reclamation and Rehabilitation Plan may please be undertaken.

It may please be ensured that the mining activities are permitted to be undertaken only after compliance of the Hon'ble Supreme Court orders and in accordance with the stipulated conditions.

Yours faithfully

Amarnatha Shekyi

Member Secretar

Copy to:

i) Addl. Chief Secretary (Forest), Government of Karnataka, Bangalore.

Contd...2/-



- ii) Secretary (Mines), Government of Karnataka, Bangaiore,
- iii) Principal Chief Conservator of Forests, Karnataka Forest Department,
 Bangalore:
- iv) Director, Mines and Geology, Government of Karnataka. It is requested that a copy of the approved R & R Plan may please be provided to the concerned lessee and the IBM.
- v) All Members and Additional Members of the Monitoring Committee with the request to undertake immediate follow up action for the implementation of the R & R Plan.
- vi) Director General, Indian Council for Forestry and Education, Dehradun.
- vii) Controller of Mines (SZ), Indian Bureau of Mines, Bangalore, viii) Secretary General, Federation of Indian Mines Industries.

CENTRAL EMPOWERED COMMITTEE

(CONSTITUTED BY THE HON'BLE SUPREME COURT OF INDIA IN WRIT PETITION (CIVIL) No. 202/95 & 171/96)
Chantyppon New Defin (1000): Tel 2009/92/2029422 2410/926 FAX No. 24/0/02/2

F.No. 2-61/CEC/SC/2017-Ptill

Dated: 21st August

To

CORRIGENDUM

The Chief Secretary Government of Kerneteka Vidhan Soudha, Bengaluru- 560001

Sub: Preparation and implementation of the Reclamation and Rehabilitation Plan of the mining lease falling in District Bellery, Karneteka

Sir

Please refer to the CEC's letter of even No. dated 17.8.2018 on the above subject. In the said letter in respect of M/s. MSPL Ltd. erstwhile of M/s. Lakshminarayan Co. (ML No 2487) the annual permissible production of Manganese Ore is shown as 0.51 MMT. This is a mistake and the same may be ignored. The concurrence is only in respect of 0.51 MMT of iron ore. Inconvenience

Yours faithfully

(Amarnatha Shetty) Member Secretary

Copy to:

Addl. Chief Secretary (Forest), Government of Karnataka, Bangalore. 前前

Secretary (Mines), Government of Kamataka, Bangalore, Principal Chief Conservator of Forests, Kamataka Forest Department,

Director, Mines and Geology, Government of Kamataka, It is requested that a copy of the approved R & R Plan may please be provided to the iv)

concerned lessee and the IBM.

All Members and Additional Members of the Monitoring Committee with v) the request to undertake immediate follow up action for the implementation

vii)

Director General, Indian Council for Forestry and Education, Dehradun.
Controller of Mines (SZ), Indian Bureau of Mines, Bangalore. Secretary General, Federation of Indian Mines Industries.

MONITORING COMMITTER

No.MC/R&R/CCA/2017-18/115/5 808

Khanija Bhavan, Race Course Road, Bangalore-1, date. 20.09.2017

NOTICE

Sub:

Concurrence of CEC on final Rehabilitation & Reclamation Plane

intimation reg.

Ref.i:

Letter of CEC No.2-61/CEC/SC/2017-Pt.III, dated 17th August 2017 and

corrigendum dated 21st August, 2017.

2: LOI issued to the Preferred Bidder dated 26.10.2016.

3: Letter of Director, DMG dated 18/19.01.2017.

The ICFRE has submitted the final Rehabilitation & Reclamation Plan of M/s Lakshminarayana Mining Company and the same has been approved by the Central Empowered Committee vide letter cited above in the reference 1 recommending the annual production of iron ore as below;

Name of the Mining Lease	ML No.	Permissible annual production of
		iron ore mine
M/s Lakshminarayana Mining	2487	0.51 MTPA
Company.		

The Monitoring Committee has also been informed by the Director. Department of Mines and Geology vide reference 3 above that you have been declared as Preferred Bidder for the said mine by submitting the highest bid in the auction conducted by the Government of Karnataka. Accordingly, Letter of Intent has also been issued to you on 26.10.2016. As per the orders of the Hon'ble Supreme Court, the R&R Plan proposed by ICFRE and approved by the CEC shall have to be implemented before starting of mining operations. You are requested to start implementation of the R&R Plan only after obtaining approval from the Director, DMG. You are also directed to submit one copy of the approved Mining Plan, Environmental Clearance, approval under the Forest (Conservation) Act, 1980, and other statutory clearances in tune with the annual production of 0.51 MTPA.

Chairman,

Monitoring Committee

To:

M/s MSPL Ltd..

Baldota Enclave, Abheraj Baldota Road,

Hospet - 583203.

Copy with compliments to.

- 1. Director, Department of Mines & Geology, Bangalore for information and necessary action.
- Regional Controller of Mines, IBM. No.29 Industrial Suburb, II Stage, Tumkur Road, Goruguntepalya, Yeshwanthpur, Bangalore for information and necessary action.
- 3. Principal Chief Conservator of Forests, Aranya Bhavana, Malleshwaram, 18thCross, Bangalore for information and necessary action.
- 4. Member Secretary, KSPCB, No.49, Parisara Bhavan, Church Street, Bangalore-560001 for information and necessary action.
- 5. Deputy Director General, Department of Mines Safety, No.5, 17thMain, 100 Feet Road, Bangalore for information and necessary action.
- 6. Deputy Commissioner, Bellary District for information and necessary action.
- 7. DCF, Bellary district for information and necessary action.
- 8. Deputy Director, Department of Mines & Geology, Hospet for needful action.



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CERTIFIED TRUE COPY EXTRACTS OF MINUTES OF MEETING OF COMMITTEE OF DIRECTORS OF MSPL LIMITED HELD ON 11th MAY 2010

In supersession of resolution passed by the Board of Directors at the meeting held on 14th November 2009 it is hereby RESOLVED THAT Sri. Narendrakumar A. Baldota, Chairman and Managing Director, Sn. Rahul Kumar N. Baldota, Sri. Shrenik Kumar N. Baldota, Executive Directors of the Company. Sri. Meda Venkataiah, Executive Director, Sri V G Subhramaniam. Vice President (Legal). Sri.Arvind Mathur, Vice President (Business Development) and Dr.Shibbin Kumar Bhushan, Authorised Representative of the Company be and hereby severally authorized to file applications for mineral concessions [Reconnaissance Permit (RP) Prospecting License (PL) Mining Lease (ML)], to pursue these applications, to swear affidavits and other documents needed for the purpose, to appear in hearings and to represent the Company, to file Revisions, to file Writs and other legal proceedings in connection with these applications and to do everything necessary and incidental in this behalf, and also to do everything necessary and incidental in other legal proceedings in all other matters for and on behalf of the Company."

FOR MSPL LIMITED

(K. CHANDRA SEKHAR NAIDU) COMPANY SECRETARY

ACS 15584

PERUBLIC গ্রাবল্য ব্যাহার



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Form 1 s

Certificate af Incorporation

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Ho. 12160 of 1961-62.

I hereby certify that MINERAL SALES PRIMATE LIMITED is this day incorporated under the Companies Act, 1956 (No. 1 of 1956) and that the Company is Limited.

Given under my hand at BOMBAY this EIGHTEENTH day of OCTOBER One thousand nine hundred and SIXTY ONE. (26th Asvina, 1883)

The Seal of the Registrat of Contpany
Moharashtra

(S. K. DUTT)
Registrar of Componies.
Mahorashtra.

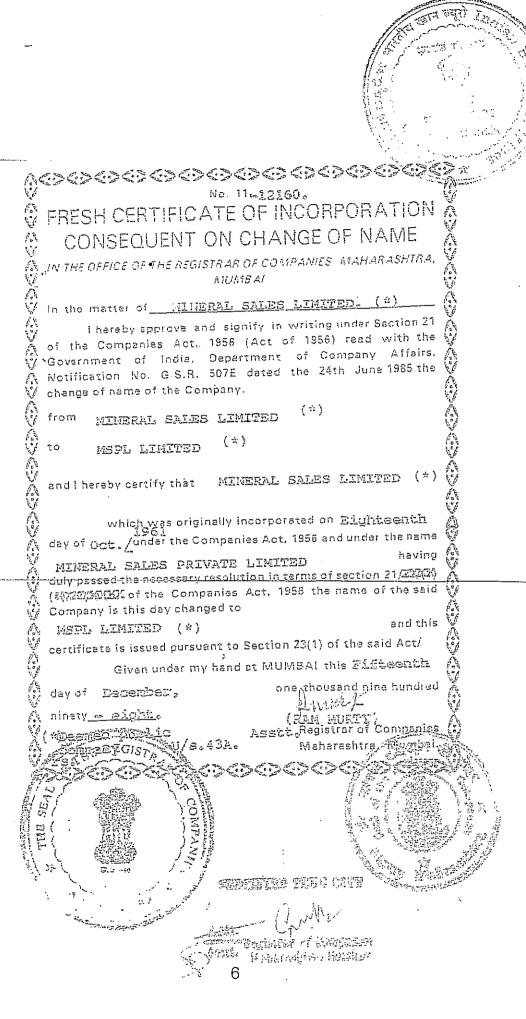




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Email: email@msollimites.com unl: www. hosapeta - 553203. Karnatzilia. India.
Office: Balacta Bhavan. 117. Junipetili Kartie Road. Minimal 19003 and a
Tel: +91 22 12630989. Fax: +91 224 2413 62 Email: insplinkin @msollimites.com
CIN UI3100MH 96/PLCO12160

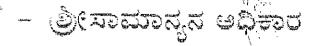
MSPL LIMITED CIN: U13100MH1961PLC012160

LIST OF DIRECTORS AS ON 09.10.2017

SL	DIN	NAME OF THE DIRECTOR	ADDRESS & PHONE NO.	DESIGNATION	CONTACT NO.	E-MAIL ID.
1	00130619	Mr. Narendrakumar A Baldota	"CHINAR" Baldota Colony, Dam Road Hosapete – 583 203, Kamataka, India PH:08394 - 232003	Chairman & Managing Director	9901012345	na.baldota@ms pllimited.com
2	00130764	Mr. Rahul Kumar N Baldota	"CHINAR" Baldota Colony, Dam Road Hosapete – 583 203, Karnataka, India PH:08394 - 232002	Joint Managing Director	9880145678	rahulbaldota@ mspllimited.co m
3	00130831	Mr. Shrenik Kumar N Baldota	"CHINAR" Baldota Colony, Dam Road Hosapete – 583 203, Karnataka, India PH:08394 - 232005	Joint Managing Director	9741112345	sn.baldota@ms pllimited.com
4	06404575	Dr. Meda Venkatalah	"OBA", No. 1019-1 2 nd Cross, M J Nagar Hosapete – 583 203 Kamataka, India	Whole Time Director	9900256797	meda venkataja h@mspllimited. com
5	00143273	Mr. Ramakrishna Hemappa Sawkar	PH:08394 - 232007 No. 292, 5 th Block, 38 th Cross, Jayanagar Bangalore – 560 041 Karnataka, India PH:08394 -232003	Independent Director	9900256793	gsocind@gmail .com
6	01086790	Mr. Madhava Ravindra	Flat 1 B, PGP Manor, 29, Barnaby Road, Kilpauk Chennai – 600 010 Tamil Nadu, India PH:08394 - 232007	independent Director	9884208964	satkudi@yahoo .com

//Certified True Copy//
For MSPL LIMITEDS

(K. CHANDRASEKHAR NAIDU) COMPANY SECRETARY ACS 16684



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Daldota, Chilliari, Dald
ROAD, SALDOTA COLONY,
Hospet, Hospet N.C.C.
Edilary, Kamataka, 668200









MSPL LIMITED

Corp. Office: Baidota Enclave, Abheraj Balduta Ruad, Hospet-583203, Karnataha, India, Cifice: -918294 232002, 232003 5av; -918394 23233 232445

Email email@mspitrated.com uni vvvv mspitrate Road v mbate 2003 na.

Road Office: Soldon Shavan, 177, Maharsi Cade Road v mbate 2003 na.

Tal +91 22 22030969 Fac +91 22 220196 20 mar mspit mum@mspitrate did CIN U13100MH1961PLC012160

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Date: 08.06.2016

OUALIFICATION AND PROFESSIONAL EXPERIENCE OF Sti. S.SHIVAKUMAR, FOR PREPARATION OF MINING PLANS/SCHEME OF MINING

This is certify that S.Shivakumar, M Sc. Geology, has been working in Vyasanakere Iron Ore Mine since 01.04.1994. At present he is working as Assistant General Manager (Exploration) for the past 5 years.

He is having vast experience in exploration works, Mineral Concession applications processes—and-preparation of Mining Plan/Scheme of Mining as prescribed by the IBM.

Dr. Meda Venkatalah

Executive Director (Mining)

GULBARGA UNIVERSITY, GULBARGA.

Certificate Of Pas	sing sing
This is to Certify the	at
Shri/Smt. Shetty Shivakumar	Company of the Compan
Passed the M. Sc. Final Geolo	019
	Examination held by the
Gulbarga University in the month of	May 1983.
and was placed in the First Class	î.
GULBARGA	$\int \int $
Dated: 18-6-1384	2 47
CONTR	THER AR EVANGINATIONS

CONTROLLER OF EXAMINATIONS
Controller of Examinations
Gulbarga University
Gulbarva-585 106.

N.1020

GULBARGA UNIVERSITY, GULBARGA

CERTIFICATE Showing the number of marks obtained by

Shivakumar

In each head of passing

1133 HEADS OF PASSING Bemarks Minimum Marks Obtained Maximum Subject egd, No. for Marks in figrs in words -E, e0/09y Passing 148 Fiziq 5/ Hy drogeology 75 26 aper 1 per 11 Exploration Geophysics Fifty three. 53 26 75 Geochemistry aper III I.M.D, ore genesis 26 43 75 & ore microscopy First oper IV Engs. Geol., surveying 75 26 42 Elem. of mining & Miner. Econ class ractical 1 Hydrogeolusy, Oresk Ore 26 40 75 microscopy and Geophysics ractical II Gerchemistry, Thisty engly-17 38 50 Surveying and Mine valuation Viva, Lab records & Tony 20 Twenty only 25 Two hundred 287 180 otal 450 erghty seven Two hundred 276 180 revious 450 Seventy Six

> sixty times Received Rs 5/-

Indicates exemptions earned-in-previous-attempts

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Grand Total

Prepared by

Checked by.....

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CONTROLLER OF EXAMINATIONS



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ಟೀರ ಎಂಬತ್ತೈದನೆಯ ಎಸ್ರಿಲ್-ಎಂಬಿರುಮ ಸೇವಿದ್ದೇವೆ. ಕು ವಿಶ್ವದಿಹ್ಯಾಲಡುದ ಮುಖ್ಯ ಮತ್ತು ಉಲಪತಿಗಳ 🥖 ರುಜುಗಳಿಂದ ಇದನ್ನು ಪ್ರಮಾಣೀಕರಿಸಲಾಗಿದೆ.

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We, the Chancellor, Vice-Chancellor and Members of the Senate of the Galbarga University

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Through MSPL LIMITED

ANNEXURE 5

Corp. Office: Baldota Enclave, Abheraj Baldota Road, Hosapete-583203. Karnataka. India.

Office: +91 8394 232002, 232003, Fax: +91 8394 232333, 232444

Email: email@mspllimited.com url: www.mspllimited.com

Regd. Office: Baldota Bhavan, 117, Marchtte.eve, Road-Mumbar-2003.0 India.
Tel: +91 22 22030989 Fax: +91 22 221/ 2002 Email: mspl.mum@mspllimited.com
CIN UI3100MH196IPLCO12160

Date: 15.02:2017

MSPL/KIOM/IBM/16-17

Τo,

The Controller General of Mines,

Indian Bureau of Mines,

Indira Bhavan, 8th Floor.

Nagpur -440 001

Sub: Submission of Form -J in connection with RC Borehole drilling programme.

Dear Sir,

With respect to above subject please find we are herewith enclosed a duly filled FORM-J & location of RC borehole plan for drilling in respect of Karadikolla Iron Ore Mine (ML No.2487), of M/s. MSPL LIMITED, Jaisinghpur village, Sandur taluk, Ballari district, Karnataka State.

This is for your kind information.

Thanking you,

Yours faithfully.

For MSPL LIMITED

Dr. Meda Venkataiah

Executive Director

CC to:

1. The Controller of Mines,

Indian Bureau of Mines,

29th, Industrial Suburb, II nd stage

Tumkur Road, Gurguntapalya,

Yeshwanthpur

Bengaluru -560 002

Contal ... 2

2. The Regional Controller of Mines, Indian Bureau of Mines, 29th, Industrial Suburb, II nd stage Tumkur Road, Gurguntapalya, Yeshwanthpur Bengaluru – 560 002

3. The Director,

Department of Mines & Geology,

"Khanija Bhavan"

Race Course Road

Bengaluru – 560 001

<u>FORM-J</u> (Notice of sinking shafts and boreholes) (See rule 47)

<u>IMPORTAN</u>T: Notice in this form shall be sent to the concerned authorities within fifteen days after the commencement of sinking shafts/boreholes.

MINE CODE:

To

- 1. The Controller General, Indian Bureau of Mines, Nagpur- 440 001.
- 2. The Controller of Mines, Indian Bureau of Mines, Bengaluru 560 002
- 3. The Regional Controller of Mines, Indian Bureau of Mines, Bengaluru 560 002
- E4. State Government concerned. Department of Mines & Geology, Bengaluru – 560 001

	1	Name of prospect/mine and mineral worked/prospected	Karadikolla Iron Ore Mine / Iron Ore
	-2	Name and address of Licensee/Lessee	M/s. MSPL Limited Baldota Enclave, Abheraj Baldoda Road, Hosapete – 583 203, Ballari Dist, Karnataka State.
	3	Location	
== 7	1)	Toposheet Number	57 A/8 (D43E/8)
	Ii)	Village	Jaisinghpur
	<u>.iii) </u>	Taluka	Sandur
	iv)	District	Ballari
	v)	State	Karnataka
	4	Number of shafts/boreholes intended to be sunk or extended (Attach a plan on a scale not less than 1 centimeter = 40 meters indicating the precise location of the shaft/borehole).	33 Nos of RC Boreholes. (Enclosed Plan for location of RC boreholes)

	4 4 10	
5	Purpose for which each of the shafts / boreholes is intended to be sunk-or extended.	To know the iron ore strike continuity ,depth persistence and to fulfill the UNFC proved reserve categor 111 in the lease area.
6	Type of shaft(s)/contemplated and its / their dimension(s).	Not applicable
7	Type of drill used and size of core to be obtained.	RC drilling & 127 mm dia.
8	Intended depth up to which shaft/boreholes are to be extended.	-
9	If the shaft/borehole commences from underground the depth of the level at which the shaft/borehole is sunk.	Not applicable
10	Name and qualification of the geologist or mining engineer in charge of the operation.	Mr. Adhinarayan. M.Sc. Geology.
11	Date of commencement of proposed shaft sinking/drilling operation.	06/2/2017

Place: Hosapete Date: 15/2/2017

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Signature:

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Name in full: Dr. Meda Venkataiah Designation: Executive Director (Mining)

 This should be sent to the Controller of Mines and Regional Controller of Mine whose territorial jurisdiction the area/mine falls as notified from time to time the Controller General, Indian Bureau of Mines, under rule 62 of the Min Conservation and Development Rules, 1988.

KARADIKOLLA IRON ORE MINE OF MSPL LIMITED (ML No 2487)									
	•	DETAI	LS OF DRILL HO	LES (MECL)		क्रिक स्थान ज्यान	In Com		
SL.No	Bore Hole No	Easting	Northing	RL	Section	Drilled Depth (M)	Remarks		
11	MLMR-03	659533.25	1678679.39	978.40	S-4	50			
2	MLMR-04	659347.74	1678609.66	952.39	S-3	40	\$2.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		
3	MLMR-05	659452.34	1678607.06	951.05	S-4 💥	20			
44	MLMR-06	659330.19	1678750.29	957.18	S-2 💃	20	Ore		
55	MLMR-07	659390.04	1678822.93	961.62	S-2	50	and a sure of the		
6	MLMR-08	659340.71	1678900.34	944.26	S-1	40	Ore		
7	MLMR-09	659600.42	1678606.34	977.56	S-5	50	Ore		
8	MLMR-10	659670,75	1678532.19	972.35	S-6	` 40	Ore		
99	MLMR-11	659812.83	1678399.15	951.62	S-8	30	Ore		
10	MLMR-12	659730.03	1678460.98	952.16	S-7	15			
11	MLMR-13	. 659742.21	1678326.08	939.79	S-8	25.			
12	MLMR-14	659673.13	1678396.36	941.16	S-7	20			
13	MLMR-15	659531.31	1678543.54	946.71	S-5	20			
14	MLMR-16	659463.91	1678470.16	929.40	S-5	30			
15	MLMR-17	659431.19	1678518.24	938.36	S-4	20			
16	MLMR-18	659177.62	1678751.69	883.21	S-1	25			
17	MLMR-19	659883.97	1678337.68	951.48	S-9	40	Ore		
18	MLMR-20	660024.87	1678179.34	962.87	S-11	35	Ore		
19	MLMR-21	660114.77	1678018.33	966.82	S-13	30	Ore		
20	MLMR-22	660017.68	1678038.54	952.25	S-12	30			
21	MLMR-23	659954.46	1678258.04	956.88	S-10	31	Ore		
22	MLMR-24	660374.12	1677692.68	930.99	S-17	35			
23	MLMR-25	660296.55	1677742.53	930.31	S-16.	39	Ore		
24	MLMR-26	660228.00	1677819.00	927.14	S-15	30	···		
25	MLMR-27	660144.75	1677872.42	926.27	S-14	20			
26	MLMR-28	660055.04	1677941.96	924.67	S-13	20			
27	MLMR-29	659891.84	1678183.07	953.54	S-10	20			
28	MLMR-30	659548.06	1678393.66	915.91	S-6	25			
. 29	MLMR-31	660536.43	1677570.15	940.97	S-19	30			
30	MLMR-32	660464.79	1677642.98	942.51	S-18	30			
31	MLMR-33	661143.43	1676909.30	925.89	S-28	35	Ore		
32	MLMR-34	661028.70	1676932.91	915.28	S-27	30	Ore		
	MLMR-35	661015.01	1677077.33	921.91	S-26	30	Ore		
	MLMR-37	660924.29	1677154.54	927.32	S-25	40	Ore		
89.	MLMR-38	660817.13	1677305.61	935.52	S-23	. 25			
	MLMR-39	660641.79	1677389.40	924.25	5-21	15			
	MLMR-40	660769.84	1677284.56	922.54	S-23	50	Ore		
		555, 55.64	10//204.50	J44.J4	J-2J	30	UIE		

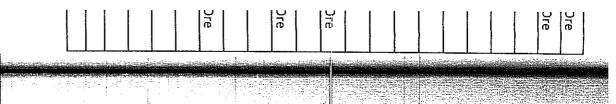
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	The salls will be a sall of the sall of th						
38	MLMR-41	//680691:30	1677308:12	916.67	S-22	30	Ore
39	MLMR-42	1 € 659944.19	1677960.18	899.18	S-12	20	Ore
40	MLMR-43	\$659813.90	1678094.70	899.42	S -1 0	20	
41	MLMR-44	659886.75	1678031.38	900.95	S-11	20	
42	MLMR-45	659605.36	1678331.47	921.82	S-7	25	
43	MLMR-46	659688.78	1678275.05	921.49	S-8	20	
44	MLMR-47	659753.75	1678186.38	919.16	S-9	20	
45	MLMR-48	659249.43	1678664.13	899.82	S-2	20	,
					TOTAL	1310.00	
1	MLM-01	659466.70	1678757.84	974.15	S-3	30	
2	MLM-02	659588.00	1678471.53	946.11	S-6	20	Ore
3	MLM-36	659800.31	1678245.86	939.36	S-9	22	
4	MLM-49	659410.26	1678661.76	950.66	S-3	34.5	Ore
5	MLM-50	660379.39	1677810.86	958.89	S-16	35	
6	MLM-51	659956.78	1678110.65	955.44	S-11	30	
7	MLM-52	660978.30	1677029.18	915.46	S-26	35	Ore
8	MLM-53	661071.73	1676868.31	917.97	S-28	35	
9	MLM-54	660879.91	1677251.63	933.94	S-24	32	
10	MLM-55	660767.37	1677384.20	954.84	S-22	30	
11	MLM-56	660638.12	1677519.24	948.10	S-20	30	<u>-</u>
					Total	333.50	
		· · · · · · · · · · · · · · · · · · ·		GRA	ND TOTAL	1643.50	



DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-03

LATITUDE : 1351212.232 LONGITUDE : 2837196.253 REDUCED LEVEL (M): 978.396

DATE OF COMMENCEMENT: 23.08.2014
DATE OF CLOSURE: 23.08.2014
DEPTH DRILLED (M): 50.00

ANNEXURE-IVB/ 1

KEDL	CEO DEVEL	19): 270.396	ļ			DEPTH C	ORILLED (M) : 50.00
DEPTH (M) FROM ! TO	! THICKNESS ! (M) !	! LITHOLOGY !	! COLOR DETAILS !	! Fe !	! sio2 !	! AL2O3 ! ! !	REMARKS !
0.00 1.00	1.00	SHALY ORE	REDDISH BROWN	29.65	21.30	20.34	·
1.00 2.00	1.00	SHALY ORE	REDDISH BROWN	33.85	17.21	21.11	
2.00 3.00	1.00	SHALY ORE	REDDISH BROWN	31.61	22.03	20.86	
3.00 4.00	1.00	SHALY ORE	REDDISH BROWN	29.37	23.07	21.44	
4.00 5.00	1.00	SHALY ORE	REDDISH BROWN	29.09	23.46	19.84	·
5.00 6.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	23.78	27.55	23.36	
6.00 7.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	22.10	27.03	24.32	
7.00 8.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	22.66	28.60	24.00	
8.00 9.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	38.60	19.69	15.04	
9.00 10.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	22.10	29.41	24.80	
10.00 11.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.70	29.96	25.12	
1.00 12.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.14	29.71	25.28	1000000
2.00 13.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	22.38	30.40	25.92	
3.00 14.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.86	28.88	25.28	
4.00 15.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.02	29.37	26.88	
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ANNEXURE-IVB/ 2

			i					
DEPTH (M)	! THICKNESS ! (M)	! LITHOLOGY	:	! COLOR DETAILS	! Fe !	SiO2	! AL2O3 !	REMARKS !
FROM ! TO	!	!		!	1		!!!	i
15.00 16.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	21.00	30.50	25.01	
6.00 17.00	1.00	FERRUGINOUS SHALE	; ;	REDDISH BROWN	20.30	32.20	26.05	•
7.00 10.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	32.34	24.60	21.16	
8.00 19.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	22.12	32.82	23.83	
9.00 20.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	19.88	33.90	27.08	The state of the s
0.00 21.00	1.00	FERRUGINOUS SHALE	ē	REDDISH BROWN	24.22	31.51	25.31	
1.00 22.00	1.00	FERRUGINOUS SHALE	\$	REDDISH BROWN	22.54	31.69	25.46	
2.00 23.00	1.00	FERRUGINOUS SHALE	.:	DARK BROWN	23.24	30.72	25.31	
3.00 24.00	1.00	FERRUGINOUS SHALE	:	DARK BROWN	21.28	32.62	25.31	
4.00 25.00	1.00	FERRUGINOUS SHALE		DARK BROWN	20.86	34.14	25.46	
5.00 26.00	1.00	FERRUGINOUS SHALE		DARK BROWN	24.08	31.30	24.86	
6.00 27.00	1.00	FERRUGINOUS SHALE		DARK BROWN	19.58	30.41	26.56	
7.00 28.00	1.00	SHALE	:	YELLOWISH BROWN	20.14	29.35	27.52	A CONTRACT OF THE PROPERTY OF
8.00 29.00	1.00	SHALE	:	YELLOWISH BROWN	19.06	31.01	26.56	
9.00 30.00	1.00	SHALE	:	YELLOWISH BROWN	19.02	27.94	24.96	
0.00 31.00	1.00	SHALE		YELLOWISH BROWN	18.74	29.52	25.44	
1,00 32.00	1.00	SHALE		YELLOWISH BROWN	24.61	29.60	25.12	
.00 33.00	1.00	SHALE		YELLOWISH BROWN	21.54	30.17	25.60	
3.00 34.00	1.00	SHALE		YELLOWISH BROWN	21.12	29.04	24.40	
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	i						В -	OREHOLE NO:MLMR-03	3			1 ;	'	
) ! THICKNES	s!	rithoro	GY	!	COLOR DETAILS	! Fe	! SiO2	! AL203 !	REMARKS	!	
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:	35.0	30 36.0	0 1.00	SHALE			Y	ELLOWISH BROWN	18.46	33.04	25.92			
	36.0	0 37.0	0 1.00	SHALE			Y	ELLOWISH BROWN	20.42	28.62	24.00			
	37.0	00 38.0	0 1.00	SHALE			Y	ELLOWISH BROWN	19.58	29.39	24.00			
	38.0	00 39.0	0 1.00	SHALE	,		Y	ELLOWISH BROWN	19.18	30.49	25.44			
	39.0	30 40.0	0 1.00	SHALE			Y	ELLOWISH BROWN	18.20	34.16	24.49	•		
	40.0	30 41.0	0 1.00	SHALE			Y	ELLOWISH BROWN	10.48	33.51	25.60		i 	
	41.0	00 42.0	0 1.00	SHALE			Y	ELLOWISH BROWN	17.78	34.69	26.02	,		
	42.0	0 43.0	0 1.00	SHALE			Y	ELLOWISH BROWN	19.46	33.82	24.02			
	43.0	00 44.0	0 1.00	SHALE			Y	ELLOWISH BROWN	19.04	33.56	24.65			
	44.0	0 45.0	0 1.00	SHALE			Y	ELLOWISH BROWN	18.20	32.82	25.12			
	45.0	0 46.0	0 1.00	SHALE			Y	ELLOWISH BROWN	16.52	34.89	24.96		i,	
	46.0	00 47.0	0 1.00	SHALE			Y	ELLOWISH BROWN	17.00	34.41	25.91		I management of the second	"Ver
	47.0	0 48.0	0 1.00	SHALE		į	Y	ELLOWISH BROWN	16.94	35.08	25.44	e de la companya de l	The same	S (C C C C C C C C C C C C C C C C C C C
	48.0	0 49.0	0 1.00	SHALE			Y	ELLOWISH BROWN	18.76	32.09	25.12			Jan State Barrier
	49.0	0 50.0	0 1.00	SHALE		1	Y	ELLOWISH BROWN	17.50	34.03	24.49	1/4/	ហ្រែ	9
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DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA PINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-04

: 1351144.939 : 2837009.856 LATITUDE LONGITUDE REDUCED LEVEL (M): 952.387

DATE OF COMMENCEMENT : 23.08.2014 DATE OF CLOSURE : 23.08.2014 : 40.00 DEPTH DRILLED (M)

! DEPTH (M)	! THICKNESS	t LITHOLOGY	(! COLOR DETAILS	! Fe	! SiO2	! AL203 ! ! !	REMARKS ! ! !	
! FROM ! TO	!	1		<u> </u>	! 	: 			A CONTRACTOR OF THE PARTY OF TH
0.00 1.00	1.00	FERRUGINOUS SHALE	1	REDDISH BROWN	21.00	29.67	25.76	and the state of t	NOG STILL
1.00 2.00	1,00	FERRUGINOUS; SHALE		REDDISH BROWN	22.12	29.47	26.08	1/3-2	J. S.
2.00 3.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	19.60	31.53	24.00		
3.00 4.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	22.96	29.40	25.76	#\${\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
4.00 5.00	1,00	FERRUGINOUS SHALE		REDDISH BROWN	21.98	28.96	21.12		The second second
5.00 6.00	1.00	FERRUGINOUS SHALE	1 - 1	REDDISH BROWN	20.02	31.38	20.80		
6.00 7.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	18.48	30.78	23.04	Mark Comment	13/1
	1.00	FERRUGINOUS SHALE		REDDISH BROWN	21.98	30.01	22.08		
7.00 8.00	1.00	FERRUGINOUS SHALE	•	REDDISH BROWN	23.52	65.01	0.85	Charles and Control of the Control o	THE RESERVE OF THE PARTY OF THE
8.00 9.00	1.00	SHALE		DARK BROWN	20.16	30.25	23.36		
9.00 10.00		SHALE	,	DARK BROWN	21.84	29.70	24.64		
10.00 11.00	1.00	SHALE	•	DARK BROWN	21.70	29.25	24.32		
11.00 12.00	1.00			DARK BROWN	18.76	31.20	22.90		
12.00 13.00	1.00	SHALE	1	DARK BROWN	19.32	32.32	23.85		
13.00 14.00	1.00	SHALE			18.20	31.40	26.68		
14.00 15.00	1.00	SHALE		DARK BROWN	10.20	52.40			

•					BOREHOLE NO: MLMR~0	4			ANN	EXURE-IVB/ 5
	DEPTH (M)	THICKNESS (M)	! !	LITHOLOGY	 ! COLOR DETAILS	! Fe !	sio2	! AL203 !	REMARKS	! !
	FROM ! TO !		! 		 ! 		-~	; ;		!
	5.00 16.00	1.00	SHALE		DARK BROWN	15.82	32.32	25.03		
	6.00 17.00	1.00	SHALE		DARK BROWN	20.72	29.55	22.90		
	7.00 18.00	1.00	SHALE		DARK BROWN	21.56	29.66	21.96		
	8.00 19.00	1.00	HEMATITIC OF	RD.	GREY BROWN	39.48	16.68	10.86	LOW GRADE	
	9.00 20.00	1.00	SHALE	·	GREY BROWN	20.02	30.70	23.38	_	
	0.00 21.00	1.00	SHALE		GREY BROWN	18.76	30.86	22.90	-	i
	1.00 22.00	1.00	SHALE		GREY BROWN	19.04	30.87	22.90		
	2.00 23.00	1.00	SHALE		GREY BROWN	20.72	29.02	22.43		1
	3.00 24.00	.1.00	SHALE		GREY BROWN	18.76	32.30	23.38		
2	4.00 25.00	1.00	SHALE		GREY BROWN	16.80	34.13	28.16		!
2.	5.00 26.00	1.00	SHALE		GREY BROWN	21.84	28.61	23.84		i I
2	6.00 27.00	1.00	SHALE ·		GREY BROWN	26.32	20.23	21.28		
2	7.00 28.00	1.00	SHALE		GREY BROWN	23.24	20.46	23.20		
28	3.00 29.00	1.00	SHALE	į	GREY BROWN	21.00	30.74	24.80		200
29	9.00 30.00	1.00	SHALE	!	REDDISH BROWN	26.88	26.93	21.44	350000	the state of the s
30	0.00 31.00	1.00	SHALE		REDDISH BROWN	23.10	27.82	22.08	12	ر کردر کردر کردر کردر کردر کردر کردر کر
31	1.00 32.00	1.00	SHALE		REDDISH BROWN	23.24	27.84	22.00	187	ខ្ន ទី្
32	2.00 33.00	1.00	SHALE		REDDISH BROWN	24.92	28.70	22.56		是 第一章 · · · · · · · · · · · · · · · · · · ·
33	3.00 34.00	1.00	SHALE		REDDISH BROWN	24.08	28.21	22.56	#*\``\`\`\`\\	
					 					}1 <i>}</i>
									Market Committee	



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! DEPTH (M) ! T !	HICKNESS (M)	! ! !	LITHOLOGY		! COLOR DETAILS ! !	! Fe ! !	! ! !	SiO2	!	AL203	! ! !	REMARKS	! !
34.00 35.00	1.00	SHALE			REDDISH BROWN	23.76		20.40		21.63			
35.00 36.00	1.00	SHALE		***	REDDISH BROWN	23.22	!	28.53		22.40	•		
36.00 37.00	1.00	SHALE		Ì	REDDISH BROWN	24.76	;	20.13		21.63			
37.00 38.00	1.00	SHALE			REDDISH BROWN	24.89	}	27.94		22.15			
38.00 39.00	1.00	SHALE			REDDISH BROWN	23.91		28.12		22.66		10 mm 1 m	1. 1.130
39.00 40.00	1.00	SHALE			REDDISH BROWN	23.92	!	27.68		22.15		September 1	والمراسم والماسي
			The state of the s									مارو مسن مراد	

DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-05

LATITUDE : 1351140 971 : 28371144409

REDUCED LEVEL (M): 951.051

DATE OF COMMENCEMENT : DATE OF CLOSURE : DEPTH DRILLED (M) :

T: 23.08.2014 : 23.08.2014 : 20.00

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DEPTH (M)	! THICKNESS ! (M)	!!	LITHOLOG	ΞΥ	!	COLOR DETAILS	! Fe	! SiO2	! AL203	!	REMARKS	!
! FROM ! TO	1	!			i .		!	į	1	!		!!!
0.00 1.00	1,00	вно			GRE	Y BROWN	21.82	67.58	0.50	SHALE	PIECES	
1.00 2.00	1.00	вно			GRE	Y BROWN	28.80	56.00	2.30	• SHALE	PIECES	•
2.00 3.00	1.00	вно	,		GRE	Y BROWN	28.67	51.73	4.30	SHALE	PIECES	•
3.00 4.00	1.00	вно			GRE	Y BROWN	16.22	51.43	15.45	SHALE	PIECES	
4.00 5.00	1.00	вно			GRE	Y BROWN	23.78	60.02	4.50	SHALE	PIECES	1
5.00 6.00	1.00	вно/внј			GRE	Y BROWN	14.27	-68.18	8.00	SHALE	PIECES	
6.00 7.00	1.00	вно/внј			GRE	Y BROWN	21.54	60.02	6.70	SHALE	PIECES	1
7.00 8.00	1.00	вно/внј			GRE'	Y BROWN	22.66	60.35	4.00	SHALE	PIECES	;
8.00 9.00	1.00	вно/внј			GRE	Y BROWN	21.12	62.53	5.20	SHALE	PIECES	and The State of t
9.00 10.00	1.00	вно/внј			GRE	Y BROWN	23.77	60.64	3.50	SHALE	PIECES	A comme
10.00 11.00	1.00	вно/внј		:	GRE	Y BROWN-	20.41	65.14	4.00	SHALE	PIECES	11880
11.00 12.00	1.00	вно/внј		-	GRE	Y BROWN	21.12	63.58	5.00	SHALE	PIECES	# { \$
12.00 13.00	1.00	вно/внј			GRE	Y BROWN	20.41	65.32	3.65	SHALE	PIECES	WA ( 9
13.00 14.00	1.00	вно/внј			GRE	Y BROWN	20.98	64.64	3.50	SHALE	PIECES	
14.00 15.00	1.00	BHQ/BHJ			GRE	Y BROWN	19.58	64.50	4.00	SHALE	PIECES	The state of
												**************************************

! DEPTH (M) ! THICKNESS ! !! (M) ! ! FROM ! TO !	LITHOLOGY	! COLOR DETAILS !	Fe ! !	SiO2	! AL203 ! ! !	REMARKS !
15.00 16.00 1.00 BHQ/BHJ		GREY BROWN	21.40	62.14	4.50	
16.00 17.00 1.00 ВНQ/ВНЈ		GREY BROWN	27.44	56.36	2.96	•
17.00 18.00 1.00 BHQ/BHJ	· }	GREY BROWN	22.40	64.86	2.66	
18.00 19.00 1.00 внд/вна		GREY BROWN	29.09	56.00	1.55	
19.00 20.00 1.00 BHQ/BHJ		GREY BROWN	27.97	57.00	2.32	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2





# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-06

LATITUDE : 1351285.778 LONGITUDE : 2836994.138 REDUCED LEVEL (M): 957.181 DATE OF COMMENCEMENT: 23.08.2014
DATE OF CLOSURE: 23.08.2014
DEPTH DRILLED (M): 20.00

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! DEPTH (M) ! T	HICKNESS	; ! !	LITHOLOGY	 ! COLOR DETAILS	! Fe	! !	sio2	! AL2O3	REMARKS	!
! FROM ! TO !	17	i		!	!	!		!	!	!
0.00 1.00	1.00	SHALE		 REDDISH BROWN	23.10		53.38	2.96	OCC HEMATITE PIECE	S
1.00 2.00	1.00	SHALE	: !	REDDISH BROWN	19.88		67.93	3.26	. OCC HEMATITE PIECE	S
2.00 3.00	1.00	SHALE		REDDISH BROWN	22.82		60.50	2.66	OCC HEMATITE PIECE	s
3.00 4.00	1.00	SHALE	i	REDDISH BROWN	14.00		77.37	2.37	OCC HEMATITE PIECE	s
4.00 5.00	1.00	SHALE		DARK BROWN	13.02		79.49	1.70		
5.00 6.00	1.00	вно		GREY BROWN	20.44		67.97	2.66	1	
6.00 7.00	1.00	BHQ		GREY BROWN	25.06		62.09	1.92	į	
7.00 8.00	1.00	вно		GREY BROWN	25.48		60.64	2.81		
8.00 9.00	1.00	вно		GREY BROWN	26.46		58.81	3.11	:	
9.00 10.00	1.00	вно		GREY BROWN	23.38		63.04	3.26	į	
10.00 11.00	1.00	вно		GREY BROWN	28.14		57.50	0.94	;	A 9.3 CV M
11.00 12.00	1.00	вно		GREY BROWN	26.60	•	59.91	0.71	est ^{er}	The state of the s
12.00 13.00	1.00	вно		GREY BROWN	29.40		57.20	0.24		
13.00 14.00	1.00	SILICIOUS	IRON ORE	GREY BROWN	39.90		42.12	0.24	J. F.	
14.00 15.00	1.00	SILICIOUS	IRON ORE	GREY BROWN	35.98		47.40	0.47	1 - 1	ि ने पान करते हैं। इ.स. १९४४
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			`						e. L	ار ایس در این در ای در این در ای

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! DEPTH (M) ! TH	ICKNESS ! (M) ! !	:	LITHOLOGY	1 !	COLOR DETAILS	!!!	Fe ! !	sio2	! AL203 ! !	! ! !	REMARKS	!
15.00 16.00	1.00 HEN	MATITIC ORE	1	GI	REY BROWN	49	.70	26.12	0.9			
16.00 17.00	1.00 HEM	MATITIC ORE		GI	REY BROWN	5 B	.80	8.51	3.7	3 4		
17.00 18.00	1.00 HEN	MATITIC ORE		GI	REY BROWN	54	.18	12.31	4.7	?		
18.00 19.00	1.00 HEN	MATITIC ORE		GI	REY BROWN	49	.00	17.72	5.4	3		•
19.00 20.00	1.00 HEM	MATITIC ORE		GI	REY BROWN	52	. 64	13.87	4.7	2	THE WAR	ಗಣೆ ಬ್ಯೂರ್ಡಾ
				- 1							<i>E</i>	11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1



#### DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA BOREHOLE NO: MLMR-07 DATITUDE : 1351357.545 DATE OF COMMENCEMENT : 23.08.2014 : 28370541799 LONGITUDE DATE OF CLOSURE 23.08.2014 REDUCED LEVEL (M): 961,624 DEPTH DRILLED (M) 50.00 ! DEPTH (M) ! THICKNESS ! LITHOLOGY COLOR DETAILS AL203 REMARKS |-----| ! FROM ! TO ! 0.00 1.00 1.00 SHALY ORE REDDISH BROWN 40.04 24.86 14.28 1.00 2.00 1.00 SHALY ORE REDDISH BROWN 20.16 31.30 28.81 2.00 3.00 1.00 SHALY ORE REDDISH BROWN 45.59 13.72 13.77 3.00 4,00 1.00 SHALY ORE REDDISH BROWN 41.68 12.98 18.10 1.00 4.00 5.00 FERRUGINOUS SHALE REDDISH BROWN 37.90 15.72 21.42 5.00 6.00 1.00 FERRUGINOUS SHALE REDDISH BROWN 20.11 .55,72 3.57 6.00 7.00 1.00 FERRUGINOUS SHALE REDDISH BROWN 33.63 22.00 22.18 7.00 8.00 1.00 SHALE REDDISH BROWN 24.89 28.04 26.52 8.00 9.00 1.00 SHALE REDDISH BROWN 19.86 32.22 20.91 9.00 10.00 1.00 SHALE REDDISH BROWN 18.74 32.94 29.07 10.00 11.00 1.00 SHALE DARK BROWN 17.62 33.08 28.56 11.00 12.00 1.00 SHALE DARK BROWN 18.88 31.94 29.07 12.00 13.00 1.00 SHALE DARK BROWN 21.11 25.92 26.77 13.00 14.00 1.00 SHALE DARK BROWN 19.16 30.44 28.30 14.00 15.00 1.00 SHALE DARK BROWN 20.13 30.44 26.52

BOREHOLE	NO:MLMR-07

! DEPTH (M)	! THICKNESS	LITHOLOGY		COLOR DETAILS	!!!	` `e	! SiO2	! AL203 !	! REMARKS !
! FROM ! TO	! (M)	1			! !		! !	!!! !!!	!
15.00 16.00	1.00	SHALE	D	ARK BROWN	19,	16	31.62	27.28	
16.00 17.00	1.00	SHALE	D	ARK BROWN	17.	06	34.08	27.79	•
17.00 18.00	1.00	SHALE	D	ARK BROWN	15.	80	35.66	28.56	
18.00 19.00	1.00	SHALE	מ	ARK BROWN	26.	15	28.58	23.71	and the state of t
19.00 20.00	1.00	SHALE	D.	ARK BROWN	17.	20	34.06	22.43	
20.00 21.00	1.00	SHALE	D.	ARK BROWN	15.	80	35.44	29.32	1/1/2
21.00 22.00	1.00	SHALE	D.	ARK BROWN	16.	78	34.78	27.79	
22.00 23.00	1.00	SHALE	D,	ARK BROWN	15.	94	35.38	28.30	
23.00 24.00	1.00	SHALE	Di	ARK BROWN	16.	50	34.04	29.07	
24.00 25.00	1.00	SHALE	Di	ARK BROWN	14.	82	35.26	29.32	
25.00 26.00	1.00	SHALE	Di	ARK BROWN	11.	83	35.76	20.05	
26.00 27.00	1.00	SHALE	DI	ARK BROWN	15.	10	36.56	26.77	and the second s
27.00 28.00	1.00	SHALE	נם	ARK BROWN	18.	60	34.90	26.01	
28.00 29.00	1.00	SHALE	D/	ARK BROWN	20.	00	33.18	26.26	
29.00 30.00	1.00	SHALE	D/	ARK BROWN	19.	72	34.04	24.73	
30.00 31.00	1.00	SHALE	to.	ARK BROWN	18,	04	34.76	26.77	
31.00 32.00	1.00	SHALE	DA	ARK BROWN	18.	60	34.78	24.99	
32.00 33.00	1.00	SHALE	D.F	ARK BROWN	10.	83	34.78	24.73	
33.00 34.00	1.00	SHALE	LO A	RK BROWN	16.	36	36.70	26.52	

				BOREHOLE NO:MLMR-07				ANEXO	E-FVALA	
! DEPTH (M) ! !	THICKNESS (附)	!	LITHOLOGY	! COLOR DETAILS	! Fe !	SiO2 !	λL203 !	REMARKS		
! FROM ! TO !		!		! ~~~~~~~~	! ! 	! 	!		!	
34.00 35.00	1.00	SHALE		DARK BROWN	16.22	37.30	26.01			
35.00 36.00	1.00	SHALE		DARK BROWN	10.48	35.60	26.01	]		
36.00 37.00	1.00	SHALE		DARK BROWN	18,62	37.72	24.22			
37.00 38.00	1.00	SHALE		DARK BROWN	11.20	47.42	23.20			
38.00 39.00	1.00	SHALE		DARK BROWN	7.14	59.84	18,87	•		
39.00 40.00	1.00	SHALE		DARK BROWN	8.68	54.02	22.18	-		
40.00 41.00	1.00	SHALE		DARK BROWN	8.36	54.39	21,64			
41.00 42.00	1.00	SHALE		DARK BROWN	9.50	56.44	19.39			
42.00 43.00	1.00	SHALE		DARK BROWN	9.78	54.73	20.16			
43.00 44.00	1.00	SHALE		DARK BROWN	10.33	53.79	20.91			
44.00 45.00	1.00	SHALE	\$	DARK BROWN	13.11	49.64	20.89		A CONTRACTOR OF THE PARTY OF TH	
45.00 46.00	1.00	SHALE	1	DARK BROWN	9.77	53.56	22,95		1 2 3 2 2 C 3 C 3 C 3 C 3 C 3 C 3 C 3 C 3	
46.00 47.00	1.00	SHALE		DARK BROWN	8.94	54.69	20.91	مينورين المراجع المراج والمراجع المراجع المرا		
47.00 48.00	1.00	SHALE		DARK BROWN	8,09	55.40	21.91			<u>a</u>
48.00 49.00	1.00	SHALE		GREY BROWN	9.36	54.48	21.94	$= - I_{ijk} + i \epsilon$	11. 100 美華	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
49.00 50.00	1.00	SHALE		GREY BROWN	8.36	55.11	21.39	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
									NAC TO STATE	

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

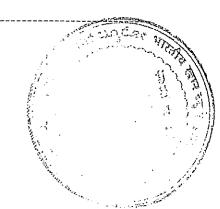
#### BOREHOLE NO:MLMR-08

LATITUDE : 1351435.682 LONGITUDE : 2837006.617 REDUCED LEVEL (M): 944.263 DATE OF COMMENCEMENT: 24.08.2014
DATE OF CLOSURE: 24.08.2014
DEPTH DRILLED (M): 40.00

! DEPTH (M) ! THICKNESS ! LITHOLOGY SiO2 AL203 REMARKS 1-----! FROM ! TO ! 0.00 1.00 1.00 SHALY ORE REDDISH BROWN 49.07 15.32 12.99 1.00 2.00 1.00 SHALY ORE REDDISH BROWN 48.20 15.07 12.50 2.00 3.00 1.00 SHALY ORE REDDISH BROWN 44.0B 16.67 14.53 3.00 4.00 1.00 SHALY ORE REDDISH BROWN 47.59 15.46 12.49 4.00 5.00 1.00 SHALY ORE REDDISH BROWN 42.50 17.87 16.30 5.00 6.00 1.00 SHALY ORE REDDISH BROWN 43.24 15.61 15.54 6.00 7.00 1.00 SHALY ORE REDDISH BROWN 49.70 13.88 10.96 7.00 8.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 34.34 24.60 19.38 8.00 9.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 36.85 20.08 19.64 9.00 10.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 32.93 24.19 10.71 10.00 11.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 10.11 23.48 30.38 11.00 12.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 22.62 30.66 26.01 12.00 13.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 20.10 32.19 27,53 13.00 14.00 1.00 HEMATITIC ORE REDDISH BROWN 59.47 3.54 5.61 14.00 15.00 1.00 SILECIOUS IRON ORE REDDISH BROWN 38.78 10.50 16.81

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							BOREHOLE NO: MLMR-08						2011
	DEPTH (M)	! THICKNESS			· 利用利用到海 (1941年)	}}.i		<u> </u>					
	FROM TO	-! (M)			LITHOLOGY		COLOR DETAILS	Fe !	SiO2	! AL203 ! ! !	REMARKS	!	
	15.00 16.00	1.00	siricions	TRON	OPF		PEDDICH PROM	! 		! 		!	
	16.00 17.00	1.00	SILICEOUS				REDDISH BROWN	39.70	19.12	16.32			
	17.00 18.00	1.00	SILICIOUS				REDDISH BROWN	29.99	27.18	19.88			
	18.00 19.00	1.00	SILICIOUS				REDDISH BROWN	35.13	35.52	10.44		•	
	19.00 20.00	1.00				j	REDDISH BROWN	32.64	42.97	1.89			
			SILICIOUS		•		REDDISH BROWN	28.46	36.64	14.27	•		
	20.00 21.00	1.00	SILICHOUS	IRON	ORE		REDDISH BROWN	31.23	29.12	17.57			
	21.00 22.00	1.00	SHALE .				DARK BROWN	27.76	26.56	21.41			
	22.00 23.00	1.00	SHALE				DARK BROWN	18.83	33.04	25.99			
	23.00 24.00	1.00	SHALE				DARK BROWN	16.73	32.46	27.50			
	24.00 25.00	1.00	SHALE				DARK BROWN	18.27	32.16	27.00			
	25.00 26.00	1.00	SHALE				DARK BROWN	17.04	33.44	26.48			
	26.00 27.00	1.00	SHALE .				DARK BROWN	15.07	35.40	29.05			
	27.00 28.00	1.00	SHALE				DARK BROWN	17.43	33.14	25.98			
	28.00 29.00	1.00	SHALE .				DARK BROWN	19.78	32.38	25.98		The state of the s	
	29.00 30.00	1.00	SHALE				DARK BROWN	18.83	33.52	26.25		Sand Color Color	
	30.00 31.00	1.00	SHALE		•		DARK BROWN	19.24	34.59	25.22	ر م د رقع		
	31.00 32.00	1.00	SHALE		,		DARK BROWN	17.14	30.19	25.46	1/2	(Con 5) (A)	
	32.00 33.00	1.00	SHALE		1		DARK BROWN	17.73	38.57	24.47		[ 1 2 1 m m m m m m m m m m m m m m m m m	
	33.00 34.00	1.00	SHALE				DARK BROWN	18.13	37.19	25.99	11		
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							·				•	Marie Marie La Caracteria de la Caracteria	
												1. 1. The state of	

! DEPTH (M) ! THICKNESS ! !! (M) ! ! FROM ! TO ! !	LITHOLOGY	! COLOR DETAILS !	! Fe !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	SiO2	! NL2O3 ! ! !	REMARKS	! ! !
34.00 35.00 1.00 SHALE		DARK BROWN	15.22	39.84	27.03		
35.00 36.00 1.00 SHALE		DARK BROWN	15.62	39.14	27.27	•	
36.00 37.00 1.00 SHALE	3 1	GREY BROWN	14.79	43.16	24.98		
37.00 38.00 1.00 SHALE	:	GREY BROWN	14.23	43.93	25.74		
38.00 39.00 1.00 SHALE	i	GREY BROWN	17.45	43.40	22.10		
39.00 40.00 1.00 SHALE	***	GREY BROWN	15.66	45.08	22.69		



DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN

alamente translation of the control 
## BOREHOLE NO:MLMR-09

M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST: BELLARY, KARNATAKA

LATITUDE : 1351138.314 LONGITUDE : 2837262.465 REDUCED LEVEL (M): 977.564

DATE OF COMMENCEMENT: 24.08.2014
DATE OF CLOSURE: 24.08.2014
DEPTH DRILLED (M): 50.00

!	THICKNESS (M)	i L	ITHOLOGY	! COLOR DETAILS !	! Fe !	SiO2 !	AL203	! REMARKS	i !
FROM ! TO !		!	~		! !		!	!	!
0.00 1.00	1.00	HEMATITIC ORE		REDDISH BROWN	51.83	8.12	9.67		**************************************
1.00 2.00	1.00	HEMATITIC ORE		REDDISH BROWN	47.79	11.18	12.21	•	
2.00 3.00	1.00	HEMATITIC ORE		REDDISH BROWN	43.13	11.36	15.30		
3.00 4.00	1.00	HEMATITIC ORE		REDDISH BROWN	52.46	5.62	9.17		
4.00 5.00	1.00	HEMATITIC ORE		REDDISH BROWN	52.51	5.70	9.70		•
5.00 6.00	1.00	HEMATITIC ORE		REDDISH BROWN	43.83	. 11.18	14.28		
6.00 7.00	1.00	HEMATITIC; ORE		REDDISH BROWN	47.07	8.78	13.23		
7.00 8.00	1.00	HEMATITIC! ORE		REDDISH BROWN	48.78	6.89	11.71		
8.00 9.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	32.52	17.27	22.43		
9.00 10.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	21.39	26.60	27.58		Colored Colore
0.00 11.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	26.06	27.20	24.69		and the second s
1.00 12.00	1.00	SHALE		DARK BROWN	18.55	33.38	28.52		
2.00 13.00	1.00	SHALE	1	DARK BROWN	19.80	31.84	28.52		18/24 1
3.00 14.00	1.00	SHALE	: :	DARK BROWN	17.01	34.86	29.04		机分类机、水质
4.00 15.00	1.00	SHALE	•	DARK BROWN	17.31	34.60	29.07		
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ROKEHOTE	NO:MLMR-US

DEPTH (M)	! THICKNESS ! (M)	! LITHOLOGY		! COLOR DETAILS	! Fe !	SiO2	AL203 !	REMARKS !
15.00 16.00	1.00	SHALE		DARK BROWN	16.99	34.65	29.50	
16.00 17.00	1.00	SHALE	ý	DARK BROWN	12.01	38.82	30.61	
7,00 18,00	1.00	SHALE	1	DARK BROWN	18.66	35.25	25.45	The state of the s
8.00 19.00	1.00	SHALE		DARK BROWN	10.04	39.69	33.11	the constant
9.00 20.00	1.00	SHALE	:	DARK BROWN	10.72	39.11	32.05	
0.00 21.00	1.00	SHALE	:	DARK BROWN	8.94	40.36	33.66	
1.00 22.00	1.00	SHALE	:	DARK BROWN	16.04	36.37	27.52	
2.00 23.00	1.00	SHALE .	-	DARK BROWN	7.83	40.90	34.71	
3.00 24.00	1.00	SHALE		DARK BROWN	11.55	39.30	33.05	
4.00 25,00	1.00	SHALE	1	DARK BROWN	10.59	38.32	32.57	
5.00 26.00	1.00	SHALE		DARK BROWN	11.43	38.00	32.09	
6.00 27.00	1.00	SHALE	2	DARK BROWN	11.03	37.96	32.36	A CONTRACTOR OF THE PARTY OF TH
7.00 28.00	1.00	SHALE	:	DARK BROWN	9.22	39.00	32.19	
8.00 29.00	1.00	SHALE	1	DARK BROWN	9.35	38.84	33.14	
00.0E 00.e	1.00	SHALE		DARK BROWN	11.32	37.86	31.87	
0.00 31.00	1.00	SHALE	1	DARK BROWN	12.27	37.00	31.05	
1.00 32.00	1.00	SHALE		DARK BROWN	13.81	35.91	30.50	
2.00 33.00	1.00	SHALE	: :	DARK BROWN	13.54	36.16	30.58	
3.00 34.00	1.00	SHALE	1	DARK BROWN	13.96	35.60	30.58	

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		200	region in Europe de la	им гоучацональная	Note to be the					
DEPTH MA	! THICKNES	s in the	Lithorogy	COLOR DETA	ils i Fe	8102	AL203	REMARKS		
To the second se	1									
34.00 35 00	1.00	SHALE		DARK BROWN	13.68	36.20	30.86	<del>-</del>		<u></u>
35.00 36.00	1.00	SHALE		DARK BROWN	13,97	36.38	30.87	•		
36.00 37.00	1.00	SHALE		DARK BROWN	17.32	34.20	28.32			
37.00 38.00 38.00 39.00	1.00	SHALE	:	DARK BROWN	13.05	37.40	30.09			
39.00 40.00	1.00	SHALE		DARK BROWN	12.28	36.81	31.09		•	
40.00 41.00	1.00	SHALE		DARK BROWN	11.43	37.86	31.84			
41.00 42.00	1.00	SHALE		DARK BROWN DARK BROWN	14.80	35.84	29.33			
42.00 43.00	1.00	SHALE		DARK BROWN	15.20 11.97	35.46 38.31	30.06			
43.00 44.00	1.00	SHALE		DARK BROWN	13.38	38.07	30.59 29.53			
44.00 45.00	1.00	SHALE		DARK BROWN	14.50	37.77	28.52			
45.00 46.00	1.00	SHALE '		DARK BROWN	12.15	39.74	30.56			
46.00 47.00	1.00	SHALE		DARK BROWN	11.86	39.76	30.56		يرور والمناز و	
47.00 48.00	1.00	SHALE		DARK BROWN	8.64	39.43	34.09	يني .	7. 00	
48.00 49.00	1.00	SHALE		DARK BROWN	11.58	39.82	30.58		Burgard and a series	
49.00 50.00	1.00	SHALE		DARK BROWN	11.58	39.78	30.58			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYAMA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-10

LATITUDE : 1351063.248 LONGITUDE : 2837331.820 REDUCED LEVEL (M): 972.352

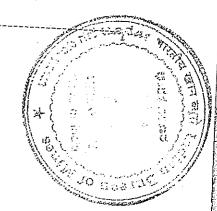
DATE OF COMMENCEMENT : 25.08.2014
DATE OF CLOSURE : 25.08.2014
DEPTH DRILLED (M) : 40.00

! DEPTH (M) !	THICKNESS (M)	! LITHOLOGY	! COLOR DETAILS	! Fe	! SiO2	AL203 !	REMARKS !
! FROM ! TO !		!	į	!	!	!	! !
0.00 1.00	1.00	SHALY ORE	DARK BROWN	44.80	11.06	10.39	
1.00 2.00	1.00	SHALY ORE	DARK BROWN	38.92	19.15	12,75	Property Section 1800 Commence
2.00 3.00	1.00	SHALY ORE	DARK BROWN	47.27	9.98	11.83	15 57 18 27 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18 37 18
3.00 4.00	1.00	SHALY ORE	DARK BROWN	41.26	12.13	13.91	
4.00 5.00	1.00	SHALY ORE	DARK BROWN	43.92	12.58	11.85	
5.00 6.00	1.00	HEMATITIC ORE	DARK BROWN	52.31	3.52	6.95	
6.00 7.00	1.00	HEMATITIC ORE	DARK BROWN	52.59	3.42	6.95	
7.00 B.00	1.00	HEMATITIC ORE	DARK BROWN	48.95	5.67	8.50	
8.00 9.00	1.00	HEMATITIC ORE	DARK BROWN	40.28	11.57	13.39	
9.00 10.00	1.00	SILICIOUS IRON ORE	REDDISH BROWN	36.22	14.40	15.71	
10.00 11.00	1.00	SHALE	REDDISH BROWN	17.06	32.63	26.52	William and the state of the st
11.00 12.00	1.00	SHALE	REDDISH BROWN	25.59	25.90	22.66	
12.00 13.00	1.00	SHALE	REDDISH BROWN	18.32	33.35	26.78	
13.00 14.00	1.00	SHALE	REDDISH BROWN	18.74	32.57	26.27	
14.00 15.00	1.00	SHALE	REDDISH BROWN	21.28	33.15	28.16	
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	21.62	ET.SE	14.20	ревк ввоми		!	SHALE	υο.τ	00.88 00.88	•
	80.0£	35.02	00.01	DVEK BEOMN	i :	1	SHYTE	00.1	31.00 32.60	I
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	32,96	ez.re	27.11	имоне янап	:	•	SHALE	σο.τ	29.00 30.00	
	88.0£	36.25	13.43	рукк вкоми	:		SHALE	00.1	28.00 29.00	
	98.08	00.75	6 <i>t</i> .6	рукк вкоми			; alahe	00.τ	00.82 00.72	Ī
	33.28	9£.7£	er.e	рукк вкоми			SHVCE .	00.τ	00.75 00.82	•
	32.74	£7.6E	28.8	оляк вкоми			SHALE	00.1	00.82 00.82	
	27.EE	. so.es	28.8	рукк вкоми			SHALE	00.1	24.00 25.00	
	32,32	16.6£	P.S. 9	KEDDIZH BKOMN			SHALE	00.1	00.02 00.82	Ī
	18.15	II.eE	11.62	REDDISH BROWN			SHALE	00.τ	00.62 00.52	
	30.08	01.75	73.02	<b>КЕ</b> ББІЗН ВКОМИ			SHALE	00.τ	21.00 22.00	
	29.92	\$6.5€	13.72	иеорігн ввоми	!		STAHS	00.1	20.00 21.00	
	09.62	36.60	13.72	REDDISH BROWN	:		SHALE	00.1	00.02 00.61	
	28.00	34.08	18.62	иеррізн виоми		;	знуге	00.1	00.61 00.81	
	02.72	32.20	9Þ.61	REDDISH BROWN	:	,	: CHVPE	00.1	00.81 00.71	•
	88.92	PT.SE	21.56	веррізн вкоми			SHALE	1.00	00.71 00.81	Ī
	p0.7S	32.24	76.0S	иеррігн виоми			SHYFE	00.1	00.81 00.21	1
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DOMEROPE	NO:MLMR~10

! DEPTH (M) !	THICKNESS												
! FROM ! TO !	(M)	i LITHOLGGY		! COLOR DETAILS	! ! Fe !	 SiO2 !	AL203 I						
34.00 35.00	1.00	SHALE	<u>:</u> 		<u>.</u>	i	!	REMARKS !					
35.00 36.00	1.00	SHALE	;	DARK BROWN	13.15	35.75	29.76	!					
36.00 37.00	1.00	SHALE		DARK BROWN	12.87	33.13	29.12						
37.00 38.00	1.00	SHALE	1	DARK BROWN	12.87	36.54	30,72						
38.00 39.00	1.00	SHALE		DARK BROWN	12.60	37.01	31.20						
39.00 40.00	1.00	SHALE		DARK BROWN	13.44	35.40	29.22						
			:	STATE ON OWN	15.12	31.86	27.69	,					



DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

## BOREHOLE NO:MLMR-11

LATITUDE : 1350928.362 LONGITUDE : 2837472.147 REDUCED LEVEL (M): 951.622

DATE OF COMMENCEMENT: 25.08.2014
DATE OF CLOSURE: 25.08.2014
DEPTH DRILLED (M): 30.00

DEPTH (M) ! ! FROM ! TO !	THICKNESS (M)	! LIT	HOLOGY	! COLOR DETAILS !	! Fe !	! \$102 !	! AL203 ! !	! REMARK	s ! !	
0.00 1.00	1.00	LATERITIC ORE		REDDISH BROWN	35.84	22.64	15.69	HEMATITE		
1.00 2.00	1.00	${\tt LATERITIC}_i \ {\tt ORE}$		REDDISH BROWN	50,96	11.05	8.73	• HEMATITE		
2.00 3.00	1.00	HEMATITIC ORE		REDDISH BROWN	52.36	14.81	6.51			
3.00 4.00	1.00	HEMATITIC ORE		REDDISH BROWN	51.80	13.78	6.81			
4.00 5.00	1.00	HEMATITIC: ORE		REDDISH BROWN	53.20	11.87	7.10			
5.00 6.00	1.00	HEMATITIC ORE		REDDISH BROWN	53.06	.13.65	6.07			
6.00 7.00	1.00	HEMATITIC ORE		REDDISH BROWN	55.44	9.11	6.36			
7.00 8.00	1.00	BLUE DUST		BL GREY	63.56	3.95	3.55			
0.00 9.00	1.00	BLUE DUST		BL GREY	56.00	11.12	6.96			
9.00 10.00	1.00	BLUE DUST		BL GREY	63.56	4.58	3.85			ومدود مستاه سيستران المدود
10.00 11.00	1.00	BLUE DUST		BL GREY	66.78	2.22	1.60		المعادي	न हैं ये कुछ है
11.00 12.00	1.00	BLUE DUST	Í	BL GREY	67.20	2.04	1.57		, odered	
12.00 13.00	1.00	HEMATITIC ORE		GREY BROWN	62.72	5.06	1.60			
3.00 14.00	1.00	HEMATITIC: ORE		GREY BROWN	42.42	37.74	1.25		$\int_{\mathbb{R}^{n}}  f(x) ^{2} dx$	i a
4.00 15.00	1.00	HEMATITIC ORE		GREY BROWN	60.76	12.17	0.80		, j	
			:						ž.	

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DEPTH (M)	! THICKNESS ! (M)	i rithoroga		! COLOR DETAILS	! Fe	! sio2	AL203	 !	REMARKS	
FROM ! TO !	!	!	. !	!	!	! !	!	!	!	
15.00 16.00	1.00	SILICIOUS IRON ORE		GREY BROWN	39.76	41.24	1.4	:  1	!	
16.00 17.00	1.00	SILICIOUS IRON ORE		GREY BROWN	35.28	48.00		•		
7.00 18.00	1.00	SILICIOUS IRON ORE	- ;	GREY BROWN	31.36	53.07	0.6			
8.00 19.00	1.00	SILICIOUS IRON ORE	;	GREY BROWN	35.14	48,90	0.41			
9.00 20.00	1.00	SILICIOUS IRON ORE		GREY BROWN	30.38	50.82	1.42			
0.00 21.00	1.00	SILICIOUS IRON ORE	1	GREY BROWN	33.18	51.34	0.95		عدالة المستعمل المست	
1.00 22.00	1.00	SILICIOUS IRON ORE		GREY BROWN	37.80	43.20	0.95		1000	
2.00 23.00	1.00	SILICIOUS IRON ORE		GREY BROWN	37.38	44.62	1.42		A Company of the Comp	
3.00 24.00	1.00	SILICIOUS IRON ORE		GREY BROWN	38.36	43.20	1.58			
4.00 25.00	1.00	SILICIOUS IRON ORE		GREY BROWN	36.40	45.55	1.42			
0.00 26.00	1.00	SILICIOUS IRON ORE		REY BROWN	35.84	46.40	2.05			
5.00 27.00	1.00	SILICIOUS IRON ORE		REY BROWN	33.74	46.26	1.58			
7.00 28.00	1.00	SILICIOUS IRON ORE		REY BROWN	25.20	59.64	1.15			
3.00 29.00	1.00	FEREUGINOUS SHALE	, 1	EDDISH BROWN	27.16	59.72	1.42			
0.00 30.00	1.00	FERRUGINOUS SHALE		EDDISH BROWN	25.76	57.63	1.11		المراجعة ال	

DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST: BELLARY, KARNATAKA BOREHOLE NO:MLMR-12

______

LATITUDE : 1350991.277 LONGITUDE : 2837390.162 REDUCED LEVEL (M): 952.160

DATE OF COMMENCEMENT : 25.08.2014 DATE OF CLOSURE : 25.08.2014 DATE OF CLOSURE

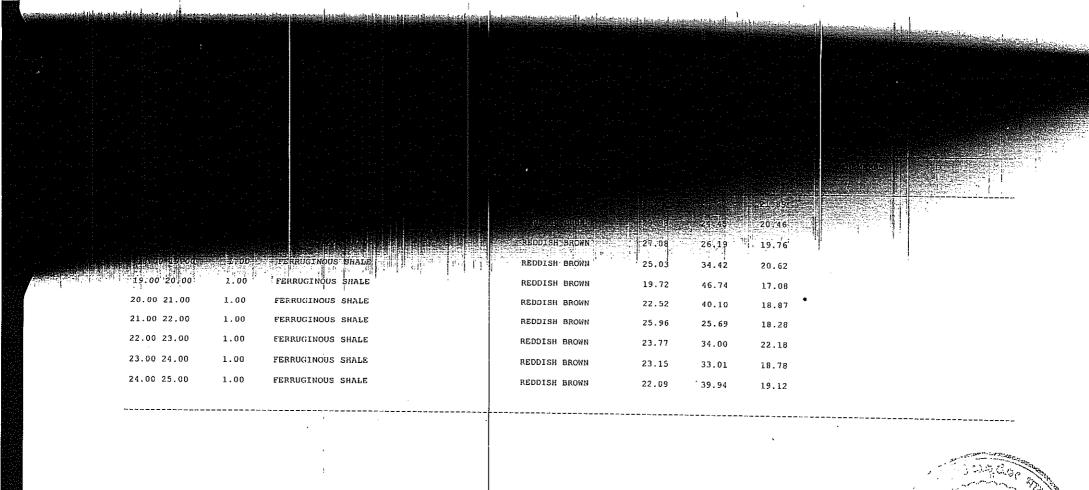
			<u> </u>						DEPTH DR	ILLED (M)	: 15.00
	! THICKNESS ! (M)	1 !		LITHOLOGY	! COLOR DETAILS	! Fe	! :	5102	! AL203 !	REMARKS	
FROM ! TO	! 	! 			!	į	į		!!!!		, <u>i</u>
0.00 1.00	1.00	SILICIOUS	RON OF	RE	GREY BROWN	30.06		 54.56	1.65		
1.00 2.00	1.00	siricions	RON OF	RE	GREY BROWN	30.56		54.14	0.89 •		
2.00 3.00	1.00	SILICIOUS	RON OF	RE	GREY BROWN	32.45		51.10	0.89		
3.00 4.00	1.00	silicious	RON OF	RE	GREY BROWN	35.66		47.86	0.63		
4.00 5.00	1.00	SILICIOUS	RON OF	38	GREY BROWN	33.64		50.54			
5.00 6.00	1.00	SILICIOUS	RON OF	: RE :	GREY BROWN	34.12			0.89		
6.00 7.00	1.00	SILICIOUS !I	RON OR	RE	GREY BROWN			19.42	0.51		i e
7.00 8.00	1.00	SILICIOUS				33.28		19.82	0.89		
8.00 9.00	1.00	silicious  i			GREY BROWN	30.42	5	54.72	0.76		
9.00 10.00	1.00	SILICIOUS I			GREY BROWN	32.66	5	51.18	1.02		
.0.00 11.00		;			GREY BROWN	34.12	4	19.18	1.53		
	1.00	SILICIOUS I		•	GREY BROWN	30.18	4	14.02	0.89		
11.00 12.00	1.00	SIL1CIOUS I		:	GREY BROWN	30.28	5	55.76	0.64		The same of the sa
.2.00 13.00	1.00	SILICIOUS I			GREY BROWN	31.54	5	3.90	0.63		and the state of
13.00 14.00	1.00	SILICIOUS	RON OR	Ε .	GREY BROWN	35.31	4	8.40	0.76	.*	
4.00 15.00	1.00	SILICIOUS I	RON OR	E	GREY BROWN	30.98	5	3.06	1.40	رخ. د کو	69
										<u>3</u> (	
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				:						1	를 보고 보세 생생기를 받 되게 하고 보세 생생기를 받는데 하는데 하는데 되었다.
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# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-13

LATITUDE : 1350056.226 LONGITUDE : 2037400.588 REDUCED LEVEL (M): 939.786 DATE OF COMMENCEMENT: 25.08.2014
DATE OF CLOSURE: 25.08.2014
DEPTH DRILLED (M): 25.00

! DEPTH (M) !	THICKNESS (M)	! LITHOLOGY	! COLOR DETAILS !	Fe	! SiO2	! AL203	! REMARKS !
! FROM ! TO !			<u>                                     </u>	!	!	!	! !
0.00 1.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.14	31.62	28.05	***************************************
1.00 2.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	18.86	32.86	28.05	
2.00 3.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	10.74	32.54	27.79	The second section of the sect
3.00 4.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	21.97	30,28	23.22	233,000,000
4.00 5.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.68	33.19	24.68	
5.00 6.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	29.23	32.56	17.84	
6.00 7.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	23.74	31.87	20.22	
7.00 8.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	24.31	31.12	18.53	
8.00 9.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	25.17	30.42	22.68	Washington Color
9.00 10.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.56	33.76	24.96	
10.00 11.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	25.45	32.02	21.16	The second of th
11.00 12.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.73	32.65	25.25	The state of the s
12.00 13.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	24.76	29.39	22.49	
13.00 14.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	26.63	27.08	22.36	
14.00 15.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	26.45	26.56	22.04	





## DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-14

LATITUDE : 1350927.405 LONGITUDE : 2837332.430 REDUCED LEVEL (M): 941.165 DATE OF COMMENCEMENT : 25.08.2014
DATE OF CLOSURE : 25.08.2014
DEPTH DRILLED (M) : 20.00

AL203 REMARKS ! FROM ! TO ! 0.00 1.00 1.00 HEMATITIC ORE GREY BROWN 54.55 15.56 5.86 1.00 2.00 1.00 FERRUGINOUS SHALE GREY BROWN 26.57 55.68 5.35 2.00 3.00 1.00 FERRUGINOUS SHALE GREY BROWN 29.57 53.94 2.82 3.00 4.00 1.00 BHQ GREY BROWN 15.80 74.46 2.55 4.00 5.00 1.00 BHQ GREY BROWN 33.71 49.36 1.53 5.00 6.00 1.00 BHQ GREY BROWN 26.57 57.92 3.82 6.00 7.00 1.00 BHQ GREY BROWN 29.91 53.56 2.80 7.00 8.00 1.00 GREY BROWN 29.23 BHQ 54.68 2.55 8.00 9.00 1.00 GREY BROWN BHQ 23.77 63.12 2.29 9.00 10.00 1.00 вно GREY BROWN 24.06 64.00 1.02 10.00 11.00 1.00 BHQ GREY BROWN 22.66 65.43 1.53 11.00 12.00 1.00 BHQ GREY BROWN 29.79 54.54 2.04 12.00 13.00 1.00 BHQ GREY BROWN 27.97 57.50 1.75 1.00 13.00 14.00 SILICIOUS IRON ORE GREY BROWN 26.99 58.76 2,29 14.00 15.00 1.00 SILICIOUS IRON ORE GREY BROWN 30.63 50.36 3.57

BOREHOLE NO: MLMR-14		ANNEXURATIVE/29
! DEPTH (M) ! THICKNESS ! LITHOLOGY ! COLOR DETAILS ! Fe ! SiO2 !	! AL2O3 ! RE	EMARKS
15.00 16.00 1.00 SILICIOUS IRON ORE GREY BROWN 32.08 52.04	1.27	
16.00 17.00 1.00 SILICIOUS IRON ORE GREY BROWN 31.50 52.76	1.27	t t
17.00 18.00 1.00 SILICIOUS IRÓN ORE GREY BROWN 32.10 52.22	1.27	
18.00 19.00 1.00 SILICIOUS IRON ORE GREY BROWN 32.17 51.03	1.53	
19.00 20.00 1.00 SILICIOUS IRON ORE GREY BROWN 33.86 48.64	1.78	
	•	

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-15

LATITUDE : 1351076.423 LONGITUDE : 2837192.545 REDUCED LEVEL (M): 946.710

DATE OF COMMENCEMENT : 26.08.2014
DATE OF CLOSURE : 26.08.2014
DEPTH DRELLED (M) : 20.00

! DEPTH (M) ! !! ! FROM ! TO !	THICKNESS (M)	! LITHOLOGY !	2 6 6	! COLOR DETAILS !	! Fe ! ! !	SiO2	! AL203 !	REMARKS ! ! !
0.00 1.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	23.52	58.44	0.95	
1.00 2.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	26.60	61.10	0.63	
2.00 3.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	21.84	68.00	0.47	33,000 2373
3.00 4.00	1.00	FERRUGINOUS SHALE	:	REDDISH BROWN	23.52	65.10	0.70	
4.00 5.00	1.00	вно		REDDISH BROWN	28.42	58.71	0.31	
5.00 6.00	1.00	вно		GREY BROWN	25.06	61.76	0.98	
6.00 7.00	1.00	вно		GREY BROWN	24.92	63.46	0.66	33
7.00 8.00	1.00	FERRUGINOUS SHALE		GREY BROWN	22.26	65.51	1.12	
8.00 9.00	1.00	FERRUGINOUS SHALE		GREY BROWN	22.68	59.21	0.48	
9.00 10.00	1.00	FERRUGINOUS SHALE	; i	DARK BROWN	22.40	64.67	0.40	The state of the s
10.00 11.00	1.00	FERRUGINOUS SHALE		DARK BROWN	25.20	62.26	0.96	and the state of t
11.00 12.00	1.00	FERRUGINOUS SHALE		DARK BROWN	26.04	62.07	0.47	
12.00 13.00	1.00	FERRUGINOUS SHALE		DARK BROWN	22.40	67.42	0.38	•
13.00 14.00	1.00	FERRUGINOUS SHALE		DARK BROWN	20.56	57.72	1.33	
14.00 15.00	1.00	вно		DARK BROWN	29.40	56.93	0.74	
			: [					

		and the state and the state of the	ilian la l'inference	and the second	tellar entre			Herisania sa		
										The second secon
rantsporting capital Light design enter							a As a le la co			
			BOR	EHOLE NO MLMR=15			53-52-5	ANN Control	ADRIC DVB/ co.	
DEPTH (M) ! T	HICKNESS ! (M) ! !	LITHOLOGY	1	COLOR DETAILS	! Fe !	SiO2 !	AL203 ! !	REMARKS	1	
15.00 16.00	1.00 BHQ		DAR	K BROWN	28.91	55.99	0.96			
16.00 17.00	1.00 BHQ		GRE	Y BROWN	31.08	54.18	0.32			
17.00 18.00	1.00 FERRUGINOUS	S SHALE	GRE	Y BROWN	23.10	65.12	0.32			
18.00 19.00	1.00 FERRUGINOUS	S SHALE	GRE	Y BROWN	26.04	60.32	1.28			
19.00 20.00	1.00 FERRUGINOUS	S SHALE	GRE	Y BROWN	23.38	60.13	0.96			



# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYAMA NINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-16

LATITUDE : 1351003.927 LONGITUDE : 2837124.187 REDUCED LEVEL (M): 929.403 DATE OF COMMENCEMENT: 26.08.2014
DATE OF CLOSURE: 26.08.2014
DEPTH_DRILLED (M): 30.00

! DEPTH (M)	! THICKNESS ! (M)	! LITHO!	rogy	! COLOR DETAILS	! Fe	! SiO2	! AL203 ! ! !	REMÁRKS !
! FROM ! TO	!	!		!	!	!	1 !	!
0.00 1.00	1.00	SHALE	:	REDDISH BROWN	19.64	31.38	23.72	
1.00 2.00	1.00	SHALE	· · · · · · · · · · · · · · · · · · ·	REDDISH BROWN	15.10	35.00	30.85	The state of the s
2.00 3.00	1.00	SHALE	<u>,</u>	REDDISH BROWN	17.01	34.47	27.75	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
3.00 4.00	1.00	SHALE .		REDDISH BROWN	17.02	33.87	29.32	
4.00 5.00	1.00	SHALE	· 1	REDDISH BROWN	13.99	35.96	31.11	
5.00 6.00	1.00	SHALE		REDDISH BROWN	12,83	35.64	31.60	
6.00 7.00	1.00	SHALE	1	REDDISH BROWN	13.68	35.92	31.11	
7.00 8.00	1.00	SHALE		REDDISH BROWN	14.52	33.22	30.60	
8.00 9.00	1.00	SHALE	1	REDDISH BROWN	15.90	33.81	29.55	
9.00 10.00	1.00	SHALE	200	REDDISH BROWN	14.50	34.38	30.06	The state of the s
10.00 11.00	1.00	SHALE		REDDISH BROWN	15.76	34.22	29.55	- Lacista alexica market
11.00 12.00	1.00	SHALE	1	REDDISH BROWN	19.40	32.07	27.53	
12.00 13.00	1.00	SHALE		REDDISH BROWN	17.42	33,43	27.50	
13.00 14.00	1.00	SHALE	:	REDDISH BROWN	20.24	32.02	27.25	
14.00 15.00	1.00	SHALE	1	REDDISH BROWN	16.20	33.44	29.50	

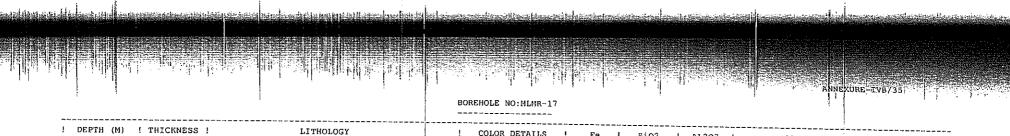
# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYAJA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-17

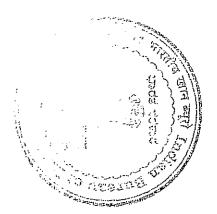
LATITUDE : : 1351052.432 LONGITUDE : 2837092.100 REDUCED LEVEL (M): 938.356

DATE OF COMMENCEMENT: 26.08.2014
DATE OF CLOSURE: 26.08.2014
DEPTH_DRILLED (M): 20.00

! DEPTH (M) !	THICKNESS (M)	! LITHOLOGY		! COLOR DETAILS	! Fe !	SiO2	! AL203 !	REMARKS !
! FROM ! TO !		!		į	i i		! !	; !
0.00 1.00	1.00	SHALE		DARK BROWN	7.83	40.08	35.19	The same of the sa
1.00 2.00	1.00	SHALE		DARK BROWN	10.77	38.08	33.40	3000
2.00 3.00	1.00	SHALE	i	DARK BROWN	8.11	39.48	34.93	
3.00 4.00	1.00	SHALE ,		DARK BROWN	10.21	38.14	33.66	
4.00 5.00	1.00	SHALE		DARK BROWN	12.87	36.10	32.38	
5.00 6.00	1.00	SHALE	:	DARK BROWN	17.31	44.96	22.44	
6.00 7.00	1.00	FERRUGINOUS SHALE		DARK BROWN	20.08	31.24	26.49	
7.00 8.00	1.00	FERRUGINOUS SHALE		DARK BROWN	20.78	32.40	28.28	
8.00 9.00	1.00	FERRUGINOUS SHALE		DARK BROWN	20.78	32.00	27.26	The state of the s
9.00 10.00	1.00	FERRUGINOUS SHALE		DARK BROWN	20,90	31.50	26.22	The second secon
10.00 11.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	19.54	32.60	28.31	
11.00 12.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	19.52	32.60	27.51	
12.00 13.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	20.48	31.62	27.50	
13.00 14.00	1.00	FERRUGINOUS SHALE		REDDISH BROWN	18.54	32.92	27.49	
14.00 15.00	1.00	FERRUGINOUS SHALE	:	REDDISH BROWN	20.11	31.24	25.00	



! DEPTH (M) ! !! ! FROM ! TO !	THICKNESS (M)	! LITHOLOGY ! !	! COLOR DETAILS	! Fe !	SiO2	! AL2O3 ! ! !	REMARKS	! !
15.00 16.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	14.40	35.94	29.58		
16.00 17.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.97	30.96	27.03		
17.00 18.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.14	32.20	27.28		
18.00 19.00	1.00	FERRUGINOUS SHALE	DARK BROWN	19.79	32.68	27.28		
19.00 20.00	1.00	FERRUGINOUS SHALE	DARK BROWN	20.98	30.58	27.03		



# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYAMA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-18

LATITUDE : 1351289.171 LONGITUDE : 2836841.607 REDUCED LEVEL (M): 883.205 DATE OF COMMENCEMENT: 26.08.2014
DATE OF CLOSURE: 26.08.2014
DEPTH DRILLED (M): 25.00

! DEPTH (M)	! THICKNESS	! !	LITHOLOGY	,	! COLOR DETAILS	! Fe	! SiO2	! AL2O3 !	REMARKS	! :
! FROM ! TO	1	!			!	1	!	1 1		Jan
0.00 1.00	1.00	SHALE	and were the term were fire the way had been sen ear any any time fire the sen any the		REDDISH BROWN	16.50	48.12	18.36	HEMATITE	100 8 87 May
1.00 2.00	1.00	SHALE		:	REDDISH BROWN	44.34	14.88	12.49	HEMATITE	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
2.00 3.00	1.00	SHALE			DARK BROWN	23.77	30.50	22.69		
3.00 4.00	1.00	SHALE -		3	DARK BROWN	8.39	47.40	27.54		
4.00 5.00	1.00	SHALE			DARK BROWN	17.48	47.14	18.10		
5.00 6.00	1.00	SHALE		.	DARK BROWN	13.00	53.06	19.12		
6.00 7.00	1.00	SHALE		.	DARK BROWN	10.91	55.38	20.65		al Artistan
7.00 0.00	1.00	SHALE			DARK BROWN	14,55	49.72	19.89		
8.00 9.00	1.00	SHALE		:	DARK BROWN	15.10	44.68	23.46	Sugar.	
9.00 10.00	1.00	SHALE			DARK BROWN	14.27	45.98	22.45		
10.00 11.00	1.00	SHALE		:	DARK BROWN	12.73	54.58	18.36		
11.00 12.00	1.00	SHALE			DARK BROWN	11.89	56.90	19.12		
12.00 13.00	1.00	SHALE		:	DARK BROWN	12.03	56.62	18.61		
13.00 14.00	1.00	SHALE			DARK BROWN	13.57	54.08	18.10		
14.00 15.00	1.00	SHALE			DARK BROWN	13.57	54.02	18.36		

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!   DEPTH (M) ! !	THICKNESS (M)	!	LITHOLOGY		! COLOR DETAILS	Fe !	SiO2 !	AL203 !	REMARKS	
15.00 16.00	1.00	SHALE			DARK BROWN	15.38	51.46	18.36		
16.00 17.00	1.00	SHALE			DARK BROWN	13.71	50.46	19.38		
17.00 18.00	1.00	SHALY ORE			DARK BROWN	44.62	14.76	13.00		; !
18.00 19.00	1.00	SHALE			YELLOWISH BROWN	15.52	49.40	18.61		
19.00 20.00	1.00	SHALE		i	YELLOWISH BROWN	15.10	44.36	30.60		
20.00 21.00	1.00	SHALE			YELLOWISH BROWN	14.26	46.48	20.91		
21.00 22.00	1.00	SHALE			DARK BROWN	14.97	44.74	21.16		
22.00 23.00	1.00	SHALE .			DARK BROWN	14.69	44.74	21.16		
23.00 24.00	1.00	SHALE		ŀ	DARK BROWN	12.87	46.42	20.14		
24.00 25.00	1.00	SHALE			DARK BROWN	12.30	46.24	20.40		
		:								



# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-19

LATITUDE : 1350865.977 LONGITUDE : 2837542.484 REDUCED LEVEL (M): 951.483

DATE OF COMMENCEMENT : 27.08.2014 DATE OF CLOSURE : 27.08.2014 DEPTH DRILLED (M) : 40.00

! DEPTH (M) !	THICKNESS (M)	i rithorogy		! COLOR DETAILS	! Fe	!	SiO2	! AL203	! REMARKS	!
! FROM ! TO !	···	!		Î.	!	!		!	; !	! !
0.00 1.00	1.00	LATERITIC ORE		REDDISH BROWN	54.94		10.60	B.92	CAVERNOUS	
1.00 2.00	1.00	LATERITIC ORE	-	REDDISH BROWN	49.51		14.24	11.47	المام ال المام المام ال	2.0000
2.00 3.00	1.00	HEMATITIC ORE		REDDISH BROWN	53.57		10.00	9.43		
3.00 4.00	1.00	HEMATITIC ORE		REDDISH BROWN	53.99		9.94	10.71		13. 15. 18
4.00 5.00	1.00	HEMATITIC ORE		REDDISH BROWN	46.85		15.58	13.00	$\int_{\mathbb{R}^{n}} dx dx = \int_{\mathbb{R}^{n}} dx dx$	
5.00 6.00	1.00	HEMATITIC ORE		REDDISH BROWN	44.76		15.60	15.04		
6.00 7.00	1.00	HEMATITIC ORE		REDDISH BROWN	51.47		10.82	10.71		
7.00 8.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	35.58		18.76	21.16	<b>,</b>	
8.00 9.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	33.05		43.94	7.39		1. Sept. 1.
9.00 10.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	33.83		44.08	5.06		The second second
10.00 11.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	41.22		33.46	6.16	***	and the state of t
11.00 12.00	1.00	HEMATITIC ORE		REDDISH BROWN	45.51		16.25	3.31		
12.00 13.00	1.00	HEMATITIC ORE		REDDISH BROWN	54.93		9.72	5.35		
13.00 14.00	1.00	HEMATITIC ORE		REDDISH BROWN	51.26		20.58	5.85		
14.00 15.00	1.00	HEMATITIC ORE		REDDISH BROWN	54.25		15.96	5.61		

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					BOREHOLB, NO:MIMR-19	J. PAN			HIV ARELINGS
	! DEPTH (M) !	THICKNESS	! LITHOLOGY	ļ	! COLOR DETAILS	1 Fe !	SiO2	! AL203 !	
	! FROM ! TO !	(M)	1.		!	!!!!	3102	: AD203 ; ;	REMARKS
·	15.00 16.00	1.00	HEMATITIC ORE	<b> </b>	REDDISH BROWN	57.76	14.36	1.78	
[12] 상:	16.00 17.00	1.00	HEMATITIC ORE		REDDISH BROWN	57.83	16.16	1.02	
	17.00 18.00	1.00	HEMATITIC ORE		REDDISH BROWN	57.89	16.48	0.51	
	18.00 19.00	1.00	HEMATITIC ORE		REDDISH BROWN	59.33	12.40	1.05	
	19.00 20.00	1.00	HEMATITIC ORE		REDDISH BROWN	48.79	28.48	1.02	
14. 34.	20.00 21.00	1.00	BLUE DUST		BL GREY	56.02	17.54	1.02	
	21.00 22.00	1.00	BLUE DUST		BL GREY	61.56	9.46	0.51	: :
	22.00 23.00	1.00	BLUE DUST		BL GREY	61.30	9.94	0.76	
	23.00 24.00	1.00	BLUE DUST		BL GREY	61.01	10.22	1.27	
	24.00 25.00	1.00	BLUE DUST		BL GREY	62.15	8.94	0.51	
40 48 48	25.00 26.00	1.00	HEMATITIC ORE		REDDISH BROWN	58.19	14.68	1.53	
	26.00 27.00	1.00	HEMATITIC ORE		REDDISH BROWN	50.66	25.74	1.02	
	27.00 28.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	37.82	44.22	1.02	
	28.00 29.00	1.00	SILICIOUS IRON ORE	1	REDDISH BROWN	38.91	42.42	1.02	The state of the s
	29.00 30.00	1.00	SILICIOUS IRON ORE		GREY BROWN	39.32	41.80	1.02	100 mg
	30.00 31.00	1.00	SILICIOUS IRON ORE		GREY BROWN	39.86	41.24	1.02	
Medi Augusti Maria	31.00 32.00	1.00	SILICIOUS IRON ORE		GREY BROWN	33.22	51.40	1.02	
	32.00 33.00	1.00	SILICIOUS IRON ORE	ĺ	GREY BROWN	37.27	45.76	0.51	
	33.00 -34.00	1.00	SILICIOUS IRON ORE		GREY BROWN	35.50	48.60	0.51	
<u>-</u>									
			!						The state of the s

ANNEXURE-IVB/40

BOREHOLE	NO:MLMR-19
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	! DEPTH (M)	! THICKNESS ! (M)	1	LITHOLOGY		COLOR DETAILS	! Fe	! SiO2	! AL203	! REMARKS	!
,	FROM ! TO	i 	i 	; 	· 	   	! ====================================	!		! 	į
	34.00 35.00	1.00	SILICIOUS IR	ON ORE		GREY BROWN	35.26	47.42	1.53		
	35.00 36.00	1.00	SILICIOUS IR	ON ORE		GREY BROWN	35.15	48.36	1.02	•	
	36.00 37.00	1.00	SILICIOUS IR	ON ORE	1	GREY BROWN	37.50	44.54	1.02		
	37.00 38.00	1.00	SILICIOUS IR	ON ORE		GREY BROWN	37.59	44.50	1.02		
	38.00 39.00	1.00	SILICIOUS IR	ON ORE		SREY BROWN	37.92	44.44	1.27		Con Bloc Strain
	39.00 40.00	1.00	SILICIOUS IR	ON ORE		SREY BROWN	37.08	45.10	1.02		
				; !	İ			•		10	

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECH INM/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST: BELLARY, KARNATAKA BOREHOLE NO:MLMR-20

LATITUDE : 1350705.342 LONGITUDE : 2837681.435 REDUCED LEVEL (M): 962.871

DATE OF COMMENCEMENT : DATE OF CLOSURE : DEPTH DRILLED (M) :

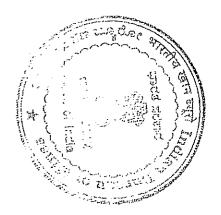
27.08.2014 27.08.2014 35.00

DEPTH (M) !	THICKNESS	! LITHOLOGY	COLOR SERVICE				
!	(M)	!	! COLOR DETAILS	! Fe !	! SiO2 !	! AL203 !	REMARKS
FROM ! TO !		!	!	!	!	!	
0.00 1.00	1.00	LATERITIC ORE	REDDISH BROWN	48.86	12.89	11.52	
1.00 2.00	1.00	SHALY ORE	REDDISH BROWN	52.22	9.93	10.72	•
2.00 3.00	1.00	SHALY ORE	REDDISH BROWN	41.44	16.07	14.56	
3.00 4.00	1.00	SHALY ORE	REDDISH BROWN	46.90	15.68	11.84	
4.00 5.00	1.00	SHALY ORE	REDDISH BROWN	49.14	14.06	11.94	
5.00 6.00	1.00	SHALY ORE	REDDISH BROWN	49.56	- 14.41	11.68	•
6.00 7.00	1.00	SHALY ORE	REDDISH BROWN	45.08	19.32	12.32	
7.00 8.00	1.00	SHALY ORE	REDDISH BROWN	37.80	31.47	12.80	
8.00 9.00	1.00	SILICIOUS IRON ORE	REDDISH BROWN	38.50	29.64	10.80	
9.00 10.00	1.00	SILICIOUS IRON ORE	REDDISH BROWN	32.06	32.47	15.84	· · · · · · · · · · · · · · · · · · ·
10.00 11.00	1.00	SILICIOUS IRON ORE	REDDISH BROWN	33.88	28.66	15.36	12900
11.00 12.00	1.00	SILICIOUS IRON ORE	REDDISH BROWN	34.58	28.44	14.72	The state of the s
12.00 13.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.84	25.06	19.31	
13.00 14.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	25.20	27.95	20.10	
14.00 15.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	25.34	26.22	22.45	
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		'					The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s
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BOREHOLE	NO:MLMR-20

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DEPTH (M)	THICKNESS (M)	LITHOLOGY		! COLOR DETAILS	! Fe	! SiO2	AL2O3	REMARKS !
FROM ! TO	! 	<u> </u>		!	! 	! 	!	!
5.00 16.00	1.00	FERRUGINOUS SHALE	į	REDDISH BROWN	28.14	25.06	19.94	
6.00 17.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	33,18	23.51	17.90	•
7.00 18.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	38.78	21.67	14.29	
8.00 19.00	1.00	SILICIOUS IRON ORE		REDDISH BROWN	38.22	23.10	13.03	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s
9.00 20.00	1.00	HEMATITIC ORE		REDDISH BROWN	43.96	16.7B	11.93	ما والمراجع المراجع ال
0.00 21.00	1.00	HEMATITIC ORE		REDDISH BROWN	45.08	15.80	11.62	
1.00 22.00	1.00	HEMATITIC ORE		REDDISH BROWN	44.52	14.16	12.59	Wales and S
2.00 23.00	1.00	HEMATITIC ORE		REDDISH BROWN	50.68	9.79	8.64	
3,00 24.00	1.00	HEMATITIC ORE		REDDISH BROWN	46.90	10.11	12.72	Reference of the second
4.00 25.00	1.00	HEMATITIC ORE	Í	DARK BROWN	38.36	36.08	3.54	
5.00 26.00	1.00	HEMATITIC ORE		DARK BROWN	46.76	22.76	5.43	
6.00 27.00	1.00	HEMATITIC ORE		DARK BROWN	53.90	10.63	5.43	
7.00 28.00	1.00	HEMATITIC ORE		GREY BROWN	52.32	24.60	0.47	المنتسبة المنتفية المنتفقة الم
8.00 29.00	1.00	вно	ŀ	GREY BROWN	38.64	43.74	0.36	LOW GRADE ORE
9.00 30.00	1.00	вно	ļ	GREY BROWN	40.14	42.20	0.36	LOW GRADE ORE
0.00 31.00	1.00	вно		GREY BROWN	34.30	50.50	0.36	
1.00 32.00	1.00	вно		GREY BROWN	33.22	52.02	0.36	
2.00 33.00	1.00	рна		GREY BROWN	30.52	47.38	0.36	
3.00 34.00	1.00	вно		GREY BROWN	30.80	53.29	0.36	

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[[6][[1][[4][[4][[4][[4][[4][[4][[4][[4][[4	BOREHOLE NO:MLMR-20		ANNEXURE TVE/413
! DEPTH (M) ! THICKNESS ! LITHOLOGY !		Fe ! SiO2 ! AL2O3 ! ! ! !	REMARKS !
34.00 35.00 1.00 BHQ	GREY BROWN 33	6.60 49.91 0.36	



# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-21

LATITUDE : 1350543.629 : 2837769.087 LONGITUDE REDUCED LEVEL (M): 966.824

DATE OF COMMENCEMENT : 30.08.2014 DATE OF CLOSURE DEPTH ORILLED (M) : 30.00

: 30.08.2014

! DEPT	H (M)	! THICKNESS	LITHOLOGY	! COLOR DETAILS	! Fe	! SiO2	! AL2O3 !	
! FROM	! TO	· · · · ·	i	<u>!</u> !	!	!	! I	REMARKS !
0.00	1.00	1.00	FERRUGINOUS SHALE	DARK BROWN	33.28	26.98	15.58	· · · · · · · · · · · · · · · · · · ·
1.00	2.00	1.00	FERRUGINOUS SHALE	DARK BROWN	36,12	16.64	21.64	The standard
2.00	3.00	1.00	FERRUGINOUS SHALE	DARK BROWN	37.66	17.46	17.72	
3.00	4.00	1.00	FERRUGINOUS SHALE	DARK BROWN	40.60	15.43		
4.00	5.00	1.00	вно	DARK BROWN	27.72	25,53	16.00 19.58	
5.00	6.00	1.00	вно	DARK BROWN	20.16	31.60	24.96	(* \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
6.00	7.00	1.00	вно	DARK BROWN	21.83	29.92	22.08	
7.00	8.00	1.00	ВНО	DARK BROWN	23.38	28.80	22.08	
8.00	9.00	1.00	вно	DARK BROWN	22.68	28.84	25.36	A STATE OF THE STA
9.00 1	0.00	1.00	вно	DARK BROWN	31.92	24.65	19.52	The second of th
10.00 1	1.00	1.00	вно	DARK BROWN	32.06	14.59	21.04	
11.00 1	2.00	1.00	ВНО	DARK BROWN	25.34	28.67	19.92	
12.00 1	3.00	1.00	ВНО	DARK BROWN	19.32	33.06	25.92	
13.00 1	4.00	1.00	вно	DARK BROWN	17.62	33,23	24.32	
14.00 1	5.00	1.00	вно	DARK BROWN	19.02	32.61	21,70	
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				BOREHOLE NO:MLMR-21				ANNEXURE-IVB/45
	! DEPTH (M) !	! THICKNESS ! (M)	i rithoroga	! COLOR DETAILS	! Fe !	! SiO2	! AL203 !	REMARKS !
	! FROM ! TO !	! 	!		!	! !	1 1	!
	15.00 16.00	1.00	вно	DARK BROWN	23.37	36.39	11.52	
	16.30 17.00	1.00	вно	DARK BROWN	52.03	9.89	3.68	•
	17.00 18.00	1.00	SHALY ORE	REDDISH BROWN	52.03	7.78	9.44	
	18.00 19.00	1.00	SHALY ORE	REDDISH BROWN	41.12	15.35	11.36	
	19.00 20.00	1.00	SHALY ORE	REDDISH BROWN	48.11	14.32	9.12	
	20.00 21.00	1.00	SHALY ORE	DARK BROWN	20.42	31.25	22.08	•
	21.00 22.00	1.00	FERRUGINOUS SHALE	DARK BROWN	15.94	35.50	27.84	
	22.00 23.00	1.00	FERRUGINOUS SHALE	DARK BROWN	18.60	32.01	22.26	·
	23.00 24.00	1.00	FERRUGINOUS SHALE	DARK BROWN	18.46	32.29	22.24	
	24.00 25.00	1.00	FERRUGINOUS SHALE	DARK BROWN	20.98	30.51	22.08	
	25.00 26.00	1.00	FERRUGINOUS SHALE	DARK BROWN	25.45	29.66	22.66	
	26.00 27.00	1.00	FERRUGINOUS SHALE	DARK BROWN	24.33	29.91	23.69	
	27.00 28.00	1.00	FERRUGINOUS SHALE	DARK BROWN	19.30	32.91	26.26	
	28.00 29.00	1.00	FERRUGINOUS SHALE	DARK BROWN	26.29	27.90	22.40	
	29.00 30.00	1.00	FERRUGINOUS SHALE	DARK BROWN	19.02	32.58	26.52	
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# DETAILED LITHOLOG AND AMALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

# BOREHOLE NO:MLMR-22

LATITUDE : 1350565.108 LONGITUDE : 2837672.271 REDUCED LEVEL (M): 952.247

DATE OF COMMENCEMENT: 30.08.2014
DATE OF CLOSURE: 30.08.2014
DEPTH DRILLED (M): 30.00

! DEPTH (M) ! !! ! FROM ! TO !	THICKNESS (M)	! LITHOLOGY	! COLOR DETAILS	! Fe !	SiO2	AL203 !	REMARKS !
0.00 1.00	1.00	SHALE	DARK BROWN	14.47	35.20	30.58	!
1.00 2.00	1.00	SHALE	DARK BROWN	12.55	36.74	30.58	
2.00 3.00	1,00	FERRUGINOUS SHALE	REDDISH BROWN	12.83	36.78	31.57	A STATE OF THE PARTY OF THE PAR
3.00 4.00	1.00	FERRUGINOUS SHALE	GREY BROWN	31.96	22.86	19.38	
4.00 5.00	1.00	FERRUGINOUS SHALE	GREY BROWN	30.21	25.60	20.76	
5.00 6.00	1.00	SHALE	GREY BROWN	13.92	35.50	31.03	ع أياً
6.00 7.00	1.00	SHALE	GREY BROWN	15.34	34.42	30.08	
7.00 8.00	1.00	SHALE	REDDISH BROWN	9.76	39.34	33.60	7.24
8.00 9.00	1.00	FERRUGINOUS SHALE	GREY BROWN	20.37	31.86	26.51	
9.00 10.00	1.00	FERRUGINOUS SHALE	GREY BROWN	24.54	29.76	23.95	
10.00 11.00	1.00	FERRUGINOUS SHALE	GREY BROWN	27.90	27.08	21.40	The second section is a second second second second second second second second second second second second se
11.00 12.00	1.00	FERRUGINOUS SHALE	GREY BROWN	16.18	34.66	29.56	Managery other states and the state of the s
12.00 13.00	1.00	FERRUGINOUS SHALE	DARK BROWN	10.18	39.06 ·	34.13	
13.00 14.00	1.00	FERRUGINOUS SHALE	DARK BROWN	12.31	37.10	32.16	
14.00 15.00	1.00	FERRUGINOUS SHALE	DARK BROWN	16.08	34.86	29.11	

## BOREHOLE NO:MLMR-22

! DEPTH (M) !	THICKNESS	! LITHOLOGY	! 00	LOR DETAILS	! E	'e	! Sic	2	! AL203	! REM	RKS	
! FROM ! TO !	(M)	!	i ! ; !		! !		! !		!	! !		!
15.00 16.00	1.00	SHALY ORE	DARK B	ROWN	40.	70	18.	49	14.10			
16.00 17.00	1.00	FERRUGINOUS SHALE	GREY B	ROWN	22.	62	29.	81	24.80			
17.00 18.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	16,	22	35.	97	24.84			
18.00 19.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	18.	11	32.	72	28.04			
19.00 20.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN -	23.	21	29.	92	24.51			
20.00 21.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	14.	47	35.	B 6	30.00	•		
21.00 22.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	20.	14	32.	26	26.23			
22.00 23.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	26.	38	28.	96	21.16			
23.00 24.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	21.	89	32.	06	22.92			
24.00 25.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	18.	15	33.	73	26.73			
25.00 26.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	22.	05	31.	58	26.51			
26.00 27.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	20.	77	30.	75	20.02			
27.00 28.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	22,	09	30.	41	24.70			
28.00 29.00	1.00	FERRUGINOUS SHALE	DARK B	ROWN	18.	15	33.	19	27.04			parameter and agreement to the parameter and the
29.00 30.00	1.00	FERRUGINOUS SHALE	REDDIS	H BROWN	15.	03	34.	50	29.60			The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s
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# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-23 ~-----

LATITUDE : 1350785.414 LONGITUDE : 2837611.928 REDUCED LEVEL (M): 956.882

DATE OF COMMENCEMENT : 30.08.2014
DATE QF CLOSURE : 30.08.2014
DEPTH DRILLED (M) : 31.00

! DEPTH (M) !	THICKNESS	I TENOLOGY					
FROM ! TO		i FITHOPOGA	! COLOR DETAILS !	! Fe !	5102	i Yr503 i	REMARKS !
0.00 1.00	1.00	SHALY ORE	GREY BROWN			! 	
1.00 2.00	1.00	SHALY ORE	GREY BROWN	54.83	9.78	7.90	رد المحاسمة المسلم و
2.00 3.00	1.00	SHALY ORE	GREY BROWN	57.62	7.64	6.36	3.
3.00 4.00	1.00	HEMATITIC ORE		59.09	7.12	5.73	
4.00 5.00		•	GREY BROWN	64.12	3.62	3.21	• • • • • • • • • • • • • • • • • • •
	1.00	HEMATITIC ORE	GREY BROWN	60.77	5.95	5.00	· · · · · · · · · · · · · · · · · · ·
5.00 6.00	1.00	HEMATITIC ORE	GREY BROWN	65.59	3,24	1.85	
6.00 7.00	1.00	HEMATITIC ORE	GREY BROWN	65.07	3,26	2.58	
7.00 8.00	1.00	HEMATITIC ORE	GREY BROWN	60.42	6.82		
8.00 9.00	1.00	HEMATITIC ORE	GREY BROWN			4.49	
9.00 10.00	1.00	HEMATITIC ORE		63.64	4.84	2.93	The second secon
0.00 11.00		HEMATITIC ORE	DARK BROWN	60.56	6.36	4.84	PIECES OF SHALE
1.00 12.00		ŧ	DARK BROWN	62.26	5.00	4.13	was a think of the state of the
		HEMATITIC ORE	DARK BROWN	62.32	5.00	4.13	
2.00 13.00	1.00	HEMATITIC ORE	DARK BROWN	66.27	2.86	1.53	
3.00 14.00	1.00	HEMATITIC ORE	DARK BROWN	64.46	4.20		
1.00 15.00	1.00	HEMATITIC ORE	DARK BROWN			2.55	
			- Living	64.27	5.18	2.04	

					BOREHOLE NO: MIMR-23					Verence Re-		
! DEPTH (M) ! !! ! FROM ! TO !	THICKNESS (M)	i 1 ! !	LITHOLOGY		! COLOR DETAILS	! Fe	si02	! λι203 : 1 !	REMARKS			
15.00 16.00	1.00	HEMATITIC	ORE		DARK BROWN	53.08		! !				
16.00 17.00	1.00	HEMATITIC	ORE		DARK BROWN	52.10	22.00	1.53		!		
17.00 18.00	1.00	HEMATITIC	ORE		DARK BROWN	53.43	23.40	1.53				
18.00 19.00	1.00	silicious	IRON ORE		GREY BROWN	37.34	21.48	1.53				
19.00 20.00	1.00	SILICIOUS	IRON ORE		GREY BROWN	40.09	44.56 41.08	1.53				
20.00 21.00	1.00	silicious	IRON ORE		GREY BROWN	33.80	50.36	1.02				
21.00 22.00	1.00	SILICIOUS	IRON ORE		GREY BROWN	26.24	61.00	1.02				
22.00 23.00	1.00	SILICIOUS :	IRON ORE		GREY BROWN	28.18	58.40	1.02				
23.00 24.00	1.00	SILICIOUS 1	IRON ORE	1	GREY BROWN	29.17	.56.40	0.76				
24.00 25.00	1.00	SILICIOUS 1	IRON ORE		GREY BROWN	37.62	44.80	1.02				
25.00 26.00	1.00	SILICIOUS I	TRON ORE		GREY BROWN	31,89	53.28	1.02				
26.00 27.00	1.00	SILICIOUS I	RON ORE		GREY BROWN	29.72	55.80	0.66				
27.00 28.00	1.00	SILICIOUS I	RON ORE		GREY BROWN	. 28.25	58.04	1.27				
28.00 29.00	1.00	SILICIOUS I	RON ORE		GREY BROWN	27.97	58.00	1.02			. Comme	
29.00 30.00	1.00	SILICIOUS I	RON ORE		GREY BROWN	32.59	51.18	1.53		. *		******
30.00 31.00	1.00	SILICIOUS I	RON ORE		GREY BROWN	31.22	54.35	1.52			( ) ( ) ( ) ( ) ( )	A STA
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DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-24

LATITUDE : 1350214.625 LONGITUDE : 2838024.166 REDUCED LEVEL (M): 930,993

DATE OF COMMENCEMENT : 31.08.2014 DATE OF CLOSURE : 31.08.2014 DEPTH DRILLED (M) : 35.00

! DEPTH (M)	! THICKNESS	LITHOLOGY				~	
! FROM ! TO	·! (M)	!	! COLOR DETAILS	! Fe !	SiO2	! AL2O3 !	REMARKS !
0.00 1.00	1.00	SHALY ORE	DARK BROWN	; ; *		! 	- and the state of
1.00 2.00	1.00	SHALY ORE	DARK BROWN	17.7B	72.92	1.47	300
2.00 3.00	1.00	FERRUGINOUS SHALE	DARK BROWN	19.04	70.52	2.07	The state of the s
3.00 4.00	1.00	FERRUGINOUS SHALE		20.72	68.15	1.43	
4.00 5.00	1.00		DARK BROWN	30.52	53.91	2.23	3 3 1
		FERRUGINOUS SHALE	DARK BROWN	23.10	64.56	1.95	
5.00 6.00	1.00	FERRUGINOUS SHALE	DARK BROWN	25.50	62.07		
6.00 7.00	1.00	FERRUGINOUS SHALE	DARK BROWN			1.13	
7.00 B.00	1.00	FERRUGINOUS SHALE		24.92	62.40	1.59	
8.00 9.00	1.00	SHALY ORE	DARK BROWN	35.70	45.94	2.70	and the second s
9.00 10.00	1.00	· i	DARK BROWN	34.26	22.35	18.03	
		FERRUGINOUS SHALE	DARK BROWN	41.82	15.13	12.88	
10.00 11.00	1.00	FERRUGINOUS SHALE	DARK BROWN	22.10	38.97		
11.00 12.00	1.00	FERRUGINOUS SHALE	DARK BROWN			20.09	
12.00 13.00	1.00	FERRUGINOUS SHALE	İ	25.87	28.44	22.15	
13.00 14.00	1.00	FERRUGINOUS SHALE	DARK BROWN	20.00	32.56	25.49	·
14.00 15.00		-	DARK BROWN	19.18	31.47	24.96	
27.00 15.00	1.00	SHALE	GREY BROWN	16.52	33.94	24.96	
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				BOREHOLE NO:MLMR-24				ANNEXURE-IVB/51	
	THICKNESS	!	LITHOLOGY	! COLOR DETAILS	! Fe !	5iO2	! AL203 !	REMARKS !	
! FROM ! TO !	(M)	!	. ;	į į	! !		! !	į	
15.00 16.00	1.00	SHALE		GREY BROWN	18.76	33.73	22.09		
16.00 17.00	1.00	SHALE		GREY BROWN	34.44	17.34	14.24		
17.00 18.00	1.00	SHALE		GREY BROWN	18.76	36.61	20.96		
18.00 19.00	1.00	SHALE	!	GREY BROWN	14.70	47.81	18.08		
19.00 20.00	1.00	SHALE	•	GREY BROWN	15.26	47.22	17.92		
20.00 21.00	1.00	вно		GREY BROWN	14.00	49.36	17.92	•	
21.00 22.00	1.00	BHQ		GREY BROWN	13.72	51.18	18.56		
22.00 23.00	1.00	BHQ		GREY BROWN	10.92	62.04	10.72		
23.00 24.00	1.00	вно		GREY BROWN	18.20	63.65	7.52		
24.00 25.00	1.00	вно		GREY BROWN	17.92	70.20	0.96		
25.00 26.00	1.00	вно		GREY BROWN	23.66	63.79	2.22		
26.00 27.00	1.00	вно/внј		GREY BROWN	24.50	62.82	1.78	OCC R BROWN	
27.00 28.00	1.00	вно/виј		GREY BROWN	21.56	66.99	1.63		
28.00 29.00	1.00	вно/внј		GREY BROWN	28.00	57.26	2.07		
29.00 30.00	1.00	вно/внј		GREY BROWN	30.24	54.83	1.63	and the second s	
30.00 31.00	1.00	вно/внј		GREY BROWN	21.14	67.14	2.52		
31.00 32.00	1.00	вно/виј		GREY BROWN	22.40	66.24	1.63		2 (
32.00 33.00	1.00	вно/внј		GREY BROWN	17.22	73.37	1.63	I(A) = I(A)	E 1/4
33.00 34.00	1.00	вно/вну		GREY BROWN	23.66	62.06	4.00		

BOREHOLE NO: MLMR-2

! DEPTH (M) ! THICKNESS ! !! (M) ! ! FROM ! TO ! !	LITHOLOGY	! ! !	COLOR DETAILS	! ! !	Fe	! SiO2 !	! AL203	! REA !	IARKS !
34.00 35.00 1.00 вно/внј	; ;	GF	REY BROWN	20).16	68.60	2.40		

DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL, IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-25

LATITUDE : 1350265.486 LONGITUDE : 2837947.248 REDUCED LEVEL (M): 930.312

DATE OF COMMENCEMENT : 31.08.2014 DATE OF CLOSURE : 31.08.2014 DEPTH DRILLED (N) : 39.00

! DEPTH (M) ! THICKNESS ! LITHOLOGY COLOR DETAILS SiO2 ! AL2O3 ! !----! (M) ! FROM ! TO ! 0.00 1.00 1.00 SHALY ORE DARK BROWN 39.34 19.65 16.85 1.00 2.00 1.00 SHALY ORE DARK BROWN 42,56 17.68 14.79 2.00 3.00 1.00 SHALY ORE YELLOWISH BROWN 36.40 23.22 19.56 LIMONITIC 3,00 4.00 1.00 SHALY ORE YELLOWISH BROWN 33.04 20.85 17.65 4.00 5.00 1.00 FERRUGINOUS SHALE YELLOWISH BROWN 29.40 22.87 19.40 5.00 6.00 1.00 FERRUGINOUS SHALE YELLOWISH BROWN 29.6B 28.87 14.31 6.00 7.00 1.00 FERRUGINOUS SHALE DARK BROWN 25.76 24.56 17.95 7.00 8.00 1.00 FERRUGINOUS SHALE DARK BROWN 17.64 31.56 23.30 8.00 9.00 1.00 FERRUGINOUS SHALE DARK BROWN 18.20 33.55 23.38 9.00 10.00 1.00 FERRUGINOUS SHALE DARK BROWN 19.88 31.82 22.90 10.00 11.00 1.00 FERRUGINOUS SHALE DARK BROWN 17.64 33.65 23.85 11.00 12.00 1.00 FERRUGINOUS SHALE DARK BROWN 18.20 33.52 23.85 12.00 13.00 1.00 FERRUGINOUS SHALE DARK BROWN 17.36 34.32 24.56 13.00 14.00 1.00 FERRUGINOUS SHALE DARK BROWN 17.64 34.84 23.85 14.00 15.00 1.00 FERRUGINOUS SHALE DARK BROWN 17.78 33.34 23.61

BOREHOLE NO:MLMR~25

DEPTH (M)	! THICKNESS ! (M)	! LITHOLOGY	! COLOR DETAILS	! Fe !	SiO2	! AL2O3 !	REMARKS !
FROM ! TO	!	!	:	! !		!	
15.00 16.00	1.00	FERRUGINOUS SHALE	DARK BROWN	19.04	30.62	23.14	
16.00 17.00	1.00	FERRUGINOUS SHALE	DARK BROWN	19.60	31.95	22.69	
7.00 18.00	1.00	FERRUGINOUS SHALE	DARK BROWN	22.68	29.76	21.25	
18.00 19.00	1.00	FERRUGINOUS SHALE	DARK BROWN	23.94	30.96	24.32	The state of the s
9.00 20.00	1.00	HENATITIC ORE	DARK BROWN	36.54	22.70	16.80	No.
20.00 21.00	1.00	HEMATITIC ORE	DARK BROWN	57.69	8.86	7.20	() () () () () () () () () ()
21.00 22.00	1.00	HENATITIC ORE	DARK BROWN	40.86	14.74	11.52	
2.00 23.00	1.00	HEMATITIC ORE	DARK BROWN	56.98	9.66	7.36	
3.00 24.00	1.00	HEMATITIC ORE	GREY BROWN	64.26	4.00	3.20	
4.00 25.00	1.00	HEMATITIC ORE	GREY BROWN	63.14	4.91	3.52	
5.00 26.00	1.00	HEMATITIC ORE	GREY BROWN	42.56	15.07	15.04	
6.00 27.00	1.00	HEMATIFIC ORE	GREY BROWN	62.09	6.54	3.84	The state of the s
7.00 28.00	1.00	FERRUGINOUS SHALE	GREY BROWN	59.71	8.06	5.44	A Santague
8.00 29.00	1.00	HENATITIC ORE	GREY BROWN	59.36	8.14	6.40	
29.00 30.00	1.00	HENATITIC ORE	GREY BROWN	63.00	6.77	2.88	
30.00 31.00	1.00	HEMATITIC ORE	GREY BROWN	52.86	23.22	0.51	
31.00 32.00	1.00	HEMATITIC ORE	GREY BROWN	57.34	12.40	4.37	
2.00 33.00	1.00	FERRUGINOUS SHALE	GREY BROWN	25.87	61.00	1.54	
3.00 34.00	1.00	FERRUGINOUS SHALE	GREY BROWN	18.60	72.10	0.77	

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	A Company of the Company								Harmon and the second		
		The second seco		B	OREHOLE NO:MLMR-25				ANNEXUI	RE-IVB/55	
-	DEPTH (M) ! THE FROM ! TO !	IICKNESS ! (M) !	! LITHOLOGY	! ! !	COLOR DETAILS	! Fe !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	SiO2	! AL203 ! ! !	REMARKS	!!!	
3	4.00 35.00	1.00	FERRUGINOUS SHALE	G	REY BROWN	18.88	71.20	1.03			·
3	5.00 36.00	1.00	FERRUGINOUS SHALE	G	REY BROWN	22.24	67.00	0.52			
3	6.00 37.00	1.00	вно	G	REY BROWN	25.03	62.46	1.03			
3	7.00 38.00	1.00	вно	G	REY BROWN	26.01	60.29	1.54			
3	8.00 39.00	1.00	вно	G	REY BROWN	25.17	62.32	1.03			
								•			

DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-26

LATITUDE : 1350342,480 LONGITUDE : 2837879,402 REDUCED LEVEL (M): 927,142

DATE OF COMMENCEMENT: 31.08.2014
DATE OF CLOSURE: 01.09.2014
DEPTH DRILLED (M): 30.00

DEPTH (M) ! THICKNESS ! COLOR DETAILS ! FROM ! TO ! 0.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 42.22 20.55 14.04 1.00 2.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 40.56 21,60 13.37 2.00 3.00 1.00 FERRUGINOUS SHALE REDDISH BROWN 21.11 32.20 24.48 3.00 4.00 1.00 FERRUGINOUS SHALE REDDISH BROWN 15.73 34.88 28.83 4.00 5.00 1.00 FERRUGINOUS SHALE DARK BROWN 24.27 29.44 23.55 5.00 6.00 1.00 FERRUGINOUS SHALE DARK BROWN 22.87 29,24 24.20 6.00 7.00 1.00 FERRUGINOUS SHALE DARK BROWN 19.51 31.56 25.24 7.00 8.00 1.00 SHALE DARK BROWN 9.44 39.58 31.87 8.00 9.00 1.00 SHALE DARK BROWN 9.16 39.28 31.70 9.00 10.00 1.00 SHALE LIGHT BROWN 10.63 35.74 30.81 10.00 11.00 1.00 SHALE LIGHT BROWN 10.35 37.60 31.12 11.00 12.00 1.00 SHALE LIGHT BROWN 15.10 33.62 29.29 12.00 13.00 1.00 SHALE LIGHT BROWN 12.87 35.32 29.53 13.00 14.00 1.00 SHALE LIGHT BROWN 20.84 31.96 25.69 14.00 15.00 1.00 SHALE LIGHT BROWN 19.44 33.06 25.71

					I							
					BOREHOLE NO:MLMR-26					ANNEXURE-IV	3/57	
	! DEPTH (M) ! !! ! FROM ! TO !	(M)	! !	LITHOLOGY	! COLOR DETAILS !	! Fe !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	si02	! AL2O3 ! ! !	REMAR	 KKS !		
	15.00 16.00	1.00	SHALE		LIGHT BROWN	17.34	34.22	26.75				-
	16.00 17.00	1.00	SHALE		LIGHT BROWN	17.76	34.94	25.23				
	17.00 18.00	1.00	SHALE		LIGHT BROWN	14.64	38.11	25.98				
	18.00 19.00	1.00	SHALE		LIGHT BROWN	18.88	34.76	25.49				
	19.00 20.00	1.00	SHALE		LIGHT BROWN	9.37	41.46	29.32				
,	20.00 21.00	1.00	SHALE		LIGHT BROWN	B.94	42.16	30.09	•			
	21.00 22.00	1.00	SHALE		LIGHT BROWN	11.15	40.24	28.05				
	22.00 23.00	1.00	SHALE		LIGHT BROWN	13.80	39.20	26.26				
	23.00 24.00	1.00	SHALE		LIGHT BROWN	14.09	38.40	26.77				
	24.00 25.00	1.00	SHALE		LIGHT BROWN	13.40	38.50	27.54				
	25.00 26.00	1.00	SHALE		LIGHT BROWN	11.16	40.30	28.81				
	26.00 27.00	1.00	SHALE		LIGHT BROWN	13.94	39.20	26.26				
	27.00 28.00	1.00	SHALE		LIGHT BROWN	15.34	30.26	24.73				
	28.00 29.00	1.00	SHALE		LIGHT BROWN	16.31	37.90	24.73				
	29.00 30.00	1.00	SHALE		LIGHT BROWN	16.75	38.92	23.46				
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DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING, COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-27

LATITUDE : 1350397.243 LONGITUDE : 2837797.433 REDUCED LEVEL (M): 926.271

DATE OF CONMENCEMENT: 01.09.2014
DATE OF CLOSURE: 01.09.2014
DEPTH DRILLED (M): 20.00

! DEPTH (M)	! THICKNESS ! (M)	LITHOLOGY	: COLOR DETAILS	! Fe	·	SiO2	! AL203 !	REMARKS	
! FROM ! TO	1	<u> </u>		į į	!		! ! !		; !
0.00 1.00	1.00	SILICIOUS IRON ORE	DARK BROWN	33.35		26.42	15.08	RED CCHRE	·
1.00 2.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.64		33.04	22.85		
2.00 3.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.67		32.70	23.08	•	and the second second second
3.00 4.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.95		32.54	22.57		199. D. B. B. B. B. B. B. B. B. B. B. B. B. B.
4.00 5.00	1.00	FERRUGINOUS SHALE	DARK BROWN	20.44		32.38	22.01		
5.00 6.00	1.00	FERRUGINOUS SHALE	DARK BROWN	20.80		32.94	22.26		
6.00 7.00	1.00	SHALE	DARK BROWN	18.18		36.28	22.23		· , (} \
7.00 8.00	1.00	SHALE	DARK BROWN	17.70		38.22	21.25	.	
8.00 9.00	1.00	SHALE	DARK BROWN	17.42		40.83	20.42	*	
9.00 10.00	1.00	SHALE	DARK BROWN	15.97		46.11	19.13	**	
10.00 11.00	1.00	SHALE	DARK BROWN	16.37		45.03	19.72	•	
11.00 12.00	1.00	SHALE	DARK BROWN	16.38		44.72	19.60		
12.00 13.00	1.00	SHALE	DARK BROWN	15.84		45.02	20.12		
13.00 14.00	1.00	SHALE	DARK BROWN	16.40		46.01	19.38		
14.00 15.00	1.00	SHALE	DARK BROWN	15.97		45.92	19.08		
			1						

ROKEHOLE	NO:MLMR-2

! DEPTH (M) ! T !	HICKNESS (M)	<u>t</u> 	LITHOLOGY	 ! !	COLOR DETAILS	! Fe	! !	SiO2	AL203	REMARKS	
15.00 16.00	1.00	SHALE		DAR	K BROWN	16.30		45.38	18.95	! 	
16.00 17.00	1.00	SHALE		GRE	Y BROWN	14.80		47.61	18.92	LIMONITE	
17.00 18.00	1.00	SHALE		GRE	Y BROWN	14.35		47.60	19.70	TIMOMIT	
18.00 19.00 19.00 20.00	1.00	SHALE		GRE	Y BROWN	13.84		47.66	20.32		
19.00 20.00	1.00	SHALE	i	GRE	Y BROWN	13.46		47.10	19.86	•	



DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-28

LATITUDE : 1350468.052 LONGITUDE : 2837708.370 REDUCED LEVEL (M): 924.668

DATE OF COMMENCEMENT: 01.09.2014
DATE OF CLOSURE : 01.09.2014
DEPTH DRILLED (M) : 20.00

! DEPTH (M)	! THICKNESS ! (M)	LITHOLOGY	! COLOR DETAILS	! Fe !	 SiO2	! AL203 !	4
! FROM ! TO	1	Í		! !		i MIZOS I	REMARKS !
0.00 1.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN			! ! 	19.80
1.00 2.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	18.70	34.93	26.04	
2.00 3.00	1.00	FERRUGINOUS SHALE		14.75	36.87	28.39	
3.00 4.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	32.88	23.31	17.20	
4.00 5.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	17.13	34.77	26.39	+
5.00 6.00			REDDISH BROWN	21.69	31.93	23.29	}
	1.00	SHALE	DARK BROWN	17.71	33.75	26.10	
6.00 7.00	1.00	SHALE	DARK BROWN	18.68	33.20	25.07	
7.00 8.00	1.00	SHALE	DARK BROWN	17.59	33,91	25.38	
8.00 9.00	1.00	SHALE	DARK BROWN	16.80	34.90	26.24	The state of the s
9.00 10.00	1.00	SHALE	DARK BROWN	20.69	32.94		
10.00 11.00	1.00	SHALE	DARK BROWN	21.47		24.64	
11.00 12.00	.1.00	SHALE	DARK BROWN		33.01	24.68	
12.00 13.00	1.00	SHALE	DARK BROWN	17.34	35.97	26.47	
13.00 14.00	1.00	SHALE		16.21	37.76	25.96	
14.00 15.00		SHALE	DARK BROWN	16.02	39.13	24.66	
		,	DARK BROWN	15.14	45.55	22.34	
		~		_			

g												40282 N. 24682 S. 25884	
						BOREHOLE NO:MLMR-28				AMNE	DIE W		Constant (III) Constant
į.	!! ! FROM ! TO !	THICKNESS (M)	!!!!	LITHOLOGY	~	! COLOR DETAILS	! Fe' 1!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	SiO2	! AL203 ! ! !	REMARKS	!		
	15.00 16.00	1.00	SHALE			DARK BROWN	15.43	44.20	22.93		 		
	16.00 17.00	1.00	SHALE			DARK BROWN	15.34	41.25	23.81		:		
	17.00 18.00	1.00	SHALE			DARK BROWN	15.47	47.91	20.88				
	18.00 19.00	1.00	SHALE			DARK BROWN	16.26	46.57	19.79				
	19.00 20.00	1.00	SHALE			DARK BROWN	15.82	47.52	20.13				
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DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-29

LATITUDE LATITUDE : 1350711.277 LONGITUDE : 2837548.331 REDUCED LEVEL (M): 953.541

DATE OF COMMENCEMENT : 01.09.2014
DATE OF CLOSURE : 01.09.2014

! DEPTH (M)	! THICKNES	S ! LITHOLOGY				DEPTH	OF CLOSURE : 01.09.2014 ORILLED (M) : 20.00
! FROM ! TO	·! (M) !	i i	COLOR DETAILS	! Fe	! SiO2	! AL203 !	REMARKS
0.00 1.00	1.00	FERRUGINOUS SHALE		! 	!		į
1.00 2.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	19.18	32.29	24.66	!
2.00 3.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	17.55	33.26	25.36	17.00 6.00
3.00 4.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	17.83	32.53	24.88	
4.00 5.00	1.00		REDDISH BROWN	19.25	31,96	_	
5.00 6.00		FERRUGINOUS SHALE	REDDISH BROWN	20.57		24.13	
6.00 7.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	20.60	31.36	23.94	· · · · · · · · · · · · · · · · · · ·
	1.00	FERRUGINOUS SHALE	REDDISH BROWN		31.74	24.36	
7.00 8.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	22.65	30.16	22.33	
8.00 9.00	1.00	FERRUGINOUS SHALE	1	14.74	34.20	26.49	
9.00 10.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	21.21	31.79	24.05	
10.00 11.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	21.64	31.71	24.17	
11.00 12.00	1.00	FERRUGINOUS SHALE	REDDISH BROWN	24.96	29.55	21.29	The second
12.00 13.00	1.00	SHALE	DARK BROWN	25.57	29.77	21.11	
3.00 14.00	1.00		DARK BROWN	17.62	33.19		
4.00 15.00		SHALE	DARK BROWN	17.68		25.35	
	1.00	SHALE	DARK BROWN		33.00	25.10	
			·	10.01	32.54	24.47	

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			a de la companya de l			TP AND TO SEE SEE SEE SEE SEE SEE SEE SEE SEE SE	NO: MLMR-29					= ANNE	XURE-TVBV63	and the second s	
	DEPTH	 THICKNESS (M)		LITHOLO	GY		R DETAILS	Fe	! SiO2	! AL203 !	REN	IARKS	And Annual and Annual		
<u> </u>	15.00 16	1.00	SHALE			DARK BRO		22.66	30.26	22.52		*	! 		
	16.00 17 17.00 18	1.00	SHALE			DARK BROW		16.10 19.26	33.68 31.76	25.73 23.43					
	18.00 19 19.00 20	1.00	SHALE			DARK BROW		20.54 21.66	31.57 30.78	23.36					
-		 						21.00	50.78	22.74	•				
						1									



DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-30

LATITUDE : 1350926.333 LONGITUDE : 2837207.330 REDUCED LEVEL (M): 915.912

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DATE OF COMMENCEMENT : 01.09.2014
DATE OF CLOSURE : 01.09.2014
DEPTH DRILLED (M) : 25.00

DEPTH (M) ! THICKNESS ! !----! ! FROM ! TO ! REMARKS 0.00 1.00 1.00 DARK BROWN 13.25 35.40 1.00 2,00 31.09 1.00 SHALE DARK BROWN 13.73 2.00 3.00 34.90 31.00 1.00 SHALE DARK BROWN 14.64 3.00 4.00 34.26 1.00 30.50 SHALE DARK BROWN 16.05 48.58 4.00 5.00 17.21 1.00 SHALE DARK BROWN 12.98 35.18 5.00 6.00 1.00 32.00 SHALE LIGHT BROWN 13.78 6.00 7.00 34.51 1.00 26.98 SHALE LIGHT BROWN 15.52 7.00 8.00 34.26 1.00 26.15 SHALE LIGHT BROWN 15.63 34.32 0.00 9.00 26.04 1.00 SHALE LIGHT BROWN 16,93 9.00 10.00 33.18 25.31 1.00 SHALE LIGHT BROWN 16.75 10.00 11.00 33.22 25.35 1.00 SHALE LIGHT BROWN 17.93 32.89 11.00 12.00 24.96 1.00 SHALE LIGHT BROWN 18.03 12.00 13.00 32.77 24.89 1.00 SHALE LIGHT BROWN 16.77 13.00 14.00 33.26 24.53 1.00 SHALE LIGHT BROWN 14.78 34.52 14.00 15.00 29.29 1.00 SHALE DARK BROWN 15.89 37.05 26.98

DEPTH (M) ! THICKNESS	! LITHOLOGY	! COLOR DETAILS !	Fe!	SiO2	! AL2O3 !	REMARKS !
ROM ! TO !	į	!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	!		!!!	! !
.00 16.00 1.00	SHALE	DARK BROWN	14.69	37.60	27.97	
1.00 17.00 1.00	SHALE	DARK BROWN	16.40	41.12	19.96	
.00 18.00 1.00	SHALE	DARK BROWN	16.84	43.40	18.42	
.00 19.00 1.00	SHALE	DARK BROWN	16.45	47.78	17.60	
.00 20.00 1.00	SHALE/OCHRE	REDDISH BROWN	15.59	49.60	16.72	
.00 21.00 1.00	SHALE/OCHRE	REDDISH BROWN	15.66	49.61	16.55	
.00 22.00 1.00	SHALE/OCHRE	REDDISH BROWN	13.82	50.64	20.14	
.00 23.00 1.00	SHALE/OCHRE	REDDISH BROWN	13.96	50.02	19.30	
.00 24.00 1.00	SHALE/OCHRE	REDDISH BROWN	15.73	46.04	20.93	
.00 25.00 1.00	SHALE/OCHRE	REDDISH BROWN	15.36	45.96	20.40	



DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-31

LATITUDE : 1350089.986 LONGITUDE : 2838184.856 REDUCED LEVEL (M): 940.973

DATE OF COMMENCEMENT: 01.09.2014
DATE OF CLOSURE: 01.09.2014
DEPTH DRILLED (M): 30.00

! DEPTH (M)	! THICKNESS		j				30.00
! FROM ! TO		i I FILHOTOGA	! COLOR DETAILS	! Fe	! sio2	i AL203 i	REMARKS !
0.00 1.00	1.00	FERRUGINOUS SHALE	DARK BROWN	! 	! 	! 	; !
1.00 2.00	1.00	FERRUGINOUS SHALE		20.86	26.47	25.28	
2.00 3.00	1.00	SILICIOUS IRON ORE	DARK BROWN	21.28	26.47	25.60	
3.00 4.00	1.00	SILICIOUS IRON ORE	DARK BROWN	31.08	16.29	22.08	Control of the Contro
4.00 5.00	1.00		DARK BROWN	31.92	21.00	19.52	Con Marie Con Control
5.00 6.00		FERRUGINOUS SHALE	DARK BROWN	20.72	28.94	25.12	
	1.00	FERRUGINOUS SHALE	DARK BROWN	22.96	27.90	25.12	
6.00 7.00	1.00	FERRUGINOUS SHALE	DARK BROWN	25.76	27,40	22.40	
7.00 8.00	1.00	SHALY ORE	DARK BROWN	43.38	13.14		
0.00 9.00	1.00	SHALY ORE	DARK BROWN	41.68		13.65	
9.00 10.00	1.00	SHALE	DARK BROWN		13.98	14.16	
10.00 11.00	1.00	SHALE	DARK BROWN	14.27	43.49	23.18	
11.00 12.00	1.00	SHALE		14.13	44.14	22.40	
12.00 13.00	1.00	SHALE	DARK BROWN	13.15	46.18	21.89	The state of the s
13.00 14.00	1.00	SHALE	DARK BROWN	13.85	45.98	22.15	
14.00 15.00	1.00		DARK BROWN	21.54	35.30	19.57	
	1.00	SHALE	DARK BROWN	16.50	37.25	24.97	

BOREHOLE NO:NLMR-31

! DEPTH (M) !	THICKNESS (M)		1	COLOR DETAILS	2	Fe	!	Sì02	! AL203	! REMARKS	!	
! FROM ! TO !	(19)	: !	!		!!		!		! !	!	!	
15.00 16.00	1.00	SHALE	D.	RK BROWN		13.43		46.24	22.15			
16.00 17.00	1.00	SHALE	D	RK BROWN		16.92		38.93	22.15			
17.00 18.00	1.00	SHALE	D <i>I</i>	RK BROWN		15.80		41.72	23.69			
18.00 19.00	1.00	SHALE	D.F	RK BROWN		15.66		41.19	23.95			
19.00 20.00	1.00	SHALE	DF	RK BROWN		15.38		49.82	25.92			
20.00 21.00	1.00	SHALE	DA	RK BROWN		12.59		39.72	22.08	•		
21.00 22.00	1.00	SHALE	D#	RK BROWN		18.74		48.15	22.40			
22.00 23.00	1.00	SHALE	DA	RK BROWN		13.15		47.94	22.40			
23.00 24.00	1.00	SHALE	DA	RK BROWN		12.59		49.31	22.40			
24.00 25.00	1.00	SHALE	DA	RK BROWN		13.29		49.29	20.80			
25.00 26.00	1.00	SHALE	DA	RK BROWN		16.08		49.27	21.44			
26.00 27.00	1.00	SHALE	DA	RK BROWN		12.03		49.91	21.44			
27.00 28.00	1.00	SHALE	DA	RK BROWN		12.59		37.88	25.92			
28.00 29.00	1.00	SHALE	DA	RK BROWN		15.94		50.78	22.08			
29.00 30.00	1.00	SHALE	DA	RK BROWN		12.73		50.77	20.60			
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DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-32

: 1350163.743 : 2838114.173

LONGITUDE : 2838114.1 REDUCED LEVEL (M): 942.505

LATITUDE

DATE OF COMMENCEMENT: 01.09.2014
DATE OF CLOSURE: 01.09.2014
DEPTH DRILLED (M): 30.00

DEPTH (M) !	THICKNESS (M)	! LITHOLOGY	! COLOR DETAILS	! Fe !	SiO2	! AL203 !	REMARKS	;
FROM ! TO !		i		;		1 1		! !
0.00 1.00	1.00	FERRUGINOUS SHALE	DARK BROWN	18.74	28.23	24.64		
1.00 2.00	1.00	FERRUGINOUS SHALE	DARK BROWN	20.72	28.44	26.70		
2.00 3.00	1.00	FERRUGINOUS SHALE	DARK BROWN	21.42	28.41	26.39		one in the State of S
3.00 4.00	1.00	FERRUGINOUS SHALE	DARK BROWN	29.96	16.95	24.96		
4.00 5.00	1.00	FERRUGINOUS SHALE	DARK BROWN	29.26	18.43	24.65		
5.00 6.00	1.00	FERRUGINOUS SHALE	DARK BROWN	23.80	32.24	21.80	• .	
6.00 7.00	1.00	HEMATITIC ORE	DARK BROWN	45.64	12.32	12.32	•	
7.00 8.00	1.00	HEMATITIC ORE	DARK BROWN	40.80	15.46	14.22	÷	
8.00 9.00	1.00	FERRUGINOUS SHALE	DARK BROWN	22.82	34.32	20.70	•	•
9.00 10.00	1.00	FERRUGINOUS SHALE	DARK BROWN	14.28	46.36	21.65	· <u>.</u>	•
10.00 11.00	1.00	FERRUGINOUS SHALE	DARK BROWN	14.14	43.59	23.86	· · · · · · · · · · · · · · · · · · ·	
11.00 12.00	1.00	SHALE	LIGHT BROWN	13.72	47.23	22.91	```	ر مسر من من
12.00 13.00	1.00	SHALE	LIGHT BROWN	20.58	28.73	26.07		Service Control of th
13.00 14.00	1.00	SHALE	LIGHT BROWN	17.92	45.73	15.58		
14.00 15.00	1.00	SHALE	LIGHT BROWN	16.66	42.36	18.65		

BOREHOLE NO:MLMR-32

! DEPTH (M)		i LITHOLOGY	! ! COLOR DETAILS	! Fe	! SiO2	! AL203 !	REMARKS
! FROM ! TO		i		! !	!	!!!!	į
15.00 16.00	1.00	SHALE	LIGHT BROWN	15.82	37.06	23.14	
16.00 17.00	1.00	SHALE	LIGHT BROWN	15.26	38.30	23.85	
17.00 18.00	1.00	SHALE	LIGHT BROWN	16.80	39.20	20.80	
18.00 19.00	1.00	SHALE	LIGHT BROWN	15.12	41.11	21.96	
19.00 20.00	1.00	SHALE	LIGHT BROWN	15.26	40.93	21.96	
20.00 21.00	1.00	SHALE	LIGHT BROWN	14.14	41.13	22.43	
21.00 22.00	1.00	SHALE	LIGHT BROWN	13.02	48.21	19.36	
22.00 23.00	1.00	SHALE	LIGHT BROWN	12.88	48.95	17.24	
23.00 24.00	1.00	SHALE	LIGHT BROWN	13.16	49.11	18.42	
24.00 25.00	1.00	SHALE	LIGHT BROWN	13.02	49.23	18.89	
25.00 26.00	1.00	SHALE	LIGHT BROWN	13.30	49.15	20.81	,
26.00 27.00	1.00	SHALE	LIGHT BROWN	21.14	30.45	24,79	
27.00 20.00	1.00	SHALE	LIGHT BROWN	12.88	49.77	20.01	
28.00 29.00	1.00	SHALE	LIGHT BROWN	12.74	49.18	21.42	A STATE OF THE STA
29.00 30.00	1.00	SHALE	LIGHT BROWN	13.02	49.89	20.50	
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DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-33

LATITUDE : 1349424.631 LONGITUDE : 2838785.805 REDUCED LEVEL (M): 925.886 DATE OF COMMENCEMENT: 02.09.2014
DATE OF CLOSURE: 02.09.2014
DEPTH DRILLED (M): 35.00

! DEPTH (M) ! !! ! FROM ! TO !	THICKNESS (M)	! !	LITHOLOGY	!	COLOR DETAILS	Fe	! !	SiO2	! AL2O3	! REMARKS !
0.00 1.00	1.00	HEMATITIC ORE		GREY	' BROWN	52.35		 11.70	8.67	
1.00 2.00	1.00	HEMATITIC ORE		GREY	BROWN	62.73		4.47	3.62	307 das
2.00 3.00	1.00	HEMATITIC ORE		GREY	BROWN	67.13		1.10	1.53	
3.00 4.00	1.00	HEMATITIC ORE		GREY	BROWN	65.59		2.22	2.19	
4.00 5.00	1.00	HEMATITIC ORE		GREY	BROWN	64.68		2.79	2.55	The state of the s
5.00 6.00	1.00	HEMATITIC ORE		GREY	BROWN	66.94		1.09	1.78	
6.00 7.00	1.00	HEMATITIC ORE		GREY	BROWN	64.93		1.41	2.70	· · · · · · · · · · · · · · · · · · ·
7.00 0.00	1.00	HEMATITIC ORE		GREY	BROWN	65.18		2.15	2.45	
8.00 9.00	1.00	HEMATITIC ORE		GREY	BROWN	65.99		1.86	2.45	A State of the Sta
9.00 10.00	1.00	HEMATITIC ORE		GREY	BROWN	65.63		1.63	2.70	
10.00 11.00	1.00	HEMATITIC ORE		GREY	BROWN	64.45		2.63	3.62	Add The State of t
11.00 12.00	1.00	HEMATITIC ORE		GREY	BROWN	65.29		1.61	3.31	
12.00 13.00	1.00	HEMATITIC ORE		GREY	BROWN	66.43		1.78	2.04	
13.00 14.00	1.00	HEMATITIC ORE		GREY	BROWN	66.15		2.25	2.04	
14.00 15.00	1.00	HEMATITIC ORE	:	GREY	BROWN	65.06		2.28	1.78	

BOREHOLE NO:MLMR-33

! DEPTH (M) !	THICKNESS (M)	! LITHOLOGY	! COLOR DETAILS	! Fe	! 5102	! AL203 !	REMARKS
FROM ! TO !	(14)	i		! !	!	!!!!!!	
15.00 16.00	1.00	HEMATITIC ORS	REDDISH BROWN	64.19	2.70	3.72	
16.00 17.00	1.00	HEMATITIC ORE	REDDISH BROWN	66.43	1.78	2.04	
17.00 18.00	1.00	HEMATITIC ORE	REDDISH BROWN	65.80	2.30	2.29	
18.00 19.00	1.00	HEMATITIC ORE	REDDISH BROWN	64.06	2.38	3.06	
19.00 20.00	1.00	HEMATITIC ORE	REDDISH BROWN	66.36	2.08	2.00	
20.00 21.00	1.00	BLUE DUST	BL GREY	65.73	1.34	2.29	
21.00 22.00	1.00	BLUE DUST	BL GREY	67.27	1.08	1.53	
22.00 23.00	1.00	BLUE DUST	BL GREY	66.99	1.20	1.53	
23.00 24.00	1.00	BLUE DUST	BL GREY	66.71	2.06	1.69	
24.00 25.00	1.00	BLUE DUST	BL GREY	65.87	1.76	1.53	and a state of the
25.00 26.00	1.00	FERRUGINOUS SHALE	GREY BROWN	19.44	32.54	27.54	The state of the s
26.00 27.00	1.00	FERRUGINOUS SHALE	GREY BROWN	14.40	35.24	29.82	
27.00 28.00	1.00	SHALY ORE	GREY BROWN	45.59	15.60	13.77	
28.00 29.00	1.00	SHALY ORE	GREY BROWN	65.45	2.20	2.80	
29.00 30.00	1.00	SHALY ORE	GREY BROWN	65.00	3.34	2.45	
30.00 31.00	1.00	SILICIOUS IRON ORE	GREY BROWN	34.83	46.80	2.55	
31.00 32.00	1.00	SILICIOUS IRON ORE	GREY BROWN	37.27	43.26	2.55	
32.00 33.00	1.00	SILICIOUS IRON ORE	GREY BROWN	32,45	51.00	2.04	The state of the s
33.00 34.00	1.00	SILICIOUS IRON ORE	GREY BROWN	33.14	50.50	1.53	
			1				The second secon

BOREHOLE NO:MLMR-33

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| ! DEPTH (M) ! THICKNE<br>!! (M)<br>! FROM ! TO ! | SS ! LITHOLOGY ! ! | <br>! COLOR DETAILS ! | !<br>!<br>! | Fe    | ! | SiO2  | !<br>!<br>! | AL203 ! | REMARKS | !<br>!<br>! |
|--------------------------------------------------|--------------------|-----------------------|-------------|-------|---|-------|-------------|---------|---------|-------------|
| 34.00 35.00 1.00                                 | SILICIOUS IRON ORE | GREY BROWN            |             | 32.66 |   | 50.46 |             | 2.29    |         |             |



DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

# BOREHOLE NO:MLMR-34

LATITUDE : 1349446.367 LONGITUDE : 2838668.757 REDUCED LEVEL (M): 915.278

DATE OF COMMENCEMENT: 02.09.2014
DATE OF CLOSURE: 03.09.2014
DEPTH DRILLED (M): 30.00

|            |                      |               | ļ |                 |       |            |       |         |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|----------------------|---------------|---|-----------------|-------|------------|-------|---------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | ! THICKNESS<br>! (M) | ! LITHOLOGY   |   | ! COLOR DETAILS | ! Fe  | <br>!<br>! | sio2  | ! AL203 | <br>! | REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FROM ! TO  | !                    | [             |   | <u> </u>        | į     | !          |       | 1       | į     | ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 0.00 1.00  | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 54,27 |            | 10.64 | 8.47    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 2.00  | 1.00                 | HEMATITIC ORE |   | REDDISH BROWN   | 39.59 |            | 19.35 | 17.07   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 3.00  | 1.00                 | HEMATITIC ORE |   | REDDISH BROWN   | 60.91 |            | 6.51  | 4.89    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 4.00  | 1.00                 | HEMATITIC ORE |   | REDDISH BROWN   | 54.10 |            | 3.72  | 3.22    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00  | 1.00                 | HEMATITIC ORE |   | REDDISH BROWN   | 54.09 |            | 10.24 | 8.75    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 6.00  | 1.00                 | HEMATITIC ORE |   | REDDISH BROWN   | 47.39 |            | 15.20 | 12.14   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 7.00  | 1.00                 | HEMATITIC ORE |   | REDDISH BROWN   | 56.01 |            | 8.78  | 7.65    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00  | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 54.87 |            | 10.57 | 8.04    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 9.00  | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 56.57 |            | 10.09 | 6.27    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 10.00 | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 53.96 |            | 11.00 | 8.06    |       | The second secon |
| 0.00 11.00 | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 51.05 |            | 13.60 | 9.47    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 12.00 | 1.00                 | HEMATITIC ORE | ĺ | GREY BROWN      | 53.37 |            | 12.24 | 0.21    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 13.00 | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 54.31 |            | 11.34 | 8.07    |       | 11 / 11 / 11 / 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3.00 14.00 | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 61.35 |            | 8.00  | 3.12    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 15.00 | 1.00                 | HEMATITIC ORE |   | GREY BROWN      | 59.54 |            | 10.80 | 2.85    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|            | ,                    |               |   |                 |       |            |       |         |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|            |                      |               |   |                 |       |            |       |         |       | The second secon |

#### BOREHOLE NO:MLMR-34

| !!            | THICKNESS<br>(M) | ! LITHOLOGY        | ! COLOR DETAILS | !     | ?e !  | SiO2  | ! AL2O3<br>! | ! REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------|------------------|--------------------|-----------------|-------|-------|-------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ! FROM ! TO ! |                  |                    | !               | !<br> | !<br> | !     | ļ            | !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 15.00 16.00   | 1.00             | SILICIOUS IRON ORE | GREY BROWN      | 43    | 52    | 33.57 | 3.06         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 16.00 17.00   | 1.00             | SILICIOUS IRON ORE | GREY BROWN      | 36    | 92    | 43.00 | 3.06         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 17.00 18.00   | 1.00             | SILICIOUS IRON ORE | GREY BROWN      | 40    | 89    | 36.65 | 3.31         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 18.00 19.00   | 1.00             | SILICIOUS IRON ORE | GREY BROWN      | 39    | 65    | 40.33 | 2.04         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 19.00 20.00   | 1.00             | SILICIOUS IRON ORE | GREY BROWN      | 39.   | 21    | 40.24 | 2.55         | See Andrea                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The state of the s |
| 20.00 21.00   | 1.00             | SILICIOUS IRON ORE | GREY BROWN      | 38    | 32    | 41.19 | 3.06         | وروسية والمتعارض |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 21.00 22.00   | 1.00             | FERRUGINOUS SHALE  | REDDISH BROWN   | 30.   | 77    | 52.80 | 2.29         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 22.00 23.00   | 1.00             | FERRUGINOUS SHALE  | REDDISH BROWN   | 31.   | 54    | 51.37 | 2.55         | # 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 1/9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 23.00 24.00   | 1.00             | FERRUGINOUS SHALE  | REDDISH BROWN   | 28    | 67    | 55.30 | 2.80         | Mac S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 24.00 25.00   | 1.00             | FERRUGINOUS SHALE  | REDDISH BROWN   | 34.   | 04    | 48.00 | 2.54         | <b>₹</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 25.00 26.00   | 1.00             | FERRUGINOUS SHALE  | REDDISH BROWN   | 32.   | 80    | 48.37 | 3.62         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | in ≅yl¢y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 26.00 27.00   | 1.00             | SHALE              | REDDISH BROWN   | 18.   | 99    | 68.80 | 2.55         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 27.00 28.00   | 1.00             | SHALE              | REDDISH BROWN   | 26.   | 00    | 60.00 | 2.04         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | The state of the s |
| 28.00 29.00   | 1.00             | SHALE              | REDDISH BROWN   | 23.   | 73    | 62.73 | 2.55         | ·-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | معلى المرابع المرابع المرابع المرابع المرابع المرابع المرابع المرابع المرابع المرابع المرابع المرابع المرابع ا                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 29.00 30.00   | 1.00             | SHALE              | REDDISH BROWN   | 23.   | 99    | 62.44 | 2.54         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML NO. 2487), DIST: BELLARY, KARNATAKA

# BOREHOLE NO:MLMR-35

LATITUDE : 1349590.956 LONGITUDE : 2838656.957 REDUCED LEVEL (M): 921.906

DATE OF COMMENCEMENT: 04.09.2014
DATE OF CLOSURE: 04.09.2014
DEPTH DRILLED (M) 30.00

|          | REDU | CED LEVEL (N              | 1): 921.906        |                   |             |        | DE             | EPTH DRILLED (M) | : 30.00                                                                                                       | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH (  |      | ! THICKNESS<br>! (M)<br>! | ! LITHOLOGY !      | ! COLOR DETAILS ! | ! Fe<br>!   | ! SiO2 | 2 ! AL203<br>! | ! REMARKS        | !<br>!                                                                                                        |
| 0.00 1.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 21.42       | 67.0   | 06 1.99        | <br>9            |                                                                                                               |
| 1.00 2.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 31.64       | 53.2   | 29 0.15        | 5                |                                                                                                               |
| 2.00 3.  | .00  | 1.00                      | HEMATITIC ORE      | DARK BROWN        | 56.00       | 15.6   | 38 3.37        | 7                |                                                                                                               |
| 3.00 4.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 36.26       | 46.]   | 1.53           | 3                |                                                                                                               |
| 1.00 5.  | . 00 | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 28.98       | 55.8   | 30 2.14        | 1                |                                                                                                               |
| 5.00 6.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 32.48       | 51.6   | 39 1.28        | 3                |                                                                                                               |
| 5.00 7.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 31.22       | 53.7   | 76 1.25        | 5                |                                                                                                               |
| 7.00 8.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 35.84       | 46.0   | 08 2.26        | 5                |                                                                                                               |
| 1.00 9.  | .00  | 1.00                      | FERRUGINOUS SHALE  | DARK BROWN        | 20.16       | 69.1   | .3 0.96        | ,<br>;           |                                                                                                               |
| .00 10.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 34.16       | 49.0   | 1.68           | 1                | ماه الماه | .00 11.  | .00  | 1.00                      | SILICIOUS IRON ORE | DARK BROWN        | 24.36       | 63.4   | 1.35           | i                |                                                                                                               |
| 00 12.   | .00  | 1.00                      | FERRUGINOUS SHALE  | REDDISH BROWN     | 24.08       | 63.5   | 1.68           | ) į              |                                                                                                               |
| 2.00 13. | .00  | 1.00                      | FERRUGINOUS SHALE  | REDDISH BROWN     | 15.40       | 68.9   | 0.64           | $f_{i}^{p}$      | \$195 B                                                                                                       |
| 3.00 14. | 00   | 1.00                      | FERRUGINOUS SHALE  | REDDISH BROWN     | 26.46       | 61.2   | 2 0.79         |                  |                                                                                                               |
| 1.00 15. | 00   | 1.00                      | FERRUGINOUS SHALE  | REDDISH BROWN     | 27.58       | 57.7   | 0 2.56         |                  |                                                                                                               |
|          |      |                           |                    |                   | *********** |        |                |                  |                                                                                                               |

#### BOREHOLE NO:MLMR-35

| DEPTH (M)     | THICKNESS (M) | ! LITHOLOGY       | ! COLOR DETAILS | ! Fe  | ! SiO2 | ! AL203 ! | REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------|---------------|-------------------|-----------------|-------|--------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ! FROM ! TO ! | !<br>         | !                 | !               | !     | !      | 1 1       | !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 15.00 16.00   | 1.00          | FERRUGINOUS SHALE | REDDISH BROWN   | 28.00 | 58.63  | 1.14      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 16.00 17.00   | 1.00          | FERRUGINOUS SHALE | REDDISH BROWN   | 23.78 | 62.37  | 2.80      | 1 2 m or 354, 100 1 1 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 17.00 18.00   | 1.00          | FERRUGINOUS SHALE | REDDISH BROWN   | 27,41 | 58.20  | 2.14      | 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 18.00 19.00   | 1.00          | FERRUGINOUS SHALE | REDDISH BROWN   | 28.25 | 57.81  | 1.48      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 19.00 20.00   | 1.00          | FERRUGINOUS SHALE | REDDISH BROWN   | 30.77 | 52.13  | 1.40      | الله الله الله الله الله الله الله الله                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 20.00 21.00   | 1.00          | FERRUGINOUS SHALE | DARK BROWN      | 22.94 | 65.45  | 0.82      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 21.00 22.00   | 1.00          | SHALY ORE         | DARK BROWN      | 41.12 | 40.39  | 0.49      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 22.00 23.00   | 1.00          | SHALY ORE         | DARK BROWN      | 43.36 | 36.56  | 0.82      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 23.00 24.00   | 1.00          | SHALE/OCHRE       | REDDISH BROWN   | 32.43 | 52.40  | 0.66      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 24.00 25.00   | 1.00          | SHALE/OCHRE       | REDDISH BROWN   | 27.97 | 58.23  | 0.49      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 25.00 26.00   | 1.00          | SHALE/OCHRE       | REDDISH BROWN   | 27.13 | 59.86  | 0.49      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 26.00 27.00   | 1.00          | SHALE/OCHRE       | REDDISH BROWN   | 30.21 | 55.63  | 0.82      | The state of the s |
| 27.00 28.00   | 1.00          | SHALE/OCHRE       | REDDISH BROWN   | 20.14 | 62.93  | 0.82      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 28.00 29.00   | 1.00          | SHALE/OCHRE       | REDDISH BROWN   | 22.40 | 66.59  | 0.82      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 29.00 30.00   | 1.00          | SHALE/OCHRE       | REDDISH BROWN   | 22.61 | 65.96  | 0.82      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|               |               |                   |                 |       |        |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-37

LATITUDE : 1349669.340 LONGITUDE : 2833567.258 REDUCED LEVEL (M): 927.324

DATE OF COMMENCEMENT: 04.09.2014
DATE OF CLOSURE: 04.09.2014
DEPTH DRILLED (M): 40.00

| FROM ! TO !  | (M)  | !             |               |        | ! SiO2 | ! AL2O3 ! |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------|------|---------------|---------------|--------|--------|-----------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 thoir , 10 |      | i             | !<br>!        | !<br>! | !      | !!!!      | REMARKS    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0.00 1.00    | 1.00 | SHALY ORE     | REDDISH BROWN | 44.52  | 17.38  | 13.32     |            | :<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1.00 2.00    | 1.00 | SHALY ORE     | REDDISH BROWN | 41.44  | 17.72  | 14.31     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2,00 3,00    | 1.00 | SHALY ORE     | REDDISH BROWN | 45.36  | 17.56  | 12.34     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 4.00    | 1.00 | SHALY ORE     | REDDISH BROWN | 46.76  | 14.87  | 11.02     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 5.00    | 1.00 | SHALY ORE     | REDDISH BROWN | 46.76  | 15.07  | 13.00     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 6.00    | 1.00 | HEMATITIC ORE | REDDISH BROWN | 49.14  | 7.69   | θ.72      |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 7.00    | 1.00 | HEMATITIC ORE | REDDISH BROWN | 51.52  | 10.98  | 9.71      |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00    | 1.00 | HEMATITIC ORE | REDDISH BROWN | 51.52  | 12.14  | 8.72      | ميدهان دور | A STATE OF THE PERSON OF THE P |
| 3.00 9.00    | 1.00 | HEMATITIC ORE | REDDISH BROWN | 49.00  | 16.47  | 6.74      | A.P.       | Con Contraction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| .00 10.00    | 1.00 | HEMATITIC ORE | REDDISH BROWN | 59.36  | 5.81   | 8.39      | , -        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0.00 11.00   | 1.00 | HEMATITIC ORE | REDDISH BROWN | 52.64  | 10.76  | 10.24     |            | ر کر اغ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 00 12.00     | 1.00 | HEMATITIC ORE | REDDISH BROWN | 52.36  | 12.70  | B.34      |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|              | 1.00 | HEMATITIC ORE | REDDISH BROWN | 59.48  | 10.75  | 2.88      |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|              |      | HENATITIC ORE | REDDISH BROWN | 52.92  | 6.54   | 11.20     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| .00 15.00    | 1.00 | HEMATITIC ORE | REDDISH BROWN | 49.28  | 9.71   | 12.32     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

BOREHOLE NO:MLMR-37

|             |                      | ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ |            |             |        |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------|-----------------------------------------|------------|-------------|--------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEPTH (M)   | ! THICKNESS<br>! (M) | ! LITHOLOGY                             | ! COLOR D  | ETAILS ! Fe | ! SiO2 | ! AL203 | ! REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FROM ! TO   | !<br>!               | į                                       | •          | i           | ;      | !       | !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 5.00 16.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 59.92       | 5.14   | 6.24    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 16.00 17.00 | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 55.44       | 9.45   | 0.32    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 17.00 18.00 | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 62.16       | 6.51   | 3.52    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 18.00 19.00 | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 50.68       | 7.00   | 12.16   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 19.00 20.00 | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 60.20       | 11.25  | 2.24    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 20.00 21.00 | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 55.16       | 17.49  | 3.20    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 21.00 22.00 | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 61.90       | 7.66   | 2.40    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 23.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 61.88       | 7.54   | 1.09    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 24.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 62.44       | 5.71   | 1.65    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 25.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 61.88       | 7.85   | 1.42    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 26.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 62.44       | 9.58   | 0.71    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 27.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 54.46       | 17.98  | 0.71    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 28.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 54.46       | 19.70  | 1.89    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 29.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 51.52       | 25.01  | 1.18    | A Committee of the Comm |
| 9.00 30.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 44.38       | 35.32  | 0.71    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0.00 31.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 55.72       | 18.52  | 1.18    | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1.00 32.00  | 1.00                 | HEMATITIC ORE                           | GREY BROWN | 55.72       | 10.50  | 1.10    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 33.00  | 1.00                 | SILICIOUS IRON ORE                      | GREY BROWN | 34.16       | 48.73  | 1.89    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 34.00  | 1.00                 | SILICIOUS IRON ORE                      | GREY BROWN | 46.90       | 30.13  | 2.36    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| :MLMR-3 |
|---------|
|         |

| ! DEPTH (M) !<br>!!<br>! FROM ! TO ! | THICKNESS<br>(M) | •                  | · ! | COLOR DETAILS | ! Fe<br>! | !<br>!<br>! | si02  | ! A | L203 ! | REMARKS          | !     |
|--------------------------------------|------------------|--------------------|-----|---------------|-----------|-------------|-------|-----|--------|------------------|-------|
| 34.00 35.00                          | 1.00             | SILICIOUS IRON ORE | GRE | Y BROWN       | 34.86     |             | 47.55 |     | 2.23   |                  | ·<br> |
| 35.00 36.00                          | 1.00             | SILICIOUS IRON ORE | GRE | Y BROWN       | 62.58     |             | 7.72  |     | 2.55   | HEMATITIC PIECES |       |
| 36.00 37.00                          | 1.00             | SILICIOUS IRON ORE | GRE | Y BROWN       | 30.94     |             | 52,17 |     | 2.87   |                  |       |
| 37.00 38.00                          | 1.00             | SILICIOUS IRON ORE | GRE | Y BROWN       | 47.18     |             | 30,41 |     | 1.76   |                  |       |
| 38.00 39.00                          | 1.00             | SILICIOUS IRON ORE | GRE | Y BROWN       | 30.38     |             | 54.75 |     | 1.43   |                  |       |
| 39.00 40.00                          | 1.00             | SILICIOUS IRON ORE | GRE | Y BROWN       | 31.92     |             | 50.95 |     | 1.28 • |                  |       |
|                                      |                  |                    |     |               |           |             |       |     |        | •                |       |

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-38

LATITUDE : 1349821.797 LONGITUDE : 2838462.074 REDUCED LEVEL (M): 935.524 DATE OF COMMENCEMENT: 04.09.2014
DATE OF CLOSURE: 04.09.2014
DEPTH DRILLED (M): 25.00

DEPTH (M) ! THICKNESS ! I----! ! FROM ! TO ! DARK BROWN 17.64 32.05 1.00 0.00 1.00 19.60 31.75 1.00 SHALE DARK BROWN 1.00 2.00 DARK BROWN 17.08 32.42 26.88 2.00 3.00 1.00 SHALE DARK BROWN 17.01 33.33 3.00 4.00 1.00 SHALE FERRUGINOUS SHALE DARK BROWN 27.30 26.13 20.80 1.00 4.00 5.00 DARK BROWN 26.60 26.60 21.96 5.00 6.00 1.00 FERRUGINOUS SHALE DARK BROWN 25.06 28.73 22.91 FERRUGINOUS SHALE 6.00 7.00 1.00 DARK BROWN 24.64 30.20 21.65 FERRUGINOUS SHALE 1.00 7.00 8.00 DARK BROWN 23.38 28.97 25.02 FERRUGINOUS SHALE 1.00 8.00 9.00 DARK BROWN 21.28 31.47 FERRUGINOUS SHALE 9.00 10.00 1.00 17.92 31.88 26.70 DARK BROWN SHALE 1.00 10.00 11.00 15.40 33,76 27.49 SHALE DARK BROWN 1,00 11.00 12.00 DARK BROWN 33.30 26.70 12.00 13.00 1,00 SHALE 33.03 27.97 DARK BROWN 16.94 13.00 14.00 1.00 SHALE 18.34 32.47 27.02 DARK BROWN 14.00 15.00 1.00 SHALE



BOREHOLE NO:MLMR-38

| DEPTH (M)   | THICKNESS<br>(M) | ! LITHOLOGY ;     | i | ! COLOR DETAILS | ! | Fe    | ! | SiO2  | ! AL203 | !   | REMARKS | <br>! |
|-------------|------------------|-------------------|---|-----------------|---|-------|---|-------|---------|-----|---------|-------|
| FROM ! TO ! | ,                | i                 |   | !               | ļ |       | ! |       | į<br>!  | !!  |         | !!!   |
| 15.00 16.00 | 1.00             | SHALE             |   | DARK BROWN      |   | 18.20 |   | 31.69 | 26.75   | ·   |         |       |
| 16.00 17.00 | 1.00             | SHALE             |   | DARK BROWN      |   | 24.92 |   | 27.79 | 21.59   | ,   |         |       |
| 17.00 18.00 | 1.00             | SHALE             |   | DARK BROWN      |   | 16.24 |   | 32.25 | 28.29   | ı   |         |       |
| 18.00 19.00 | 1.00             | FERRUGINOUS SHALE |   | DARK BROWN      |   | 23.38 |   | 27.63 | 23.52   |     |         |       |
| 19.00 20.00 | 1.00             | FERRUGINOUS SHALE |   | DARK BROWN      |   | 20.02 |   | 29.56 | 26.81   |     |         |       |
| 20.00 21.00 | 1.00             | FERRUGINOUS SHALE |   | DARK BROWN      |   | 22.54 |   | 28.73 | 24.67   | . • |         |       |
| 21.00 22.00 | 1.00             | FERRUGINOUS SHALE |   | DARK BROWN      |   | 21.70 |   | 27.07 | 22.37   |     |         |       |
| 22.00 23.00 | 1.00             | SHALE/OCHRE       |   | REDDISH BROWN   |   | 24.92 |   | 27.35 | 23.03   |     |         |       |
| 23.00 24.00 | 1.00             | SHALE/OCHRE       |   | REDDISH BROWN   |   | 24.50 |   | 27.52 | 22.20   |     |         |       |
| 24.00 25.00 | 1.00             | SHALE/OCHRE       |   | REDDISH BROWN   |   | 24.08 |   | 27.26 | 21.54   |     |         |       |
|             |                  |                   |   |                 |   |       |   |       |         |     |         |       |

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-39

LATITUDE : 1349907.867 LONGITUDE : 2838287.851 REDUCED LEVEL (M): 924.249

DATE OF COMMENCEMENT: 04.09.2014
DATE OF CLOSURE: 04.09.2014
DEPTH DRILLED (M): 15.00

! DEPTH (M) ! THICKNESS ! COLOR DETAILS ! FROM ! TO ! 0.00 1.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 33.46 24.61 16.28 1.00 2.00 1.00 SILICIOUS IRON ORE REDDISH BROWN 39.62 20.26 20.73 2.00 3.00 1.00 BHQ/BHJ GREY BROWN 22.68 29.55 12.50 3.00 4.00 1.00 BHQ/BHJ GREY BROWN 14.56 34.70 24.67 4.00 5.00 1.00 BHQ/BHJ GREY BROWN 20.44 42.20 18.99 5.00 6.00 1.00 BHQ/BHJ GREY BROWN 24.64 30.67 22,30 6.00 7.00 1.00 BHQ GREY BROWN 10.92 77.43 4.41 7.00 8.00 1.00 BHQ GREY BROWN 16.38 72.85 3.18 8.00 9.00 1.00 BHQ GREY BROWN 16.52 63.46 0.86 9.00 10.00 1.00 BHQ GREY BROWN 13.02 78.85 2.33 10.00 11.00 1.00 BHQ GREY BROWN 17.36 72.46 2.33 11.00 12.00 1.00 BHQ GREY BROWN 17.64 69.51 2.33 12.00 13.00 1.00 BHQ GREY BROWN 23.80 60.97 1.59 13.00 14.00 1.00 BHQ GREY BROWN 23.94 63.92 1.59 14.00 15.00 1.00 BHO GREY BROWN 15.12 76.72 1.47

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLMR-40

LATITUDE : 1349801.370 LONGITUDE : 2838414.512 REDUCED LEVEL (M): 922.541

DATE OF COMMENCEMENT: 05.09.2014
DATE OF CLOSURE: 05.09.2014
DEPTH DRILLED (M): 50.00

|                     |                  |               |           |                 |       |        | DE      | PTH DRI | ILLED (M) :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 50.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------|---------------|-----------|-----------------|-------|--------|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ! DEPTH (M) !<br>!! | THICKNESS<br>(M) | !<br>!        | LITHOLOGY | ! COLOR DETAILS | ! Fe  | ! SiO2 | ! AL203 | !       | REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ! FROM ! TO !       |                  | <br>          |           | !               | !     | !      |         | ;<br>!  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <u>!</u><br>!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 0.00 1.00           | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 64.6B | 4.01   | 0.98    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 2.00           | 1.00             | HEMATITIC ORE | 1         | REDDISH BROWN   | 63.00 | 4.26   | 4.35    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 3.00           | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 61.74 | 5.44   | 5.60    | •       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 4.00           | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 58.10 | 7.16   | 5.91    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00           | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 58.38 | 9.36   | 5.75    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| .5.00 6.00          | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 57.40 | 10.50  | 7.31    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 7.00           | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 57.54 | 9.90   | 6.99    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00           | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 57.68 | 9.30   | 7.46    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 8.00 9.00           | 1.00             | SHALY ORE     |           | DARK BROWN      | 25.48 | 11.09  | 24.26   |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 10.00          | 1.00             | SHALY ORE     |           | DARK BROWN      | 32.20 | 7.48   | 22.08   |         | بند ر                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | erio obietico                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 10.00 11.00         | 1.00             | BLUE DUST     |           | BL GREY         | 64.68 | 3.25   | 4.19    |         | ا بالمناسبونيون<br>والمنافي                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 11.00 12.00         | 1.00             | BLUE DUST     |           | BL GREY         | 64.12 | 3.43   | 4.50    |         | Jane 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 12.00 13.00         | 1.00             | BLUE DUST     |           | BL GREY         | 60.34 | 5.24   | 5.44    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13.00 14.00         | 1.00             | BLUE OUST     |           | BL GREY         | 61.88 | 3.56   | 3.13    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ## E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 14.00 15.00         | 1.00             | HEMATITIC ORE |           | REDDISH BROWN   | 61.32 | 4.51   |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     |                  |               |           |                 | 01.52 | 4.31   | 5.76    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3 7 7 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                     |                  |               |           |                 |       |        |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     |                  |               |           |                 |       |        |         |         | Mark State Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Same of the first                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                     |                  | ,             |           |                 |       |        |         |         | Constitution of the Consti | Commission of the Commission o |
|                     |                  | •             |           |                 |       |        |         |         | Post HE W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | the Table Textiles - Settle Barrer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

BOREHOLE NO:MLMR-40

| DEPTH (M)<br>FROM ! TO     | ! THICKNESS<br>! (M)<br>! | !<br>!        | LITHOLOGY | ! COLOR DETAILS             | ! Fe           | ! sio2        | ! AL203 !    | REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|---------------------------|---------------|-----------|-----------------------------|----------------|---------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15.00 16.00                | 1.00                      | HEMATITIC ORE |           | REDDISH BROWN               | :<br><br>59.08 | ;<br><br>3.86 | 1 <u></u>    | • !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 16.00 17.00                | 1.00                      | HEMATITIC ORE |           | REDDISH BROWN               | 64.12          | 1.57          | 7.90<br>4.94 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 17.00 18.00                | 1.00                      | HEMATITIC ORE |           | REDDISH BROWN               | 57.96          | 5.05          | 6.50         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 18.00 19.00                | 1.00                      | HEMATITIC ORE |           | REDDISH BROWN               | 62.72          | 4.82          | 4.28         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 19.00 20.00                | 1.00                      | HEMATITIC ORE |           | GREY BROWN                  | 55.72          | 5.47          | 5.26         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 20.00 21.00                | 1.00                      | HEMATITIC ORE |           | GREY BROWN                  | 50.26          | 11.89         | 9.87         | The state of the s |
| 21.00 22.00                | 1.00                      | HEMATITIC ORE |           | GREY BROWN                  | 61.60          | 5.13          | 4.61         | The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s |
| 22.00 23.00                |                           | HEMATITIC ORE |           | GREY BROWN                  | 66.64          | 2.19          | 1.97         | 2. J. A. J. J. J. J. J. J. J. J. J. J. J. J. J.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 23.00 24.00                |                           | HEMATITIC ORE |           | GREY BROWN                  | 62.44          | 3.27          | 2.80         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 24.00 25.00<br>25.00 26.00 |                           | HEMATITIC ORE |           | GREY BROWN                  | 65.87          | 2.86          | 2.14         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 26.00 27.00                |                           | HEMATITIC ORE |           | REDDISH BROWN               | 62.86          | 1.79          | 1.42         | 1000年                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 27.00 28.00                |                           | HEMATITIC ORE |           | REDDISH BROWN               | 65.38          | 2.21          | 1.40         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 29.00                 |                           | HEMATITIC ORE |           | REDDISH BROWN               | 66.08          | 2.38          | 1.18         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 30.00                 |                           | HEMATITIC ORE |           | REDDISH BROWN               | 65.10          | 1.25          | 1.65         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0.00 31.00                 |                           | HEMATITIC ORE |           | REDDISH BROWN               | 65.24          | 3.31          | 2.36         | The same of the sa |
| 1.00 32.00                 |                           | HEMATITIC ORE |           | REDDISH BROWN REDDISH BROWN | 64.12          | 1.84          | 2.12         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 33.00                 | 1.00                      | HEMATITIC ORE |           | REDDISH BROWN               | 64.12          | 3.35          | 2.12         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 34.00                 | 1.00                      | HEMATITIC ORE |           | DARK BROWN                  | 64.12<br>59.50 | 2.58<br>4.61  | 2.36<br>4.72 | OCC SHALY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



| !_ | DEPTH (M) ! |      | ! LITHO       | oroga<br> | ! COLOR DETAILS |       | !<br>! SiO2 | 1 203 1          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----|-------------|------|---------------|-----------|-----------------|-------|-------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | FROM ! TO ! | (M)  | !             |           | 1               | !     | !<br>!      | ! AL203 !<br>! ! | REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3  | 4.00 35.00  | 1.00 | HEMATITIC ORE | ***       | DARK BROWN      | 65.38 | 1.70        | 1.89             | ļ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3! | 5.00 36.00  | 1.00 | HEMATITIC ORE |           | DARK BROWN      | 61.04 | 4.52        | 3.10             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | 5.00 37.00  | 1.00 | HEMATITIC ORE |           | DARK BROWN      | 64.82 | 2.77        | 2.83             | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 7.00 38.00  | 1.00 | HEMATITIC ORE |           | DARK BROWN      | 60.48 | 6.59        | 2.33 •           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | 3.00 39.00  | 1.00 | HEMATITIC ORE |           | DARK BROWN      | 59.78 | 4.55        | 3.68             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | 0.00 40.00  | 1.00 | HEMATITIC ORE |           | DARK BROWN      | 62.44 | 3.80        | 3.06             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | 0.00 41.00  | 1.00 | HEMATITIC ORE |           | DARK BROWN      | 63.98 | 3.55        | 2.20             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | .00 42.00   | 1.00 | HEMATITIC ORE |           | GREY BROWN      | 62.44 | 4.67        | 2.57             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | .00 44.00   | 1.00 | HEMATITIC ORE |           | GREY BROWN      | 66.64 | 2.50        | 2.08             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | ,00 45.00   | 1.00 | HEMATITIC ORE |           | GREY BROWN      | 60.48 | 4.92        | 4.78             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | .00 46.00   | 1.00 | HEMATITIC ORE |           | GREY BROWN      | 57.82 | 7.49        | 3.80             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | .00 47.00   | 1.00 | HEMATITIC ORE |           | GREY BROWN      | 58.10 | 4.98        | 6.62             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | .00 48.00   | 1.00 | HEMATITIC ORE |           | GREY BROWN      | 63.84 | 3.57        | 4.41             | A CONTRACTOR OF THE PROPERTY O |
|    | .00 49.00   |      | HEMATITIC ORE |           | GREY BROWN      | 63.56 | 2.79        | 3.18             | The state of the s |
|    | .00 50.00   |      | HEMATITIC ORE |           | GREY BROWN      | 61.04 | 5.15        | 2.45             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    |             |      |               |           | GREY BROWN      | 61.60 | 7.31        | 3.13             | \$ P. B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|    |             |      |               |           |                 |       |             |                  | رائية في الأن التي التي التي التي التي التي التي التي                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-41

LATITUDE : 1349825.949 LONGITUDE : 2838336.295 REDUCED LEVEL (M): 916.666

DATE OF COMMENCEMENT : 05.09.2014
DATE OF CLOSURE : 05.09.2014
DEPTH DRILLED (M) : 30.00

AL203 ! ! DEPTH (M) ! THICKNESS LITHOLOGY COLOR DETAILS Si02 REMARKS (M) ! FROM ! TO ! 0.00 1.00 1.00 HEMATITIC ORE DARK BROWN 60.20 7.16 5.26 1.00 HEMATITIC ORE 1.00 2.00 DARK BROWN 59.08 6.40 4.94 2.00 3.00 1.00 HEMATITIC ORE DARK BROWN 63.28 2,26 5.10 60.48 3.00 4.00 1.00 HEMATITIC ORE DARK BROWN 3.83 4.11 4.00 5.00 1.00 HEMATITIC ORE DARK BROWN 56.84 8.62 6.09 5.00 6.00 1.00 HEMATITIC ORE DARK BROWN 56.00 8.97 6.74 6.00 7.00 1.00 HEMATITIC ORE DARK BROWN 59.36 7.17 0.82 7.00 8.00 1.00 HEMATITIC ORE DARK BROWN 64.96 2.17 2.14 8.00 9.00 1.00 HEMATITIC ORE DARK BROWN 61.45 6.15 4.11 9.00 10.00 1,00 HEMATITIC ORE DARK BROWN 59.92 5.26 4.28 10.00 11.00 1.00 HEMATITIC ORE DARK BROWN 62,73 5.86 2.63 11.00 12.00 1.00 BLUE DUST BL GREY 65.80 3.77 1.97 12.00 13.00 1.00 BLUE DUST BL GREY 64.12 4.93 3.12 13.00 14.00 1.00 BLUE DUST BL GREY 63.84 4.98 3.10 HEMATITIC ORE 14.00 15.00 1.00 GREY BROWN 61.18 6.96 4.44

#### BOREHOLE NO:MLMR-41

| ! DEPTH (M) !<br>!!<br>! FROM ! TO ! | THICKNESS<br>(M) | ! LITHOLOGY        | ! COLOR DETAILS<br>!<br>! | !<br>!<br>! | Fe    | ! SiO2<br>! | ! AL203<br>!<br>! | ! REMARKS<br>!<br>! | !<br>!<br>! |
|--------------------------------------|------------------|--------------------|---------------------------|-------------|-------|-------------|-------------------|---------------------|-------------|
| 15.00 16.00                          | 1.00             | HEMATITIC ORE      | GREY BROWN                |             | 60.20 | 6.88        | 4.77              |                     |             |
| 16.00 17.00                          | 1.00             | SILICIOUS IRON ORE | GREY BROWN                |             | 33.18 | 50.41       | 1.77              |                     |             |
| 17.00 10.00                          | 1.00             | SILICIOUS IRON ORE | GREY BROWN                |             | 37.80 | 44.62       | 1.00              |                     |             |
| 18.00 19.00                          | 1.00             | FERRUGINOUS SHALE  | GREY BROWN                |             | 14.00 | 79.29       | 0.33              |                     |             |
| 19.00 20.00                          | 1.00             | FERRUGINOUS SHALE  | GREY BROWN                |             | 23.24 | 65.31       | 0.85              |                     |             |
| 20.00 21.00                          | 1.00             | FERRUGINOUS SHALE  | GREY BROWN                |             | 25.06 | 62.55       | 1.10              | •                   |             |
| 21.00 22.00                          | 1.00             | FERRUGINOUS SHALE  | GREY BROWN                |             | 24.64 | 63.04       | 0.99              |                     |             |
| 22.00 23.00                          | 1.00             | FERRUGINOUS SHALE  | GREY BROWN                |             | 23.94 | 63.73       | 0.82              |                     |             |
| 23.00 24.00                          | 1.00             | FERRUGINOUS SHALE  | GREY BROWN                |             | 24.36 | 62.61       | 2.20              |                     |             |
| 24.00 25.00                          | 1.00             | вно/внј            | GREY BROWN                |             | 13.58 | 78.33       | 1.72              |                     |             |
| 25.00 26.00                          | 1.00             | вно/внј            | GREY BROWN                |             | 13.58 | 78.83       | 1.47              |                     |             |
| 26.00 27.00                          | 1.00             | вно/внј            | GREY BROWN                |             | 14.42 | 72.61       | 3.92              |                     |             |
| 27.00 28.00                          | 1.00             | вно/внј            | GREY BROWN                |             | 13.58 | 79.34       | 0.98              |                     |             |
| 28,00 29.00                          | 1.00             | вно/внј            | GREY BROWN                |             | 13.16 | 79.04       | 1.72              |                     |             |
| 29.00 30.00                          | 1.00             | внQ/внЈ            | GREY BROWN                |             | 13.44 | 77.29       | 3.18              |                     |             |

#### DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECI, IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-42

LONGITUDE : 1350487.713 REDUCED LEVEL (M): 899.177

DATE OF COMMENCEMENT : 05.09.2014 DATE OF CLOSURE : 05.09.2014 DEPTH DRILLED (M) : 20.00

| DEPTH (M)   | ! THICKNESS | ! LITHOLOGY        | COLOR DETAILS | ! Fe  | ! \$102<br>! | ! AL203 ! | REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|-------------|--------------------|---------------|-------|--------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FROM ! TO   | !           | !                  | :             | !     | !            | ! !       | i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 0.00 1.00   | 1.00        | FERRUGINOUS SHALE  | REDDISH BROWN | 15.40 | 51.80        | 17.15     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 2.00   | 1.00        | FERRUGINOUS SHALE  | REDDISH BROWN | 14.56 | 51.40        | 17.64     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 3.00   | 1.00        | FERRUGINOUS SHALE  | REDDISH BROWN | 16.80 | 52.10        | 15.68     | The state of the s |
| 3.00 4.00   | 1.00        | FERRUGINOUS SHALE  | REDDISH BROWN | 17.92 | 51.27        | 15.19     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00   | 1.00        | HEMATITIC ORE      | GREY BROWN    | 39.06 | 24.50        | 11.76     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 6.00   | 1.00        | HEMATITIC ORE      | GREY BROWN    | 59.64 | 8.21         | 3.58      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 7.00   | 1.00        | HEMATITIC ORE      | GREY BROWN    | 62.72 | 6.38         | 3.26      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00   | 1.00        | HEMATITIC ORE      | GREY BROWN    | 57.40 | 11.21        | 5.75      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 9.00   | 1.00        | HEMATITIC ORE      | GREY BROWN    | 58.80 | 8.03         | 2.95      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 10.00  | 1.00        | HEMATITIC ORE      | GREY BROWN    | 50.26 | 20.82        | 4.51      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10.00 11.00 | 1.00        | SILICIOUS IRON ORE | GREY BROWN    | 38.36 | 41.81        | 2.64      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 11.00 12.00 | 1.00        | SILICIOUS IRON ORE | GREY BROWN    | 32.76 | 49.31        | 2.49      | The state of the s |
| 12.00 13.00 | 1.00        | SILICIOUS IRON ORE | GREY BROWN    | 35.70 | 43.97        | 2.18      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13.00 14.00 | 1.00        | SILICIOUS IRON ORE | GREY BROWN    | 33.32 | 38.88        | 6.10      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 15.00  | 1.00        | SILICIOUS IRON ORE | GREY BROWN    | 36.26 | 39.25        | 3.26      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                    |                  |                                          |           |          |          |           |       | i dom |                |               |             |         |           |   |
|--------------------|------------------|------------------------------------------|-----------|----------|----------|-----------|-------|-------|----------------|---------------|-------------|---------|-----------|---|
|                    |                  |                                          |           |          |          | 100       |       |       |                |               |             |         |           |   |
|                    |                  | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 |           |          |          | 1012      |       |       |                |               |             |         |           |   |
|                    |                  |                                          |           | <br>  Bi | OREHOLE  | NO:MLMR-4 | 2     |       |                | r i Ni Migmer |             | ANNEXD  | RE-IVB/89 |   |
| ! DEPTH (M) !<br>! | THICKNESS<br>(M) | !!!!                                     | LITHOLOGY |          | COLOR    | DETAILS   | !     | Fe !  | SiO2           | ! AL203       | ~<br>!<br>! | REMARKS | !         | , |
| 15.00 16.00        | 1.00             | вно                                      |           | GF       | REY BROW | <br>M     | !<br> | !<br> |                | !             |             |         | ]<br>]    |   |
| 16.00 17.00        | 1.00             | вно                                      |           |          | EY BROW  |           |       | .48   | 64.82          | 3.11          |             |         |           |   |
| 17.00 18.00        | 1.00             | BHQ                                      |           |          | EY BROW  |           |       | . 44  | 67.48<br>79.29 | 2.64          |             |         |           |   |
| 18.00 19.00        | 1.00             | вно                                      |           | . GR     | EY BROW  | 1         |       | . BB  | 56.16          | 1.18          |             |         |           |   |
| 19.00 20.00        | 1.00             | вно                                      |           | GR       | EY BROWN | 1         |       | . 32  | 69.60          | 3.07<br>1.89  |             |         |           |   |
|                    |                  |                                          |           |          |          |           |       |       |                |               |             |         |           |   |

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECI, IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-43

LATITUDE LONGITUDE

: 1350623.931 : 2837469.241

REDUCED LEVEL (M): 899.418

DATE OF COMMENCEMENT : 05.09.2014

DATE OF CLOSURE : 05.09.2014 DEPTH DRILLED (M) : 20.00

|                  |                   | ! COLOR DETAILS !                       | Fe!   | SiO2  | ! AL203 !<br>! ! | REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------|-------------------|-----------------------------------------|-------|-------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ! FROM ! TO !    |                   | : : : : : : : : : : : : : : : : : : : : | !     |       | ! !              | !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 0.00 1.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.74 | 32.83 | 19.86            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 2.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 22.54 | 31.90 | 17.95            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 3.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.88 | 40.32 | 16.53            | The second secon |
| 3.00 4.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 20.86 | 33.90 | 17.98            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.74 | 39.14 | 15.82            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 6.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.60 | 37.10 | 18.18            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 7.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.18 | 38.43 | 17.24            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.46 | 35.41 | 19.86            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 9.00 1.00   | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.04 | 35.95 | 19.36            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 10.00 1.00  | FERRUGINOUS SHALE | REDDISH BROWN                           | 19.88 | 38.09 | 19.57            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10.00 11.00 1.00 | SHALE             | DARK BROWN                              | 16.66 | 45.37 | 18.26            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 11.00 12.00 1.00 | SHALE             | DARK BROWN                              | 14.42 | 51.68 | 16.28            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 12.00 13.00 1.00 | SHALE             | DARK BROWN                              | 17.08 | 43.47 | 10.58            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13.00 14.00 1.00 | SHALE             | DARK BROWN                              | 16.24 | 47.78 | 16.70            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 14.00 15.00 1.00 | SHALE             | DARK BROWN                              | 16.80 | 48.15 | 16.61            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

#### BOREHOLE NO:MLMR-43 ! DEPTH (M) ! THICKNESS ! LITHOLOGY ! FROM ! TO ! DARK BROWN 16.80 51.77 15.00 16.00 1.00 SHALE 13.82 SHALE DARK BROWN 15.82 50.88 15.63 16.00 17.00 1.00 DARK BROWN 15.54 52.39 15.30 . 17.00 18.00 1.00 SHALE SHALE DARK BROWN 26.32 61.13 0.89 18.00 19.00 1.00 1.00 SHALE DARK BROWN 13.02 58.62 13.32 19.00 20.00

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-44

: 1350559.663 LONGITUDE : 2837541.264 REDUCED LEVEL (M): 900.953

LATITUDE

DATE OF COMMENCEMENT : 05.09.2014 DATE OF CLOSURE : 05.09.2014 DEPTH DRILLED (M) : 20.00

| ! DEPTH (M) ! | THICKNESS<br>(M) | LITHOLOGY         | ! COLOR DETAILS | ! Fe          | ! SiO2 | ! AL203 ! | REMARKS t                             |
|---------------|------------------|-------------------|-----------------|---------------|--------|-----------|---------------------------------------|
| ! FROM ! TO ! | ,                | į                 | [               | <u>!</u><br>! | !      | !         | !                                     |
| 0.00 1.00     | 1.00             | SHALE             | GREY BROWN      | 10.92         | 54.90  | 12.66     | !                                     |
| 1.00 2.00     | 1.00             | SHALE             | GREY BROWN      | 12.60         | 52.92  | 13.32     |                                       |
| 2.00 3.00     | 1.00             | SHALE             | GREY BROWN      | 13.72         | 50.51  | 13.98     |                                       |
| 3.00 4.00     | 1.00             | SHALE             | GREY BROWN      | 14.28         | 53.03  | 14,64     | ر پېښت کاکات مايادي                   |
| 4.00 5.00     | 1.00             | SHALE             | GREY BROWN      | 12.04         | 54.64  | 13.00     | Service Control                       |
| 5.00 6.00     | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 12.88         | 56.41  | 12.01     |                                       |
| 6.00 7.00     | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 15.12         | 54.07  | 14.97     |                                       |
| 7.00 8.00     | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 15.82         | 54.10  | 15.63     |                                       |
| 8.00 9.00     | 1.00             | FERRUCINOUS SHALE | REDDISH BROWN   | 14.98         | 54.55  | 14.97     |                                       |
| 9.00 10.00    | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 14.00         | 52.95  | 16.29     |                                       |
| 10.00 11.00   | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 15.12         | 52.73  | 15.96     |                                       |
| 11.00 12.00   | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 15.68         | 50.54  | 16.17     |                                       |
| 12.00 13.00   | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 13.16         | 53.24  | 15.24     |                                       |
| 13.00 14.00   | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 14.70         | 52.67  | 15.39     | • • • • • • • • • • • • • • • • • • • |
| 14.00 15.00   | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 15.26         | 49,28  | 16.45     |                                       |
|               | ~~               |                   |                 |               |        |           |                                       |

#### ANNEXURE-IVB/93 BOREHOLE NO:MLMR-44 LITHOLOGY ! AL203 ! REMARKS ! FROM ! TO ! 15.00 16.00 1.00 LIGHT BROWN 14.00 52.42 15.24 16.00 17.00 1.00 SHALE LIGHT BROWN 14.42 51.45 14.46 17.00 18.00 1.00 SHALE LIGHT BROWN 13.58 51.51 13.84 18.00 19.00 1.00 SHALE LIGHT BROWN 12.60 50.80 14.31 19.00 20.00 1.00 SHALE LIGHT BROWN 14.98 50.05 16.79

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-45 ------

: 1350863.406 : 2837263.815

LONGITUDE REDUCED LEVEL (M): 921.823

LATITUDE

DATE OF COMMENCEMENT : 06.09.2014
DATE OF CLOSURE : 06.09.2014 DATE OF CLOSURE : 06.09.2014 DEPTH DRILLED (M) : 25.00

| ! DEPTH (M) !<br>!! | THICKNESS (M) | ! LITHOLOGY !     | ! COLOR DETAILS | . Fe   | ! SiO2 | ! AL2O3 !                               | ! REMARKS I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|---------------|-------------------|-----------------|--------|--------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ! FROM ! TO !       |               | !                 | !               | !<br>! | !<br>! | !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0.00 1.00           | 1.00          | FERRUGINOUS SHALE |                 | 18.48  | 31.65  | 25.97                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 2.00           | 1.00          | FERRUGINOUS SHALE |                 | 19.46  | 31.85  | 24.72                                   | og commence of the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2.00 3.00           | 1.00          | FERRUGINOUS SHALE |                 | 19.32  | 33.30  | 23.95                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 4.00           | 1.00          | FERRUGINOUS SHALE |                 | 21.70  | 30.95  | 21.25                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00           | 1.00          | FERRUGINOUS SHALE |                 | 20.86  | 31.34  | 21.00                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 6.00           | 1.00          | FERRUGINOUS SHALE |                 | 20.86  | 31.89  | 21.96                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 7.00           | 1.00          | FERRUGINOUS SHALE |                 | 17.50  | 32.77  | 24.56                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00           | 1.00          | FERRUGINOUS SHALE |                 | 17.64  | 33.01  | 22.67                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 9.00           | 1.00          | FERRUGINOUS SHALE |                 | 10.90  | 32.84  | 23.14                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 10.00          | 1.00          | FERRUGINOUS SHALE |                 | 18.34  | 32.92  | 23.14                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10.00 11.00         | 1.00          | FERRUGINOUS SHALE |                 | 20.72  | 32.88  | 21.96                                   | the second secon |
| 11.00 12.00         | 1.00          | FERRUGINOUS SHALE |                 | 20.86  | 31.86  | 21.72                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 12.00 13.00         | 1.00          | FERRUGINOUS SHALE |                 | 19.46  | 32.12  | 22.67                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13.00 14.00         | 1.00          | FERRUGINOUS SHALE |                 | 18.20  | 35.07  | 21.49                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 14.00 15.00         | 1.00          | FERRUGINOUS SHALE |                 | 16.24  | 37.63  | 21.96                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

# BOREHOLE NO: NLMR-45

| ! DEPTH (M) ! | THICKNESS<br>(M) | ! LITHOLOGY       |   | ! COLOR DETAILS | ! Fe  | ! | SiO2  | ! AL203 | ! REMARKS ! | • |
|---------------|------------------|-------------------|---|-----------------|-------|---|-------|---------|-------------|---|
| ! FROM ! TO ! |                  | 1                 |   | i               | !     | ! |       | !       | !           |   |
| 15.00 16.00   | 1.00             | FERRUGINOUS SHALE | 1 |                 | 17.50 |   | 40.23 | 17.24   | ·           |   |
| 16.00 17.00   | 1.00             | FERRUGINOUS SHALE |   |                 | 15.96 |   | 42.30 | 19.36   | ;           |   |
| 17.00 18.00   | 1.00             | FERRUGINOUS SHALE | : |                 | 15.40 |   | 43.11 | 19.36   | <b>;</b>    |   |
| 18.00 19.00   | 1.00             | FERRUGINOUS SHALE | • |                 | 17.64 |   | 40.58 | 18.42   |             |   |
| 19.00 20.00   | 1.00             | SHALE             |   | GREY BROWN      | 15.54 |   | 45.66 | 18.18   |             |   |
| 20.00 21.00   | 1.00             | SHALE             | • | GREY BROWN      | 20.16 |   | 40.30 | 18.42   | •           |   |
| 21.00 22.00   | 1.00             | SHALE             | 1 | GREY BROWN      | 17.0B |   | 42.21 | 18.18   |             |   |
| 22.00 23.00   | 1.00             | SHALE             | ; | GREY BROWN      | 18.62 |   | 42.82 | 18.42   |             |   |
| 23.00 24.00   | 1.00             | SHALE             |   | GREY BROWN      | 15.26 |   | 42.32 | 17.94   |             |   |
| 24.00 25.00   | 1.00             | SHALE             |   | GREY BROWN      | 16.80 |   | 41.96 | 17.94   |             |   |
|               |                  |                   |   |                 |       |   |       |         |             |   |

#### DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECH, IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO:MLMR-46

: 1350805.901 : 2837346.487

LATITUDE

LONGITUDE

REDUCED LEVEL (M): 921.485

DATE OF COMMENCEMENT : 06.09.2014

DATE OF CLOSURE : 06.09.2014 DEPTH DRILLED (M) : 20.00

| ! DEPTH (M) !<br>!! | THICKNESS<br>(M) | ! LITHOLOGY       | ! COLOR DETAILS | ! Fe  | ! SiO2 | ! AL203 | ! REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|------------------|-------------------|-----------------|-------|--------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ! FROM ! TO !       |                  | !                 | !               | 1     | !      | !       | i<br>!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0.00 1.00           | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 13.58 | 35.90  | 25.03   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1.00 2.00           | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 17.50 | 33.24  | 24.08   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 3.00           | 1.00             | FERRUGINOUS SHALE | REDDISH BROWN   | 18.06 | 31.25  | 22.43   | The second secon |
| 3.00 4.00           | 1.00             | LIMONITIC SHALE   | GREY BROWN      | 20.16 | 31.96  | 21.34   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00           | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 21.56 | 28.92  | 19.13   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 6.00           | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 16.34 | 31,64  | 21.25   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 7.00           | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 19.32 | 31.02  | 21.72   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00           | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 18.06 | 30.37  | 22.20   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 9.00           | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 19.74 | 28.77  | 21.49   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 10.00          | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 16.52 | 33.24  | 22.20   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10.00 11.00         | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 16.24 | 30.04  | 19.78   | and the second s |
| 11.00 12.00         | 1.00             | LIMONITIC SHALE   | GREYISH YELLOW  | 20.16 | 33.50  | 23.38   | A STATE OF THE PROPERTY OF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 12.00 13.00         | 1.00             | SHALE             | DARK BROWN      | 17.08 | 33.18  | 21.02   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13.00 14.00         | 1.00             | SHALE             | DARK BROWN      | 16.10 | 38.77  | 20.31   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 14.00 15.00         | 1.00             | SHALE             | DARK BROWN      | 17.64 | 34.85  | 25.33   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     |                  |                   |                 |       |        |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| 3OREHOLE | NO:MLMR-46 |
|----------|------------|
|----------|------------|

| ! DEPTH (M)<br>! | ! THICKNESS<br>! (M)<br>! | !<br>! | PITHOFOGA | !<br>!<br>! | COLOR DETAILS | !<br>!<br>! | Fe    | <br>!<br>!<br>! | 5iO2  | <br>!<br>! | AL203 | ! REMARKS ! |
|------------------|---------------------------|--------|-----------|-------------|---------------|-------------|-------|-----------------|-------|------------|-------|-------------|
| 15.00 16.00      | 1.00                      | SHALE  |           | DAR         | K BROWN       |             | 15.12 |                 | 42.63 |            | 23.03 |             |
| 16.00 17.00      | 1.00                      | SHALE  |           | DARK        | K BROWN       |             | 15.12 |                 | 43.91 |            | 22.70 |             |
| 17.00 18.00      | 1.00                      | SHALE  |           | DARK        | K BROWN       |             | 14.84 |                 | 46.34 |            | 20.56 |             |
| 18.00 19.00      | 1.00                      | SHALE  |           | DARK        | BROWN         |             | 14.56 |                 | 49.46 |            | 19.08 |             |
| 19.00 20.00      | 1.00                      | SHALE  |           | DARK        | BROWN         |             | 14.42 |                 | 48,90 |            | 19.08 |             |
|                  |                           |        |           |             |               |             |       |                 |       |            |       |             |

# DETAILED LITHOLOG AND ANALYTICAL DETAILS OF BOREHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-47

LATITUDE : 1350716.389 LONGITUDE : 2837410.292 REDUCED LEVEL (M): 919.161

DATE OF COMMENCEMENT: 06.09.2014
DATE OF CLOSURE: 06.09.2014
DEPTH DRILLED (M): 20.00

| ! DEPTH (M) | ! THICKNESS<br>! (M) | LITHOLOGY         | ! COLOR DETAILS | ! Fe  | !<br>! SiO2    | ! AL2O3        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------|-------------------|-----------------|-------|----------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ! FROM ! TO | !<br>                | į                 | !               | !     | !              | : ALZO3        | REMARKS !                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 0.00 1.00   | 1.00                 | LIMONITIC SHALE   | GREYISH YELLOW  | 21.70 | ;<br>          | !<br>          | i .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 1.00 2.00   | 1.00                 | LIMONITIC SHALE   | GREYISH YELLOW  | 24,36 | 29.00          | 24.67          | The state of the s |
| 2.00 3.00   | 1.00                 | LIMONITIC SHALE   | GREYISH YELLOW  | 23.66 | 26.20          | 22.86          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 4.00   | 1.00                 | FERRUGINOUS SHALE | REDDISH BROWN   | 24.50 | 27.43<br>28.14 | 23.52          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00   | 1.00                 | FERRUGINOUS SHALE | REDDISH BROWN   | 22.68 | 28.14          | 22.46          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5.00 6.00   | 1.00                 | FERRUGINOUS SHALE | REDDISH BROWN   | 24.92 | 27.41          | 24.51          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6.00 7.00   | 1.00                 | SHALE             | DARK BROWN      | 12.60 | 36.10          | 23.19<br>29.54 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00   | 1.00                 | SHALE             | DARK BROWN      | 12.32 | 36.14          | 29.54          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8.00 9.00   | 1.00                 | SHALE             | DARK BROWN      | 15.40 | 34.44          | 27.37          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9.00 10.00  |                      | SHALE             | DARK BROWN      | 14.56 | 39.81          | 23.48          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10.00 11.00 |                      | SHALE             | DARK BROWN      | 14.70 | 35.72          | 27.37          | The second of the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 11.00 12.00 |                      | SHALE             | GREY BROWN      | 16.38 | 34.70          | 25.03          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 12.00 13.00 |                      | SHALE             | GREY BROWN      | 16.66 | 35.24          | 24.26          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13.00 14.00 |                      | SHALE             | GREY BROWN      | 14.90 | 38.75          | 23.64          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 14.00 15.00 | 1.00                 | SHALE             | GREY BROWN      | 14.00 | 44.37          | 20.68          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

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ANNEXURE-IVB/ 99

| BOREHOLE | NO:MLMR-4 | 7 |
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| ! DEPTH (M) !<br>!!<br>! FROM ! TO ! | THICKNESS<br>(M) | !     | LITHOLOGY | ! COLOR DETAILS ! | ! Fe<br>! | !<br>!<br>! | SiO2  | ! p | L203  | <br>!<br>! | REMARKS | !<br>!<br>! |
|--------------------------------------|------------------|-------|-----------|-------------------|-----------|-------------|-------|-----|-------|------------|---------|-------------|
| 15.00 16.00                          | 1.00             | SHALE |           | GREY BROWN        | 13.10     | ;           | 50,62 |     | 17.73 |            |         | ·<br>       |
| 16.00 17.00                          | 1.00             | SHALE |           | LIGHT BROWN       | 14.00     | )           | 49.43 |     | 17.57 |            |         |             |
| 17.00 18.00                          | 1.00             | SHALE |           | LIGHT BROWN       | 12.08     | I           | 48.05 |     | 18.50 |            |         |             |
| 18.00 19.00                          | 1.00             | SHALE |           | LIGHT BROWN       | 12.32     | !           | 47.92 |     | 15.58 |            |         |             |
| 19.00 20.00                          | 1.00             | SHALE |           | LIGHT BROWN       | 12.32     |             | 48.27 |     | 15.58 |            |         |             |
|                                      |                  |       |           |                   |           |             |       |     |       |            |         |             |



# DETAILED LITHOLOG AND ANALYTICAL CETAILS OF BORCHOLES (REVERSE CIRCULATION) DRILLED BY MECL IN M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO:MLMR-48

LATITUDE : 1351200.686 : 2836912.263 LONGITUDE REDUCED LEVEL (M): 899.824

DATE OF COMMENCEMENT : DATE OF CLOSURE DEPTH DRILLED (M) 07.09.2014 : 07.09.2014

| DEPTH (M) | ! THICKNES | LITHOLOGY                               |              |           | ~= ~= - |            | DRILLED (M) : 07.09.2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|------------|-----------------------------------------|--------------|-----------|---------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FROM ! TO | !          | i                                       | ! COLOR DETA | Alls ! Fe | ! SiO2  | ! AL203 !  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0.00 1.00 | 1.00       | SHALE                                   |              | !         | i<br>i  | !          | REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1.00 2.00 | 1.00       | SHALE                                   | DARK BROWN   | 13.16     | 36.92   | !<br>25,74 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2.00 3.00 | 1.00       | SHALE                                   | DARK BROWN   | 14.14     | 35.12   |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.00 4.00 | 1.00       | SHALE                                   | DAIK BROWN   | 10.36     | 38.81   | 25.74      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4.00 5.00 | 1.00       | SHALE                                   | CARK BROWN   | 12.46     | 36.88   | 26.92      | - Administration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 5.00 6.00 | 1.00       | SHALE                                   | CARK BROWN   | 15.68     | 34.45   | 26.68      | J. J. Carlotte                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 6.00 7.00 | 1.00       | SHALE                                   | DARK BROWN   | 10.64     | 38.98   | 24.80      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.00 8.00 | 1.00       | SHALE                                   | DARK BROWN   | 13.58     | 37.44   | 26.68      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| .00 9.00  | 1.00       | LIMONITIC SHALE                         | DARK BROWN   | 19.04     | 32.80   | 26.21      | $\sim 4\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| .00 10.00 | 1.00       | LIMONITIC SHALE                         | GEEY BROWN   | 13.58     | 37.11   | 22.20      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| .00 11.00 | 1.00       | LIMONITIC SHALE                         | GREY BROWN   | 18.62     | 33.84   | 24.80      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 00 12.00  | 1.00       |                                         | LIGHT BROWN  | 19.60     | 40.32   | 21.25      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 00 13.00  |            | LIMONITIC SHALE                         | LIGHT BROWN  | 14.00     | 51.20   | 10.59      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 00 14.00  |            | LIMONITIC SHALE                         | LIGHT BROWN  | 14.56     |         | 18.92      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 00 15.00  |            | LIMONITIC SHALE                         | LIGHT BROWN  | 18.76     | 51.88   | 19.90      | the first series to the series of the series |
|           |            | LIMONITIC SHALE                         | LIGHT BROWN  | 19.46     | 47.10   | 20.89      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           |            | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |              | 19.46     | 46.59   | 16.94      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

ANNEXURE-IVB/ 101

|                                      |                  |        |           |         | LE NO:MLMR-48 |       |        |         | WANNEYOKE-IAB\ | 101 |
|--------------------------------------|------------------|--------|-----------|---------|---------------|-------|--------|---------|----------------|-----|
| ! DEPTH (M) !<br>!!<br>! FROM ! TO ! | THICKNESS<br>(M) | !!!    | LITHOLOGY | ! CO:   | LOR DETAILS ! | Fe    | ! SiO2 | ! AL203 | ! REMARKS !    |     |
| 15.00 16.00                          | 1.00             | SHALE  |           | DARK BE |               |       | :<br>  | :<br>   |                |     |
| 16.00 17.00                          | 1.00             | SHALE  |           |         |               | 15.54 | 47.69  | 18.92   |                |     |
| 17.00 18.00                          | 1.00             | SHALE  |           | DARK BE | OWN           | 17.36 | 46.99  | 17.93   |                |     |
| 18.00 19.00                          |                  |        |           | DARK BE | OWN           | 17.36 | 48.84  | 16.94   |                |     |
|                                      | 1.00             | SHALE  |           | DARK BR | OWN           | 16.52 | 49.03  | 18.92   |                |     |
| 19.00 20.00                          | 1.00             | SHALE. |           | DARK BR | OWN           | 13,72 |        |         |                |     |
|                                      |                  |        |           |         |               | 13,72 | 53.70  | 18.75   |                |     |

ANNEXURE-VI/1

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING)
M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

#### BOREHOLE NO: MLM-01

LATITUDE : 1351291.547 DATE OF COMMENCEMENT : 24.08.2014
LONGITUDE : 2837130.739 DATE OF CLOSURE : 02.09.2014
REDUCED LEVEL (M): 974.149 DEPTH DRILLED (M) : 30.00

|        |         |           |              |       | <b></b> |         |    |
|--------|---------|-----------|--------------|-------|---------|---------|----|
| ! DEPT | ! (M) H | THICKNESS | ! SAMPLE NO. | ! Fe  | ! Si02  | ! Al203 | !  |
|        | !       | (M)       | !            | !     | ! .     | !       | į. |
| ! FROM | ! TO !  |           | !            | i     | Ţ.      | j.      | ļ  |
| 0.00   | 0.50    | 0.50      | MLM-01/01    | 35.28 | 10.16   |         |    |
| 0.60   | 1.00    | 0.40      | MLM-01/02    | 31.50 | 18.16   | 14.64   |    |
| 1.00   | 2.00    | 1.00      | MLM-01/02    | 38.22 | 20.35   | 17.32   |    |
| 2.00   | 2.50    | 0.50      | MLM-01/03    |       | 16.43   | 12.99   |    |
|        | 3.50    |           | •            | 33.88 | 20.27   | 14.17   |    |
| 2.50   |         | 1.00      | MLM-01/05    | 34.72 | 20.82   | 14.40   |    |
| 3.50   | 5.00    | 1.50      | MLM-01/06    | 26.88 | 25.32   | 18.71   |    |
| 5.00   | 5.50    | 0.50      | MLM-01/07    | 22.40 | 29.40   | 20.36   |    |
| 5.50   | 7.00    | 1.50      | MLM-01/08    | 20.62 | 33.53   | 20.78   |    |
| 7.00   | 7.50    | 0.50      | MLM-01/09    | 20.16 | 32.29   | 22.01   |    |
| 7.50   | 8.50    | 1.00      | MLM-01/10    | 22.10 | 29.50   | 23.27   |    |
| 8.50   | 9.50    | 1.00      | MLM-01/11    | 19.58 | 32.85   | 23.79   |    |
| 9.50   | 10.50   | 1.00      | MLM-01/12    | 17.48 | 34.51   | 23.79   |    |
| 10.50  | 11.50   | 1.00      | MLM-01/13    | 14.82 | 37.09   | 26.93   |    |
| 11.50  | 12.50   | 1.00      | MLM-01/14    | 19.02 | 33.43   | 24.06   |    |
| 12.50  | 13.50   | 1.00      | MLM-01/15    | 18.04 | 34.03   | 25.36   |    |
| 13.50  | 14.50   | 1.00      | MLM-01/16    | 16.92 | 34.74   | 24.06   |    |
| 14.50  | 16.00   | 1.50      | MLM-01/17    | 18.04 | 34.83   | 23.79   |    |
| 16.00  | 17.50   | 1.50      | MLM-01/18    | 17.06 | 35.92   | 24.58   |    |
| 17.50  | 19.00   | 1.50      | мпм-01/19    | 16.01 | 41.96   | 23.04   |    |
| 19.00  | 20.50   | 1.50      | MLM-01/20    | 13.30 | 47.51   | 19.84   |    |
| 20.50  | 21.50   | 1.00      | MLM-01/21    | 11.20 | 56.41   | 15.68   |    |
| 21.50  | 22.50   | 1.00      | MLM-01/22    | 14.00 | 53.81   | 16.60   |    |
| 22.50  | 23.50   | 1.00      | MLM-01/23    | 13.44 | 52.32   | 17.60   |    |
| 23.50  | 25.00   | 1.50      | MLM-01/24    | 15.68 | 51.28   | 16.48   |    |
| 25.00  | 26.00   | 1.00      | MLM-01/25    | 13.86 | 52.52   | 18.08   |    |
| 26.00  | 27.00   | 1.00      | MLM-01/26    | 12.32 | 52.16   | 17.92   |    |
| 27.00  | 28.00   | 1.00      | MLM-01/27    | 18.06 | 34.20   | 25.60   |    |
| 28.00  | 29.00   | 1.00      | MLM-01/28    | 13.44 | 54.24   | 16.64   |    |
| 29.00  | 30.00   | 1.00      | MLM-01/29    | 15.68 | 48.66   | 17.44   |    |

ANNEXURE-VI/2

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING)
M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No: 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO: MLM-02

LATITUDE 1351003.783 LONGITUDE 2837248.186 REDUCED LEVEL (M): 946.112

2431 ALL

DATE OF COMMENCEMENT : 24.08.2014 DATE OF CLOSURE : 10.09.2014 DEPTH DRILLED (M) : 20.00

| 0.00 1.00 1.00 MLM-02/01 53.76 19.35 3.14 2.00 3.50 1.50 MLM-02/03 52.08 21.03 1.86 5.00 5.50 0.50 MLM-02/05 52.92 19.98 1.86 5.50 7.00 1.50 MLM-02/06 54.04 18.45 1.71 7.00 8.00 1.00 MLM-02/07 54.32 17.49 2.48 9.50 11.00 1.50 MLM-02/08 41.72 31.67 5.12 11.00 12.50 1.50 MLM-02/10 43.54 33.70 1.86 14.00 15.50 1.50 MLM-02/10 43.54 33.70 1.86 14.00 15.50 1.50 MLM-02/11 35.98 45.41 1.24 15.50 17.00 1.50 MLM-02/12 35.98 45.09 1.24 17.00 18.50 1.50 MLM-02/13 32.48 45.25 2.17 18.50 20.00 1.50 MLM-02/14 32.34 50.08 1.86 | ! DEPT                                                                                           | H (M) !                                                                                                    | THICKNESS<br>(M)                                             | SAMPLE NO.                                                                                                                                                            | ! Fe                                                                                                     | ! SiO2                                                                                                   | ! E02LA !                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 52.13 1.86                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.00<br>2.00<br>3.50<br>5.00<br>5.50<br>7.00<br>8.00<br>9.50<br>11.00<br>12.50<br>14.00<br>15.50 | 2.00<br>3.50<br>5.00<br>5.50<br>7.00<br>8.00<br>9.50<br>11.00<br>12.50<br>14.00<br>15.50<br>17.00<br>18.50 | 1.00<br>1.50<br>1.50<br>0.50<br>1.50<br>1.50<br>1.50<br>1.50 | MLM-02/02<br>MLM-02/03<br>MLM-02/04<br>MLM-02/05<br>MLM-02/06<br>MLM-02/07<br>MLM-02/08<br>MLM-02/09<br>MLM-02/10<br>MLM-02/11<br>MLM-02/12<br>MLM-02/13<br>MLM-02/14 | 53.34<br>52.08<br>52.92<br>52.92<br>54.04<br>54.32<br>41.72<br>53.76<br>43.54<br>35.98<br>35.98<br>32.48 | 21.00<br>21.03<br>19.98<br>19.61<br>18.45<br>17.49<br>31.67<br>17.58<br>33.70<br>45.41<br>45.09<br>45.25 | 2.53<br>1.86<br>1.86<br>2.17<br>1.71<br>2.48<br>5.12<br>2.17<br>1.86<br>1.24<br>1.24<br>2.17 |



ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING) M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST BELLARY, KARNATAKA

### BOREHOLE NO:MLM-36

LATITUDE : 1350775.256 DATE OF COMMENCEMENT : 03.09.2014
LONGITUDE : 2837457.626 DATE OF CLOSURE : 07.09.2014
REDUCED LEVEL (M): 939.363 DEPTH DRILLED (M) : 22.00

| ! DEPTH (M)                                                                                                                                     | ! THICKNESS<br>-! (M) | ! SAMPLE NO.                                                                                                                                                         | ! Fe                                                                                                                                        | ! SiO2<br>!                                                                                                                                  | ! Al203 !<br>!                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 0.00 1.00 1.00 2.50 2.50 4.00 4.00 5.50 5.50 7.00 7.00 8.50 10.00 10.50 11.50 13.00 13.00 14.50 14.50 16.00 17.50 19.00 19.00 20.50 20.50 22.00 | 1.50<br>1.50<br>1.50  | MLM-36/ 01 MLM-36/ 02 MLM-36/ 03 MLM-36/ 05 MLM-36/ 05 MLM-36/ 07 MLM-36/ 08 MLM-36/ 09 MLM-36/ 10 MLM-36/ 11 MLM-36/ 12 MLM-36/ 13 MLM-36/ 14 MLM-36/ 15 MLM-36/ 16 | 22.26<br>9.10<br>17.50<br>18.20<br>20.58<br>19.46<br>17.22<br>14.70<br>20.86<br>19.04<br>18.48<br>16.10<br>20.44<br>16.52<br>15.26<br>27.44 | 31.53<br>37.94<br>33.00<br>32.99<br>31.74<br>31.72<br>33.02<br>34.24<br>29.78<br>30.88<br>31.55<br>33.65<br>30.26<br>31.16<br>34.14<br>26.09 | 26.22<br>32.46<br>27.68<br>27.56<br>27.81<br>28.18<br>27.93<br>29.28<br>24.86<br>26.58<br>27.20<br>28.66<br>25.85<br>28.42<br>28.66<br>20.58 |



ANNEXURE-VI/4

# ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING) M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST: BELLARY, KARNATAKA

### BOREHOLE NO: MLM-49

LATITUDE : 1351195.683 LONGITUDE : 2837072.961 REDUCED LEVEL (M): 950.659

 $\psi^{\frac{1}{2}}$ 

DATE OF COMMENCEMENT : 06.09.2014 DATE OF CLOSURE : 25.09.2014 DEPTH DRILLED (M) : 34.50

! DEPTH (M) ! THICKNESS ! SAMPLE NO. ! FROM ! TO ! ! Fe ! SiO2 ! Al2O3 ! (M) į ------1.00 MLM-49/ 01 57.96 1.00 MLM-49/ 02 59.92 1.00 MLM-49/ 03 51.52 1.00 MLM-49/ 05 37.80 1.00 MLM-49/ 06 35.28 0.00 1.00 1.00
2.00 1.00
3.00 1.00
4.00 1.00
5.00 1.00
6.50 0.50
8.00 1.50
9.50 1.50
11.00 1.50
12.70 1.70
14.00 1.30
15.00 1.00
16.00 1.00
18.00 2.00 1.00 57.96 5.89 59.92 6.68 51.52 14.46 63.00 3.35 37.80 20.98 35.28 33.44 44.94 22.57 54.18 13.11 63.84 3.72 63.84 2.35 65.10 1.52 66.78 1.76 1.00 4.34 2.00 3.00 5.11 7.90 4.00 2.94 .=/ 05 MLM-49/ 06 MLM-49/ 07 MLM-49/ ^ 5.00 17.05 6.00 11.00 6.50 7.13 8.00 9.50 6.20 MLM-49/ 10 MLM-49/ 11 11.00 2.63 12.70 1.55 MLM-49/ 12 14.00 4.65 66.78 59.78 1.76 MLM-49/ 13 15.00 2.38 11.65 16.00 MLM-49/ 14 5.88 1.98 18.00 61.04 2.00 0.80 MLM-49/ 15 18.00 1.19 18.80 67.20 MLM-49/ 16 0.76 1.59 18.80 20.50 67.20 1.70 1.50 MLM-49/ 17 MLM-49/ 18 0.70 1.98 20.50 22.00 66.64 1.11 -.-0 1.50 22.00 2.38 23.50 67.06 MIM-49/ 19 1.50 23.50 25.00 2.18 66.50 1.50 2.53 1.90 MIM-49/ 20 25.00 1.98 26.00 66.08 1.00 MLM-49/ 21 MLM-49/ 22 26.00 26.50 2.38 0.50 63.56 4.12 26.50 3.18 27.50 1.00 63,42 MLM-49/ 23 1.90 27.50 1.98 28.50 1.00 66.08 MLM-49/ 24 2.60 28,50 29.00 2.18 0.50 31.36 52.44 MLM-49/ 25 29.00-- 30.50 0.24 1.50 MLM-49/ 26 MLM-49/ 27 MLM-49/ 28 -59<del>.92</del> 12.62 30.50 1.35 31.00 0.50 59.78 11.69 31.00 1.60 33.50 57.40 2.50 12.98 33.50 3.79 34.50 48.02 1.00 28.30 MLM-49/ 29 1.72 66.64

ANNEXURE-VI/5

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING)
M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST: BELLARY, KARNATAKA
BOREHOLE NO:MLM-50

### BOREHOLE NO:MLM-50

1350332.722 LONGITUDE 2838030.977

DATE OF COMMENCEMENT : 08.09.2014 DATE OF CLOSURE : 15.09.2014

3555 B. 1. 18.2

REDUCED LEVEL (M): 958.888

AND ASSESSED FROM

DEPTH DRILLED (M)

: 35.00

| DEP   | TH (M) ! | THICKNESS ! | SAMPLE NO.  | ! Fe   | ! SiO2   | ! Al203        | į      |
|-------|----------|-------------|-------------|--------|----------|----------------|--------|
| FROM  | ! TO !   | (PI) ;      |             | !<br>! | !!       | !<br>!         | Į<br>į |
| 0.00  | 0.50     | 0.50        | MLM-50 / 18 | 21.14  | 31.34    |                |        |
| 0.50  | 1.00     | 0.50        | MLM-50/ 01  | 50.82  | 10.92    | 26.37          |        |
| 1.00  | 1.50     | 0.50        | MLM-50/ 02  | 46.90  | 13.87    | 10.66          |        |
| 1.50  | 3.00     | 1.50        | MLM-50/ 03  | 41.72  |          | 12.50          |        |
| 3.00  | 4.00     | 1.00        | MLM-50/ 04  | 34.72  | <b>-</b> | 15.44          |        |
| 4.00  | 5.50     | 1.50        | MLM-50/ 05  | 22.12  |          | 19.23          |        |
| 5.50  | 7.00     | 1.50        | MLM-50/ 06  | 30.14  |          | 25.11          |        |
| 7.00  | 8.00     | 1.00        | MLM-50/ 07  | 22.26  | 32.51    | 20.09          |        |
| 8.00  | 9.00     | 1.00        | MLM-50/ 08  | 22.54  | 31.18    | 24.50          |        |
| 9.00  | 10.00    | 1.00        | MLM-50/ 09  | 23.52  | 30.64    | 24.62          |        |
| 10.00 | 11.00    | 1.00        | MLM-50/ 10  | 29.12  | 26.19    | 24.88          |        |
| 11.00 | 12.50    | 1.50        | MLM-50/ 11  | 28.84  | 25.98    | 21.30          |        |
| 12.50 | 14.00    | 1.50        | MLM-50/ 12  | 20.44  | 31.27    | 21.30          |        |
| 14.00 | 15.50    | 1.50        | MIM-50/ 13  | 22.68  | 28.19    | 26.12          |        |
| 15.50 | 17.00    | 1.50        | MLM-50/ 14  | 21.28  | 30.40    | 24.88          |        |
| 17.00 | 18.50    | 1.50        | MLM-50/ 15  | 23.52  | 29.86    | 23.95          |        |
| 18.50 | 20.00    | 1.50        | MLM-50/ 16  | 24.08  |          | 23.95          |        |
| 20.00 | 21.50    | 1.50        | MLM-50/ 17  | 21.56  | 30.90    | 24.57          |        |
| 21.50 | 23.00    | 1.50        | MLM-50/ 19  | 16.80  | 33.02    | 26.44          |        |
| 23.00 | 24.50    | 1.50        | MLM-50/ 20  | 21.84  | 30.86    | 27.06<br>24.57 |        |
| 24.50 | 26.00    | 1.50        | MLM-50/ 21  | 14.70  | 34.98    | 24.57<br>25.74 |        |
| 6.00  | 27.50    | 1.50        | MLM-50/ 22  | 10.50  | 38.66    | 25.74<br>27.39 |        |
| 7.50  | 29.00    | 1.50        | MLM-50/ 23  | 12.74  | 36.96    | 26.92          |        |
| 9.00  | 30.50    | 1.50        | MLM-50/ 24  | 12.88  | 36.88    | 25.74          |        |
| 10.50 | 32.00    | 1.50        | MLM-50/ 25  | 20.30  | 31.62    | 21.96          |        |
| 2.00  | 33.50    | 1.50        | MLM-50/ 26  | 16.38  | 33.77    | 25.74          |        |
| 3.50  | 35.00    | 1.50        | MLM-50/ 27  | 18.06  | 32.95    | 23.85          |        |

ANNEXURE-VI/6

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE ERILLING) ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE ERILLING)

M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(MINO. 2487), DIST: BELLARY, KARNATAKA

BOREBOLE NO:MLM-51

LATITUDE: 1350638.188. DATE OF COMMENCEMENT: 11.09.2014

LONGITUDE: 2837612.337 DATE: OF CLOSURE: 15.09.2014

REDUCED LEVEL (M): 955.443 DEPTH DRILLED (M): 30.00

|       | H (M) !<br>! | THICKNESS<br>(M) | ! SAMPLE NO. | ! Fe  | ! SiO2 | ! Al203 | ! |
|-------|--------------|------------------|--------------|-------|--------|---------|---|
| FROM  | ! TO !       |                  | !            | i     | !      | !       | ļ |
| 0.00  | 1.00         | 1.00             | MLM-51/ 01   | 36.40 | 19.84  | 17.00   |   |
| 1.00  | 2.00         | 1.00             | MLM-51/ 02   | 13.86 |        |         |   |
| 2.00  | 3.00         | 1.00             | MLM-51/ 03   | 11.90 | 37.66  |         |   |
| 3.00  | 4.00         | 1.00             | MLM-51/ 04   | 11.20 |        |         |   |
| 4.00  | 5.00         | 1.00             | MLM-51/ 05   | 11.20 |        |         |   |
| 5.00  | 6.00         | 1.00             | MLM-51/ 06   | 14.55 |        |         |   |
| 6.00  | 7.50         | 1.50             | MLM-51/ 07   | 18.04 |        |         |   |
| 7.50  | 9.00         | 1.50             | MLM-51/ 08   | 17.76 | 34.25  |         |   |
| 9.00  | 10.50        | 1.50             | MLM-51/ 09   | 15.94 |        |         |   |
| 10.50 | 12.00        | 1.50             | MLM-51/ 10   | 14.68 |        |         |   |
| 12.00 | 13.50        | 1.50             | MLM-51/ 11   | 19.72 |        |         |   |
| 13.50 | 15.00        | 1.50             | MLM-51/ 12   | 17.76 | 32,23  |         |   |
| 15.00 | 16.50        | 1.50             | MLM-51/ 13   | 17.76 |        |         |   |
| 16.50 | 18.00        | 1.50             | MLM-51/ 14   | 16.92 |        | 25.05   |   |
| 18.00 | 19.50        | 1.50             | MLM-51/ 15   | 16.36 | 33.55  |         |   |
| 19.50 | 21.00        | 1.50             | MLM-51/ 16   | 11.61 | 37.55  |         |   |
| 21.00 | 22.50        | 1.50             | MLM-51/ 17   | 12.03 | 36.98  |         |   |
|       | 24.00        | 1.50             | MLM-51/ 18   | 18.34 | 32.70  |         |   |
| 24.00 | 25.50        | 1.50             | MLM-51/ 19   | 20.16 | 30.77  |         |   |
| 25.50 | 27.00        | 1.50             | MLM-51/ 20   | 16.94 | 32.51  |         |   |
|       |              | 1.50             | MLM-51/ 21   | 16.66 |        |         |   |
| 28.50 | 30.00        | 1.50             | MLM-51/ 22   | 22.68 | 28.94  |         |   |

ANNEXURE-VI/7

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analytical results of primary samples (core drilling)  $_{\text{M/s.}}$  lakshminarayana mining company lease area(ML no. 2487), dist: bellary, karnataka

#### BOREHOLE NO:MLM-52

LATITUDE : 1349543.287 DATE OF COMMENCEMENT : 15.09.2014
LONGITUDE : 2838619.621 DATE OF CLOSURE : 24.09.2014
REDUCED LEVEL (M): 915.458 DEPTH DRILLED (M) : 35.00

| DEPTH  | (M) ! | THICKNESS<br>(M) | ! SAMPLE NO. | ! Fe  | ! SiO2 | ! Al203 | ! |
|--------|-------|------------------|--------------|-------|--------|---------|---|
| FROM ! | то!   |                  | !<br>        |       | !      | İ       | ! |
| 0.00   | 1.00  | 1.00             | MLM-52/ 01   | 47.18 | 14.22  | 11.04   |   |
| 1.00   | 2.00  | 1.00             | MLM-52/ 02 , | 52.22 | 10.20  | 8.08    |   |
| 2.00   | 3.00  | 1.00             | MLM-52/ 03   | 53.34 | 9.55   | 8.08    |   |
| 3,00   | 4,00  | 1.00             | MLM-52/ 04   | 55.30 | 9.43   | 7.46    |   |
| 4.00   | 5.00  | 1.00             | MLM-52/ 05   | 52.08 | 11.23  | 8.55    |   |
| 5.00   | 6.00  | 1.00             | MLM-52/ 06   | 46.20 | 13.49  | 11.35   |   |
| 6.00   | 7.00  | 1.00             | MLM-52/ 07   | 37.10 | 20.80  | 16.95   |   |
| 7.00   | 8.00  | 1.00             | MLM-52/ 08   | 48.72 | 10.84  | 9.48    |   |
| 8.00   | 9.00  | 1.00             | MLM-52/ 09   | 43.68 | 15.05  | 12.75   |   |
| 9.00   | 10.00 | 1.00             | MLM-52/ 10   | 42.98 | 14.02  | 12,50   |   |
| 0.00   | 11.50 | 1.50             | MLM-52/ 11   | 13.44 | 36.33  | 30.26   |   |
| 1.50   | 13.00 | 1.50             | MLM-52/ 12   | 16.24 | 32.96  | 28.14   |   |
| 3.00   | 14.50 | 1.50             | MLM-52/ 13   | 12.32 | 37.59  | 30.01   |   |
| 4.50   | 16.00 | 1.50             | MLM-52/ 14   | 14.00 | 35.20  | 30.01   |   |
| 6.00   | 17.50 | 1.50             | MLM-52/ 15   | 38.22 | 18.93  | 14.62   |   |
| 7.50   | 19.00 | 1.50             | MLM-52/ 16   | 40.18 | 16.78  | 13.84   |   |
| 9.00   | 20.50 | 1.50             | MLM-52/ 17   | 34.02 | 22.77  | 18.04   |   |
| 0.50   |       | 1.50             | MLM-52/ 18   | 43.54 | 13.18  | 12.28   |   |
| 2.00   | 23.50 | 1.50             | MLM-52/ 19   | 34.72 | 20.45  | 17.26   |   |
| 3.50   | 25.00 | 1.50             | MLM-52/ 20   | 24.92 | 28.43  | 20.31   |   |
| 5.00   | 26.50 | 1.50             | MLM-52/ 21   | 24.22 | 28.47  | 21.25   |   |
| 6.50   | 28.00 | 1.50             | MLM-52/ 22   | 20.30 |        | 24.09   |   |
| 8.00   | 29.50 | 1.50             | MLM-52/ 23   | 24.26 |        | 21.25   |   |
| 9.50   | 31.00 | 1.50             | MLM-52/ 24   | 20.67 |        | 20.31   |   |
| 1.00   | 32.50 | 1.50             | MIM-52/ 25   | 20.10 |        | 21.02   |   |
| 2.50   | 34.00 | 1.50             | MLM-52/ 26   | 24.06 | 28.70  | 21.25   |   |
| 4.00   | 35.00 | 1.00             | MLM-52/ 27   | 23.80 | 28.85  | 21.25   |   |

ANNEXURE-VI/8

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING)
M/s. LARSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST: BELLARY, KARNATAKA

BOREHOLE NO:MLM-53

LATITUDE : 1349381 213 DATE OF COMMENCEMENT : 16.09.2014
LONGITUDE : 2838710.945 DATE OF CLOSURE : 23.09.2014
REDUCED LEVEL (M): 917.971 DEPTH DRILLED (M) : 35.00

| ! DEPT<br>!<br>! FROM | !     | THICKNESS<br>(M) | ! SAMPLE NO. ! | ! Fe           | ! SiO2 | ! Al203<br>! | !!! |
|-----------------------|-------|------------------|----------------|----------------|--------|--------------|-----|
| 0.00                  | 1.50  | 1.50             | MLM-53/1       | 19.88          | 30.08  | 23.89        |     |
| 1.50                  | 2.50  | 1.00             | MLM-53/2       | 14.56          | 32.88  | 27.32        |     |
| 2.50                  | 4.00  | 1.50             | MLM-53/3       | 13.02          | 33.39  |              |     |
| 4.00                  | 5.50  | 1.50             | MLM-53/4       | 14.56          | 33.43  | 29.14        |     |
| 5.50                  | 7.00  | 1.50             | MLM-53/5       | 16.66          | 32.33  | 28.98        |     |
| 7.00                  | 8.50  | 1.50             | MLM-53/6       | 18.48          | 32.33  | 27.75        |     |
| 8.50                  | 9.50  | 1.00             | MLM-53/7       | 21.00          |        | 28.83        |     |
| 9.50                  | 10.00 | 0.50             | MLM-53/8       | 28.98          | 29.55  | 25.58        |     |
| 10.00                 | 10.50 | 0.50             | MLM-53/9       | 21.56          | 21.98  | 21.24        |     |
| 10.50                 | 12.00 | 1.50             | MLM-53/10      | 17.92          | 28.48  | 25.73        |     |
| 12.00                 | 13.50 | 1.50             | MLM-53/11      | 17.92          | 31.92  | 27.90        |     |
| 13.50                 | 15.00 | 1.50             | MLM-53/12      | 16.52          | 33.77  | 28.83        |     |
| 15.00                 | 16.50 | 1.50             | MLM-53/13      |                | 33.09  | 28.06        |     |
| 16.50                 | 18.00 | 1.50             | MLM-53/14      | 17.36<br>15.68 | 32.59  | 27.59        |     |
| 18.00                 | 19.50 | 1,50             | MLM-53/15      | 17.36          | 31.88  | 32.55        |     |
| 19.50                 | 21.00 | 1.50             | MLM-53/16      |                | 31.99  | 28.57        |     |
| 21.00                 | 22.50 | 1.50             | MLM-53/17      | 19.60          | 31.41  | 27.63        |     |
| 22.50                 | 24.00 | 1.50             | MLM-53/18      | 23.38          | 29.50  | 25.43        |     |
| 24.00                 | 25.50 | 1.50             | MLM-53/19      | 18.76          | 32.15  | 27.32        |     |
| 25.50                 | 27.00 | 1.50             | MLM-53/20      | 17.36          | 32.84  | 28.42        |     |
| 27.00                 | 28.50 | 1.50             | MLM-53/21      | 15.68          | 33.55  | 29.99        |     |
| 28.50                 | 30.00 | 1.50             | MLM-53/22      | 20.02<br>17.50 | 31.81  | 26.85        |     |
| 30.00                 | 31.50 | 1.50             | MLM-53/23      |                | 34.83  | 26.22        |     |
| 31.50                 | 32.00 | 0.50             | MLM-53/24      | 18.90          | 35.69  | 24.81        |     |
| 32.00                 | 33.00 | 1.00             | MLM-53/25      | 17.92          | 38.39  | 22.61        |     |
| 33.00                 | 34.00 | 1.00             | MLM-53/26      | 15.12<br>15.40 | 48.04  | 19.47        |     |
| 34.00                 | 35.00 | 1.00             | MLM-53/27      |                | 48.21  | 19.15        |     |
|                       |       |                  |                | 13.02          | 46.42  | 22.17        |     |

ANNEXURE-VI/9

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING)  $_{\rm M/s}$  . Lakshminarayana mining company lease area(ml no. 2487), dist: bellary, karnataka

#### BOREHOLE NO:MLM-54

LATITUDE : 1349768.365 LONGITUDE : 2838525.382

一個多樣的四個人不是不不知不必然不是不是不是我的人

DATE OF COMMENCEMENT : 25.09.2014
DATE OF CLOSURE : 02.10.2014

REDUCED LEVEL (M): 933.942 DEPTH DRILLED (M) : 32.00

AND METER V

| DEPTH  | (M)   | THICKNESS<br>(M) | ! SAMPLE NO. | ! Fe   | ! SiO2 | ! A1203 | ! |
|--------|-------|------------------|--------------|--------|--------|---------|---|
| FROM ! | TO!   | (12)             | :<br>!       | i<br>I | !      | ;<br>!  | ! |
|        |       |                  |              |        |        |         |   |
| 0.00   | 0.50  | 0.50             | MLM-54/1     | 44.66  | 9.03   | 12.98   |   |
| 0.50   | 1.00  | 0.50             | MLM-54/2     | 24.36  | 11.90  | 32,71   |   |
| 1.00   | 2.50  | 1.50             | MLM-54/3     | 22.40  | 9.15   | 37.61   |   |
| 2.50   | 4.00  | 1.50             | MLM-54/4     | 31,50  | 18.55  | 18.38   |   |
| 4.00   | 5.50  | 1.50             | MLM-54/5     | 35.70  | 16,19  | 17,88   |   |
| 5.50   | 7.00  | 1.50             | MLM-54/6     | 30.66  | 20.28  | 20.70   |   |
| 7.00   | 7.50  | 0.50             | MLM-54/7     | 31.36  | 22.82  | 19.72   |   |
| 7,50   | 9.00  | 1.50             | MLM-54/8     | 28.98  | 24.17  | 21.44   |   |
| 9.00   | 10.50 | 1.50             | MLM-54/9     | 29.26  | 24.39  | 20.21   |   |
| 10.50  | 12.00 | 1.50             | MLM-54/10    | 29.26  | 24.20  | 22.78   |   |
| 12.00  | 13.50 | 1.50             | MLM-54/11    | 24.22  | 28.02  | 23.15   |   |
| 13.50  | 15.00 | 1.50             | MLM-54/12    | 26.88  | 25.01  | 21.20   |   |
| 15.00  | 16.00 | 1.00             | MLM-54/13    | 31.64  | 24.48  | 19.00   |   |
| 16.00  | 17.00 | 1.00             | MLM-54/14    | 27.16  | 25.99  | 22,45   |   |
| 17.00  | 17.50 | 0.50             | MLM-54/15    | 29.68  | 23.63  | 17.14   |   |
| 17.50  | 19.00 | 1.50             | MLM-54/16    | 24.50  | 27.39  | 23.39   |   |
| 19.00  | 20.50 | 1.50             | MLM-54/17    | 33.46  | 19.86  | 17.11   |   |
| 20.50  | 22.00 | 1.50             | MLM-54/18    | 34.16  | 20.24  | 18.21   |   |
| 22.00  | 23.50 | 1.50             | MLM-54/19    | 33.32  | 19.54  | 17.27   |   |
| 23.50  | 25.00 | 1.50             | MLM-54/20    | 33.88  | 21.26  | 17.43   |   |
| 25.00  | 26.00 | 1.00             | MLM-54/21    | 45.08  | 15.26  | 11.78   |   |
| 26.00  | 27.00 | 1.00             | MLM-54/22    | 28.56  | 24.07  | 19.78   |   |
| 27.00  | 28.50 | 1.50             | MLM-54/23    | 29.12  | 24.41  | 18.40   |   |
| 28.50  | 30.00 | 1.50             | MLM-54/24    | 19.19  | 32.14  | 25.20   |   |
| 30.00  | 31.00 | 1.00             | MLM-54/25    | 27.86  | 25.42  | 20.04   |   |
| 31.00  | 32.00 | 1.00             | MLM-54/26    | 17.36  | 33.81  | 26.00   |   |



ANNEXURE-VI/10

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING)

M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA(ML No. 2487), DIST: BELLARY, KARNATAKA

# BOREHOLE NO:MIM-55

LATITUDE 1349901.031 LONGITUDE : 2838413.345

DATE OF COMMENCEMENT : 25.09.2014
DATE OF CLOSURE : 02.10.2014
DEPTH DRILLED (M) : 30.00

REDUCED LEVEL (M): 954.841

| ! DEPT | ! (M) ! | THICKNESS<br>(M) | ! SAMPLE NO. | ! Fe  | ! SiO2 | ! Al203        | <br>! |
|--------|---------|------------------|--------------|-------|--------|----------------|-------|
| ! FROM | ! TO !  |                  | !            | į     | 1      | !              | !     |
| 0.00   | 1.00    | 1.00             | MLM-55/1     | 16.24 | 30.83  | 29.17          |       |
| 1.00   | 2.50    | 1.50             | MLM-55/2     | 14.00 | 30.72  | 29.17          |       |
| 2.50   | 3.00    | 0.50             | MLM-55/3     | 10.92 | 35.60  | 29.17<br>31.35 |       |
| 3.00   | 4.50    | 1.50             | MLM-55/4     | 18.62 | 30.63  |                |       |
| 4.50   | 6.00    | 1.50             | MLM-55/5     | 18.48 | 30.86  | 26.59<br>27.38 |       |
| 6.00   | 7.50    | 1.50             | MLM-55/6     | 18.20 | 30.52  | 27.38<br>27.38 |       |
| 7.50   | 9.00    | 1.50             | MLM-55/7     | 16.10 | 32.27  |                |       |
| 9.00   | 10.50   | 1.50             | MLM-55/8     | 15.26 | 32.52  | 28.38<br>29.17 |       |
| 10.50  | 12.00   | 1.50             | MLM-55/9     | 18.76 | 29.99  |                |       |
| 12.00  | 12.50   | 0.50             | MLM-55/10    | 15.96 | 33.22  | 27.38<br>28.68 |       |
| 12.50  | 14.00   | 1.50             | MLM-55/11    | 20.30 | 31.82  | 26.04          |       |
| 14.00  | 15.50   | 1.50             | MLM-55/12    | 19.74 | 30.04  | 26.04          |       |
| 15.50  | 17.00   | 1.50             | MIM-55/13    | 19.60 | 28.85  |                |       |
| 17.00  | 18.50   | 1.50             | MLM-55/14    | 20.16 | 30.33  | 24.03<br>24.34 |       |
| 18.50  | 20.00   | 1.50             | MLM-55/15    | 18.54 | 29.68  | 24.34<br>25.11 |       |
| 20.00  | 21.50   | 1.50             | MLM-55/16    | 24.78 | 29.31  | 24.18          |       |
| 21.50  | 23.00   | 1.50             | MLM-55/17    | 18.76 | 29.67  | 25.11          |       |
| 23.00  | 24.50   | 1.50             | MLM-55/18    | 20.16 | 26.90  | 24.65          |       |
| 24.50  | 26.00   | 1.50             | MIM-55/19    | 20.86 | 30.43  | 25.58          |       |
| 26.00  | 27.50   | 1.00             | MLM-55/20    | 21.42 | 26.12  | 25.42          |       |
| 27.50  | 29.00   | 1.50             | MIM-55/21    | 21.28 | 29.02  | 24.18          |       |
| 29.00  | 30.00   | 1.00             | MLM-55/22    | 18.76 | 29.66  | 25.43          |       |
|        |         |                  |              |       |        | 15             |       |

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ANNEXURE-VI/II

ANALYTICAL RESULTS OF PRIMARY SAMPLES (CORE DRILLING)

M/s. LAKSHMINARAYANA MINING COMPANY LEASE AREA (ML No. 2487), DIST: BELLARY, RARNATAKA

STATE CONTRACTOR

#### BOREHOLE NO:MLM-56

DATE OF COMMENCEMENT : 27.09.2014
DATE OF CLOSURE : 04.10.2014 1350037.745 LATITUDE : 2838285.874 LONGITUDE : 04.10.2014 REDUCED LEVEL (M): 948.096 DEPTH DRILLED (M) : 30.00

| DEPTI | ! (M) E | THICKNESS | ! SAMPLE NO. | ! F | `e!  | <br>SiO2 | <br>! | Al203 | <br>! |
|-------|---------|-----------|--------------|-----|------|----------|-------|-------|-------|
| j     | 1       | (M)       | !            | !   | 1    |          | į     |       | 1     |
| FROM  | TO !    |           | İ.           | !   | į    |          | !     |       | į     |
|       |         |           |              |     |      |          |       |       |       |
| 0.00  | 1.00    | 1.00      | MLM-56/1     | 26  | .04  | 26.66    |       | 22.76 |       |
| 1.00  | 2.00    | 1.90      | MLM-56/2.    | 20  | .16  | 29.98    |       | 24.33 |       |
| 2.00  | 3.00    | 1.00      | MLM-56/3     | 22  | .82  | 29.17    |       | 24.81 |       |
| 3.00  | 4.00    | 1.00      | MLM-56/4     | 21  | .28  | 30.35    |       | 24.49 |       |
| 4.00  | 5.50    | 1.50      | MLM-56/5     | 20  | .02  | 31.31    |       | 24.18 |       |
| 5.50  | 7.00    | 1.50      | MLM-56/6     | 21  | .72  | 30.27    |       | 24.96 |       |
| 7.00  | 8,50    | 1.50      | MLM-56/7     | 21  | .14  | 30.11    |       | 21.42 |       |
| 8.50  | 10.00   | 1.50      | MLM-56/8     | 20  | .72  | 30.61    |       | 24.81 |       |
| 10.00 | 11.50   | 1.50      | MLM-56/9     | 21  | .00  | 31,16    |       | 24.81 |       |
| 11.50 | 12.50   | 1.00      | MLM-56/10    | 20  | . 44 | 31.47    |       | 25.59 |       |
| 12.50 | 13.50   | 1.00      | MLM-56/11    | 20  | .44  | 30.74    |       | 24.65 |       |
| 13.50 | 15.00   | 1.50      | MLM-56/12    | 21  | .84  | 31.00    |       | 25.12 |       |
| 15.00 | 16.00   | 1.00      | MLM-56/13    | 21  | .84  | 30.10    |       | 24.81 |       |
| 16.00 | 17.50   | 1.50      | MLM-56/14    | 19  | . 60 | 32.57    |       | 25.59 |       |
| 17.50 | 19.00   | 1.50      | MLM-56/15    | 19  | .32  | 33.11    |       | 24.65 |       |
| 19.00 | 20.50   | 1.50      | MLM-56/16    | 21  | .70  | 28.67    |       | 24.96 |       |
| 20.50 | 22.00   | 1.50      | MLM-56/17    | 19  | .74  | 32.72    |       | 25.91 |       |
| 22.00 | 22.50   | 0.50      | MLM-56/18    |     | .04  | 34.74    |       | 25.59 |       |
| 22.50 | 24.00   | 1.50      | MLM-56/19    | 18  | .76  | 34.60    |       | 25.43 |       |
| 24.00 | 25.50   | 1.50      | MLM-56/20    |     | . 32 | 38.74    |       | 23.24 |       |
| 25.50 | 27.00   | 1.50      | MLM-56/21    |     | .88  | 38.15    |       | 22.77 |       |
| 27.00 | 28.50   | 1.50      | MLM-56/22    |     | .16  | 34.22    |       | 24.02 |       |
| 28.50 | 30.00   | 1.50      | MLM-56/23    | 19  | . 04 | 32.80    |       | 26.85 |       |
|       |         |           |              |     |      |          |       |       |       |

TABLE-4
SECTIONWISE, BOREHOLEWISE, CATEGORYWISE IRON ORE RESERVES / RESOURCES BY CROSS SECTION METHOD

|                    |              | Inte          | rsection<br>(m) |             |               |                                   | Ţ         |                                                  | <del></del>    | <del></del>       |                   |                   |                                 |       |                  |                                  | ,                 |
|--------------------|--------------|---------------|-----------------|-------------|---------------|-----------------------------------|-----------|--------------------------------------------------|----------------|-------------------|-------------------|-------------------|---------------------------------|-------|------------------|----------------------------------|-------------------|
| Section<br>Numbe   |              | From          | T               | Diff<br>(m) | True<br>Width | Average<br>sectional<br>Influence | Area      | Area<br>(Sq.m)                                   | Area           | Reserves          | Reserves          | Reserves          |                                 |       | Gra              | d e                              |                   |
| ļ<br>              |              | Prom          | То              | ,,          | (m)           | (m)                               | 111       | 112                                              | (Sq.m)<br>121  | (Tonnes)<br>(111) | (Tonnes)<br>(112) | (Tonnes)<br>(121) | Total<br>Reserves/<br>Resources | Fe%   | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> % | Nomen-<br>clature |
| S1-S1 <sup>1</sup> | MLMR08       | 0.00          | 7.00            | 7.00        | 6,09          | 95                                | 735.0189  | 1353,1359                                        |                | <u> </u>          | <u> </u>          |                   |                                 |       | %                | 1 20378                          | 1                 |
| <u> </u>           | SUB-TOTAL    | <del>-,</del> |                 |             |               |                                   |           | 1050, 1053                                       | ` <del> </del> | 268833,1627       | 494909.455        |                   | 763742.6181                     | 46.35 | 15.70            | 13.62                            | <del> </del>      |
| S2-S2              | MLMR-6       | 15.00         | 20,00           | 5.00        | 4.35          | 100                               | 529.9244  | <del> `</del>                                    | <del> </del>   | 268833.1627       | 494909,455        |                   | 763742.6181                     |       | 15.70            | <del> </del>                     | Northern Bai      |
|                    | SUB-TOTAL    |               |                 |             |               |                                   | 120,02.14 | <del> </del>                                     |                | 204020.8940       |                   |                   | 204020.8940                     |       | 15.71            | 13.62                            | <u> </u>          |
| S3-S3'             | MLM-49       | 0.00          | 34.50           | 34.50       | 29.92         | 100                               | 3236.6979 |                                                  | 1447.7         | 204020.8940       |                   |                   | 204620,8940                     |       | 15.71            | 3.92                             | Central Band      |
|                    | SUB-TOTAL    |               |                 |             |               |                                   | -200.0070 | <del> </del>                                     | 1410,802       | 12 10 120.00 10   |                   | 543159.0395       | 1789287.7310                    | 59.34 | 9.37             | 3.92                             | ļ                 |
| S5-S5'             | MLMR-09      | 0.00          | 8.00            | 8,00        | 6.96          | 100                               | 871.8354  | i i                                              | <del></del>    | 1246128.6915      |                   | 543159.0395       | 1789287.7310                    | 59.34 | <del></del>      | 3.43                             | Central Band      |
|                    | SUB-TOTAL    |               |                 |             |               |                                   | 571.0004  | <del>                                     </del> | <del> </del> - | 335656.6290       |                   |                   | 335656.6290                     | 48.43 | 9.37             | 3.43                             |                   |
| S6-S6'             | MLMR-10      | 0.00          | 10,00           | 10.00       | 8.66          | 98                                | 754,2667  | <b> </b>                                         | ļ              | 335656.6290       |                   |                   | 335656,6290                     | 48.43 | 8.60             | 11.91                            | Northern Ban      |
| <del></del>        | MLM-02       | 0.00          | 11.00           | 11.00       | 9.54          | 98                                | 554,7050  |                                                  | <del> </del>   | 284584.8259       |                   |                   | 284584.8259                     | 47.72 | 8,60             | 11.91                            |                   |
| <u> </u>           | SUB-TOTAL    |               |                 |             |               |                                   | 334.7030  | <u> </u>                                         |                | 209290,1965       |                   |                   | 209290.1965                     | 51.79 | 7.88             | 10.00                            | Northern Band     |
| S8-S8'             | MLMR-11      | 0.00          | 15.00           | 15.00       | 13.05         | DB.                               |           |                                                  | <u> </u>       | 493875.0224       |                   | <del> </del>      | 493875.0224                     |       | 20.97            | 2.57                             | Central Band      |
|                    | SUB-TOTAL    | <u></u>       |                 |             | 15.00         | 98                                | 1219.1454 |                                                  |                | 459983.5594       |                   |                   |                                 | 49.44 | 13.43            | 6.85                             |                   |
| <br>S9-S9'         | T            |               |                 |             |               |                                   |           |                                                  |                | 459983,5594       |                   | <del> </del>      | 459983,5594                     | 57.13 | 10,94            | 4.48                             | Northern Band     |
| 09-09              | MLMR-19      | 0.00          | 40.00           | 40.00       | 34.80         | 100                               | 4460.4302 |                                                  |                |                   | <del></del>       |                   | 459983.5594                     | 57.13 | 10.94            | 4.48                             | <del> </del>      |
|                    | Influence121 | 1             | i               |             |               | 100                               |           |                                                  |                | 1717265.6270      |                   |                   | 1717265.6270                    | 47.01 | 26.59            | 4.12                             | Kladh - 5         |
|                    | SUB-TOTAL    |               |                 |             |               |                                   |           |                                                  | 1690.0552      |                   |                   | 650671.2520       | 650671.2520                     | 47.01 | 26.59            |                                  | Northern Band     |
| S10-S10'           | MLMR-23      | 0.00          | 24.00           |             |               |                                   |           |                                                  |                | 1717265.6270      |                   | 650671.2520       | <del></del>                     |       |                  | 4.12                             | Ñathern Band      |
|                    |              | 0.00          | 31.00           | 31.00       | 26.97         | 105                               | 1111.3862 | 1734.3338                                        | 2786.3866      | 449277.8714       | 701104.4387       |                   | 2367936.8790                    | 47.01 | 26.59            | 4.12                             | 15 W              |
|                    | SUB-TOTAL    |               |                 |             | 1             |                                   |           |                                                  |                |                   | <del></del>       | 1126396.7831      | 2276779.0931                    | 48.52 | 26.94            | 2.51:                            | Northern Bend     |
| 11-S11'            | MLMR-20      | 0.00          | 7.00            | 7.00        | 6.09          | 98                                | 811.8297  |                                                  | <del></del>    |                   | 701104.4387       | 1126396,7831      | 2276779.0931                    | 48.52 | 26.94            | 2.51                             | <u> </u>          |
| ļ                  |              | 20.00         | 28,00           | 8.00        | 6.96          |                                   |           |                                                  |                | 306303.3458       |                   |                   | 306303.3458                     | 47.06 | 1450             |                                  | 1 3 H             |
| s                  | UB-TOTAL     | <del></del>   |                 |             | 3.50          | 30                                | 819.8769  |                                                  |                | 309339.5544       |                   |                   | 309339,5544                     |       | 14.62            |                                  | Straity / 2       |
|                    |              |               |                 |             |               |                                   |           |                                                  |                | 615642.9002       |                   | <u>-</u>          |                                 | 47.32 | 17.99            | 7.56                             | Northern Band     |
|                    |              |               |                 |             |               |                                   |           |                                                  |                |                   | l                 |                   | 615642.9002                     | 47.19 | 16.31            | 9.80                             | <i></i>           |

|                   |                    | 1        | section<br>m) |             |                      |                                          |                       | 1                     |                       |                               | · ·                           |                               | 1                               |       | Grad              |                                  |                                         |
|-------------------|--------------------|----------|---------------|-------------|----------------------|------------------------------------------|-----------------------|-----------------------|-----------------------|-------------------------------|-------------------------------|-------------------------------|---------------------------------|-------|-------------------|----------------------------------|-----------------------------------------|
| Section<br>Number | Borehole<br>Number | From     | То            | Diff<br>(m) | True<br>Width<br>(m) | Average<br>sectional<br>Influence<br>(m) | Area<br>(Sq.m)<br>111 | Area<br>(Sq.m)<br>112 | Area<br>(Sq.m)<br>121 | Reserves<br>(Tonnes)<br>(111) | Reserves<br>(Tonnes)<br>(112) | Reserves<br>(Tonnes)<br>(121) | Total<br>Reserves/<br>Resources | Fe%   | Grad<br>SIO₂<br>% | Al <sub>2</sub> O <sub>3</sub> % | Nomen-<br>clature                       |
| S12-S12'          | MLMR-42            | 5.00     | 10.00         | 5.00        | 4.35                 | 88                                       | 382.0112              |                       |                       | 129425.3946                   |                               |                               | 129425.3946                     | 57.76 | 11.09             | 4.01                             | Southern<br>Band                        |
|                   | SUB-TOTAL          | 1        | · '           | <u> </u>    |                      |                                          |                       |                       | <u> </u>              | 129425,3946                   |                               |                               | 129425.3946                     | 57.76 | 11.09             | 4.01                             |                                         |
| S13-S13'          | MLMR-21            | 16.00    | 20.00         | 4,00        | 3,48                 | 106                                      | 424.6748              |                       | 134.2001              | 173309.7859                   | ,,                            | 54767.0608                    | 228076,8467                     | 48.04 | 11.76             | 8,35                             | Northern Band                           |
|                   | SUB-TOTAL          | ,        |               | <u></u> '   |                      |                                          |                       |                       |                       | 173309,7859                   | ,                             | 54767.0608                    | 228076,8467                     | 48.04 | 11.76             | 8,35                             |                                         |
| S16-S16'          | MLMR-25            | 20.00    | 32.00         | 12,00       | 10.44                | 96                                       | 1018,1312             |                       |                       | 376301,2915                   |                               |                               | 376301.2915                     | 57.32 | 10.2              | 5.94                             | Central Band                            |
|                   | SUB-TOTAL          |          |               | <u> </u>    |                      |                                          |                       |                       |                       | 376301.2915                   |                               |                               | 376301.2915                     | 57.32 | 10.20             | 5.94                             | ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) |
| S22-S22'          | MLMR-41            | 0.00     | 16.00         | 16,00       | 13.92                | 93                                       | 1513,6838             |                       |                       | 541974.4846                   |                               |                               | 541974.4846                     | 61.92 | 5,71              | 3.98                             | Eastern Band                            |
|                   | SUB-TOTAL          |          | '             |             |                      |                                          |                       |                       |                       | 541974.4846                   |                               |                               | 541974.4846                     | 61.92 | 5.71              | 3,98                             |                                         |
| S23-S23'          | MLMR-40            | 0.00     | 50.00         | 50.00       | 43.50                | 88                                       | 2865.9812             |                       |                       | 970994.4306                   |                               |                               | 970994.4306                     | 60.5  | 4.78              | 4.71                             | Eastern Band                            |
|                   | Influence121       |          |               | <u> </u>    |                      | 88                                       |                       |                       | 1140,4021             |                               |                               | 386368.2315                   | 386368.2315                     | 60,5  | 4.78              | 4.71                             | Eastern Band                            |
|                   | SUB-TOTAL          |          |               | '           |                      |                                          |                       |                       |                       | 970994.4306                   |                               | 386368.2315                   | 1357362,6620                    | 60.50 | 4.78              | .4.71                            | i i i i i i i i i i i i i i i i i i i   |
| S25-S25'          | MLMR-37            | 0.00     | 40.00         | 40.00       | 34,80                | 120                                      | 2988.6792             |                       | 1395,3938             | 358641.5040                   |                               | 644671,9356                   | 1003313.4396                    | 51.03 | 18.47             | 5.46                             | Eastern Band                            |
|                   | SUB-TOTAL          |          | <u> </u>      |             |                      | <u> </u>                                 |                       |                       |                       | 358641.5040                   |                               | 644671.9356                   | 1003313.4396                    | 51.03 | 18.47             | 5.46                             |                                         |
| S26-S26'          | MLM-52             | 0.00     | 8.00          | 8,00        | 6.96                 | 114                                      | 527.7338              | I                     |                       | 231622.3648                   |                               |                               | 231622.3648                     | 49.02 | 12.47             | 10.12                            | Eastern Band                            |
|                   | MLMR-35            | 3.00     | 8.00          | 5.00        | 4,33                 | 114                                      |                       |                       | 174.3034              |                               |                               | 76501.7623                    | 76501.7623                      | 56.00 | 15.88             | 3.37                             | Eastern Band                            |
|                   | SUB-TOTAL          | /        |               | '           |                      |                                          |                       |                       |                       | 231622,3648                   |                               | 76501.7623                    | 308124.1271                     | 50.75 | 13.32             | 8.44                             |                                         |
| S27-S27'          | MLMR-34            | 0,00     | 21.00         | :21.00      | 18.27                | 105                                      | 1350.5142             |                       |                       | 545945.3654                   | ,                             |                               | 545945.3654                     | 49.66 | 18.76             | 6.27                             | Eastern Band                            |
|                   | SUB-TOTAL          | <u> </u> |               |             |                      |                                          |                       | 1                     |                       | 545945,3654                   |                               |                               | 545945,3654                     | 49.66 | 18.76             | 6.27                             |                                         |
| S28-S28'          | MLMR-33            | 0.00     | 35.00         | 35.00       | 30.45                | 166                                      | 2891.0257             |                       |                       | 1847654.5249                  |                               |                               | 1847654.5249                    | 57,68 | 11.16             | 4.36                             | Eastern Band                            |
|                   | Influence121       |          | <u></u> '     | '           |                      | 166                                      |                       |                       | 1093,2627             |                               |                               | 698704.1916                   | 698704,1916                     | 57.68 | 11.16             | 4.36                             | Eastern Band                            |
| ···               | SUB-TOTAL          |          | <u> </u>      | <u> </u>    |                      |                                          |                       |                       |                       | 1847654.5249                  |                               | 698704.1916                   | 2546358.7164                    | 57.68 | 11.16             | 4.36                             |                                         |
|                   | ~~~~ <u>~</u>      |          |               |             | TOTAL                | _                                        | ·                     |                       |                       | 10966553,5037                 | 7 1196013,8941                | 4181240.2563                  | 16343807.6540                   | 53.03 | 15.89             | ,5.15                            |                                         |
| -                 |                    |          |               |             |                      | ESOURCES                                 | ·                     | -                     | !                     | 98698981.5332                 | 10764125.0467                 | 737631162.3064                | 14709426.89                     | 52.91 | 16.04             | 5.16                             |                                         |

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# ANNEXURE 7

|    |            | KARAD        | IKOLLA IRON OI | RE MINE O  | F MSPL LII | MITED ( M  | IL No 2487)  |               | <u> </u>    |
|----|------------|--------------|----------------|------------|------------|------------|--------------|---------------|-------------|
|    |            | DETAILS OF R | EVERSE CIRCULA | ATION DRII | LL HOLES   | - 06-02-20 | 17 TO 26-02- | 2017          | `           |
|    | Bore Hole  |              |                |            |            | 17.8       | Drilled      |               | Date of     |
| lo | No         | Easting      | Northing       | RL         | Azimuth    | Section    | Depth (M)    | Date of Start | Completion  |
| 1  | MSPL/RC-1  | 661122.935   |                | 919.671    | 90°        | S28        | 45           | 06-02-2017    | 307-02-2017 |
| 2  | MSPL/RC-2  | 661164.227   | 1676840.847    | 926.390    | 60°        | 529        | 61           | 07-02-2017    | 07-02-2017  |
| 3  | MSPL/RC-2A | 661166.757   | 1676838.628    | 926.296    | 60°        | 529        | 12           | 07-02-2017    | 07-02-2017  |
| 4  | MSPL/RC-3  | 661088.954   | 1676983.004    | 913.436    | 90°        | S27        | 13           | 07-02-2017    | 07-02-2017  |
| 5  | MSPL/RC-4  | 661045.461   | 1677088.887    | 910.201    | 90°        | S26        | 19           | 08-02-2017    | 08-02-2017  |
| 6  | MSPL/RC-5  | 660954.826   | 1677151.664    | 914.396    | 90°        | \$25       | 37           | 08-02-2017    | 08-02-2017  |
| 7  | MSPL/RC-6  | 659991.747   | 1677883.774    | 891.841    | 90"        | 513        | 31           | 09-02-2017    | 09-02-2017  |
| 8  | MSPL/RC-7  | 659936.916   | 1677934.298    | 889.011    | 90°        | S12        | 25           | 09-02-2017    | 09-02-2017  |
| 9  | MSPL/RC-8  | 660681.997   | 1677336.852    | 920.453    | 85°        | S22        | 70           | 10-02-2017    | 10-02-2017  |
| 10 | MSPL/RC-9  | 660825.155   | 1677222.718    | 907.768    | 90°        | 524        | 45           | 10-02-2017    | 10-02-2017  |
| 11 | MSPL/RC-10 | 660749.863   | 1677265.769    | 910.013    | 90°        | 523        | 70           | 11-02-2017    | 11-02-2017  |
| 12 | MSPL/RC-11 | 659669.960   | 1678411.469    | 941.156    | 60°        | S7         | 21           | 11-02-2017    | 11-02-2017  |
| 13 | MSPL/RC-12 | 659541.711   | 1678544.388    | 946.777    | 60°        | <b>S</b> 5 | 31           | 12-02-2017    | 12-02-2017  |
| 14 | MSPL/RC-13 | 659646.246   | 1678508.648    | 959.308    | 90°        | . S6       | 42           | 12-02-2017    | 12-02-2017  |
| 15 | MSPL/RC-14 | 659499.302   | 1678626.836    | 958.377    | 90°        | S4         | 49           | 13-02-2017    | 13-02-2017  |
| 16 | MSPL/RC-15 | 659565.832   | 1678567.491    | 963.968    | 90°        | S5         | 49           | 14-02-2017    | 14-02-2017  |
| 17 | MSPL/RC-16 | 659394.003   | 1678651.918    | 950.998    | 90°        | <b>S</b> 3 | 33           | 14-02-2017    | 14-02-2017  |
| 18 | MSPL/RC-17 | 659478.282   | 1678605.052    | 951.096    | 60°        | S4         | 22           | 15-02-2017    | 15-02-2017  |
| 19 | MSPL/RC-18 | 659423.319   | 1678676.593    | 950.996    | 85°        | 53         | 37           | 15-02-2017    | 15-02-2017  |
| 20 | MSPL/RC-19 | 659326.440   | 1678753.270    | 957.430    | 90°        | S2         | 30           | 16-02-2017    | 17-02-2017  |
| 21 | MSPL/RC-20 | 659354.740   | 1678911.900    | 946.130    | 70°        | 51         | 31           | 17-02-2017    | 17-02-2017  |
| 22 | MSPL/RC-21 | 659794.250   | 1678381.350    | 946.310    | 90°        | 58         | 40           | 18-02-2017    | 18-02-2017  |
| 23 | MSPL/RC-22 | 659887.620   | 1678333.310    | 951.250    | 60°        | S9         | 7            | 18-02-2017    | 18-02-2017  |
| 24 | MSPL/RC-23 | 659975.040   | 1678277.220    | 970.510    | 60°        | —S10—∐     | 6            | 19-02-2017    | 20-02-2017  |
| 25 | MSPL/RC-24 | 660015.000   | 1678172.720    | 962.570    | 90°        | \$11       | 50           | 20-02-2017    | 21-02-2017  |
| 26 | MSPL/RC-25 | 660111.206   | 1578014.300    | 967.420    | 90°        | S13        | 31           | 21-02-2017    | 21-02-2017  |
| 27 | MSPL/RC-26 | 659898.080   | 1678197.330    | 952.360    | 90°        | S10        | 31           | 21-02-2017    | 21-02-2017  |
| 28 | MSPL/RC-27 | 659868.620   | 1678016.460    | 894.120    | 90°        | 511        | 43           | 21-02-2017    | 22-02-2017  |
| 29 | MSPL/RC-28 | 659766.740   | 1678113.760    | 895.710    | 90°        | S10        | 31           | 22-02-2017    | 22-02-2017  |
| 30 | MSPL/RC-29 | 660311.120   | 1677730.970    | 931.420    | 90°        | S16        | 43           | 22-02-2017    | 22-02-2017  |
| 31 | MSPL/RC-30 | 660067.360   | 1677865.390    | 906.130    | 90°        | S13        | 25           | 23-02-2017    | 23-02-2017  |
| 32 | MSPL/RC-31 | 659205.130   | 1678989.220    | 943.010    | 75°        | S0         | 50           | 23-02-2017    | 23-02-2017  |
| 33 | MSPL/RC-32 | 660214.500   | 1677796.660    | 930.440    | 90°        | \$15       | 37           | 24-02-2017    | 24-02-2017  |
| 34 | MSPL/RC-33 | 659769.720   | 1678307.930    | 938.840    | 80°        | S8         | 31           | 26-02-2017    | 26-02-2017  |
|    |            |              |                |            |            | Total      | 1198         |               |             |

AND STATES CALLS OF ·

# KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-1

Date of Start

Location. Collar Height 661122.935,1676894.838 Date of Completion 919.671 mRL

Total Depth

07-02-2017

05-02-2017

45 m

Mr.K Adinarayana &

Annexure:

90° Inclination Logged by Vijayakumar S

|       | Run (N   | leters) | Total Run |           |        | Chen               | nical Analysis      |                                                  |
|-------|----------|---------|-----------|-----------|--------|--------------------|---------------------|--------------------------------------------------|
| SI.No | From     | То      | (Meters)  | LITHOLOGY | Fe%    | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%                                               |
| 1_    | 0        | 1       | 919       | Ore       | 54.50  |                    |                     |                                                  |
| 2     | <u> </u> | 2       | 918       | Ore       | 60.67  |                    |                     |                                                  |
| 3     | 2        | 3       | 917       | Ore       | 60.45  |                    |                     |                                                  |
| 4     | 3        | 4       | 916       | Оге       | 59.78  |                    |                     |                                                  |
| 5     | 4        | 5       | 915       | Ore       | 60.90  | 6.08               | 3.16                | 0.110                                            |
| 6     | 5        | 6       | 914       | Ore       | 61.79  |                    |                     |                                                  |
| 7     | 6        | 7       | 913       | Ore       | 62.46  |                    | ,                   | -                                                |
| 8     | 7        | 8       | 912       | Ore       | 60.23  |                    |                     |                                                  |
| 9     | 8        | 9       | 911       | Ore       | 61.57  |                    |                     |                                                  |
| 10    | 9        | 10      | 910       | Ore       | 57.53  | 12.24              | 1.76                | 0.040                                            |
| 11    | 10       | 11      | 909       | Ore       | 59,56  | i                  |                     |                                                  |
| 12    | 11       | 12      | 908       | Ore       | 57.98  |                    |                     |                                                  |
| 13    | 12       | 13      | 907       | Ore       | 60.67  |                    |                     |                                                  |
| 14    | 13       | 14      | 906       | ВНЈ       | 39.31  |                    |                     |                                                  |
| 15    | 14       | 15      | 905       | ВНЈ       | 35.07  | 45.14              | 1.32                | 0.065                                            |
| 16    | 15       | 16      | 904       | ВНЈ       | 3.4.85 |                    |                     | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \            |
| 17    | 16       | 17      | 903       | ВНЈ       | 35.07  | -                  |                     |                                                  |
| 18    | 17       | 18      | 902       | ВНЈ       | 35.96  |                    |                     |                                                  |
| 19    | 18       | 19      | 901       | внј       | 30.60  |                    |                     |                                                  |
| 20    | 19       | 20      | 900       | вни       | 32.06  | 51.78              | 0.7                 | 0.050                                            |
| 21    | 20       | 21      | 899       | BHJ       | 31.95  |                    |                     |                                                  |
| 2,2   | 21       | 22      | 898       | BHI       | 30.82  |                    |                     |                                                  |
| 23    | 22       | 23      | 897       | вни       | 31.72  |                    | ,                   |                                                  |
| 24    | 23       | 24      | 896       | внј       | 31.49  |                    |                     |                                                  |
| 25    | 24       | 25      | 895       | ВНЈ       | 32.16  | 48.70              | 1.27                | 0.051                                            |
| 26    | 25       | 26      | 894       | ВНЈ       | 34.40  |                    |                     |                                                  |
| 27    | 26       | 27      | 893       | BHJ       | 35.07  |                    |                     | 1                                                |
| 28    | 27       | 28      | 892       | BHJ       | 33.51  | -                  |                     |                                                  |
| 29    | 28       | 29      | 891       | ВНЈ       | 32.61  |                    |                     |                                                  |
| 30    | 29       | 30      | 890       | вні       | 38.76  | 41.23              | 1.72                | 0.047                                            |
| 31    | 30       | 31      | 889       | ВНЈ       | 35.74  |                    |                     |                                                  |
| 32    | 31       | 32      | 888       | ВНЈ       | 36.41  |                    |                     | <del>  </del>                                    |
| 33    | 32       | 33      | 887       | ВНЈ       | 35.96  |                    |                     | <del> </del>                                     |
| 34    | 33       | 34      | 886       | ВНЈ       | 32.83  |                    |                     |                                                  |
| 35    | 34       | 35      |           | ВНЈ       | 35.96  | 43.92              | 1.63                | 0.054                                            |
| 36    | 35       | 36      |           | ВНЈ       | 34.62  |                    |                     | - 0.054                                          |
| 37    | 36       | 37      |           | ВНЈ       | 36.41  |                    |                     | <del>                                     </del> |
| 38    | 37       | 38      |           | BHJ       | 37.97  |                    |                     | <del>                                     </del> |
| 39    | 38       | 39      |           | BHJ       | 45.79  |                    |                     | <del>                                     </del> |
| 40    | 39       | 40      |           | ВНЈ       | 40.10  | 39.68              | 1.15                | 0.056                                            |
| 41    | 40       | 41      |           | ВНЈ       | 36.41  | 22.00              | 4.13                | 0.030                                            |
| 42    | 41       | 42      |           | BHJ       | 35.74  |                    |                     |                                                  |
| 43    | 42       | 43      |           | BHJ       | 34.62  |                    |                     |                                                  |
| 44    | 43       | 44      |           | BHJ       | 36.85  | 42.82              | 1.27                | 0.065                                            |
| 45    | 44       | 45      |           | BHJ       | 34.18  | "TZ.OZ             | 1.4                 | 0.065                                            |
|       |          |         |           |           |        |                    |                     | JJ                                               |

#### KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

3000年10日出 N

MSPL/RC-2

Date of Start

07-02-2017 07-02-2017

Location. Collar Height 661164.227,1676840.847 Date of Completion 926.39 mRL

Total Depth

61 m

Mr.K Adinarayana & Inclination 60°E

| Inclin  | ration | 60°E    | · · · · · · · · · · · · · · · · · · ·  | Logged by  |         |                                                  | Vijayakumar S       | "                                                |
|---------|--------|---------|----------------------------------------|------------|---------|--------------------------------------------------|---------------------|--------------------------------------------------|
| <u></u> | Run (I | Meters) | Total Run                              |            |         | Ch                                               | emical Analysis :   |                                                  |
| SI.No   | From   | To      | (Meters)                               | LITHOLOGY  | Fe%     | SiO <sub>2</sub> %                               | Al2O <sub>3</sub> % | . P%                                             |
| 1       | 0      | 1       | 925                                    | Ore        | 62.69   | 2.02/                                            | 7.1120374           | 1 75                                             |
| 2       | 1      | 2       | 924                                    | Ore        | 63.36   | -                                                |                     | <del> </del>                                     |
| 3       | 2      | 3       | 923                                    | Ore        | 64.25   | <del>                                     </del> | -                   | <del></del>                                      |
| 4       | 3      | 4       | 922                                    | Ore        | 64.15   | <del> </del>                                     | ****                | -                                                |
| 5       | 4      | 5       | 921                                    | Ore        | 64.03   | 4.01                                             | 2.29                | 0.049                                            |
| 6       | 5      | 6       | 920                                    | Ore        | 64.03   |                                                  | 2.23                | 0.043                                            |
| 7       | 6      | 7       | 919                                    | Ore        | 64.03   |                                                  |                     |                                                  |
| 8       | 7      | 8       | 918                                    | Ore        | 64.81   | †                                                |                     | <del>                                     </del> |
| 9       | 8      | 9       | 917                                    | Ore        | 64.03   | ·                                                |                     |                                                  |
| 10      | 9      | 10      | 916                                    | Ore        | 62.78   | 5.04                                             | 1.72                | 0.050                                            |
| 11      | 10     | 11      | 915                                    | Ore        | 64.25   |                                                  |                     | 0.050                                            |
| 12      | 11     | 12      | 914                                    | Ore        | 64.48   |                                                  |                     |                                                  |
| 13      | 12     | 13      | 913                                    | Ore        | 64.03   | 1 -                                              |                     |                                                  |
| 14      | 13     | 14      | 912                                    | Ore        | 64.03   | <u> </u>                                         |                     | <del>                                     </del> |
| 15      | 14     | 15      | 911                                    | Ore        | 63.14   | 4.72                                             | 3.56                | 0.051                                            |
| 16      | 15     | 16      | 910                                    | Ore        | 64.03   |                                                  | 3,30                | 0.051                                            |
| 17      | 16     | 17      | 909                                    | Ore        | 63.14   |                                                  |                     |                                                  |
| 18      | 17     | 18      | 908                                    | Оге        | 63.36   | <u> </u>                                         |                     |                                                  |
| 19      | 18     | 19      | 907                                    | Ore        | 63.36   |                                                  | : """               |                                                  |
| 20      | 19     | 20      | 906                                    | Ore        | 51.72   | 23.75                                            | 0.66                | 0.050                                            |
| 21      | 20     | 21      | 905                                    | Shale      | 31.27   |                                                  |                     | 0.000                                            |
| 22      | 21     | 22      | 904                                    | shale      | 28.14   |                                                  |                     |                                                  |
| 23      | 22 ·   | 23      | 903                                    | Shale      | 38.42   | 1                                                |                     |                                                  |
| 24      | 23     | 24      | 902                                    | shale      | 45.57   |                                                  |                     |                                                  |
| 25      | 24     | 25      | 901                                    | Shale      | 37.98   | 42.94                                            | 1.42                | 0.050                                            |
| 26      | 25     | 26      | 900                                    | Ore        | 48.70   |                                                  |                     |                                                  |
| 27      | 26     | 27      | 899                                    | Ore        | 52.50   | ļ                                                |                     |                                                  |
| 28      | 27     | 28      | 898                                    | Ore        | 48.70   | i                                                |                     |                                                  |
| 29      | 28     | 29      | 897                                    | Ore        | 58.31   |                                                  |                     |                                                  |
| 30      | 29     | 30      |                                        | Ore        | 57.97   | 13.78                                            | 1.23                | 0.032                                            |
| 31      | 30     | 31      | 895                                    | Ore        | 64.33   |                                                  |                     |                                                  |
| 32      | 31     | 32      | 894                                    | Ore        | 61.34   |                                                  |                     |                                                  |
| 33      | 32     | 33      |                                        | Ore        | 62.24   |                                                  |                     |                                                  |
| 34      | 33     | 34      | 892                                    | <u>Ore</u> | 60.67   |                                                  |                     |                                                  |
| 35      | 34     | 35      |                                        | Ore        | 60.90   | 6.62                                             | 2.59                | 0.010                                            |
| 36      | 35     | 36      |                                        | Ore        | 61.57   |                                                  |                     |                                                  |
| 37      | 36     | 37      |                                        | Ore        | 62.69   |                                                  |                     |                                                  |
| 38      | 37     | 38      |                                        | Ore        | 52.45   |                                                  |                     |                                                  |
| 39      | 38     | 39      |                                        | Ore        | 60.45   |                                                  |                     |                                                  |
| 40      | 39     | 40      |                                        | Ore        | 57.53   | 14.22                                            | 1.07                | 0.055                                            |
| 41      | 40     | 41      |                                        | Ore        | 60.65   |                                                  |                     |                                                  |
| 42      | 41     | 42      |                                        | Ore        | 61.78   |                                                  |                     |                                                  |
| 43      | 42     | 43      |                                        | Ore        | 58.75   |                                                  |                     |                                                  |
| 44      | 43     | 44      |                                        | Ore        | 54.51   |                                                  |                     |                                                  |
| 45      | 44     | 45      | ······································ | Ore        | 60.90   | 6.76                                             | 2.90                | 0.072                                            |
| 46      | 45     | 46      |                                        | Ore        | 60.00   |                                                  |                     |                                                  |
| 47      | 46     | 47      | 879                                    | Ore        | 59.22   |                                                  |                     |                                                  |
| 48      | 47     | 48      | 878                                    | Ore        | 59.44   |                                                  |                     |                                                  |
| 49      | 48     | 49      | 877                                    | Ore        | 60.00   |                                                  |                     |                                                  |
| 50      | 49     | 50      |                                        | внј        | 45.80 \ | <del>31</del> .98                                | 0.90                | 0.039                                            |
| 51      | 50     | 51      | 875                                    | внј        | 37.98   |                                                  |                     |                                                  |
| 52      | 51     | 52      | 874                                    | ВНЈ        | 36.19   |                                                  |                     |                                                  |
| 53      | 52     | 53      | 873                                    | ВНЈ        | 35.97   |                                                  |                     |                                                  |
| 54      | 53     | 54      | 872                                    | ВНЈ        | 35.74   |                                                  |                     |                                                  |
| 55      | 54     | 55      | 871                                    | ВНЈ        | 35.30   | 45.12                                            | 1.27                | 0.088                                            |
| 56      | 55     | 56      | 870                                    | внј        | 32.62   |                                                  | naw.                |                                                  |
| 57      | 56     | 57      | 869                                    | ВНЈ        | 37.75   |                                                  |                     |                                                  |
| 58      | 57     | 58      | 868                                    | ВНЈ        | 39.76   |                                                  |                     |                                                  |
| 59      | 58     | 59      |                                        | ВНЈ        | 36.41   |                                                  |                     |                                                  |
| 60      | 59     | 60      | 866                                    | ВНЈ        | 39.43   | 40.88                                            | 0.09                | 0.040                                            |
| 61      | 60     | 61      | 865                                    | ВНЈ        | 39.10   |                                                  |                     |                                                  |
|         |        |         |                                        |            |         |                                                  |                     |                                                  |

#### KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-2A

Date of Start

*ช*ี้7<u>\*</u>02-2017

Location.

661166.757,1676838.628 Date of Completion

Collar Height

926.296 mRL

**Total Depth** 

Mr.K Adinarayana &

Inclination

60°W

Logged by

| 1111111       |      | /leters) | Total Run |             |       | Chemi              | cal Analysis        |       |
|---------------|------|----------|-----------|-------------|-------|--------------------|---------------------|-------|
| si.No         | From | То       | (Meters)  | LITHOLOGY   | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | Р%    |
| 1             | 0    | 1        | 925       | Ore         | 60.65 | 8.47               | 0.98                | 0.052 |
| <del></del>   | 1    | 2        | 924       | Ore         | 63,58 |                    |                     |       |
| _ <del></del> | 2    | 3        | 923       | <b>©</b> re | 62.24 |                    |                     |       |
| <del></del> 4 | 3    | 4        | 922       | Ore         | 62.02 |                    |                     |       |
| <u>-</u>      | 4    | 5        | 921       | Ore         | -     |                    |                     |       |
|               | 5    | 6        | 920       | Ore         | 62.57 |                    |                     |       |
| 7             | 6    | 7        | 919       | Ore         | 62.34 |                    |                     |       |
| 8             | 7    | 8        | 918       | Ore         | 62.34 | <u> </u>           |                     |       |
| 9             | 8    | 9        | 917       | Ore         | 61.57 |                    |                     |       |
| 10            | 9    | 10       | 916       | Ore         | 63.02 |                    |                     |       |
| 11            | 10   | 11       | 915       | Ore         | 63.24 |                    |                     |       |
| 12            | 11   | 12       | 914       | Ore         | 63.24 |                    |                     |       |

# KARADIKOLLA IRON ORE MINE M/s. MSPL LIMITED

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REVERSE CIRCULATION DRILLING LOG

<sub>βore</sub>hole No. MSPL/RC-3 Date of Start

collar Height Location. 913.436 mRL 661088.9542,1676983.0039 Date of Completion Total Depth

07-02-2017

07-02-2017

Mr.K Adinarayana &

| Inclination | tion         | 3°09    |           | Logged by |       |                    | Vijayakumar S 😘 🖘 |       |
|-------------|--------------|---------|-----------|-----------|-------|--------------------|-------------------|-------|
|             | Run (Meters) | leters) | Total Run |           |       | Cherr              | Chemical Analysis |       |
| SI.No       | From         | То      | (Meters)  | LITHOLOGY | Fe%   | SiO <sub>2</sub> % | AI20,%            | Р%    |
| 1           | 0            | 1       | 912       | Ore       | 54.06 |                    |                   |       |
| ~           | <u></u>      | 2       | 911       | Ore       | 54.06 |                    |                   |       |
| w           | 2            | 3       | 910 .     | Ore       | 49.15 |                    |                   |       |
| 4           | ω            | 4       | 909       | Ore       | 46.91 |                    |                   |       |
| 2           | 4            | 5       | 908       | Ore       | 46.47 | 30.10              | 1.37              | 0.088 |
| 6           | 5            | 6       | 907       | ВНЈ       | 38.64 | _                  |                   |       |
| 7           | O            | 7       | 906       | BHJ       | 35.29 |                    |                   |       |
| ∞           | 7            | 8       | 905       | внј       | 27.93 |                    |                   |       |
| 9           | ∞            | 9       | 904       | ВНЈ       | 39.54 |                    |                   |       |
| 10          | 9            | 10      | 903       | ВНЈ       | 34.29 | 48.32              | 0.9               | 0.045 |
| 11          | 10           | 11      | 902       | BHJ       | 33.06 |                    |                   | Ì     |
| 12          | 11           | 12      | 901       | BHJ       | 30.82 |                    |                   |       |
| ts          | 12           | lü .    | 900       | ВНЈ       | 33.51 |                    |                   |       |
|             |              |         |           |           |       |                    |                   | -     |

#### KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-4

Date of Start

Location.

661045.461,1677088.887 Date of Completion

Collar Height

**Total Depth** 

Mr.K Adinarayana &

| i<br>Inclin | ation  | 90°      |           | Logged by |       | · ·                | Víjayakumar S       | . 19 e<br>19 e |
|-------------|--------|----------|-----------|-----------|-------|--------------------|---------------------|----------------|
|             | Run (N | /leters) | Total Run |           |       | Cher               | nical Analysis      | •              |
| SI.No       | From   | То       | (Meters)  | LITHOLOGY | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%             |
| 1           | 0      | 1        | 909       | ВНЈ       | 38.64 |                    |                     |                |
| 2           | 1      | 2        | 908       | BHJ       | 38.42 |                    |                     |                |
| 3           | 2      | 3        | 907       | • BHJ     | 40.43 |                    | 77 44 4             |                |
| 4           | 3      | 4        | 906       | ВНЈ       | 38.20 |                    |                     |                |
| 5           | 4      | 5        | 905       | ВНЈ       | 36.19 | 44.22              | 1.52                | 0.047          |
| 6           | 5      | 6        | 904       | ВНЈ       | 37.97 |                    |                     |                |
| 7           | 6      | 7        | 903       | внј       | 31.05 |                    |                     |                |
| 8           | 7      | 8        | 902       | внл       | 28.82 |                    |                     |                |
| 9           | 8      | 9        | 901       | BHJ       | 27.70 |                    |                     |                |
| 10          | 9      | 10       | 900       | внј       | 26.36 | 59.72              | 0.86                | 0.024          |
| 11          | 10     | 11       | 899       | ВНЈ       | 26.36 |                    | *****               |                |
| 12          | 11     | 12       | 898       | BHJ       | 30.15 |                    |                     |                |
| 13          | 12     | 13       | 897       | ВНЈ       | 26.81 |                    |                     |                |
| 14          | 13     | 14       | 896       | BHJ       | 29.94 |                    |                     |                |
| 15          | 14     | 15       | 895       | BHJ       | 33.73 | 47.12              | 1.37                | 0.051          |
| 16          | 15     | 16       | 894       | ВНЈ       | 29.26 |                    |                     |                |
| 17          | 16     | 17       | 893       | внл       | 32.62 | -                  |                     |                |
| 18          | 17     | 18       | 892       | внл       | 28.82 |                    |                     |                |
| 19          | 18     | 19       | 891       | BHJ       | 32.83 |                    |                     |                |

## KARADIKOLLA IRON ORE MINE

# REVERSE CIRCULATION DRILLING LOG

<sub>Borehole</sub> No.

MSPL/RC-5

Date of Start

660954.826,1677151.664 Date of Completion

Collar Height

Location.

914.396 mRL

Total Depth

37 m Mr.K Adinarayana &

| Viia | aval | ζun | ıar | S |
|------|------|-----|-----|---|

| Inclin | ation  | 90°      |           | Logged by |       |                                              | Mr.K Adinarayana<br>Vijayakumar S | & .     |
|--------|--------|----------|-----------|-----------|-------|----------------------------------------------|-----------------------------------|---------|
|        | Run (I | Vieters) | Total Run |           | 1     | Che                                          | emical Analysis                   |         |
| si.No  | From   | То       | (Meters)  | LITHOLOGY | Fe%   | SiO <sub>2</sub> %                           | Al20 <sub>3</sub> %               | P%.     |
| 1_     | 0      | 1        | 913       | Dump soil | 48.03 |                                              | 13,0                              | 3.5     |
| 2      | 1      | 2        | 912       | Dump soil | 47.81 |                                              |                                   | 1       |
| 3      | 2      | 3        | 911       | Ore       | 59.78 |                                              |                                   |         |
| 4      | 3      | 4        | 910       | Ore       | 58.99 | <u>-                                    </u> |                                   |         |
| 5      | 4      | 5        | 909       | Ore       | 58.53 | 10.00                                        | 2.16                              | 0.081   |
| 6      | 5      | 6        | 908       | Ore       | 60.11 |                                              | 2,10                              | 0.001   |
| 7      | 6      | 7        | 907       | Ore       | 55.85 | <del> </del>                                 |                                   |         |
| 8      | 7      | 8        | 906       | Ore       | 65.52 |                                              |                                   |         |
| 9      | 8      | 9        | 905       | Ore       | 60.90 |                                              |                                   |         |
| 10     | 9      | 10       | 904       | Ore       | 62.11 | 5.61                                         | 2.58                              | 0.019   |
| 11     | 10     | 11       | 903       | Ore       | 59.34 |                                              |                                   | 0.015   |
| 12     | 11     | 12       | 902       | Ore       | 59.34 |                                              |                                   |         |
| 13     | 12     | 13       | 901       | Ore       | 60.23 | <u> </u>                                     |                                   |         |
| 14     | 13     | 14       | 900       | Ore       | 60.79 |                                              |                                   |         |
| 15     | 14     | 15       | 899       | Ore       | 66.35 | 1.66                                         | 1.32                              | 0.058   |
| 16     | 15     | 16       | 898       | Ore       | 60.68 |                                              |                                   |         |
| 17     | 16     | 17       | 897       | Ore       | 60.11 |                                              |                                   |         |
| 18     | 17     | 18       | 896       | Ore       | 59.89 |                                              |                                   |         |
| 19     | 18     | 19       | 895       | Ore       | 59.22 |                                              |                                   |         |
| 20     | 19     | 20       | 894       | Ore       | 60.76 | 7.51                                         | 2,54                              | - 0.044 |
| 21     | 20     | 21       | 893       | Ore       | 59.22 |                                              |                                   |         |
| 22     | 21     | 22       | 892       | Ore       | 62.77 |                                              |                                   |         |
| 23     | 22     | 23       | 891       | Ore       | 52.49 |                                              |                                   |         |
| 24     | 23     | 24       | 890       | BHJ       | 40.65 |                                              | ,                                 |         |
| 25     | 24     | 25       | 889       | ВНЈ       | 32.84 | 48.22                                        | 2.14                              | 0.055   |
| 26     | 25     | 26       | 888       | ВНЈ       | 36.41 |                                              |                                   |         |
| 27     | 26     | 27       | 887       | ВНЈ       | 34.18 |                                              |                                   |         |
| 28     | 27     | 28       | 886       | ВНЈ       | 53.62 |                                              |                                   |         |
| 29     | 28     | 29       | 885       | ВНЈ       | 37.53 |                                              |                                   |         |
| 30     | 29     | 30       | 884       | внл       | 47.36 | 26.84                                        | 2.38                              | 0.027   |
| 31     | 30     | 31       | 883       | ВНЈ       | 53.62 |                                              |                                   |         |
| 32     | 31     | 32       | 882       | ВНЈ       | 27.93 |                                              |                                   |         |
| 33     | 32     | 33       | 881       | ВНЈ       | 29.26 |                                              |                                   |         |
| 34     | 33     | 34       | 880       | ВНЈ       | 31.50 |                                              |                                   |         |
| 35     | 34     | 35       | 879       | ВНЈ       | 34.18 | 45.84                                        | 1.47                              | 0.074   |
| 36     | 35     | 36       |           | ВНЈ       | 27.92 | .0.0                                         | ٤٠٣/                              | 0.074   |
| 37     | 36     | 37       |           | ВНЈ       | 32.62 |                                              |                                   |         |

#### KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-6

Date of Start

09-02-2017

Location.

659991.7466,1677883.774 Date of Completion

09-02-2017

eollar Height

891.841 mRL

Total Depth

31 m

Mr.K Adinarayana &

| Inclina                                  | ation   | 90°     |             | Logged by |                   | V                  | ijayakumar S        |       |
|------------------------------------------|---------|---------|-------------|-----------|-------------------|--------------------|---------------------|-------|
| 1/2 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Run (IV | leters) | Total Run   |           |                   | Chemi              | cal Analysis        |       |
| SI.No                                    | From    | То      | (Meters)    | LITHOLOGY | Fe%               | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%    |
| 1                                        | 0       | 1       | 891         | Dump Soil | 50.2 <del>6</del> |                    |                     |       |
| 2                                        | 1       | 2       | 890         | Ore       | 59.00             |                    |                     |       |
| 3                                        | 2       | 3       | 889         | внј       | 43.11             |                    |                     |       |
| 4                                        | 3       | 4       | 888         | ВНЈ       | 37.31             |                    |                     |       |
| 5                                        | 4       | 5       | 887         | ВНЈ       | . 43.56           | 33.12              | 1.63                | 0.043 |
| 6                                        | 5       | 6       | 886         | Ore/BHJ   | 58.09             |                    |                     |       |
| 7                                        | 6       | 7       | 885         | Ore/BHJ   | 56.30             |                    |                     |       |
| 8                                        | 7       | 8       | 884         | ВНЈ       | 37.08             |                    |                     |       |
| 9                                        | 8       | 9       | 883         | внј       | 45.13             |                    |                     |       |
| 10                                       | 9       | 10      | 882         | Ore       | 55.29             | 18.24              | 0.94                | 0.025 |
| 11                                       | 10      | 11      | 881         | Ore       | 60.55             |                    |                     |       |
| 12                                       | 11      | 12      | 880         | Ore       | 60.67             |                    |                     |       |
| 13                                       | 12      | 13      | 879         | Ore       | 61.34             |                    |                     | _     |
| 14                                       | 13      | 14      | 878         | Ore       | 62.57             |                    |                     |       |
| 15                                       | 14      | 15      | 877         | Ore       | 62.13             | 6.10               | 2.45                | 0.082 |
| 16                                       | 15      | 16      | 8 <u>76</u> | Ore       | 59.55             |                    |                     | _     |
| 17                                       | 16      | 17      | 875         | Ore       | 54.73             |                    |                     |       |
| 18                                       | 17      | 18      | 874         | Ore       | 55.40             |                    |                     |       |
| 19                                       | 18      | 19      | 873         | Ore       | 60.32             |                    |                     |       |
| 20                                       | 19      | 20      | 872         | Ore       | 59.76             | 12.07              | 0.86                | 0.024 |
| 21                                       | 20      | 21      | 871         | Ore       | 59.88             |                    |                     |       |
| 22                                       | 21      | 22      | 870         | Ore       | 52.50             |                    |                     |       |
| 23                                       | 22      | 23      | 869         | ВНЈ       | 41.99             |                    |                     |       |
| _24                                      | 23      | 24      | 868         | ВНЈ       | 44.01             |                    |                     | 0.050 |
| 25                                       | 24      | 25      | 867         | ВНЈ       | 48.70             | 27.18              | 1.12                | 0.050 |
| 26                                       | 25      | 26      | 866         | ВНЈ       | 48.03             |                    |                     |       |
| 27                                       | 26      | 27      | 865         | ВНЈ       | 38.65             |                    |                     |       |
| 28                                       | 27      | 28      | 864         | ВНЈ       | 39.76             |                    |                     |       |
| 29                                       | 28      | 29      | 863         | ВНЈ       | 37.53             |                    |                     |       |
| 30                                       | 29      | 30      | 862         | ВНЈ       | 36.97             | 44.26              | 0.98                | 0.022 |
| . 31                                     | 30      | 31      | 861         | внл       | 37.31             |                    |                     |       |

# KARADIKOLLA IRON ORE MINE

# REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-7

Date of Start

Location.

659936.9161,1677934.2981 Date of Completion

Collar Height

889.011 mRL

**Total Depth** 

Mr.K Adinarayana &

| TO CHEE  |                | 90° |                       | Logged by |       | 13                 | Vijayakumar S       | · ·      |
|----------|----------------|-----|-----------------------|-----------|-------|--------------------|---------------------|----------|
| Illeine  | tion<br>Run (M |     |                       |           |       | Che                | mical Analγsis      |          |
|          | From           | To  | Total Run<br>(Meters) | LITHOLOGY | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%       |
| SI.No    |                | 1   | 888                   | Ore       | 58.53 |                    | - :-                |          |
| 1        | 0              | 2   | 887                   | Ore       | 61.88 |                    | The same of the     |          |
| 2        | 1              | 3   | 886                   | Ore       | 61.21 |                    |                     |          |
| 3        | 2              | 4   | 885                   | Ore       | 61.44 |                    |                     |          |
| 4        | 3              | 5   | 884                   | Ore       | 53.84 | 17.16              | 2.05                | 0.046    |
| 5        | 4              | 6   | 883                   | Ore       | 44.01 |                    |                     |          |
| 6        | 5              | 7   | 882                   | Ore       | 43.12 |                    |                     |          |
| 7        | 5              | 8   | 881                   | Ore       | 50.26 |                    |                     |          |
| 8        | 7 8            | 9   | 880                   | Ore       | 34.85 |                    |                     |          |
| 9        |                | 10  | 879                   | Ore       | 50.04 | 25.52              | 1.15                | 0.026    |
| 10       | 9 10           | 11  | 878                   | Ore       | 59.87 |                    |                     |          |
| 11       | 11             | 12  | 877                   | Ore       | 52.50 |                    |                     |          |
| 12       | 12             | 13  | 876                   | внј       | 25.24 |                    |                     |          |
| 13       | 13             | 14  | 875                   | внЈ       | 28.15 |                    |                     |          |
| 14<br>15 | 14             | 15  | 874                   | внј       | 21.44 | 64.74              | 1.78                | 0.074    |
| 16       | 15             | 16  | 873                   | внј       | 51.38 |                    |                     | <u> </u> |
| 17       | 16             | 17  | 872                   | внл       | 54.96 |                    |                     |          |
| 18       | 17             | 18  | 871                   | ВНЈ       | 31.95 | <u> </u>           |                     | <u> </u> |
| 19       | 18             | 19  | 870                   | внј       | 30.83 |                    | 4.00                | 0.053    |
| 20       | 1.9            | 20  | 869                   | ВНЈ       | 40.88 | 38.19              | 1.23                | 0.055    |
| 21       | 20             | 21  | 868                   | вну       | 49.82 | 1                  |                     |          |
| 22       | 21             | 22  | 867                   | вні       | 33.51 |                    |                     |          |
| 23       | 22             | 23  | 866                   | внј       | 35.30 |                    |                     |          |
| 24       | 23             | 24  | 865                   | BHJ       | 23.46 |                    | 2.04                | 0.041    |
| 25       | 24             | 25  | 864                   | BHJ       | 24.35 | 60.34              | 2.04                | U.U41    |

# KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

M5PL/RC-8

Date of Start

10-02-2017 10-02-2017

Location. Coilar Height

660681.997,1677336.852 Date of Completion 920.453 mRL

Total Depth

70 m

| Inclin              | ation  | 85°E     |           | Logged by |          |                    | Mr.K Adinarayana :<br>Vijayakumar S | ο.                |
|---------------------|--------|----------|-----------|-----------|----------|--------------------|-------------------------------------|-------------------|
|                     | Run (N | Vieters) | Total Run |           | <u> </u> |                    | nical Analysis                      | الماسالة المرادات |
| l.No                | From   | То       | (Meters)  | LITHOLOGY | Fe%      | SiO <sub>2</sub> % | Al20 <sub>3</sub> % چانونو          | (5). P%           |
| 1                   | 0      | 1        | 919       | Ore       | 60.44    | 1 11121            | 2 1/2                               | /~                |
| 2                   | 1      | 2        | 918       | Ore       | 61.11    |                    | 74                                  | 1,17, 2°          |
| 3                   | 2      | 3        | 917       | Ore       | 60.55    |                    | 1 / 6 5                             | 1                 |
| 4                   | 3      | 4        | 916       | Ore       | 61.79    |                    |                                     |                   |
| 5                   | 4      | 5        | 915       | Ore       | 62.35    | 4.06               | 3.46                                | 0.066             |
| 6                   | 5      | 6        | 914       | Ore       | 62.57    | i                  |                                     |                   |
| 7                   | . 6    | 7        | 913       | Ore       | 61.90    |                    | •                                   |                   |
| 8                   | 7      | 8        | 912       | Ore       | 61.79    |                    |                                     |                   |
| 9                   | 8      | 9        | 911       | Ore       | 61.00    |                    |                                     |                   |
| 10                  | 9      | 10       | 910       | Ore       | 58.87    | 8.95               | 2.71                                | 0.050             |
| 11                  | 10     | 11       | 909       | Ore_      | 60.79    |                    |                                     |                   |
| 12                  | 11     | 12       | 908       | Ore       | 61.23    |                    |                                     |                   |
| 13                  | 12     | 13       | 907       | Ore       | 61.90    |                    |                                     |                   |
| 14                  | 13     | 14       | 906       | Ore       | 60.34    |                    |                                     |                   |
| 15                  | 14     | 15       | 905       | Ore       | 60.34    | 5.24               | 3.36                                | 0.069             |
| 16                  | 15     | 15       | 904       | Ore       | 60.88    |                    |                                     |                   |
| 17                  | 16     | 17       | 903       | Ore       | 58.08    |                    |                                     |                   |
| 18                  | 17     | 18       | 902       | Ore       | 59.33    | -                  |                                     |                   |
| 19                  | 18     | 19       | 901       | Ore       | 61.35    |                    |                                     |                   |
| 20                  | 19     | 20       | 900       | Ore       | 59.76    | 9.26               | 1.93                                | 0.015             |
| 21                  | 20     | 21       | 899       | Ore       | 60.79    |                    |                                     |                   |
| 22                  | 21     | 22       | 898       | Ore       | 61.57    | -                  |                                     |                   |
| <u>22</u><br>23     | 22     | 23       | 897       | Ore       | 62.24    |                    |                                     |                   |
| 24                  | 23     | 24       | 896       | Ore       | 61.57    | -                  |                                     |                   |
| <del>27</del><br>25 | 24     | 25       | 895       | Ore       | 62.24    | 6.15               | 2.17                                | 0.066             |
| 26                  | 2.5    | 26       | 894       | Ore       | 61.57    | 5.25               |                                     | 0.000             |
| 27                  | 26     | 27       | 893       | Ore       | 60.90    |                    |                                     |                   |
| 28                  | 27     | 28       | 892       | Ore       | 60.45    |                    |                                     |                   |
| <del></del>         | 28     | 29       | 891       | Ore       | 60.99    |                    |                                     |                   |
| 30                  | 29     | 30       | 890       | Ore       | 59.09    | 9.87               | 2.25                                | 0.045             |
| 31                  | 30     | 31       | 889       | Ore       | 58.08    |                    |                                     | 0.043             |
| 32                  | 31     | 32       | 888       | Ore       | 61.90    |                    |                                     |                   |
| 33                  | 32     | 33       | 887       | Ore       | 61.12    |                    |                                     |                   |
| 34                  | 33     | 34       | 886       | Ore       | 66.12    |                    |                                     |                   |
| 35                  | 34     | 35       | 885       | Ore       | 61.90    | 6.52               | 2.56                                | 0.084             |
| 36                  | 35     | 36       | 884       | Ore       | 61.45    |                    |                                     |                   |
| 37                  | 36     | 37       | 883       | Ore       | 61.45    | <u> </u>           |                                     |                   |
| 38                  | 37     | 38       | 882       | Ore       | 61.9     |                    |                                     |                   |
| 39                  | 38     | 39       | 881       | Ore       | 67.02    | <u> </u>           |                                     |                   |
| 40                  | 39     | 40       | 880       | Ore       | 59.98    | 7.68               | 2.67                                | 0.020             |
| 41                  | 40     | 41       | 879       | Ore       | 61.9     |                    |                                     |                   |
| 42                  | 41     | 42       | 878       | Оге       | 60.22    |                    |                                     |                   |
| 43                  | 42     | 43       | 877       | Ore       | 60.56    |                    |                                     |                   |
| 44                  | 43     | 44       | 876       | Ore       | 59.22    | · -                |                                     |                   |
| 45                  | 44     | 45       | 875       | Ore       | 61.45    | 6.36               | 2.85                                | 0.074             |
| 46                  | 45     | 46       | 874       | Ore       | 61.23    |                    |                                     |                   |
| 47 :                | 46     | 47       | 873       | Ore       | 60.79    |                    |                                     |                   |
| 48                  | 47     | 48       | 872       | Ore       | 61.57    |                    |                                     |                   |
| 49                  | 48     | 49       | 871       | Ore       | 61.9     |                    |                                     |                   |
| 50                  | 49     | 50       | 870       | Ore       | 59.98    | 7.83               | 2.91                                | 0.040             |
| 51                  | 50     | 51       | 869       | Ore       | 56.52    | 7.03               | 4.31                                | U.U4U             |
| 52<br>52            |        | 52       | 868       |           | ······   |                    | I                                   |                   |
|                     | 51     |          | 867       | Ore       | 59.99    |                    |                                     |                   |
| 53                  | 52     | 53       |           | Ore       | 60.55    |                    |                                     |                   |
| 54                  | 53     | 54       | 866       | Ore       | 63.11    |                    |                                     |                   |
| 55                  | 54     | 55       | 865       | Ore       | 61.56    | 5.63               | 3.26                                | 0.079             |
| 56                  | 55     | 56       | 864       | Ore       | 62.35    |                    |                                     |                   |
| 57                  | 56     | 57       | 863       | Ore       | 61.79    |                    |                                     |                   |
| 58                  | 57     | 58       | 862       | Ore       | 60.32    |                    |                                     |                   |
| 59                  | 58     | 59       | 861       | Ore       | 61.57    |                    |                                     |                   |
| 60                  | 59     | 60       | 860       | Ore       | 61.99    | 6.31               | 1.72                                | 0.019             |
| 61                  | 60     | 61       | 859       | Ore       | 60.34    |                    |                                     |                   |
| 62                  | 61     | 62       | 858       | Ore       | 63.89    |                    |                                     |                   |
| 63                  | 62     | 63       | 857       | Ore       | 59.88    |                    |                                     |                   |
| 64                  | 63     | 64       | 856       | Ore       | 62.55    |                    |                                     |                   |
| 65                  | 64     | 65       | 855       | Ore       | 59.44    | 7.48               | 3.05                                | 0.079             |
| 66                  | 65     | 66       | 854       | Ore       | 59.65    |                    |                                     |                   |
| 67                  | 66     | 67       | 853       | Оге       | 58.32    |                    |                                     |                   |
| 68                  | 67     | 68       | 852       | Ore       | 59.22    |                    |                                     |                   |
| 69                  | 68     | 69       | 851       | Ore       | 58.88    |                    |                                     |                   |
| 70                  | 69     | 70       | 850       | Ore       | 61.77    | 5.14               | 2.71                                | 0.05              |

850

Ore

61.77

nate.

5.14

0.059

 $\hat{\mathcal{A}}_{ij}^{(a)} \hat{\mathcal{A}}_{ij}^{(a)} \hat{\mathcal{A}}_{ij}^{(a)} = 0.0000 \; , \label{eq:decomposition}$ 

#### M/s. MSPL LIMITED

#### KARADIKOLLA IRON ORE MINE

A STATE OF STATES

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-9

Date of Start

Location.

660825.155,1677222.718 Date of Completion

Collar Height

907.768 mRL

Total Depth

10-02-2017

45 m

Mr.K Adinarayana &

| Inclin     | ation  | 90°     |           | Logged by |       | ;                  | Wir.K Adinarayana<br>Vijayakumar S |                                        |
|------------|--------|---------|-----------|-----------|-------|--------------------|------------------------------------|----------------------------------------|
|            | Run (N | Meters) | Total Run |           |       | Cher               | nical Analysis                     |                                        |
| SI.No      | From   | То      | (Meters)  | LITHOLOGY | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> %                | P%                                     |
| 1          | 0      | 1       | 907       | Ore       | 61.23 |                    | San June                           | i si i i i i i i i i i i i i i i i i i |
| 2          | 1      | 2       | 906       | Ore       | 61.45 |                    |                                    |                                        |
| 3          | 2      | 3       | 905       | Ore       | 62.34 |                    |                                    |                                        |
| 4          | 3      | 4       | 904       | Ore•      | 62.57 |                    |                                    |                                        |
| 5          | 4      | 5       | 903       | Ore       | 62.79 | 4.46               | 2.46                               | 0.079                                  |
| 6          | 5      | 6       | 902       | Ore       | 63.02 |                    |                                    |                                        |
| 7          | 6      | 7       | 901       | Ore       | 63.24 |                    |                                    |                                        |
| 8          | 7      | 8       | 900       | Ore       | 62.34 |                    |                                    |                                        |
| 9          | 8      | 9       | 899       | Ore       | 61.57 |                    |                                    |                                        |
| 10         | 9      | 10      | 898       | Ore       | 61.21 | 7.52               | 2.13                               | 0.022                                  |
| 11         | 10     | 11      | 897       | Ore       | 64.36 |                    |                                    |                                        |
| 12         | 11     | 12      | 896       | Ore       | 63.69 |                    |                                    |                                        |
| 13         | 12     | 13      | 895       | Ore       | 61.45 |                    |                                    |                                        |
| 14         | 13     | 14      | 894       | Ore       | 64.58 |                    |                                    |                                        |
| <b>1</b> 5 | 14     | 15      | 893       | Ore       | 63.24 | 5.02               | 2.46                               | 0.049                                  |
| 16         | 15     | 16      | 892       | Ore       | 61.90 |                    |                                    |                                        |
| 17         | 16     | 17      | 891       | Ore       | 62.12 |                    |                                    |                                        |
| 18         | 17     | 18      | 890       | Ore       | 60.78 |                    |                                    |                                        |
| 19         | 18     | 19      | 889       | Ore       | 59.99 |                    |                                    |                                        |
| 20         | 19     | 20      | 888       | Ore       | 58.20 | 10.26              | 2.62                               | 0.050                                  |
| 21         | 20     | 21      | 887       | Ore       | 58.77 |                    |                                    |                                        |
| 22         | 21     | 22      | 886       | Ore       | 62.57 |                    |                                    |                                        |
| 23         | 22     | 23      | 885       | Ore       | 63.02 |                    |                                    |                                        |
| 24         | 23     | 24      | 884       | Ore       | 63.24 |                    |                                    |                                        |
| 25         | 24     | 25      | 883       | Ore       | 62.79 | 5.08               | 3.01                               | 0.065                                  |
| 26         | 25     | 26      | 882       | Ore       | 60.33 |                    |                                    |                                        |
| 27         | 26     | 27 ·    | 881       | Ore       | 59.66 |                    | ·                                  |                                        |
| 28         | 27     | 28      | 880       | Ore       | 58.21 |                    |                                    |                                        |
| 29         | 28     | 29      | 879       | Ore       | 59.10 |                    |                                    |                                        |
| 30         | 29     | 30      | 878       | Ore       | 59.76 | 9.84               | 1.8                                | 0.022                                  |
| 31         | 30     | 31      | 877       | Ore       | 60.46 |                    |                                    |                                        |
| 32         | 31     | 32      | 876       | Ore       | 60.89 |                    |                                    |                                        |
| 33         | 32     | 33      | 875       | Ore       | 64.79 |                    |                                    |                                        |
| 34         | 33     | 34      | 874       | Ore       | 59.31 |                    |                                    |                                        |
| 35         | 34     | 35      | 873       | Ore       | 62.12 | 5.46               | 3.06                               | 0.060                                  |
| 36         | 35     | 36      | 872       | Ore       | 63.67 |                    |                                    |                                        |
| 37         | 36     | 37      | 871       | ВНЈ       | 40.70 |                    |                                    |                                        |
| 38         | 37     | 38      | 870       | ВНЈ       | 34.18 |                    |                                    |                                        |
| 39         | 38     | 39      | 869       | ВНЈ       | 30.60 |                    |                                    |                                        |
| 40         | 39     | 40      | 868       | ВНЈ       | 31.61 | 50.38              | 1.97                               | 0.045                                  |
| 41         | 40     | 41      | 867       | ВНЈ       | 30.60 |                    |                                    | 1.0,5                                  |
| 42         | 41     | 42      | 866       | ВНЈ       | 32.83 |                    |                                    |                                        |
| 43         | 42     | 43      | 865       | BHJ       | 33.28 |                    |                                    |                                        |
| 44         | 43     | 44      | 864       | BHJ       | 30.60 |                    |                                    | 11                                     |
| 45         | 44     | 45      | 863       | ВНЈ       | 30.38 | 53.00              | 1.22                               | 0.073                                  |

# KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-10

Date of Start 660749.863,1677265.769 Date of Completion 11-02-2017 11-02-2017

Location. Collar Height

910.013 mRL

Total Depth

| Mr.K Adinarayana & |
|--------------------|
| Vijayakumar S      |

| Inclin   | ation    | 90"                  |            | Logged by  |                | ν                  | ijayakumar Ś        | -         |
|----------|----------|----------------------|------------|------------|----------------|--------------------|---------------------|-----------|
|          | Run (N   | /leters)             | Total Run  |            |                | Chemi              | cal Analysis        |           |
| SI.No    | From     | To                   | (Meters)   | LITHOLOGY  | Fe%            | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%        |
| 1        | 0        | 1                    | 909        | Ore        | 60.44          |                    |                     |           |
| 2        | 1        | 2                    | 908        | Ore        | 59.32          |                    |                     |           |
| 3        | 2        | 3                    | 907        | Ore        | 61.78          |                    |                     |           |
| 4        | 3        | 4                    | 906        | Ore        | 61.56          |                    | ٦,                  |           |
| _ 5      | 4        | 5                    | 905        | Ore        | 60.34          | 7.54               | 3.11                | 0.047     |
| 6        | 5        | 6                    | 904        | Ore        | 62.23          |                    | <del> </del>        | 1 1 1 1 1 |
| 7 8      | 7        | 7                    | 903<br>902 | Ore<br>Ore | 62.45<br>63.34 |                    |                     |           |
| 9        | 8        | 9                    | 901        | Ore        | 62.45          |                    |                     | -         |
| 10       | 9        | 10                   | 900        | Ore        | 61.99          | 5.59               | 2.34                | 0.029     |
| 11       | 10       | 11                   | 899        | Ort        | 63.57          | V.03               |                     | 0.025     |
| 12       | 11       | 12                   | 898        | Ore        | 62.67          |                    |                     |           |
| 13       | 12       | 13                   | 897        | Ore        | 56.52          |                    |                     |           |
| 14       | 13       | 14                   | 896        | Ore        | 51.82          |                    |                     |           |
| 15       | 14       | 15                   | 895        | ВНЈ        | 38.42          | 40.58              | 2.29                | 0.061     |
| 16       | 15       | 16                   | 894        | BHJ        | 32.61          |                    |                     |           |
| 17       | 16       | 17                   | 893        | BHJ        | 32.16          |                    |                     |           |
| 18       | 17       | 18                   | 892        | Ore        | 58.30          |                    |                     |           |
| 19<br>20 | 18<br>19 | 19<br>20             | 891<br>890 | 8HJ        | 31.94          | 46.29              | 7 70                | 0.035     |
| 21       | 20       | 20                   | 889        | BHJ        | 31.83<br>30.38 | 40.23              | 2.79                | 0.025     |
| 22       | 21       | 22                   | 888        | ВНЈ        | 32.84          |                    |                     |           |
| 23       | 22       | 23                   | 887        | внл        | 28.82          |                    |                     |           |
| 24       | 23       | 24                   | 886        | внл        | 33.51          |                    |                     |           |
| 25       | 24       | 25                   | 885        | вну        | 24.35          | 59.96              | 1.88                | 0.047     |
| 26       | 25       | 26                   | 884        | внл        | 34.85          |                    |                     |           |
| 27       | 26       | 27                   | 883        | ВНЈ        | 34.85          | ļ                  |                     |           |
| 28       | 27       | 28                   | 882        | BHJ        | 34.63          |                    |                     |           |
| 29<br>30 | 28<br>29 | 2 <del>9</del><br>30 | 881<br>880 | BH)        | 26.81<br>28.93 | 52.34              | 1.52                | 0.022     |
| 31       | 30       | 31                   | 879        | BHJ        | 48.03          | 32.34              | 1.52                | 0.022     |
| 32       | 31       | 32                   | 878        | BHJ        | 43.56          |                    |                     | 1         |
| 33       | 32       | 33                   | 877        | вні        | 43.79          |                    |                     |           |
| 34       | 33       | 34                   | 876        | внј        | 42.45          |                    |                     |           |
| 35       | 34       | 35                   | 875        | внл        | 42.45          | 33.40              | 1.73                | 0.041     |
| 36       | 35       | 36                   | 874        | BHJ        | 28.60          |                    |                     |           |
| 37       | 36       | 37                   | 873        | BHJ        | 18.54          |                    |                     |           |
| 38       | 37       | 38                   | 872        | BHJ        | 37.98          |                    |                     |           |
| 39       | 38<br>39 | 39<br>40             | 871<br>870 | 8HJ        | 21.67<br>21.00 | 63.78              | 1 07                | 0.030     |
| 40       | 40       | 41                   | 869        | BHJ        | 27.48          | 03./6              | 1.97                | 0.020     |
| 42       | 41       | 42                   | 868        | вни        | 35.74          |                    |                     | -         |
| 43       | 42       | 43                   | 867        | ВНЈ        | 28.59          |                    |                     |           |
| 44       | 43       | 44                   | 866        | вни        | 30.83          |                    |                     |           |
| 45       | 44       | 45                   | 865        | 84)        | 27.25          | 55.76              | 1.42                | 0.058     |
| 46       | 45       | 46                   | 864        | внл        | 26.81          |                    |                     |           |
| 47       | 46       | 47                   | 863        | BHJ        | 19.21          |                    |                     |           |
| 48       | 47       | 48                   | 862        | вни        | 21.22          |                    |                     |           |
| 49       | 48       | 49                   | 861        | внл        | 27.03          |                    |                     |           |
| 50       | 49       | 50                   | 860        | ВНЈ        | 21.89          | 61.02              | 2.09                | 0.065     |
| 51       | 50       | 51                   | 859        | BHJ        | 27.48          |                    |                     |           |
| 52       | 51       | 52                   | 858        | ВНЈ        | 20.78          |                    |                     | <u> </u>  |
| 53       | 52       | 53                   | 857        | ВНЈ        | 27.93          |                    |                     |           |
| 54<br>55 | 53<br>54 | 54<br>55             | 856<br>855 | вн)<br>вн) | 32.62<br>29.94 | 53.14              | 1.52                | 0.044     |
| 56       | 55       | 55                   | 855<br>854 | ВНЈ        | 25.36          | 33.14              | 1.32                | 0.044     |
| 57       | 56       | 57                   | 853        | ВНЈ        | 28.60          |                    |                     |           |
| 58       | 57       | 58                   | 852        | ВНЈ        | 28.60          |                    |                     | -         |
| 59       | 58       | 59                   | 851        | BHJ        | 26.81          |                    |                     |           |
| 60       | 59       | 60                   | 850        | BHJ        | 28.93          | 53.47              | 1.64                | 0.030     |
| 61       | 60       | 61                   | 849        | вни        | 39.10          |                    | · · · · ·           | 1         |
| 52       | 61       | 62                   | 848        | BHJ        | 40.88          |                    |                     |           |
| 63       | 62       | 63                   | 847        | BHJ        | 47.36          |                    |                     |           |
| 64       | 63       | 64                   | 846        | внј        | 35.74          |                    |                     |           |
| 65       | 54       | 65                   | 845        | внл        | 45.35          | 29.42              | 1.88                | 0.076     |
| 66       | 65       | 66                   | 844        | ВНЈ        | 33.06          |                    |                     | -         |
| 67       | 66       | 57                   | 843        | BHJ        | 39.32          |                    |                     |           |
| 68       | 67       | 68                   | 842        | ВНЈ        | 32.62          |                    |                     | 1         |
| 69       | 68       | 69                   | 841        | BHJ        | 33.73          |                    |                     | 1         |

## KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

<sub>Borehole</sub> No.

MSPL/RC-11

Date of Start

Total Depth

Location.

659669.96,1678411.4688 Date of Completion

Collar Height 941.156 mRL 21 m

Mr.K Adinarayana &

| taclini | ation | 60°E    |           | Logged by |        |                    | ijayakumar S                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------|-------|---------|-----------|-----------|--------|--------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |       | leters) | Total Run |           |        | Chemi              | cal Analysis                     | 100 July 100 |
| SI.No   | From  | То      | (Meters)  | LITHOLOGY | Fe%    | SiO <sub>2</sub> % | cal Analysis Al2O <sub>3</sub> % | P%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1       | 0     | 1       | 940       | Ore       | 57.19  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2       | 1     | 2       | 939       | Ore       | 48.70  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3       | 2     | 3       | 938       | внЈ       | 33.51  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4       | 3     | 4       | 937       | ВНЈ       | 37.98  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5       | 4     | 5       | 936       | ВНЈ       | 41.99  | 36.08              | 1.42                             | 0.059                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 6       | 5     | 6       | 935       | внл       | 40.21  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1-7     | 6     | 7       | 934       | ВНЈ       | 42.22  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8       | 7     | 8       | 933       | ВНЈ       | 42.22  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9       | 8     | 9       | 932       | внЈ       | 37.75  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10      | 9     | 10      | 931       | внј       | 36.08  | 44.17              | 0.66                             | 0.071                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 11      | 10    | 1.1     | 930       | ВНЈ       | 36.86  | <u> </u>           |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 12      | 11    | 12      | 929       | внј       | 34.18  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13      | 12    | 13      | 928       | внл       | 31.95  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 14      | 13    | 14      | 927       | внЈ       | 32.84  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 15      | 14    | 15      | 926       | ВНЈ       | 33.51  | 47.90              | 2.03                             | 0.072                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 16      | 15    | 16      | 925       | ВНЈ       | 34.63  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 17      | 16    | 17      | 924       | BHJ       | 35.30  |                    |                                  | <u> </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 18      | 17    | 18      | 923       | BHJ       | 37.53  |                    |                                  | 1/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 19      | 18    | 19      | 922       | ВНЈ       | 36.64  |                    |                                  | \                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 20      | 19    | 20      | 921       | вну -     | 38.76_ | 42.38              | 0                                | 0.048                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 21      | 20    | 21      | 920       | ВНЈ       | 36.41  |                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

# KARADIKOLLA IRON ORE MINE

# REVERSE CIRCULATION DRILLING LOG

Borehole No.

Collar Height

MSPL/RC-12

946.777 mRL

Date of Start

12-02-2017 12-02-2017

Location.

659541.7108,1678544.38: Date of Completion Total Depth

31 m

Mr.K Adinarayana &

| Run (Meters) Total Run (Meters) LITHOLOGY Fe% SiO <sub>2</sub> % Al2O <sub>3</sub> % P%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |          | 60°E     |          | Logged by |        | Vij    | jayakumar S  |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|----------|----------|-----------|--------|--------|--------------|----------|
| Run (Meters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Inclina        | 1        |          |          |           |        | Chemic | cal Analysis |          |
| Si,No   Form   To   (No. Exp.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |          |          |          | LITHOLOGY | Fe%    |        |              | 1        |
| 1         U         1         2         945         . Ore         57.64           2         1         2         945         . Ore         55.07         .           3         2         3         944         Ore         52.05         .           4         3         4         943         Ore         57.32         11.36         3.72         0.065           5         4         5         942         Ore         57.32         11.36         3.72         0.065           6         5         6         941         Ore         59.11         .         .           7         6         7         940         Ore         59.42         .         .           7         6         7         940         Ore         59.42         .         .           7         6         7         940         Ore         61.11         .         .           9         8         9         938         Ore         69.11         .         .         .           10         9         10         937         Ore         60.88         8.37         1.68         .         .                                                                                                                                                                                                                                                          | SI.No          | <u> </u> | <u> </u> |          |           | 52.05  |        |              |          |
| 2         1         2         34         Ore         56.07         944         07e         52.05         0.065           5         4         5         942         Ore         57.32         11.36         3.72         0.065           6         5         6         941         Ore         59.11         0.065           7         6         7         940         Ore         59.42         0.07           8         7         8         939         Ore         61.11         0.07           9         8         9         938         Ore         59.11         0.03           10         9         10         937         Ore         60.88         8.37         1.68         0.033           11         10         11         936         Ore         49.82         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033         0.033                                                                                                                                                                                    | 1              |          | <u> </u> |          | Ore       | 57.64  |        |              |          |
| 3         2         3         943         Ore         52.05         942         0.065           5         4         5         942         Ore         57.32         11.36         3.72         0.065           6         5         6         941         Ore         59.11         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00                                                                                                                        | 2              |          |          |          | _ •       |        | L      |              |          |
| 4         3         4         543         Ore         57.32         11.36         3.72         0.065           5         4         5         942         Ore         59.11             6         5         6         941         Ore         59.11             7         6         7         940         Ore         59.42             8         7         8         939         Ore         61.11             9         8         9         938         Ore         59.11             10         9         10         937         Ore         60.88         8.37         1.68         0.033           11         10         11         936         Ore         49.82              11         11         12         935         Ore         57.64              12         11         12         933         Ore         66.90         9.18         1.68         0.047           15         14         15         932<                                                                                                                                                                                                                                                                                                                                                                                                              | 3              | <u> </u> | <u> </u> |          |           |        |        |              |          |
| 5         4         5         542         Ore         59.11         6         5         6         941         Ore         59.42         7         6         7         940         Ore         59.42         7         8         939         Ore         61.11         8         7         8         939         Ore         61.11         9         10         937         Ore         60.88         8.37         1.68         0.033         10         9         10         937         Ore         60.88         8.37         1.68         0.033         11         10         11         936         Ore         57.64         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20         9.20 <td< td=""><td>4</td><td><u> </u></td><td></td><td></td><td></td><td></td><td>11.36</td><td>3.72</td><td>0.065</td></td<> | 4              | <u> </u> |          |          |           |        | 11.36  | 3.72         | 0.065    |
| 6         5         6         7         940         Ore         59.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5_             | 1        |          |          | J         |        |        |              |          |
| 7         6         7         940         61.11         9         8         939         938         Ore         59.11         9         10         937         Ore         60.88         8.37         1.68         0.033           10         9         10         937         Ore         60.88         8.37         1.68         0.033           11         10         11         936         Ore         49.82         1           12         11         12         935         Ore         57.64         1           13         12         13         934         Ore         62.90         1           14         13         14         933         Ore         56.97         1           14         15         932         Ore         60.99         9.18         1.68         0.047           15         14         15         932         Ore         61.44         1         16         17         930         Ore         52.50         1         1         18         1929         Ore         56.97         1         1         18         1929         927         BHJ         39.453         41.47         0.66                                                                                                                                                                                                      | 6              | ·        |          |          |           |        |        |              |          |
| 8         7         8         935         Ore         59.11         59.11         0.033           10         9         10         937         Ore         60.88         8.37         1.68         0.033           11         10         11         936         Ore         49.82         9.18         1.68         0.033           12         11         12         935         Ore         57.64         9.18         0.047           13         12         13         934         Ore         62.90         0.047           14         13         14         933         Ore         56.97         0.047           15         14         15         932         Ore         60.99         9.18         1.68         0.047           16         15         16         931         Ore         61.44         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.047         0.04                                                                                                                                                                  | 7              | 1        |          |          |           |        |        |              |          |
| S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 8              | <u> </u> |          | <u> </u> |           |        |        |              |          |
| 10         9         10         937         Ore         49.82           11         10         11         936         Ore         57.64           12         11         12         935         Ore         57.64           13         12         13         934         Ore         62.90           14         13         14         933         Ore         56.97           15         14         15         932         Ore         60.99         9.18         1.68         0.047           15         14         15         932         Ore         61.44         1.68         0.047           16         15         16         931         Ore         61.44         1.68         0.047           16         17         930         Ore         52.50         1.72         1.72         1.68         0.047           18         17         18         929         Ore         43.56         1.84         1.94         0.66         0.049           20         19         20         927         BHJ         39.43         41.47         0.66         0.049           21         20         21         <                                                                                                                                                                                                                         | 9              |          |          |          |           |        | 8.37   | 1.68         | 0.033    |
| 11         10         11         935         Ore         57.64           12         11         12         935         Ore         62.90           13         12         13         934         Ore         62.90           14         13         14         933         Ore         56.97           15         14         15         932         Ore         60.99         9.18         1.68         0.047           15         14         15         931         Ore         61.44         1.68         0.047           16         15         16         931         Ore         61.44         1.68         0.047           17         16         17         930         Ore         52.50         1.7         1.8         1.28         929         Ore         43.56         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2                                                                                                                                                                                                 | 10             |          |          |          |           |        |        |              |          |
| 12         11         12         933         Ore         62.90           13         12         13         934         Ore         56.97           14         13         14         933         Ore         60.99         9.18         1.68         0.047           15         14         15         932         Ore         60.99         9.18         1.68         0.047           15         14         15         931         Ore         61.44         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00         9.00                                                                                                                                                   | 11             | 1.0      |          |          |           | 1      |        |              |          |
| 13         12         13         334         Ore         56.97         14         13         14         933         Ore         60.99         9.18         1.68         0.047           15         14         15         932         Ore         60.99         9.18         1.68         0.047           15         14         15         932         Ore         61.44         1.68         0.047           16         15         16         931         Ore         52.50         1.7         1.7         1.6         17         930         Ore         52.50         1.7         1.8         1.7         1.8         929         Ore         43.56         1.7         1.8         1.9         928         Ore         56.97         1.8         1.9         928         Ore         56.97         1.9         1.8         1.9         928         Ore         56.97         1.9         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0 <t< td=""><td>12</td><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>                                                      | 12             | 11       |          |          |           |        |        |              |          |
| 14         13         14         935         Ore         60.99         9.18         1.68         0.047           15         14         15         932         Ore         61.44         0.66         0.047           16         15         16         931         Ore         52.50         0.66         0.049           17         16         17         930         Ore         52.50         0.049         0.049           18         17         18         929         Ore         56.97         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049         0.049                                                                                                                         | 13             |          |          |          |           |        |        |              |          |
| 15         14         15         352         31         Ore         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44         61.44                                                              | 14             |          |          |          |           |        | 9.18   | 1.68         | 0.047    |
| 16         15         16         931         Ore         52.50         7           17         16         17         930         Ore         43.56         9           18         17         18         929         Ore         56.97         9           19         18         19         928         Ore         56.97         9           20         19         20         927         BHJ         39.43         41.47         0.66         0.049           21         20         21         926         BHJ         34.63         93.43         41.47         0.66         0.049           21         20         21         926         BHJ         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63         34.63                                                                                                                                                             | 15             |          |          | 1        |           |        |        |              |          |
| 17       16       17       930       Ore       43.56       43.56       43.56       43.56       43.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56       63.56                                                                                                                                           | 16             |          |          |          |           |        |        |              | <u> </u> |
| 18       17       18       925       3.6       56.97       0.66       0.049         19       18       19       928       Ore       56.97       0.66       0.049         20       19       20       927       BHJ       39.43       41.47       0.66       0.049         21       20       21       926       BHJ       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       <                                                                                                                                                                                   | 17             |          |          |          |           |        |        |              |          |
| 19       18       19       20       927       BHJ       39.43       41.47       0.66       0.049         20       19       20       927       BHJ       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63       34.63                                                                                                                                                          | 18             |          |          |          |           |        |        |              |          |
| 20         19         20         926         BHJ         34.63           21         20         21         926         BHJ         43.34           22         21         22         925         BHJ         46.91           23         22         23         924         BHJ         40.21           24         23         24         923         BHJ         40.21           25         24         25         922         BHJ         36.64         42.08         1.27         0.047           25         24         25         921         BHJ         33.06         99.77         920         BHJ         39.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.77         99.7                                                                                                                                                 | 19             |          |          |          |           |        | 41.47  | 0.66         | 0.049    |
| 21       20       21       925       BHJ       43.34         22       21       22       925       BHJ       46.91         23       22       23       924       BHJ       40.21         24       23       24       923       BHJ       36.64       42.08       1.27       0.047         25       24       25       922       BHJ       33.06       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77       39.77                                                                                                                                                                                                    | 20             |          |          |          |           |        |        |              |          |
| 22         21         22         923         8HJ         46.91           23         22         23         924         8HJ         40.21           24         23         24         923         8HJ         40.21           25         24         25         922         8HJ         36.64         42.08         1.27         0.047           25         24         25         921         8HJ         33.06         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77         39.77                                                                                                                      | 1              |          |          |          |           | 43.34  |        |              |          |
| 23       22       23       24       923       BHJ       40.21         24       23       24       923       BHJ       36.64       42.08       1.27       0.047         25       24       25       922       BHJ       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.07       33.06       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.0                                                                                                                                                                      | 1 <del>-</del> | 1        |          |          |           | 46.91  |        |              |          |
| 24       23       24       323       323       34       323       36.64       42.08       1.27       0.047         25       24       25       922       8HJ       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.06       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07       33.07                                                                                                                                                            | 1              |          |          |          |           | 40.21  |        |              |          |
| 25     24     25     921     BHJ     33.06       26     25     26     921     BHJ     39.77       27     26     27     920     BHJ     39.77       28     27     28     919     BHJ     44.23       29     28     29     918     BHJ     38.42       30     29     30     917     BHJ     15.08     73.87     1.56     0.029       30     29     30     916     BHJ     42.00     42.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 24             |          |          |          |           | 36.64  | 42.08  | 1.27         | 0.047    |
| 26     25     26     921     39.77       27     26     27     920     BHJ     39.77       28     27     28     919     BHJ     44.23       29     28     29     918     BHJ     38.42       30     29     30     917     BHJ     15.08     73.87     1.56     0.029       30     29     30     916     BHJ     42.00     42.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4              |          |          |          |           |        |        |              |          |
| 27     26     27     920     5HJ     44.23       28     27     28     919     BHJ     44.23       29     28     29     918     BHJ     38.42       30     29     30     917     BHJ     15.08     73.87     1.56     0.029       30     29     30     917     BHJ     42.00     42.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 26             |          |          |          |           |        |        |              |          |
| 28     27     28     919     38.42       29     28     29     918     BHJ     15.08     73.87     1.56     0.029       30     29     30     917     BHJ     42.00     1.56     0.029                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 27             |          |          |          |           |        |        |              |          |
| 29 28 29 518 510 15.08 73.87 1.56 0.029<br>30 29 30 917 BHJ 15.08 73.87 1.56 0.029                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 28             | 27       |          |          |           |        |        |              |          |
| 30 29 30 91/ BH 42.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 29             | 28       |          |          |           |        |        | 1.56         | 0.029    |
| 31 30 31 916 Brid 42.00 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 30             | ) 29     |          |          |           |        |        |              |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 31             | L 30     | 31       | 916      | DEG       | -72.00 |        |              |          |

# M/s. MSPL LIMITED KARADIKOLLA IRON ORE MINE

REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-13

Date of Start

12-02-2017 12-02-2017

Location.

959.308 mRL

659646.2462,1678508.64! Date of Completion Total Depth

Collar Height

42 m

Mr.K Adinarayana &

| Inclina                                         | ation       | 90°      |            | Logged by |                 | Vi                 | jayakumai s         | 40.78                                            |
|-------------------------------------------------|-------------|----------|------------|-----------|-----------------|--------------------|---------------------|--------------------------------------------------|
|                                                 | Run (M      | eters)   | Total Run  |           |                 | Chemi              | cal Analysis        |                                                  |
| SI,NO                                           |             | То       | (Meters)   | LITHOLOGY | Fe%             | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%                                               |
| 1                                               | 0           | 1        | 958        | Ore       | 63.34           |                    |                     |                                                  |
| 2                                               | 1           | 2        | 957        | → Ore     | 58.99           |                    |                     |                                                  |
| 3                                               | 2           | 3        | 956        | Ore       | 52.5            |                    |                     | -                                                |
| 4                                               | 3           | 4        | 955        | Ore       | 59.65           |                    |                     |                                                  |
| 5                                               | 4           | 5        | 954        | Ore       | 55.4            | 15.82              | 2.54                | 0.044                                            |
| 6                                               | 5           | 6        | 953        | Ore       | 37.08           |                    |                     |                                                  |
| <del>                                    </del> | 6           | 7        | 952        | Ore       | 57.86           |                    |                     |                                                  |
| 8                                               | 7           | 8        | 951        | Ore       | 59.87           |                    |                     |                                                  |
| 9                                               | 8           | 9        | 950        | Ore       | 58.75           |                    |                     |                                                  |
| 10                                              | 9           | 10       | 949        | Ore       | 43.34           | 35.49              | 0.82                | 0.040                                            |
| 11                                              | 10          | 11       | 948        | Ore       | 45.8            |                    |                     |                                                  |
| 12                                              | 11          | 12       | 947        | Ore       | 44.01           |                    |                     |                                                  |
| 13                                              | 12          | 13       | 946        | Ore       | 42.22           |                    |                     |                                                  |
| 14                                              | 13          | 14       | 945        | Ore       | 42.45           | 22.42              | 2.03                | 0.038                                            |
| 15                                              | 14          | 15       | 944        | Ore       | 44.23           | 33.18              | 2.03                | 1 0.038                                          |
| 16                                              | 15          | 16       | 943        | Ore       | 44.45           |                    |                     | + 7                                              |
| 17                                              | 16          | 17       | 942        | Ore       | 40.21           |                    |                     | <del>                                     </del> |
| 18                                              | 17          | 18       | 941        | Ore       | 41.33<br>40.21  |                    |                     | <del></del>                                      |
| 19                                              | 18          | 19       | 940        | Ore       | 40.21<br>-59.98 | -10.03             | -1.56               | 0.015                                            |
| 20                                              | 19          | 20       | 939<br>938 | Ore Ore   | 59.44           | 10.05              |                     |                                                  |
| 21                                              | 20          | 21       | 937        | Ore       | 54.06           |                    |                     |                                                  |
| 22                                              | 21          | 22       | 936        | Ore       | 58.32           |                    |                     |                                                  |
| 23                                              | 22          | 23<br>24 | 935        | Ore       | 58.98           |                    |                     |                                                  |
| 24                                              | 23          | 25       | 934        | Ore       | 58.08           | 12.84              | 1.78                | 0.035                                            |
| 25                                              | 24          | 25       | 933        | Ore       | 57.32           |                    |                     |                                                  |
| 26                                              | 25          | 27       | 932        | Ore       | 56.74           | 1                  |                     | ĺ                                                |
| 27                                              | 26          | 28       | 931        | Ore       | 50.26           |                    |                     |                                                  |
| 28                                              | 27          | 29       | 930        | Ore       | 44.68           |                    |                     |                                                  |
| 29                                              | 28          | 30       | 929        | Ore       | 44.68           | 33.37              | 0.74                | 0.056                                            |
| 30                                              | 29          |          | 928        | Ore       | 44.45           |                    |                     |                                                  |
| 31                                              | 30          | 31       | 927        | Ore       | 51.83           |                    |                     |                                                  |
| 32                                              | 31          | 32       |            | Ore       | 47.81           | +                  |                     |                                                  |
| 33                                              | 32          | 33       | 926        | Ore       | 43.12           |                    |                     |                                                  |
| 34                                              | 33          | 34       | 925        | Ore       | 50.27           | 22.22              | 1.92                | 0.048                                            |
| 35                                              | 34          | 35       | 924        | Ore       | 48.03           |                    | _,                  |                                                  |
| 36                                              | 35          | 36       | 923        | Ore       | 46.69           |                    |                     |                                                  |
| 37                                              | 36          | 37       | 922        | Ore       | 45.8            | 1                  |                     |                                                  |
| 38                                              | 37          | 38       | 921        | BHJ       | 38.87           | 1                  |                     |                                                  |
| 39                                              | 38          | 39       | 920<br>919 | BHJ       | 43.12           | 36.01              | 0.58                | 0.038                                            |
| 40                                              | 39          | 40       | 919        | BHJ       | 45.8            |                    |                     | 15                                               |
| 41 42                                           | <del></del> | 41       | 918        | BHJ       | 46.91           |                    |                     |                                                  |
| ¥ \                                             | 41          | 42       | 31/        |           |                 | <u></u>            |                     | ·······                                          |

# KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-14

Date of Start

659499.3022,1678626.8362 Date of Completion

/13-02-2017 13-02-2017

Location. Collar Height

958.377 mRL

Total Depth

49 m

Mr.K Adinarayana &

| Inclin    | nation      | 90°          |           | Mr.K Adinarayana &<br>Vijayakumar S |        |                    |                     |                                         |  |  |  |
|-----------|-------------|--------------|-----------|-------------------------------------|--------|--------------------|---------------------|-----------------------------------------|--|--|--|
|           | <del></del> | Pun (Motors) |           |                                     |        |                    |                     |                                         |  |  |  |
|           |             | <del></del>  | Total Run |                                     |        | Che                | emical Analysis     |                                         |  |  |  |
| l.No      | From        | То           | (Meters)  | LITHOLOGY                           | Fe%    | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%                                      |  |  |  |
| 1         | 0           | 1            | 957       | Оге                                 | 59.20  |                    |                     |                                         |  |  |  |
| 2         | 1           | 2            | 956       | Ore                                 | 50.79  |                    |                     |                                         |  |  |  |
| 3         | 2           | 3            | 955       | Ore                                 | 54.06  |                    |                     |                                         |  |  |  |
| 4         | 3           | 4            | 954       | Ore                                 | 54.73  |                    |                     |                                         |  |  |  |
| 5         | 4           | 5            | 953 ,     | Ore                                 | 52.28  | 22.14              | 1.27                | 0.044                                   |  |  |  |
| 6         | 5           | 6            | 952       | Ore                                 | 52.50  |                    |                     |                                         |  |  |  |
| 7         | 6           | 7            | 951       | Ore                                 | 45.57  |                    |                     |                                         |  |  |  |
| 8         | 7           | 8            | 950       | Ore                                 | 50.94  |                    |                     |                                         |  |  |  |
| 9         | 8           | 9            | 949       | Ore                                 | 44.68  |                    |                     |                                         |  |  |  |
| 10        | 9           | 10           | 948       | Ore                                 | 40.10  | 40.28              | 0.74                | 0.042                                   |  |  |  |
| 11        | 10          | 11           | 947       | Ore                                 | 46.91  |                    |                     |                                         |  |  |  |
| 12        | 11          | 12           | 946       | ВНЈ                                 | 39.10  |                    |                     | <u> </u>                                |  |  |  |
| 13        | 12          | 13           | 945       | ВНЈ                                 | 41.33  |                    |                     |                                         |  |  |  |
| 14        | 13          | 14           | 944       | ВНЈ                                 | 44.00  |                    |                     |                                         |  |  |  |
| 15        | 14          | 15           | 943       | ВНЈ                                 | 46.24  | 30.46              | 1.27                | 0.057                                   |  |  |  |
| 16        | 15          | 16           | 942       | ВНЈ                                 | 40.44  |                    |                     |                                         |  |  |  |
| 17        | 15          | 17           | 941       | BHJ                                 | 40.66  |                    |                     |                                         |  |  |  |
| 1.8       | 17          | 18           | 940       | BHJ                                 | 37.98  |                    |                     |                                         |  |  |  |
| 19        | 18          | 19           | 939       | внј                                 | 50.26  |                    |                     |                                         |  |  |  |
| 20        | 19          | 20           | 938       | BHJ                                 | 40.66  | 37.76              | 1.44                | 0.040                                   |  |  |  |
| 21        | 20          | 21           | 937       | BH.)                                | 42.89  |                    |                     |                                         |  |  |  |
| 22        | 21          | 22           | 936       | внл                                 | 46.91  |                    |                     |                                         |  |  |  |
| 23        | 22          | 23           | 935       | внл                                 | 45.35  |                    |                     |                                         |  |  |  |
| 24        | 23          | 24           | 934       | BHJ                                 | 38.65  |                    |                     |                                         |  |  |  |
| 25        | 24          | 25           | 933       | BHJ                                 | 44.58  | 32:68              |                     | 0.047                                   |  |  |  |
| 26        | 25          | 26           | 932       | вну                                 | 34.63  |                    |                     | and the second                          |  |  |  |
| 27        | 26          | 27           | 931       | BHJ                                 | 41.32  |                    |                     |                                         |  |  |  |
| 28        | 27          | 28           | 930       | Ore                                 | 58.44  |                    |                     |                                         |  |  |  |
| 29        | ·28         | 79           | 929       | Ore                                 | -60-67 |                    |                     |                                         |  |  |  |
| 30        | 29          | 30           | 928       | Ore                                 | 60.65  | 9.37               | 1.39                | 0.049                                   |  |  |  |
| 31        | 30          | 31           | 927       | ВНЈ                                 | 39.54  |                    |                     |                                         |  |  |  |
| 32        | 31          | 32           | 926       | BHJ                                 | 32.39  |                    |                     | , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |  |  |  |
| 33        | 32          | 33           | 925       | вни                                 | 34.63  |                    |                     |                                         |  |  |  |
| 34        | 33          | 34           | 924       | ВНЈ                                 | 38.42  |                    |                     |                                         |  |  |  |
| 35        | 34          | 35           | 923       | ВНЈ                                 | 36.86  | 42.06              | 1.68                | 0.054                                   |  |  |  |
| 36        | 35          | 36           | 922       | ВНЈ                                 | 36.41  |                    |                     |                                         |  |  |  |
| 37        | 36          | 37           | , 921     | внј                                 | 36.86  |                    |                     |                                         |  |  |  |
| 38        | 37          | 38           | 920       | ВНЈ                                 | 37.53  |                    |                     |                                         |  |  |  |
| 39        | 38          | 39           | 919       | ВНЈ                                 | 36.86  |                    |                     |                                         |  |  |  |
| 40        | 39          | 40           | 918       | ВНЈ                                 | 36.75  | 43.69              | 1.48                | 0.049                                   |  |  |  |
| 41        | 40          | 41           | 917       | ВНЈ                                 | 36.86  | 13.05              | 1.70                | 0.043                                   |  |  |  |
| 42        | 41          | 42           | 916       | BHJ                                 | 41.55  |                    |                     |                                         |  |  |  |
| 43        | 42          | 43           | 915       | BHJ                                 | 36.41  |                    |                     |                                         |  |  |  |
| 44        | 43          | 44           | 914       | ВНЈ                                 | 37.08  |                    |                     |                                         |  |  |  |
| 45        | 44          | 45           | 913       | BHJ                                 | 39.77  | 20.42              | 153                 | 0.00=                                   |  |  |  |
| 46        | 45          | 46           | 912       | BHJ                                 | 38.87  | 39.42              | 1.52                | 0.037                                   |  |  |  |
| 47        | 46          | 47           | 911       | BHJ                                 | 38.42  | -                  |                     |                                         |  |  |  |
| 48        | 47          | 48           | 910       | BHJ                                 | 35.74  |                    |                     |                                         |  |  |  |
| 49        | 48          | 49           | 909       | ВНЈ                                 | 38.87  | <u> </u>           |                     |                                         |  |  |  |
| <u> ]</u> |             | 1 -7.5       | 203       | ווס                                 | 20.0/  |                    | [                   |                                         |  |  |  |

#### M/s. MSPL LIMITED KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-15

Date of Start

14-02-2017

Location. Collar Height

963.968 mRL

659565.8324,1678567.491 Date of Completion Total Depth

14-02-2017

49 m

Mr.K Adinarayana &

90° Inclination

Logged by

| Inclin | ation      | 90°      |           | Logged by |       |                    | Vijayakumar S       |          |
|--------|------------|----------|-----------|-----------|-------|--------------------|---------------------|----------|
| _      | Run (A     | /leters) | Total Run |           |       | Chen               | nical Analysis      | -        |
| SI.No  | From       | То       | (Meters)  | LITHOLOGY | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | Р%       |
|        | 0          | 1        | 963       | Ore       | 62.35 |                    |                     |          |
| 2      | 1          | 2        | 962       | Ore       | 62.57 |                    |                     |          |
| 3      | 2          | 3        | 961       | Ore       | 62.35 |                    |                     | <u> </u> |
| 4      | 3          | 4        | 960       | Ore       | 63.14 |                    |                     |          |
|        | 4          | 5        | 959       | Ore       | 63.14 | 5.22               | 1.95                | 0.055    |
| 6      | 5          | 6        | 958       | Ore       | 63.81 |                    |                     |          |
| 7      | 6          | 7        | 957       | Ore       | 63.81 | i                  |                     | 1        |
|        | 7          | 8        | 956       | Ore       | 66.80 |                    |                     |          |
| 9      | 8          | 9        | 955       | Оге       | 63.14 |                    |                     |          |
| 10     | 9          | 10       | 954       | Ore       | 63.00 | 5.08               | 1.97                | 0.033    |
| 11     | 10         | 11       | 953       | Оге       | 64.69 |                    |                     |          |
| 12     | 11         | 12       | 952       | Ore       | 63.47 |                    |                     |          |
| 13     | 12         | 13       | 951       | Ore       | 63.14 |                    |                     |          |
| 14     | 13         | 14       | 950       | Ore       | 61.45 |                    |                     | İ        |
| 15     | 14         | 15       | 949       | Ore       | 54.29 | 13.76              | 4.33                | 0.044    |
| 16     | 15         | 16       | 948       | Оге       | 58.08 |                    |                     |          |
| 17     | 16         | 17       | 947       | Ore       | 59.32 |                    |                     |          |
| 18     | <u>1</u> 7 | 18       | 946       | Ore       | 53.62 |                    |                     |          |
| 19     | 18         | 19       | 945       | Ore       | 41.55 |                    |                     |          |
| 20     | 19         | 20       | 944       | Ore       | 58.87 | 13.29              | 0.41                | 0.014    |
| 21     | 20         | 21       | 943       | Ore       | 55.63 |                    |                     |          |
| 22     | 21         | 22       | 942       | Ore       | 49.37 |                    |                     |          |
| 23     | 22 .       | 23       | 941       | Ore       | 44.68 |                    |                     |          |
| 24***  | 23         | 24       | 940**     | n Ore     | 47.44 |                    |                     |          |
| 25     | 24         | 25       | 939       | Ore       | 45.8  | 26.92              | 1.68                | 0.044    |
| 26     | 25         | 26       | 938       | Ore       | 53.62 |                    |                     |          |
| 27     | 26         | 27       | 937       | Ore       | 49.15 |                    |                     |          |
| 28     | 27         | 28       | 936       | Ore       | 54.73 |                    |                     |          |
| 29     | 28         | 29       | 935       | Ore       | 59.42 |                    |                     |          |
| 30     | 29         | 30       | 934       | Ore       | 52.83 | 22.18              | 0.41                | 0.450    |
| 31     | 30         | 31       | 933       | Ore       | 47.14 |                    |                     |          |
| 32     | 31         | 32       | 932       | Ore       | 47.14 |                    |                     |          |
| 33     | 32         | 33       | 931       | Ore       | 54.29 |                    |                     |          |
| 34     | 33         | 34       | 930       | внј _     | 37.98 |                    |                     |          |
| 35     | 34         | 35       | 929       | внЈ       | 35.98 | 44.56              | 1.58                | 0.039    |
| 36     | 35         | 36       | 928       | внЈ       | 39.77 |                    |                     |          |
| 37     | 36         | 37       | 927       | BHJ       | 39.77 |                    |                     |          |
| 38     | 37         | 38       | 926       | BHJ       | 30.38 |                    |                     |          |
| 39     | 38         | 39       | 925       | BHJ       | 28.6  |                    |                     |          |
| 40     | 39         | 40       | 924       | ВНЈ       | 32.73 | 48.67              | 1.44                | 0.045    |
| 41     | 40         | 41       | 923       | внл       | 35,3  | İ                  |                     |          |
| 42     | 41         | 42       | 922       | ВНЈ       | 33.51 |                    |                     |          |
| 43     | 42         | 43       | 921       | внл       | 31.5  |                    |                     |          |
| 44     | 43         | 44       | 920       | вну       | 35.97 |                    |                     | i        |
| 45     | 44         | 45       | 919       | внл       | 35.07 | 47.08              | 1.44                | 0.041    |
| 46     | 45         | 46       | 918       | внл       | 35.3  |                    | P                   | 1        |
| 47     | 46         | 47       | 917       | внл       | 35.3  |                    | ratura              |          |
| 48     | 47         | 48       | 916       | ВНЈ       | 33.06 |                    |                     |          |
| 49     | 48         | 49       | 915       | внл       | 38.87 |                    |                     |          |

#### KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

<sub>Bore</sub>hole No.

MSPL/RC-16

Date of Start

14-02-2017

<sub>Location</sub>.

659394.0032,1678651.917 Date of Completion

14-02-2017

Collar Height

950.998 mRL

Total Depth

33 m

Mr.K Adinarayana &

inclination

90°

Logged by

Vijavakumar'S

| Run (Meters)   Total Run   Chemical Analysis     Si,No   From   To   (Meters)   LITHOLOGY   Fe%   SiO <sub>2</sub> %   Al2O <sub>3</sub> %     1 | P%           |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| No   From   To   (Meters)   LITHOLOGY   Fe%   SiO <sub>2</sub> %   Al2O <sub>3</sub> %     1                                                     | P%           |
| 2     1     2     949     Dump Soil     61.67       3     2     3     948     Dump Soil     60.55       4     3     4     947     Ore     61.00  |              |
| 3 2 3 948 Dump Soil 60.55<br>4 3 4 947 Ore 61.00                                                                                                 |              |
| 3 2 3 948 Dump Soil 60.55<br>4 3 4 947 Ore 61.00                                                                                                 |              |
|                                                                                                                                                  |              |
| 5 4 5 946 Ore 62.45 5.42 2.00                                                                                                                    |              |
|                                                                                                                                                  | 0.064        |
| 6 5 6 945 Ore 62.45                                                                                                                              |              |
| 7 6 7 - 944 Ore 64.02 · ···                                                                                                                      |              |
| 8 7 8 943 Ore 63.80                                                                                                                              |              |
| 9 8 9 942 Ore 63.80                                                                                                                              |              |
| 10 9 10 941 Ore 62.66 5.69 1.64                                                                                                                  | 0.025        |
| 11 10 11 940 Ore 63.35                                                                                                                           |              |
| 12 11 12 939 Ore 63.68                                                                                                                           |              |
| 13 12 13 938 Ore 62.02                                                                                                                           |              |
| 14 13 14 937 Ore 61.57                                                                                                                           |              |
| 15 14 15 936 Ore 62.24 6.28 2.05                                                                                                                 | 0.056        |
| 16 15 16 935 Ore 63.91                                                                                                                           |              |
| 17 16 17 934 Ore 63.24                                                                                                                           |              |
| 18 17 18 933 Ore 66.80                                                                                                                           |              |
| 19 18 19 932 Ore 63.80                                                                                                                           |              |
| 20   19   20   931   Ore   58:42   12:87   1:68                                                                                                  | 0.042        |
| 21 20 21 930 Ore 39.77                                                                                                                           |              |
| 22 21 22 929 Ore 53.84                                                                                                                           |              |
| 23 22 23 928 Ore 51.16                                                                                                                           |              |
| 24 23 24 927 Ore 45.80                                                                                                                           |              |
| 25 24 25 926 Ore 46.91 30.36 0.96                                                                                                                | 0.053        |
| 26 25 26 925 BHJ 42.45                                                                                                                           |              |
| 27 26 27 924 BHJ 43.12                                                                                                                           |              |
| 28 27 28 923 BHJ 41.33                                                                                                                           |              |
| 29 28 29 922 BHJ 41.33                                                                                                                           |              |
| 30 29 30 921 BHJ 41.78 36.84 1.34                                                                                                                | 0.05         |
| 31 30 31 920 BHJ 45.13                                                                                                                           |              |
| 32 31 32 919 BHJ 41.33                                                                                                                           |              |
| 33 32 33 918 BHJ 42.45                                                                                                                           | <del> </del> |

# M/s. MSPL LIMITED KARADIKOLLA IRON ORE MINE

REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-17

Date of Start

15-02-2017

Location.

tion. 659478.2825,

659478.2823,1678605.052 Date of Completion

15-02-2017

Collar Height

951.096 mRL

Total Depth

22 m

Mr.K Adinarayana &

Inclination

60°E

Logged by

| incli n | ation  | 00 5    |           | Logged by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     | ν                  | ijayakumai 3        |                                           |
|---------|--------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|---------------------|-------------------------------------------|
|         | Run (N | leters) | Total Run | The second secon |                     | Chem               | ical Analysis       | · iti ita ita ita ita ita ita ita ita ita |
| si.No   | From   | То      | (Meters)  | LITHOLOGY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Fe%                 | SiO <sub>2</sub> % | Al20 <sub>3</sub> % | P%                                        |
| 1       | 0      | 1       | 950       | внл                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 27.7                |                    |                     |                                           |
| 2       | 1      | 2       | 949       | ВНЈ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 22.34               |                    |                     |                                           |
| 3       | 2      | 3       | 948       | • BHJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 23.45               |                    |                     |                                           |
| 4       | 3      | 4       | 947       | внј                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 33.51               |                    |                     |                                           |
| 5       | 4      | 5       | 946       | BHJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 35.07               | 42.62              | 2.80                | 0.054                                     |
| 6       | 5      | 6       | 945       | ВНЈ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 30.82               |                    |                     |                                           |
| 7       | 6      | 7       | 944       | внј                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 29.04               | -                  |                     |                                           |
| 8       | 7      | 8       | 943       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 48.47               |                    |                     |                                           |
| 9       | 8      | 9       | 942       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 49.82               |                    |                     |                                           |
| 10      | 9      | 10      | 941       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 41.11               | 36.74              | 1.44                | 0.019                                     |
| 11      | 10     | 11      | 940       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 49.14               |                    |                     |                                           |
| 12      | 11     | 12      | 939       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 42.66               |                    |                     |                                           |
| 13      | 12     | 13      | 938       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50.71               |                    |                     |                                           |
| 14      | 13     | 14      | 937       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 44.68               |                    |                     |                                           |
| 15      | 14     | 15      | 936       | Ore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 49.14               | 21.02              | 1.60                | 0.054                                     |
| 16      | 15     | 16      | 935       | ВНЈ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 41.77               |                    |                     |                                           |
| 17      | 16     | 17      | 934       | ВНЈ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 40.88               |                    |                     |                                           |
| 18      | 17     | 18      | 933       | внј                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 39.31               |                    |                     |                                           |
| 19      | 18     | 19      | 932       | BHJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 56.29               |                    |                     |                                           |
| 20      | 19     | 20      | 931       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | - <del>42.</del> 00 | 36.39              | -0.86               | 0.045                                     |
| 71      | 20     | 21      | 930       | BHJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 31.28               |                    |                     |                                           |
| 22      | 21     | 22      | 929       | BHJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 29.71               |                    |                     |                                           |

## KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

<sub>Bore</sub>hole No.

MSPL/RC-18

Date of Start

Location.

659423.3187,1678676.5934 Date of Completion

15-02-2017

Collar Height

950.996 mRL

Total Depth

37m Mr.K Adinarayana &

Logged by Vijayakumar S 85°E <sub>Inclination</sub>

| Inclina | LIUII  | 85°E    |           | rogged by  |       |                    | пауакитаг <b>5</b>  |       |
|---------|--------|---------|-----------|------------|-------|--------------------|---------------------|-------|
|         | Run (N | leters) | Total Run |            |       | Chemi              | cal Analysis        |       |
| SINO    | From   | То      | (Meters)  | LITHOLOGY  | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%    |
| 1       | 0      | 1       | 950       | Ore        | 62.00 |                    |                     |       |
| 2       | 1      | 2       | 949       | Ore        | 64.24 | - I                |                     |       |
| 3       | 2      | 3       | 948 ,     | Ore        | 63.79 |                    |                     |       |
| 4       | 3      | 4       | 947       | Ore        | 62.23 |                    |                     |       |
| 5       | 4      | 5       | 946       | Ore        | 63.34 | 4.98               | 3.10                | 0.045 |
| 6       | 5      | 6       | 945       | Ore        | 64.46 |                    |                     |       |
| 7       | 6      | 7       | 944       | Ore        | 64.46 |                    |                     |       |
| 8       | 7      | 8       | 943       | Ore        | 64.46 |                    |                     |       |
| 9       | 8      | 9       | 942       | Ore        | 64.91 |                    |                     |       |
| 10      | 9      | 10      | 941       | Ore        | 65.23 | 3.29               | 1.03                | 0.032 |
| 11      | 10     | 11      | 940       | Ore        | 64.24 |                    |                     | -     |
| 12      | 11     | 12      | 939       | Ore        | 64.24 |                    |                     |       |
| 13      | 12     | 13      | 938       | Ore        | 63.79 |                    |                     |       |
| 14      | 13     | 14      | 937       | Ore        | 62    |                    |                     |       |
| 15      | 14     | 15      | 936       | Ore        | 44.68 | 31.94              | 1.01                | 0.054 |
| 16      | 15     | 16      | 935       | Ore        | 43.11 |                    |                     |       |
| 17      | 16     | 17      | 934       | Ore        | 55.17 |                    |                     |       |
| 18      | 17     | 18      | 933       | Ore        | 57.31 |                    |                     |       |
| 19      | 18     | 19      | 932       | Ore        | 57.63 |                    |                     |       |
| 20      | 19     | 20      | 931       | Ore        | 40.44 | 38.14              | 1.6                 | 0.044 |
| 21      | 20     | 21      | 930       | <u>Ore</u> | 45.35 |                    | <del></del>         |       |
| 22      | 21     | 22      | 929       | Ore        | 45.12 |                    |                     |       |
| 23      | 22     | 23      | 928       | Ore        | 49.37 |                    |                     |       |
| 24      | 23     | 24      | 927       | Ore        | 45.79 |                    |                     |       |
| 25      | 24     | 25      | 926       | <u>Ore</u> | 56.07 | 17.26              | 1.22                | 0.059 |
| 26      | 25     | 26      | 925       | Ore        | 46.02 |                    |                     |       |
| 27      | 26     | 27      | 924       | Ore        | 47.13 |                    |                     |       |
| 28      | 27     | 28      | 923       | BHJ        | 36.19 |                    |                     |       |
| 29      | 28     | 29      | 922       | внл        | 39.31 |                    |                     |       |
| 30      | 29     | 30      | 921       | BHJ        | 45.35 | 32.86              | 0.45                | 0.035 |
| 31      | 30     | 31      | 920       | ВНЈ        | 35.74 |                    |                     |       |
| 32      | , 31   | 32      | 919       | ВНЈ        | 35.07 |                    |                     |       |
| 33      | 32     | 33      | 918       | внЈ        | 41.55 |                    |                     |       |
| 34      | 33     | 34      | 917       | ВНЈ        | 32.39 |                    |                     |       |
| 35      | 34     | 35      | 916       | ВНЈ        | 27.92 | 56.16              | 1.32                | 0.044 |
| 36      | 35     | 36      | 915       | ВНЈ        | 25.02 |                    |                     |       |
| 37      | 36     | 37      | 914       | ВНЈ        | 29.26 |                    |                     |       |

# M/s. MSPL LIMITED KARADIKOLLA IRON ORE MINE

# REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-19

Date of Start

Location.

659326.44,1678753.27

Date of Completion

16,02-2017 17-02-2017

30 m

Collar Height

957.430 mRL

**Total Depth** 

Mr.K Adinarayana &

| (nclina | ation           | 90°           |                       | Logged by              |       | Vi                 | ijayakumar S        |       |
|---------|-----------------|---------------|-----------------------|------------------------|-------|--------------------|---------------------|-------|
| [NCIIII | Run (M          |               |                       |                        |       | Chemi              | cal Analysis        |       |
|         | · <u>`</u> -    | To            | Total Run<br>(Meters) | LITHOLOGY              | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%    |
| SI.NO   | 0               | 1             | 956                   | Ore mixed laterite     | 60.54 |                    |                     | _     |
| 1       |                 | 2             | 955                   | Ore mixed laterite     | 62.77 |                    |                     |       |
| 2       | 1               | 3             | 954                   | Ore                    | 61.24 |                    |                     |       |
| 3       | 2               |               | 953                   | Ore                    | 60.98 |                    |                     |       |
| 4       | 3               | <u>4</u><br>5 | 952                   | Ore                    | 61.67 | 6.48               | 2.56                | 0.045 |
| 5       | 4               |               | 951                   | Ore                    | 61.34 |                    |                     |       |
| 6       | 5               | 6<br>7        | 950                   | Ore                    | 64.46 |                    |                     |       |
| 7       | 6               | <del></del>   | 949                   | Ore                    | 62.00 |                    |                     |       |
| 8       | 7               | 8             | 948                   | Ore                    | 61.65 |                    |                     |       |
| 9       | 8               | 9             | 947                   | Ore                    | 58.2  | 13.67 "            | 0.78                | 0.045 |
| 10      | 9               | 10            | 946                   | Ore                    | 60.33 |                    |                     |       |
| 11_     | 10              | 11            | 945                   | Ore                    | 61.90 |                    |                     |       |
| 12      | 11              | 12            | 944                   | Ore                    | 65.35 |                    |                     |       |
| 13      | 12              | 13            | 943                   | Ore                    | 62.33 |                    |                     |       |
| 14      | 13              | 14            | 943                   | Оге                    | 61.88 | 7.86               | 1.78                | 0.043 |
| 15      | 14              | 15            | 941                   | Ore                    | 62.99 |                    |                     |       |
| 16      | 15              | 16<br>17      | 940                   | Ore                    | 62.55 |                    |                     |       |
| 17      | 16              | <u> </u>      | 939                   | Ore                    | 63.22 |                    |                     |       |
| 18      | 17              | 18<br>19      | 938                   | Ore                    | 63.79 |                    |                     |       |
| 19      | 18              | 20            | 937                   | Ore                    | 61.10 | 7.42               | 1.64                | 0.039 |
| 20      | 19              | 21            | 936                   | Ore                    | 61.44 |                    |                     |       |
| 21      | 20              | 22            | 935                   |                        | 55:62 |                    |                     |       |
| - 22    |                 | 23            | 934                   | Ore                    | 59.20 |                    |                     |       |
| 23      | 22              | 24            | 933                   | Ore                    | 62.55 |                    |                     |       |
| 24      | 24              | 25            | 932                   | Ore                    | 63.22 | 5.84               | 1.78                | 0.047 |
| 25      |                 | 26            | 931                   | Ore                    | 60.31 |                    |                     |       |
| 26      | 25              | 27            | 930                   | ВНЈ                    | 53:39 |                    |                     |       |
| 27      | 26              | 28            | 929                   | внј                    | 40.43 |                    |                     |       |
| 28      | 27              |               | 928                   | ВНЈ                    | 35.96 |                    |                     |       |
| 29      | 28              | 29            | 928                   | ВНЈ                    | 52.83 | 21.13              | 0.86                | 0.04  |
| 30      | 29              | 30            | 72/                   |                        |       |                    |                     |       |
| Note:   | : RC drill 1m r | ecovery of s  | ampie is less tr      | nan 2kg upto 20m depti |       |                    |                     |       |

# KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-20

Date of Start

Location.

659354.74,1678911.9

Date of Completion

17-02-2017

Collar Height

946.130 mRL

Total Depth

31 m

Mr.K Adinarayana &

| Inclir        | lination 70° |                | 70° Logged by |                |            |                    | Vijayakumar S       |                                               |  |  |  |
|---------------|--------------|----------------|---------------|----------------|------------|--------------------|---------------------|-----------------------------------------------|--|--|--|
| ***<br>***    | Run (f       | ∕leters)       | Total Run     |                |            | Chem               | ical Analysis       |                                               |  |  |  |
| SI.NO         | From         | To             | (Meters)      | LITHOLOGY      | Fe%        | SiO <sub>2</sub> % | Al20 <sub>3</sub> % | P%                                            |  |  |  |
| 1             | 0            | 1              | 945           | Stock material | 58.75      |                    |                     |                                               |  |  |  |
| 2             | 1            | 2              | 944           | Ore            | 53.62      |                    |                     |                                               |  |  |  |
| 3             | 2            | 3              | 943           | Ore            | 51.38      |                    |                     |                                               |  |  |  |
| 4             | 3            | 4              | 942           | ▼ Ore          | 41.11      |                    |                     |                                               |  |  |  |
| 5             | 4            | 5              | 941           | Ore            | 46.69      | 28.84              | 2.39                | 0.044                                         |  |  |  |
| 6             | 5            | 6              | 940           | Ore            | 45.57      |                    |                     |                                               |  |  |  |
| 7             | 6            | 7              | 939           | Оге            | 47.36      |                    |                     |                                               |  |  |  |
| 8             | 7            | 8              | 938           | Shale          | 30.16      |                    |                     |                                               |  |  |  |
| 9             | 8            | 9              | 937           | shale          | 35.74      |                    |                     |                                               |  |  |  |
| 10            | 9            | 10             | 936           | shale          | 44.68      | 22.59              | 5.95                | 0.050                                         |  |  |  |
| 11            | 10           | 11             | 935           | BHQ mixed Ore  | 43.79      |                    |                     |                                               |  |  |  |
| 12            | 11           | 12             | 934           | BHQ mixed Ore  | 49.15      |                    |                     |                                               |  |  |  |
| 13            | 12           | 13             | 933           | BHQ mixed Ore  | 43.12      |                    |                     |                                               |  |  |  |
| 14            | 13           | 14             | 932           | BHQ mixed Ore  | 48.70      |                    |                     |                                               |  |  |  |
| 15            | 14           | 15             | 931           | BHQ mixed Ore  | 52.05      | 20.84              | 2.70                | 0.044                                         |  |  |  |
| 16            | 15           | 16             | 930           | BHQ mixed Ore  | 45.80      |                    |                     |                                               |  |  |  |
| 17            | 16           | 17             | 929           | Shale          | 43.56      |                    |                     |                                               |  |  |  |
| 18            | 17           | 18             | 928           | Shale          | 39.99      |                    |                     |                                               |  |  |  |
| 19            | 18           | 19             | 927           | Shale          | 34.36      |                    |                     |                                               |  |  |  |
| 20            | 19           | 20             | 926           | Shale          | 26.58      | 39.61              | 8.5                 | 0.069                                         |  |  |  |
| 21            | 20           | 21             | 925           | Shale          | 18.32      |                    |                     |                                               |  |  |  |
| <del>22</del> | 21           | <del> 22</del> | 924           | shale          | 18.99      |                    |                     |                                               |  |  |  |
| 23            | 2.2          | 23             | 923           | Shale          | 20.11      |                    |                     |                                               |  |  |  |
| 24            | 23           | 24             | 922           | shale          | 19.88      |                    |                     |                                               |  |  |  |
| 25            | 24           | 25             | 921           | Shale          | 19.44      | 64.00              | 3.80                | 0.060                                         |  |  |  |
| 26            | 25           | 26             | 920           | shale          | .22.34     |                    |                     |                                               |  |  |  |
| 27            | 26           | 27'            | 919           | Shale .        | ·· ·21.22· |                    |                     | <u>  ' ' ' ' '                           </u> |  |  |  |
| 28            | 27           | 28             | 918           | shale          | 21.00      |                    | •                   |                                               |  |  |  |
| 29            | 28           | 29             | 917           | Shale          | 22.34      |                    |                     |                                               |  |  |  |
| 30            | 29           | 30             | 916           | Shale          | 22.12      | 48.51              | 7.32                | 0.032                                         |  |  |  |
| 31            | 30           | 31             | 915           | Shale          | 22.56      | 1                  |                     |                                               |  |  |  |

# M/s. MSPL LIMITED KARADIKOLLA IRON ORE MINE REVERSE CIRCULATION DRILLING LOG

<sub>Bore</sub>hole No.

MSPL/RC-21

Date of Start

Location.

659794.25,1678381.35

Date of Completion

18-02-2017

Collar Height

946.310 mRL

Total Depth

40<sup>t</sup>m

Mr.K Adinarayana &

|        | _                     | 90°    |           | Logged by     |                                       | Vija               | yakumar S           |          | <u>ं के किय</u> है।<br>जिस्सी |
|--------|-----------------------|--------|-----------|---------------|---------------------------------------|--------------------|---------------------|----------|-------------------------------|
| Inclin | 1                     | T      |           | 1056-1        |                                       | Chemica            | l Analysis          |          | <u>~;;;;;</u> ;;;;            |
|        | Run (M                | eters) | Total Run |               | Fe%                                   | SiO <sub>2</sub> % | Al20 <sub>3</sub> % |          | P%                            |
| sl.No  | From                  | To     | (Meters)  | LITHOLOGY     | 56.97                                 | 5102/0             |                     |          |                               |
| 1      | 0                     | 11     | 945       | Dump material | 56.97                                 |                    |                     |          |                               |
| 2      | 1                     | 2      | 944       | Dump material | · · · · · · · · · · · · · · · · · · · |                    |                     |          |                               |
| 3      | 2                     | 3      | 943       | Dump material | 45.80                                 |                    |                     |          |                               |
| 4      | 3                     | 4      | 942       | Dump material | 42.00                                 | 40.36              | 1.32                | 10       | .054                          |
| 5      | 4                     | 5      | 941       | Dump material | 39.10                                 | 40.50              | 1,32                |          |                               |
| 6      | 5                     | 6      | 940       | Dump material | 40.66                                 |                    |                     |          |                               |
| 7      | 6                     | 7      | 939       | Ore mixed BHJ | 39.32                                 |                    |                     |          |                               |
| 8      | 7                     | 8      | 938       | Ore mixed BHJ | 42.00                                 |                    |                     | _        |                               |
| 9      | 8                     | 9      | 937       | Ore mixed BHJ | 38.42                                 | 27.00              | 1.05                |          | 0.033                         |
| 10     | 9                     | 10     | 936       | Ore mixed BHJ | 41.33                                 | 37.98              | 1.03                | _   _ `  | -                             |
| 11     | 10                    | 11     | 935       | Ore mixed BHJ | 38.20                                 |                    |                     |          |                               |
| 12     | 11                    | 12     | 934       | Ore mixed BHJ | 42.45                                 |                    |                     |          |                               |
| 13     | 12                    | 13     | 933       | Ore mixed BHJ | 43.34                                 |                    |                     |          |                               |
| 14     | 13                    | 14     | 932       | внј           | 32.39                                 | 41.52              | 1.37                |          | 0.040                         |
| 15     | 14                    | 15     | 931       | ВНЈ           | 38.42                                 | 41.52              |                     |          |                               |
| 16     | 15                    | 16     | 930       | ВНЈ           | 35.97                                 |                    |                     |          |                               |
| 17     | 16                    | 17     | 929       | ВНЈ           | 36.86                                 |                    |                     |          |                               |
| 18     | 17                    | 18     | 928       | Shale         | 28.37                                 |                    |                     |          |                               |
| 19     | 18                    | 19     | 927       | Shale         | 31.95                                 | 48.49              | 0.78                |          | 0.040                         |
| 20     | 19                    | 20     | 926       | Shale         | 33.4<br>37.30                         | 40.43              |                     |          |                               |
| 21     | 20                    | 21     | 925       | BHJ           | - 43.11                               |                    |                     |          |                               |
| 22     | 21                    | 22     | 924       | - BH1         | 34.85                                 |                    |                     |          |                               |
| 23     | 22                    | 23     | 923       | ВНЈ           | 35.29                                 |                    |                     |          |                               |
| 24     | 23                    | 24     | 922       | BHJ           | 34.40                                 | 46.24              | 1.07                |          | 0.041                         |
| 25     | 24                    | 25     | 921       | ВНЈ           | 37.75                                 | 40.27              |                     |          |                               |
| 26     | 25                    | 26     | 920       | ВНЈ           | 37.73                                 |                    |                     | -        |                               |
| 27     | ·26                   | 27     | 919       | DHJ_          | <del> </del>                          |                    |                     |          |                               |
| 28     | 27                    | 28     | 918       | BHJ           | 37.97                                 |                    |                     |          |                               |
| 29     | 28                    | 29     | 917       | ВНЈ           | 34.62                                 | 42.98              | 1.21                |          | 0.028                         |
| 30     | 29                    | 30     | 916       | · Shale       | 37.42                                 | 42.36              | #12.2               |          |                               |
| 31     |                       | 31     | 915       | BHJ           | 37.97                                 | <del> </del>       |                     |          |                               |
| 32     |                       | 32     | 914       | BHJ           | 38.64                                 |                    |                     |          |                               |
| 33     |                       | 33     | 913       | BHJ           | 36.86                                 | <del>-</del>       | ·                   | <u> </u> |                               |
| 3/     |                       | 34     | 912       | ВНЈ           | 38.87                                 |                    | 2.22                | +        | 0.058                         |
| 35     |                       | 35     | 911       | BHJ mixed ore | 40.21                                 | 38.08              | 3.33                |          | ۵.0.0                         |
| 3      |                       | 36     | 910       | BHJ mixed ore | 39.31                                 |                    |                     |          |                               |
| 3      |                       | 37     | 909       | BHJ mixed ore | 41.10                                 |                    |                     |          |                               |
| 3      |                       | 38     | 908       | BHJ mixed ore | 36.63                                 |                    |                     |          |                               |
| 3      |                       | 39     | 907       | BHJ mixed ore | 38.20                                 |                    |                     |          |                               |
| 3      | 9 38                  | 40     | 906       | BHJ mixed ore | 35.63                                 | 46.23              |                     | 0.62     | 0.0                           |
|        | 0 39<br>e : Mined out |        |           | 1             |                                       |                    |                     |          |                               |

#### KARADIKOLLA IRON ORE MINE REVERSE CIRCULATION DRILLING LOG

<sub>Bore</sub>hole No.

MSPL/RC-22

Date of Start

Total Depth

Location.

659887.62,1678333.31

18-02-2017

Collar Height

951.250 mRL

Date of Completion

44 m

Mr.K Adinarayana &

| nclina       |      | 60°           |                       | Logged by               |       | Chemi    | cal Analysis        |       |
|--------------|------|---------------|-----------------------|-------------------------|-------|----------|---------------------|-------|
|              |      | Meters)<br>To | Total Run (Meters)    | LITHOLOGY               | Fe%   | SiO₂%    | Al20 <sub>3</sub> % | P%    |
| No           | From | 10            | 950                   | Ore dump stack material | 59.98 | 6.18     | 3.28                | 0.047 |
| <u>-</u>     | 1    | +             | 949                   | Ore dump stack material | 49.44 |          |                     |       |
| <del>_</del> | 7    | $\frac{1}{3}$ | 948                   | Ore dump stack material | 49.21 |          |                     |       |
| <u></u>      | 3    | 4             | 947                   | Ore dump stack material | 48.32 |          |                     | 0.078 |
| <del></del>  | Δ    | 5             | 946                   | Ore dump stack material | 48.54 | 7.64     | 3.26                | 0.076 |
| <del>-</del> |      | 6             | 945                   | Ore dump stack material | 41.17 |          |                     |       |
| <del>-</del> | 6    | 7             | 944<br>depth due to R | Ore dump stack material | 47.87 | <u> </u> |                     |       |

## KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

<sub>Borehole</sub> No.

MSPL/RC-23

Date of Start

Location.

659975.04,1678277.22

Date of Completion

Collar Height

970.510 mRL

Total Depth

70 m

Mr.K Adinarayana &

| Inclina  | ation          | 60°          |                       | Logged by               |       | V                  | ijayakumar S        | <del></del> |
|----------|----------------|--------------|-----------------------|-------------------------|-------|--------------------|---------------------|-------------|
| Inciting | T              | Meters)      |                       |                         |       | Chemi              | cal Analysis        |             |
|          | From           | To           | Total Run<br>(Meters) | LITHOLOGY               | Fe%   | SiO <sub>2</sub> % | Al20 <sub>3</sub> % | P%:         |
| SI.NO    | rion           | 1            | 970                   | Ore dump stack material | 59.09 | 7.29               | 2.95~               | 0.057       |
| 1        | 1 1            | 7            | 969                   | Ore dump stack material | 42.13 |                    |                     |             |
|          |                | 3            | 968                   | Ore dump stack material | 50.17 |                    |                     |             |
|          | 3              | 4            | 967                   | Ore dump stack material | 51.74 |                    |                     |             |
|          | <del>-</del> Δ | 5            | 966                   | Ore dump stack material | 45.93 | 16.38              | 4.35                | 0.082       |
| 5        | 5              | 6            | 965                   | Ore dump stack material | 45.71 |                    |                     |             |
|          | <u> </u>       | topped to di | ie Rod struck.        |                         |       |                    |                     |             |

#### KARADIKOLLA IRON ORE MINE REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-24

Date of Start

660015,1678172.72

Date of Completion

Location.

.25

26

27

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21-02-2017

| in the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second se | Height | 962.570 mRL |                       | Total Depth  Logged by  |                   |          | Mr.K.Adinarayana &<br>Vijayakumar S |          |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|-----------------------|-------------------------|-------------------|----------|-------------------------------------|----------|--|
| Inclin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1      | Neters)     | T ! D                 | 30                      | Chemical Analysis |          |                                     |          |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | From   | То          | Total Run<br>(Meters) | LITHOLOGY               | Fe%               | SiO₂%    | Al20 <sub>3</sub> %                 | P%       |  |
| SI NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0      | 1           | 962                   | Ore dump stack material | 60.54             |          |                                     |          |  |
| $\frac{1}{2}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1      | 2           | 961                   | Ore dump stack material | 44.00             |          |                                     | ******   |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2      | 3           | 960                   | Ore dump stack material | 33.73             |          |                                     |          |  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3      | 4           | 959                   | Ore dump stack material | 54.06             |          |                                     |          |  |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4      | 5           | 958                   | Ore dump stack material | 53.16             | 13.88    | 5.11                                | 0.069    |  |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5      | 5           | 957                   | Ore dump stack material | 55.85             |          |                                     |          |  |
| <del>-</del> <del>7</del>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 6      | 7           | 956                   | Ore dump stack material | 55.85             |          |                                     |          |  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 7      | 8           | 955                   | Ore dump stack material | 47.13             |          |                                     |          |  |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 8      | 9           | 954                   | Ore dump stack material | 46.46             |          |                                     |          |  |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9      | 10          | 953                   | Ore dump stack material | 47.58             | 22.37    | 3.49                                | 0.057    |  |
| 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 10     | 11          | 952                   | Ore dump stack material | 50.48             |          |                                     |          |  |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11     | 12          | 951                   | Ore dump stack material | 50.71             |          |                                     |          |  |
| 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 12     | 13          | 950                   | Ore dump stack material | 48.03             |          |                                     |          |  |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 13     | 14          | 949                   | ВНЈ                     | 43.56             |          |                                     |          |  |
| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 14     | 15          | 948                   | ВНЈ                     | 37.30             | 34.66    | 5.60                                | 0.089    |  |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15     | 16          | 947                   | ВНЈ                     | 56.07             |          |                                     |          |  |
| 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 16     | 17          | 946                   | ВНЈ                     | 32.39             |          |                                     |          |  |
| 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 17     | 18          | 945                   | ВНЈ                     | 32.39             | <u> </u> |                                     |          |  |
| 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 18     | 19          | 944                   | ВНЈ                     | 53.61             |          | 7.40                                | 0.050    |  |
| 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 19     | 20          | 943                   | внЈ                     | 45.57             | 25.23    | 3.49                                | 0.050    |  |
| 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20     | 21          | 942                   | внЈ                     | 23.68             | <u> </u> |                                     |          |  |
| 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 21     | 22          | 941                   | 8H7                     | 47.81             | <u> </u> |                                     |          |  |
| 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 22     | 23          | 940                   | ВНЈ                     | 44.01             | <u> </u> |                                     | <u> </u> |  |
| 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 23     | 24          | 939                   | BHJ                     | 41.55             | 30.00    | 7 67                                | 0.066    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |             |                       |                         |                   |          |                                     |          |  |

23 0.066 41.55 30.98 3.67 938 BHI 75 24 59.87 Ore dump stack material 937 26 25 Ore dump stack material 43.12 936 27 26 51.83 935 Ore dump stack material 28 27 45.35 Ore dump stack material 934 29 28 0.045 3.27 55.74 8.47 Ore dump stack material 933 30 29 57.19 Ore dump stack material 932 31 30 60.76 Ore dump stack material 931 31 32 58.53 930 Ore dump stack material 32 33 64.34 Ore dump stack material 34 929 33 0.063 2.54 7.18 61.43 928 Ore dump stack material 35 35 34 Ore dump stack material 45.35 927 36 36 35 57.19 Ore dump stack material 926 37 36 37 54.94 Ore dump stack material 38 38 925 37 50.48 924 Ore dump stack material 39 39 38 1.11 0.024 35.74 Ore dump stack material 42.45 923 40 40 39 46.91 Ore dump stack material 922 41 40 41 49.82 Ore dump stack material 921 42 42 41

Ore dump stack material

Ore dump stack material

BHJ

BHJ

внЈ

ВНЈ

BHJ

47.80

45.57

39.10

44.45

38.87

37.30

36.86

38.31

39.58

42.07

0.056

0.023 26

1.83

1.09

внл 913 50 50 49 Note: RC drill 1m recovery of sample is less than 4kg upto 10m depth.

920

919

918

917

916

915

914

43

44

45

46

47

48

49

#### KARADIKOLLA IRON ORE MINE

#### REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-25

Date of Start

Location.

660240.65,1677989.42

Date of Completion

collar Height

967.420 mRL

Total Depth

21-02-2017 21-02-2017

Mr.K Adinarayana &

| Inclination    |            | 90°        | Logged by |           | Vijayakumar S     |                    |                     |                                              |
|----------------|------------|------------|-----------|-----------|-------------------|--------------------|---------------------|----------------------------------------------|
|                | Run (N     | Meters)    | Total Run |           | Chemical Analysis |                    |                     |                                              |
| SI.NO          | From       | То         | (Meters)  | LITHOLOGY | Fe%               | SiO <sub>z</sub> % | Al20 <sub>3</sub> % | P% .                                         |
| 1              | 0          | 1          | 966       | Ore       | 46.70             |                    |                     |                                              |
| 2              | 1          | 2          | 965       | Ore       | 48.03             |                    |                     |                                              |
| - 3            | 2          | 3          | 964       | Ore       | 50.26             |                    |                     |                                              |
| 4              | 3          | 4          | 963       | • Ore     | 57.63             |                    |                     |                                              |
| 5              | 4          | 5          | 962       | Ore       | 40.21             | 29.48              | 5.83                | 0.080                                        |
| 6              | 5          | 6          | 961       | Оге       | 46.24             |                    |                     |                                              |
| 7              | 6          | 7          | 960       | Ore       | 48.03             |                    |                     |                                              |
| 8              | 7          | 8          | 959       | Оге       | 44.68             |                    |                     |                                              |
| 9              | 8          | 9          | 958       | Оге       | 36.19             |                    |                     |                                              |
| 10             | 9          | 10         | 957       | Ore       | 27.48             | 47.68              | 3.94                | 0.033                                        |
| 11             | 10         | 11         | 956       | Ore       | 44.90             |                    |                     | August a plan                                |
| 12             | 11         | 12         | 955       | Ore       | 39.99             |                    |                     |                                              |
| 13             | 12         | 13         | 954       | Ore       | 53.39             |                    |                     |                                              |
| 14             | 13         | 14         | 953       | Ore       | 48.03             |                    |                     |                                              |
| 15             | 14         | 15         | 952       | Ore       | 53.62             | 14.42              | 3.28                | 0.068                                        |
| 16             | 15         | 16         | 951       | Ore       | 50.26             |                    | ,                   |                                              |
| 17             | 16         | 17         | 950       | Shale     | 22.56             |                    |                     |                                              |
| 18             | 17         | 18         | 949       | Shale     | 19.43             |                    |                     |                                              |
| 19             | 18         | 19         | 948       | Shale     | 21.45             |                    | 1                   |                                              |
| 20             | 19         | 20         | 947       | Shale     | 32.73             | 40.69              | 4.51                | 0.042                                        |
| 21             | 20         | 21         | 946       | Shale     | 18.76             |                    |                     |                                              |
| 22             | 21         | 22         | 945       | Shale     | 16.75             |                    |                     |                                              |
| 23             | 22         | 23         | 944       | Shale     | 18.09             | (                  |                     |                                              |
| 24             | Σ3         | -24        | 943       | - Shale   | 22,16             |                    |                     |                                              |
| 25             | 24         | 25         | 942       | Shale     | 16.98             | 59.20              | 6.67                | 0.081                                        |
| 26             | 25         | 26         | 941       | Shale     | 18.54             |                    |                     | <u>                                     </u> |
| 27             | 26         | 27         | 940       | Shale     | 18.98             |                    |                     |                                              |
| 28             | 27         | 28         | 939       | Shale     | 19.43             |                    |                     |                                              |
| 2 <del>9</del> | 28         | 29         | 938-      | Shale     | 22:34             | <u> </u>           |                     |                                              |
| 30             | 29         | 30         | 937       | Shale     | 21.22             | 51.17              | 6.79                | 0.04                                         |
| 31             | 30         | 31         | 936       | Shale     | 18.54             |                    |                     |                                              |
| Note:          | Area seems | to be dump |           |           |                   |                    |                     |                                              |

## KARADIKOLLA IRON ORE MINE

REVERSE CIRCULATION DRILLING LOG

Borehole No. Location.

Collar Height

MSPL/RC-26

659898.08,1678197.33 952.360 mRL

Date of Start

Date of Completion

Total Depth

Mr.K Adinarayana &

| i.<br>Umn | tion   | 90°         |               | Logged by                 |       |                    | jayakumar S         | -              |
|-----------|--------|-------------|---------------|---------------------------|-------|--------------------|---------------------|----------------|
| Inclina   | Run (M | - <u>-</u>  |               |                           |       | Chemi              | cal Analysis        | (1)3           |
|           |        | To          | Total Run     | LITHOLOGY                 | Fe%   | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%             |
| 31.10     | From   |             | (Meters)      | Waste Dump stack material | 54.73 |                    | · ·                 | 13             |
| 1         | 0      | 1           | 951           | Waste Dump stack material | 49.82 |                    |                     | A Sagar        |
| 2         | 1      | 2           | 950           | Waste Dump stack material | 54.29 |                    |                     | _              |
| 3         | 2      | 3           | 949           | Waste Dump stack material | 55.85 |                    |                     | - <del> </del> |
| 4         | 3      | 4           | 948           |                           | 54.51 | 13.44              | 4.38                | 0.088          |
| 5         | 4      | 5           | 947           | Waste Dump stack material | 56.52 | 1,3,44             |                     |                |
| 6         | 5      | 6           | 946           | Waste Dump stack material |       |                    |                     |                |
| 7         | 6      | 7           | 945           | Waste Dump stack material | 58.75 |                    |                     |                |
| 8         | 7      | 8           | 944           | Waste Dump stack material | 56.97 |                    |                     | <u> </u>       |
| 9         | 8      | 9           | 943           | Waste Dump stack material | 56.97 |                    | 3.86                | 0.500          |
| 10        | 9      | 10          | 942           | Waste Dump stack material | 57.53 | 8.36               | 3.80                | 0.300          |
| 11        | 10     | 11          | 941           | Waste Dump stack material | 56.07 | _                  | <u> </u>            |                |
| 12        | 11     | 12          | 940           | Waste Dump stack material | 57.41 |                    |                     |                |
| 13        | 12     | 13          | 939           | Waste Dump stack material | 60.99 |                    | 11                  |                |
| 14        | 13     | 14          | 938           | Waste Dump stack material | 61.11 |                    | 2.05                | 0.085          |
| 15        | 14     | 15          | 937           | Waste Dump stack material | 62.00 | 4.12               | 2.95                | 0.003          |
| 16        | 15     | 16          | 936           | Shale                     | 29.04 | <u> </u>           |                     |                |
| 17        | 16     | 17          | 935           | Shale                     | 30.83 |                    |                     |                |
| 18        | 17     | 18          | 934           | Shale                     | 23.23 |                    |                     |                |
| 19        | 18     | 19          | 933           | Shale                     | 34.40 | <u> </u>           |                     | 0.055          |
| 20        | 19     | 20          | 932           | Shale                     | 24.8  | 46.79              | 6.26                | 0.033          |
| 21        | 20     | 21          | 931           | Shale                     | 42.45 |                    |                     |                |
| 22        | 21     | 22          | 930           | Shale                     | 25.91 |                    |                     |                |
| 23        | 22     | 23          | 929           | Shale                     | 26.81 | 1                  |                     |                |
| 24        | 23     | 24          | 928           | Shale                     | 24.57 |                    |                     | 0.081          |
| -25       | 24     | 25          | 927           | Shale                     | 24.57 | 46.78              | 7.64                | 0,051          |
| 26        | 25     | 26          | 926           | Shale                     | 22.12 | <u> </u>           |                     |                |
| 27        | 26     | 27          | 925           | Shale                     | 21.67 |                    |                     |                |
| 28        | 27     | 28.         | 924           | Shale                     | 21.45 |                    |                     |                |
| 29        | 28     | 29          | 923           | Shale                     | 19.88 |                    |                     |                |
| 30        | 29     | 30          | 922           | Shale                     | 19.44 | 53.12              | 5.54                | 0.042          |
| 31        | 30     | 31          | 921           | Shale                     | 19.44 | <u> </u>           |                     |                |
|           |        | to be Mined | dout and back | filled.                   |       |                    |                     |                |

## KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-27

Date of Start

21-02-2017

Location.

659868.62,1678016.46

Date of Completion

22-02-2017

43 m<sub>25</sub>

Collar Height

Inclination

894.120 mRL

90°

Total Depth

Logged by

Mr.K Adinarayana &

Vijayakumar S

|                            | Run (Meters) |     | D                     |               | Chemical Analysis |                    |                     |                                              |
|----------------------------|--------------|-----|-----------------------|---------------|-------------------|--------------------|---------------------|----------------------------------------------|
| i.No                       | From         | To  | Total Run<br>(Meters) | LITHOLOGY     | Fe%               | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | - P%                                         |
| 1                          | 0            | 1   | 893                   | Ore           | 61.90             |                    |                     |                                              |
|                            | 1            | 2   | 892                   | Оге           | 61.67             |                    |                     |                                              |
| 2<br>3<br>4<br>5<br>6<br>7 | 2            | 3   | 891                   | Ore           | 61.90             |                    |                     |                                              |
| -3-                        | 3            | 4   | 890                   | Ore           | 60.77             |                    |                     |                                              |
|                            | 4            | 5   | 889                   | Ore           | 61.67             | 6.17               | 3.05                | 0.052                                        |
| - 5                        | 5            | 6   | 888                   | Ore           | 62.12             |                    |                     |                                              |
|                            | 6            | 7   | 887                   | Ore           | 62.33             |                    |                     |                                              |
| - 8                        | 7            | 8   | 886                   | Ore           | 61.1              |                    |                     |                                              |
| 9                          | 8            | 9   | 885                   | Ore           | 61.55             |                    |                     |                                              |
| 10                         | 9            | 10  | 884                   | Ore           | 62.33             | 5.59               | 2.26                | 0.052                                        |
| 11                         | 10           | 11  | 883                   | Ore           | 61.99             |                    |                     |                                              |
| 12                         | 11           | 12  | 882                   | Ore           | 61.43             |                    |                     |                                              |
| 13                         | 12           | 13  | 881                   | Ore           | 61.22             |                    |                     |                                              |
| 14                         | 13           | 14  | 880                   | Ore           | 62.32             |                    |                     | 5.055                                        |
| 15                         | 14           | 15  | 879                   | Ore           | 61.45             | 6.68               | 3.06                | 0.055                                        |
| 16                         | 15           | 16  | 878                   | Ore           | 60.56             |                    |                     |                                              |
| 17                         | 16           | 17  | 877                   | Ore           | 61.90             |                    |                     |                                              |
| 18                         | 17           | 18  | 876                   | Ore           | 48.25             |                    |                     |                                              |
| 19                         | 18           | 19  | 875                   | Ore           | 61.56             |                    | 3.42                | 0.019                                        |
| 20                         | 19           | 20  | 874                   | Ore           | 61.1              | 7.33               | 2.13                | 0.019                                        |
| 21                         | 20           | 21  | 873                   | Ore           | 60.78             | <del> </del>       |                     |                                              |
| 22                         | 21           | 22  | 872                   | Ore           | 61.22             |                    |                     |                                              |
| 23                         | 22           | 23  | 871                   | Ore           | 61.78             |                    |                     |                                              |
| 24                         | 23           | 24  | 870                   | Ore           | 61.55             |                    | 3.70                | 0.073                                        |
| 25                         | 24           | .25 | 869                   | Ore           | 59.20             | 8.44               | 2.70                | 0.073                                        |
| 26                         | 25           | 26  | 868                   | Ore mixed BHJ | 60.09             |                    |                     |                                              |
| 27                         | 26 .         | 27  | 867                   | Ore mixed BHJ | 33.96             |                    |                     |                                              |
| 28                         | 27           | 28  | 866                   | Ore mixed BHJ | 45.57             |                    |                     | <u>.                                    </u> |
| 29                         | 28           | 29  | 865                   | Ore mixed BHJ | 55.18             |                    | 1.00                | 0.070                                        |
| 30                         | 29           | 30  | 864                   | Ore mixed BHJ | 58.42             | 12.28              | 1.03                | 0.029                                        |
| 31                         | 30           | 31  | 863                   | Ore mixed BHJ | 61.43             |                    |                     |                                              |
| 32                         | 31           | 32  | 862                   | Ore mixed BHJ | 54.51             |                    |                     | <u> </u>                                     |
| 33                         | 32           | 33  | 861                   | Ore mixed BHJ | 46.02             |                    |                     |                                              |
| 34                         | 33           | 34  | 860                   | Ore mixed BHJ | 27.48             |                    |                     |                                              |
| 35                         | 34           | 35  | 859                   | Ore mixed BHJ | 29.94             | 49.76              | 2.39                | 0.054                                        |
| 36                         | 35           | 36  | 858                   | Ore mixed BHJ | 35.52             |                    |                     |                                              |
| 37                         | 36           | 37  | 857                   | Ore mixed BHJ | 60.32             |                    |                     |                                              |
| 38                         | 37           | 38  | 856                   | Ore mixed BHJ | 55.85             |                    |                     | <u> </u>                                     |
| 39                         | 38           | 39  | 855                   | Ore mixed BHJ | 54.06             |                    |                     |                                              |
| 40                         | 39           | 40  | 854                   | Shale         | 23.68             | 51.23              | 6.2                 | 0.026                                        |
| 41                         | 40           | 41  | 853                   | Shale         | 16.76             |                    |                     |                                              |
| 41                         | 41           | 42  | 852                   | Shale         | 15.93             |                    |                     | 29_                                          |
| 43                         | 42           | 43  | 851                   | Shale         | 15.86             |                    |                     |                                              |

## KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-28

Date of Start

22-02-2017

Location.

659766.74,1678113.76

Date of Completion

22-02-2017

Collar Height

895.710 mRL

Total Depth

31 m

Mr.K Adinarayana &

Inclination 9

90°

Logged by

Vijayakumar S

| Inclination |        | 90°      |           | Logged by | Vijayakumar S |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
|-------------|--------|----------|-----------|-----------|---------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--|
|             | Run (N | /leters) | Total Run |           |               | Chen               | nical Analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |  |
| si.No       | From   | То       | (Meters)  | LITHOLOGY | Fe%           | SiO <sub>2</sub> % | Al2O <sub>3</sub> %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | P%    |  |
| 1           | 0      | 1        | 895       | Ore       | 60.76         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 2           | 1      | 2        | 894       | Ore       | 60.56         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 3           | 2      | 3        | 893       | One       | 61.80         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 4           | 3      | 4        | 892       | Ore       | 61.46         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 5           | 4      | 5        | 891       | Ore       | 62.13         | 5.02               | 2.95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.075 |  |
| 6           | 5      | 6        | 890       | Ore       | 62.13         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 7           | 6      | 7        | 889       | Ore       | 61.56         |                    | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |  |
| 8           | 7      | 8        | 888       | Ore       | 61.90         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 9           | 8      | 9        | 887       | Ore       | 62.24         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 10          | 9      | 10       | 886       | Ore       | 63.22         | 5.26               | 1.56                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.060 |  |
| 11          | 10     | 11       | 885       | Ore       | 62.13         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 12          | 11     | 12       | 884       | Ore       | 62.55         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 13          | 12     | 13       | 883       | Ore       | 62.00         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 14          | 13     | 14       | 882       | Ore       | 61.89         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 15          | 14     | 15       | 881       | Ore       | 61.12         | 8.68               | 2.29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.056 |  |
| 16          | 15     | 16       | 880       | Ore       | 62.22         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 17          | 16     | 17       | 879       | Ore       | 61.34         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 18          | 17     | 18       | 878       | Ore       | 59.20         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 19          | 18     | 19       | 877       | Ore       | 55.40         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| ···20       | 19     | 20       | 876       | внл       | 12.4          | 78.89              | 1.23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.040 |  |
| 21          | 20     | 21       | 875       | внл       | 8.27          |                    | and the second s |       |  |
| 22          | 21     | 22       | 874       | ВНЈ       | 6.55          |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 23          | 22     | 23       | 873       | ВНЈ       | 16.76         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 24          | 23     | 24       | 872       | BHJ       | 24.13         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 25          | 24     | 25       | 871       | BHJ       | 24.57         | 58.72              | 1.88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.054 |  |
| 26          | 25     | 26       | 870       | ВНЈ       | 39.76         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 27          | 26     | 27       | 869       | BHJ       | 49.59         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 28          | 27     | 28       | 868       | внј       | 36.41         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 29          | 28     | 29       | 867       | BHJ       | 35.30         | ·                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |
| 30          | 29     | 30       | 866       | BHJ       | 29.73         | 56.27              | 1.11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.039 |  |
| 31          | 30     | 31       | .865      | BHJ       | 27.25         |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |  |

## KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-29

Date of Start

660311.12,1677730.97

Date of Completion

Location. Collar Height

931.420 mRL

Total Depth

22-02-2017. 22-02-2017.

43 m

Mr.K Adinarayana &

`Vijayakumar S

| Inclination      |        | 90°    | Logged by |                    | Vijayakumar \$ |                    |                     |      |          |  |
|------------------|--------|--------|-----------|--------------------|----------------|--------------------|---------------------|------|----------|--|
|                  | Run (M | eters) | Total Run |                    |                | Chemi              | cal Analysis        |      |          |  |
| si.No            | From   | То     | (Meters)  | LITHOLOGY          | Fe%            | SiO <sub>2</sub> % | Al2O <sub>3</sub> % |      | P%       |  |
| 1                | 0      | 1      | 930       | Dump material      | 38.87          |                    |                     | 1    |          |  |
| 2                | 1      | 2      | 929       | Dump material      | 40.88          |                    | 50°-1,              |      |          |  |
| 3                | 2      | 3      | 928       | Dump material      | 43.78          |                    |                     | _    |          |  |
| 4                | 3      | 4      | 927       | Dump material      | 42.22          |                    |                     |      |          |  |
| 5                | 4      | 5      | 926       | Dump material      | 41.10          | 30.04              | 8.15                |      | 0.074    |  |
|                  | 5      | 6      | 925       | Gabrro             | 37.75          |                    |                     |      |          |  |
| 7                | 6      | 7      | 924       | Gabrro             | 21.66          |                    |                     |      |          |  |
| <del></del> 8    | 7      | 8      | 923       | Gabrro             | 25.02          |                    |                     |      |          |  |
| 9                | 8      | 9      | 922       | Gabrro             | 34.62          |                    |                     |      |          |  |
| 10               | 9      | 10     | 921       | Gabrro             | 30.94          | 37.68              | 6.38                |      | 0.059    |  |
| $-\frac{10}{11}$ | 10     | 11     | 920       | Gabrro mixed shale | 27.25          |                    |                     |      |          |  |
| - <del>11</del>  | 11     | 12     | 919       | Shale              | 23.45          |                    |                     |      |          |  |
| 13               | 12     | 13     | 918       | Shale              | 20.55          |                    |                     |      |          |  |
| 14               | 13     | 14     | 917       | Shale              | 20.77          |                    |                     |      |          |  |
| <br>15           | 14     | 15     | 916       | Shale              | 19.65          | 61.28              | 4,12                |      | 0.071    |  |
| 16               | 15     | 16     | 915       | Shale              | 18.31          |                    |                     |      |          |  |
| 17               | 16     | 17     | 914       | Shale              | 19.21          |                    |                     |      |          |  |
| 18               | 17     | 18     | 913       | Shale              | 20.55          |                    |                     |      |          |  |
| 19               | 18     | 19     | 912       | Shale              | 22.56          |                    |                     |      | 0.044    |  |
| 20               | 19     | 20     | 911       | Shale              | 17.65          | 57.29              | 6.19                |      | 0.044    |  |
| 21               | 20     | 21     | 910       | Shale              | 17.42          |                    |                     |      |          |  |
| 22               | 21     | 22     | 909       | Shale              | 46.02          | <u> </u>           | <u> </u>            |      |          |  |
| 23               | 22     | 23     | 908       | Ore mixed shale    | 60.43          |                    |                     |      |          |  |
| 24               | 23     | 24     | 907       | Ore mixed shale    | 61.89          | 7.10               | 3.41                |      | 0.067    |  |
| 25               | 24     | 25     | 906       | Ore                | 61.23          | 7.19               | 5.41                |      | 0.007    |  |
| 26               | 25     | 26     | 905       | Ore                | 57.24          |                    |                     |      |          |  |
| 27               | 26     | 27     | 904       | Ore                | 61.56          | <u> </u>           |                     |      |          |  |
| 28               | 27     | 28     | 903       | Ore                | 61.56          |                    |                     |      |          |  |
| 29               | 28     | 29     | 902       | Ore                | 61.78          | 7.54               | 7 77                |      | 0.037    |  |
| 30               | 29     | 30     | 901       | Ore                | 61.77          | 7.64               | 1.23                |      | 0.037    |  |
| 31               | 30     | 31     | 900       | Ore                | 62.46          | <u> </u>           |                     |      |          |  |
| 32               | 31     | 32     | 899       | Ore                | 62.02          | <u> </u>           |                     |      |          |  |
| 33               | 32     | 33     | 898       | Ore                | 61.90          |                    |                     |      |          |  |
| 34               | 33     | 34     | 897       | Оге                | 57.41          |                    |                     |      | 0.074    |  |
| 35               | 34     | 35     | 896       | Ore                | 57.86          | 13.08              | 2.34                |      | 0.074    |  |
| 36               | 35     | 36     | 895       | Ore                | 44.45          |                    |                     |      |          |  |
| 37               | 36     | 37     | 894       | BHJ mixed ore      | 49.59          |                    |                     |      | <u> </u> |  |
| 38               | 37     | 38     | 893       | BHJ mixed ore      | 52.49          |                    |                     |      |          |  |
| 39               | 38     | 39     | 892       | BHJ mixed ore      | 47.58          |                    |                     |      |          |  |
| 40               | 39     | 40     | 891       | BHJ mixed ore      | 45.13          | 31.74              |                     | 1.68 | 0.051    |  |
| 41               | 40     | 41     | 890       | BHJ mixed ore      | 44.68          | <u> </u>           |                     |      |          |  |
| 42               | 41     | 42     | 889       | BHJ mixed ore      | 47.36          |                    |                     |      |          |  |
| 43               | 42     | 43     | 888       | BHJ mixed ore      | 46.24          |                    |                     |      |          |  |

## KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

orehole No.

MSPL/RC-30

Date of Start

660067.36,1677865.39

Date of Completion

23-02-2017

llar Height

ication.

906.130 mRL

Total Depth

25 m

Mr.K Adinarayana &

liiavakumas

| din     | ation  | 90°     |           | Logged by     | , <u></u> | \                  | /ijayakumar S       | ***            |
|---------|--------|---------|-----------|---------------|-----------|--------------------|---------------------|----------------|
|         | Run (i | Meters) | Total Run |               |           | Chem               | ical Analysis       | and the second |
| 0       | From   | То      | (Meters)  | LITHOLOGY     | Fe%       | SiO <sub>2</sub> % | Al2O <sub>3</sub> % | P%             |
|         | 0      | 1       | 905       | Dump material | 60.31     |                    |                     |                |
| :       | 1      | 2       | 904       | Dump material | 61.11     |                    |                     |                |
|         | 2      | 3       | 903       | Ore           | 61.33     | <u> </u>           |                     |                |
|         | 3      | 4       | 902       | Ore •         | 61.33     |                    |                     |                |
|         | 4      | 5       | 901       | Ore           | 62.23     | 5.70               | 2.44                | 0.075          |
|         | 5      | 6       | 900       | Ore           | 62.45     |                    |                     | 1 10.0         |
|         | 6      | 7       | 899       | Ore           | 62.24     |                    |                     |                |
|         | 7      | 8       | 898       | Ore           | 61.11     |                    |                     |                |
|         | 8      | 9       | 897       | Ore           | 62.45     |                    |                     |                |
| )       | 9      | 10      | 896       | Ore           | 62.66     | 5.77               | 1.49                | 0.018          |
|         | 10     | 11      | 895       | Ore           | 62.02     |                    |                     |                |
| !       | 11     | 12      | 894       | Ore           | 62.11     |                    |                     |                |
| 1       | 12     | 13      | 893       | Ore           | 61.88     |                    | •                   |                |
|         | 13     | 14      | 892       | Ore           | 61.43     |                    |                     |                |
|         | 14     | 15      | 891       | Ore           | 61.21     | 7                  | 3.46                | 0.085          |
|         | 15     | 16      | 890       | ВНЈ           | 37.08     |                    |                     |                |
|         | 16     | 17      | 889       | BHJ           | 22.56     |                    |                     |                |
|         | 17     | 18      | 888       | BHJ           | 18.09     |                    |                     |                |
|         | 18     | 19      | 887       | ВНЈ           | 20.32     |                    |                     |                |
|         | 19     | 20      | 886       | BHJ           | 12.18     |                    |                     |                |
|         | 20     | 21      | 885       | BHJ           | 6.70      | 79.8               | 0.98                | 0.021          |
| _       | 21     | 22      | 884       | ВНЈ           | 7.14      |                    |                     |                |
|         | 22     | 23      | 883       | BHJ           | 4.02      |                    |                     |                |
| $\perp$ | 23     | 24      | 882       | внл           | 4.24      |                    |                     |                |
|         | 24     | 25      | 881       | BHJ           | 8.04      | 75.86              | 2.95                | 0.088          |

## KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-31

Date of Start

Total Depth

23-02-2017

Location. Collar Height

943.010 mRL

659205.13,1678989.22

Date of Completion

23-02-2017 50 m

Mr.K Adinarayanà &

| Inclin     | Inclination 75° |         |           | Logged by     |       | Vijayakumar \$                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
|------------|-----------------|---------|-----------|---------------|-------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--|
|            | Run (N          | leters) | Total Run |               |       | Chem                                             | ical Analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | a v gyvi.                                        |  |
| si.No      | From            | То      | (Meters)  | LITHOLOGY     | Fe%   | SiO <sub>2</sub> %                               | Al2O <sub>3</sub> %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | - P%                                             |  |
| 1          | 0               | 1       | 942       | Lateritic Ore | 54.73 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10.12.1                                          |  |
| 2          | 1               | 2       | 941       | Lateritic Ore | 56.52 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 3          | 2               | 3       | 940       | Lateritic Ore | 48.70 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 4          | 3               | 4       | 939       | Lateritic Ore | 52.05 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 5          | 4               | 5       | 938       | Lateritic Ore | 41.55 | 24.51                                            | 6.47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.081                                            |  |
| 6          | 5               | 6       | 937       | Lateritic Ore | 43.12 | <del>   </del>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.002                                            |  |
| 7          | 6               | 7       | 936       | Lateritic Ore | 42.67 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 8          | 7               | 8       | 935       | Lateritic Ore | 41.77 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 9          | 8               | 9       | 934       | Ore           | 57.41 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 10         | 9               | 10      | 933       | Ore           | 55.51 | 12.88                                            | 2.52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.017                                            |  |
| 11         | 10              | 11      | 932       | Ore           | 59.65 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 0.027                                          |  |
| 12         | 11              | 12      | 931       | Ore           | 61.44 |                                                  | ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                  |  |
| 13         | 12              | 13      | 930       | Ore           | 61.55 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 14         | 13              | 14      | 929       | Ore           | 62.9  |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 15         | 14              | 15      | 928       | Оге           | 62.02 | 5.16                                             | 3.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.054                                            |  |
| 16         | 15              | 16      | 927       | Ore           | 61.79 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 17         | 16              | 17      | 926       | Ore           | 62.55 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 18         | 17              | 18      | 925       | Ore           | 61.66 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 19         | 18              | 19      | 924       | Ore           | 62.55 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Ï                                                |  |
| 20         | 19              | 20      | 923       | Ore           | 61.21 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 21         | 20              | 21      | 922       | Ore           | 62.57 | 7.04                                             | 1.76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.049                                            |  |
| 22         | 21              | 22      | 921       | Ore           | 62.35 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 23         | 22              | 23      | 920       | Ore           | 62.02 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 24         | 23              | 24      | 919       | Ore           | 62.14 |                                                  | MARKE SULLANDE IN LOUIS I LOUIS LINE 1 . A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                  |  |
| 25         | 24              | 25      | 918       | Ore           | 62.14 | 6.08                                             | 3.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.054                                            |  |
| 26         | 25              | 26      | 917       | Ore           | 62.80 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 27         | 26              | 27      | 916       | Ore           | 62.47 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 28         | 27              | 28      | 915       | Ore           | 62.69 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 29         | 28              | 29      | 914       | Ore           | 60.79 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 30         | 29              | 30      | 913       | Ore:          | 49.15 | 27.23                                            | 0.9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.027                                            |  |
| 31         | 30              | 31      | 912       | Ore mixed BHJ | 46.91 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| _32        | 31              | 32      | 911       | Ore mixed BHJ | 48.03 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 33         | 32              | 33      | 910       | Ore mixed BHJ | 44.68 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 34         | 33              | 34      | 909       | Ore mixed BHJ | 48.70 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 35         | 34              | 35      | 908       | BHJ (         | 40.21 | 38.72                                            | 2.27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.061                                            |  |
| 36         | 35              | 36      | 907       | вну           | 34.63 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| _37        | 36              | 37      | 906       | BHJ           | 40.66 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 38         | 37              | 38      | 905       | внл           | 43.34 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 39         | 38              | 39      | 904       | ВНЈ           | 42.67 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | i                                                |  |
| 40         | 39              | 40      | 903       | BHJ           | 38.87 | 41.89                                            | 0.74                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.069                                            |  |
| 41         | 40              | 41      | 902       | внј           | 38.42 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 42         | 41              | 42      | 901       | ВНЈ           | 41.78 |                                                  | a.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                  |  |
| 43         | 42              | 43      | 900       | ВНЈ           | 42.45 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 44         | 43              | 44.     | 899       | ВНЈ           | 44.23 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <del>                                     </del> |  |
| 45         | 44              | 45      | 898       | ВНЈ           | 43.79 | 32.72                                            | 1.52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.057                                            |  |
| 46         | 45              | 46      | 897       | ВНЈ           | 43.34 | J 32.7 L                                         | 2122                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1 3.337                                          |  |
| 47         | 46              | 47      | 896       | ВНЈ           | 44.01 |                                                  | ***************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                                                |  |
| 48         | 47              | 48      | 895       | ВНЈ           | 53.62 |                                                  | The state of the s | +                                                |  |
| 49         | 48              | 49      | 894       | ВНЈ           | 40.66 | <del>                                     </del> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |
| 50         | 49              | 50      | 893       | ВНЈ           | 40.21 | 40.18                                            | 0.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 9 0.058                                          |  |
| ~ <u>~</u> | <u> </u>        | 1       | ·         | 1             |       |                                                  | <b>9.</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -, 0.030                                         |  |

## KARADIKOLLA IRON ORE MINE

### REVERSE CIRCULATION DRILLING LOG

Date of Completion

<sub>Bore</sub>hole No.

<sub>Collar</sub> Height

Location.

MSPL/RC-32

Date of Start

660214.5,1677796.66

Total Depth 930.440 mRL

Mr.K Adinarayana &

Inclination 90° Logged by Vijayakumar S

| lucinic   | nclination 90 |          |           | Logged by          |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | vijayakumar S. |       |  |  |  |
|-----------|---------------|----------|-----------|--------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|--|--|--|
|           | Run (N        | leters)  | Total Run |                    |             | Chemi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | cal Analysis   |       |  |  |  |
| SI.No     | From          | To       | (Meters)  | LITHOLOGY          | Fe%         | SiO <sub>2</sub> %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ÀI2O₃%         | Р%    |  |  |  |
| 1<br>(44) | 0             | 1        | 929       | Dump material      | 54.06       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 2         | 1             | 2        | 928       | Dump material      | 49.82       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 3         | 2             | 3        | 927       | Dump material      | 53.39       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ,              |       |  |  |  |
| 4         | 3             | 4        | 926       | Dump material      | 55.85       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| - 5       | 4             | 5        | 925       | Dump material      | 34.18       | 35.96                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5.67           | 0.074 |  |  |  |
| 6         | 5             | 6        | 924       | Dump material      | 49.59       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 7         | 6             | 7        | 923       | Dump material      | 47.36       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| - 8       | 7             | 8        | 922       | Dump material      | 44.23       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 9         | 8             | 9        | 921       | Dump material      | 39.10       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 10        | . 9           | 10       | 920       | Dump material      | 63.00       | 6.13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.03           | 0.042 |  |  |  |
| 11        | 10            | 11       | 919       | Dump material      | 42.44       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 12        | 11            | 12       | 918       | Dump material      | 39.09       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 13        | 12            | 13       | 917       | Dump material      | 34.18       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 14        | 13            | 14       | 916       | Dump material      | 39.09       | A CONTRACTOR OF THE CONTRACTOR |                |       |  |  |  |
| 15        | 14            | 15 ·     | 915       | Dump material      | 51.38       | 14.26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5.30           | 0.074 |  |  |  |
| 16        | 15            | 16       | 914       | Dump material      | 60.77       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 17        | 16            | 17       | 913       | Dump material      | 56.29       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 18        | 17            | 18       | 912       | Dump material      | 21.66       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 19        | 18            | 19       | 911       | Dump material      | 26.36       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ·              |       |  |  |  |
| 20        | 19            | 20       | 910       | Dump material      | 20.78       | 56.32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3.49           | 0.044 |  |  |  |
| 21        | 20            | 21       | 909       | Dump material      | 20.99       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| _22       | 21            | 22       | 908       | Dump material      | 21.66       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 23        | 22            | 23       | 907       | Dump material      | 17.64       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 24        | 23 .          | 24       | 906       | Shale              | 17.20       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 25        | 24            | 25       | 905       | Shale              | 22.78       | 50.72                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5.86           | 0.072 |  |  |  |
| 26        | 25            | 26       | 904       | Shale              | 24.57       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 27        | 26            | 27       | 903       | Shale              | 18.98       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 28        | 27            | 28       | 902       | Shale              | 17.20       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 29        | 28            | 29       | 901       | Shale              | 12.73       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                | ·     |  |  |  |
| 30        | 29            | 30       | 900       | Shale              | 11.28       | 64.29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 7.23           | 0.051 |  |  |  |
| 31        | 30            | 31       | 899       | Shale              | 18.09       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 32        | 31            | 32       | 898       | Shale              | 11.84       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 33        | 32            | 33       | 897       | Shale              | 15.86       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 34        | 33            | 34       | 896       | Shale              | 20.99       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 35        | 34            | 35       | 895       | Shale              | 22.78       | 55.32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4.99           | 0.088 |  |  |  |
| 36        | 35            | 36       | 894       | Shale              | 18.98       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
| 37        | 36            | 37       | 893       | Shale              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |       |  |  |  |
|           |               | <u> </u> |           | rial, below the 23 | n shale has | heen encour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | tored          |       |  |  |  |

## KARADIKOLLA IRON ORE MINE

## REVERSE CIRCULATION DRILLING LOG

Borehole No.

MSPL/RC-33

Date of Start

Location.

659769.72,1678307.93

Date of Completion

26-02-2017

Collar Height

938.840 mRL

Total Depth

31 m

Mr.K Adinarayana &

| Che<br>% SiO <sub>2</sub> %      |          |                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Inclina                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| % SiO <sub>2</sub> %             |          | }                                                                                                                                                                 | Total Run                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | leters)                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Run (Meters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                  | Fe%      | LITHOLOGY                                                                                                                                                         | (Meters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | То                                                                                                                                                                                                                                                                                                                                                                                                                                                              | From                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | sl.No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 53                               | 58.53    | Ore                                                                                                                                                               | 938                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 44                               | 42.44    | Ore                                                                                                                                                               | 937                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 99                               | 60.99    | • Ore                                                                                                                                                             | 936                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <del></del> 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 78                               | 61.78    | Ore                                                                                                                                                               | 935                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 99 3.98                          | 61.99    | Ore                                                                                                                                                               | 934                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <del></del>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 10                               | 61.10    | Ore                                                                                                                                                               | 933                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 02                               | 46.02    | Ore                                                                                                                                                               | 932                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 88                               | 40.88    | ВНЈ                                                                                                                                                               | 931                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 86                               | 36.86    | внл                                                                                                                                                               | 930                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 9                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 75 43.84                         | 36.75    | внл                                                                                                                                                               | 929                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 87                               | 38.87    | ВНЈ                                                                                                                                                               | 928                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 83                               | 32.83    | внЈ                                                                                                                                                               | 927                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 29                               | 35.29    | BHJ                                                                                                                                                               | 926                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  | 34.40    | BHJ                                                                                                                                                               | 925                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 40 47.36                         | 34.40    | внј                                                                                                                                                               | 924                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  | 31.49    | BHJ                                                                                                                                                               | 923                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  |          | ВНЈ                                                                                                                                                               | 922                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  |          | внј                                                                                                                                                               | 921                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  |          | ВНЈ                                                                                                                                                               | 920                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 18 .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  | 1        | tH8                                                                                                                                                               | 919                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  | <u> </u> | внЈ                                                                                                                                                               | 918                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  |          | ВНЈ                                                                                                                                                               | 917                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  |          | BHJ                                                                                                                                                               | 916                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                  |          | ВНЈ                                                                                                                                                               | 915                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| .30 43.02                        | 37.30    | внЈ                                                                                                                                                               | 914                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| .31                              | 39.31    | внл                                                                                                                                                               | 913                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 77                               | 41.77    | ВНЈ                                                                                                                                                               | 912                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 27                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| .77                              | 41.77    | ВНЈ                                                                                                                                                               | 911                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| .16                              | 32.16    | ВНЈ                                                                                                                                                               | 910                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| .95 50.2                         | 32.95    | BHJ                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 0.38                             | 30.38    | ВНЈ                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 43.84<br>47.36<br>41.61<br>43.02 |          | 61.99 61.10 46.02 40.88 36.86 36.75 38.87 32.83 35.29 34.40 34.40 31.49 36.19 33.95 35.96 38.87 37.30 37.08 31.94 34.62 37.30 39.31 41.77 41.77 41.77 32.16 32.95 | Ore 61.99 Ore 61.10 Ore 46.02 BHJ 40.88 BHJ 36.86 BHJ 36.75 BHJ 32.83 BHJ 35.29 BHJ 34.40 BHJ 34.40 BHJ 31.49 BHJ 36.19 BHJ 35.96 BHJ 35.96 BHJ 37.30 BHJ 37.08 BHJ 37.08 BHJ 37.08 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 BHJ 37.30 | 934 Ore 61.99 933 Ore 61.10 932 Ore 46.02 931 BHJ 40.88 930 BHJ 36.86 929 BHJ 36.75 928 BHJ 32.83 926 BHJ 35.29 925 BHJ 34.40 924 BHJ 34.40 923 BHJ 31.49 922 BHJ 36.19 921 BHJ 33.95 920 BHJ 35.96 919 BHJ 35.96 919 BHJ 37.30 917 BHJ 37.08 916 BHJ 37.08 917 BHJ 37.08 916 BHJ 37.30 917 BHJ 37.08 918 BHJ 37.30 917 BHJ 37.30 918 BHJ 37.30 919 BHJ 37.30 911 BHJ 37.30 912 BHJ 37.30 913 BHJ 37.30 914 BHJ 37.30 915 BHJ 37.30 916 BHJ 37.30 917 BHJ 37.08 | 5         934         Ore         61.99           6         933         Ore         61.10           7         932         Ore         46.02           8         931         BHJ         40.88           9         930         BHJ         36.86           10         929         BHJ         36.75           11         928         BHJ         38.87           12         927         BHJ         32.83           13         926         BHJ         35.29           14         925         BHJ         34.40           15         924         BHJ         34.40           16         923         BHJ         31.49           17         922         BHJ         36.19           18         921         BHJ         33.95           19         920         BHJ         35.96           20         919         BHJ         37.30           21         918         BHJ         37.30           22         917         BHJ         37.08           23         916         BHJ         37.30           24         915         BHJ | 3         4         935         Ore         61.78           4         5         934         Ore         61.99           5         6         933         Ore         61.10           6         7         932         Ore         46.02           7         8         931         BHJ         40.88           8         9         930         BHJ         36.86           9         10         929         BHJ         36.75           10         11         928         BHJ         38.87           11         12         927         BHJ         32.83           12         13         926         BHJ         35.29           13         14         925         BHJ         34.40           14         15         924         BHJ         34.40           15         16         923         BHJ         31.49           16         17         922         BHJ         36.19           17         18         921         BHJ         33.95           18         19         920         BHJ         35.96           19         20         919 |

# CHAITHANYA GEO CHEM MINERAL & ANALYTICAL LABORATORIES

## ANALYSIS REPORT

: 10.000 gms Each sample (Approx)

: Iron Ore 100 mesh powder / Sealed

: M/s. MSPL Limited, Baldota Encalves, Abhiraj Baldota Road

: Iron Ore (100 mesh powder) : M/s. Karadikolla Iron Ore Mines.,

ID No: 143 Sample Described by Customer as

(ustomer's Name fustomer's Address

Place

State Sampling Method

Sample Quantity Sample Condition

Basis of Analysis

Sample Mark

Test Start Date Test Protocol

: M/s.Karadikolla Iron Ore Mines, M.L.No. 2487 Sample Received / Registration Date: 15.06.17

: 15.06.17

: Dry Basis

: Hospet-583203

: N.A

: Karnataka, India

: IS 1493: 1981 Part 1 (RA 2006)

Test End Date: 23.06.17

## Sample dried at 105°C Chemical Test

#### HOLE NO-1

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 57.53 | 12.24  | 1.76    | 0.040 |
| 19-20     | 32.06 | 51.78  | 0.70    | 0.050 |
| 29-30     | 38.76 | 41.23  | 1.72    | 0.047 |
| 39-40     | 40.10 | 39.68  | 1.15    | 0.056 |

#### HOLE NO-2

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 62.78 | 5.04   | 1.72    | 0.052 |
| 19-20     | 51.72 | 23.75  | 0.66    | 0.050 |
| 29-30     | 57.97 | 13.78  | 1.23    | 0.032 |
| 39-40     | 57.53 | 14.22  | 1.07    | 0.055 |
| 49-50     | 45.80 | 31.98  | 0.90    | 0.039 |
| 59-60     | 39.43 | 40.88  | 0.90    | 0.040 |
| 2A 0-1    | 60.65 | 8.47   | 0.98    | 0.052 |

(Quality Manager)



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HOLE NO-3

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 34.29 | 48.32  | 0.90    | 0.045 |

HOLE NO-4

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 26.36 | 59.72  | 0.86    | 0.024 |

HOLE NO-5

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 62.11 | 5.61   | 2.58    | 0.019 |
| 19-20     | 60.76 | 7.51   | 2.54    | 0.044 |
| 29-30     | 47.36 | 26.84  | 2.38    | 0.027 |

HOLE NO.6

| 11020110-0 |       |        |         |       |  |  |
|------------|-------|--------|---------|-------|--|--|
| Meter No.  | Fe %  | SiO2 % | Al2O3 % | P %   |  |  |
| 9-10       | 55.29 | 18.24  | 0.94    | 0.025 |  |  |
| 19-20      | 59.76 | 12.07  | 0.86    | 0.024 |  |  |
| 29-30      | 36.97 | 44.26  | 0.98    | 0.022 |  |  |

(Quality Manager)



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### HOLE NO-7

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 50.04 | 25.52  | 1.15    | 0.026 |
| 19-20     | 40.88 | 38.19  | 1.23    | 0.053 |

#### HOLE NO-8

| Meter No. | Fe %  | SiO2 % | AI2O3 % | Р%    |
|-----------|-------|--------|---------|-------|
| 9-10      | 58.87 | 8.95   | 2.71    | 0.050 |
| 19-20     | 59.76 | 9.26   | 1.93    | 0.015 |
| 29-30     | 59.09 | 9.87   | 2.26    | 0.045 |
| 39-40     | 59.98 | 7.68   | 2.67    | 0.020 |
| 49-50     | 59.98 | 7.83   | 2.91    | 0.040 |
| 59-60     | 61.99 | 6.31   | 1.72    | 0.019 |
| 69-70     | 61.77 | 5.14   | 2.71    | 0.059 |

#### HOLE NO-9

| Meter No. | Fe %  | SiO2 % | Al2O3 % | Р%    |
|-----------|-------|--------|---------|-------|
| 9-10      | 61.21 | 7.52   | 2.13    | 0.022 |
| 19-20     | 58.20 | 10.26  | 2.62    | 0.020 |
| 29-30     | 59.76 | 9.84   | 1.80    | 0.022 |
| 39-40     | 31.61 | 50.38  | 1.97    | 0.045 |

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| HOLE NO-10<br>Meter No. | Fe %  | SiO2 %   | Al2O3 % | P %   |
|-------------------------|-------|----------|---------|-------|
|                         | 61.99 | 5.59     | 2.34    | 0.029 |
| 9-10                    |       | 46.29    | 2.79    | 0.025 |
| 19-20                   | 31.83 | 52.34    | 1.52    | 0.022 |
| 29-30                   | 28.93 | 63.78    | 1.97    | 0.020 |
| 39-40                   | 21.00 | <u> </u> | 2.09    | 0.065 |
| 49-50                   | 21.89 | 61.02    | _       | 0.030 |
| 59-60                   | 28.93 | 53.47    | 1.64    | 0.030 |
| 69-70                   | 34.07 | 44.91    | 2.54    | 0.040 |

HOLE NO-11

| HOLE RO-IX |       |        | 1       |       |
|------------|-------|--------|---------|-------|
| Meter No.  | Fe %  | SiO2 % | Al2O3 % | P %   |
| 9-10       | 36.08 | 44.17  | 0.66    | 0.071 |
| 19-20      | 38.76 | 42.38  | 0.00    | 0.048 |

HOLE NO-12

| J-14  |                  |                                                            |                                                        |
|-------|------------------|------------------------------------------------------------|--------------------------------------------------------|
| Fe %  | SiO2 %           | A12O3 %                                                    | P %                                                    |
| 60.88 | 8.37             | 1.68                                                       | 0.033                                                  |
| 39.43 | 41.47            | 0.66                                                       | 0.049                                                  |
| 15.08 | 73.87            | 1.56                                                       | 0.029                                                  |
|       | Fe % 60.88 39.43 | Fe %     SiO2 %       60.88     8.37       39.43     41.47 | 60.88     8.37     1.68       39.43     41.47     0.66 |

HOLE NO-13

| HULLIN    | J-13  |        |         |       |
|-----------|-------|--------|---------|-------|
| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
| 9-10      | 43.34 | 35.49  | 0.82    | 0.040 |
| 19-20     | 59.98 | 10.03  | 1.56    | 0.015 |
| 29-30     | 44.68 | 33.37  | 0.74    | 0.056 |
| 39-40     | 43.12 | 36.01  | 0.58    | 0.038 |

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HOLE NO-14

| Meter No. | Fe %  | SiO2 % | AI2O3 % | P %   |  |
|-----------|-------|--------|---------|-------|--|
| 9-10      | 40.10 | 40.28  | 0.74    | 0.042 |  |
| 19-20     | 40.66 | 37.76  | 1.44    | 0.040 |  |
| 29-30     | 60.65 | 9.37   | 1.39    | 0.049 |  |
| 39-40     | 36.75 | 43.69  | 1.48    | 0.049 |  |

## HOLE NO-15

| TEOTET    |       |        |         |       |  |  |  |  |
|-----------|-------|--------|---------|-------|--|--|--|--|
| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |  |  |  |  |
| 9-10      | 63.00 | 5.08   | 1.97    | 0.033 |  |  |  |  |
| 19-20     | 58.87 | 13.29  | 0.41    | 0.014 |  |  |  |  |
| 29-30     | 52.83 | 22.18  | 0.41    | 0.045 |  |  |  |  |
| 39-40     | 32.73 | 48.67  | 1.44    | 0.045 |  |  |  |  |

#### HOLE NO-16

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 62.66 | 5.69   | 1.64    | 0.025 |
| 19-20     | 58.42 | 12.87  | 1.68    | 0.042 |
| 29-30     | 41.78 | 36.84  | 1.34    | 0.050 |

## HOLE NO-17

|           | ,     |         |         |       |
|-----------|-------|---------|---------|-------|
| Meter No. | Fe %  | SiO2-%- | AI2O3-% | P %-  |
| 9-10      | 41.11 | 36.74   | 1.44    | 0.019 |
| 19-20     | 42.00 | 36.39   | 0.86    | 0.045 |

#### HOLE NO-18

| 130113110-10 |       |        |         |       |  |
|--------------|-------|--------|---------|-------|--|
| Meter No.    | Fe %  | SiO2 % | Al2O3 % | P %   |  |
| 9-10         | 65.23 | 3.29   | 1.03    | 0.032 |  |
| 19-20        | 40.44 | 38.14  | 1.60    | 0.044 |  |
| 29-30        | 45.35 | 32.86  | 0.45    | 0.035 |  |

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### HOLE NO-19

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %     |
|-----------|-------|--------|---------|---------|
| 9-10      | 58.20 | 13.67  | 0.78    | 0.045 ু |
| 19-20     | 61.10 | 7.42   | 1.64    | 0.039   |
| 29-30     | 52.83 | 21.13  | 0.86    | 0.040   |

#### HOLE NO-20

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 44.68 | 22.59  | 5.95    | 0.050 |
| 19-20     | 26.58 | 39.61  | 8.57    | 0.069 |
| 29-30     | 22.12 | 48.51  | 7.32    | 0.032 |

#### HOLE NO-21

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 41.33 | 37.98  | 1.05    | 0.033 |
| 19-20     | 33.40 | 48.49  | 0.78    | 0.040 |
| 29-30     | 37.42 | 42.98  | 1.21    | 0.028 |
| 39-40     | 35.63 | 46.23  | 0.62    | 0.030 |

## **HOLE NO-22**

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 0-1       | 59.98 | 6.18   | 3.28    | 0.047 |

### **HOLE NO-23**

| Meter No. | Fe %  | SiO2 % | Al2O3 % | Р%    |
|-----------|-------|--------|---------|-------|
| 0-1       | 59.09 | 7.29   | 2.95    | 0.057 |

(Quality Manager)



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# OGO CHAITHANYA GEO CHEM MINERAL & ANALYTICAL LABORATORIES

#### HOLE NO-24

| ~ | ATOLETIC-24 |       |        |         |       |  |  |
|---|-------------|-------|--------|---------|-------|--|--|
|   | Meter No.   | Fe %  | SiO2 % | Al2O3 % | P%    |  |  |
|   | 9-10        | 47.58 | 22.37  | 3.49    | 0.057 |  |  |
|   | 19-20       | 45.57 | 25.23  | 3.49    | 0.050 |  |  |
|   | 29-30       | 55.74 | 8.47   | 3.27    | 0.045 |  |  |
|   | 39-40       | 42.45 | 35.74  | 1.11    | 0.024 |  |  |
|   | 49-50       | 38.31 | 42.07  | 1.09    | 0.023 |  |  |

#### **HOLE NO-25**

| 3000011000 |       |        |         |       |  |
|------------|-------|--------|---------|-------|--|
| Meter No.  | Fe %  | SiO2 % | Al2O3 % | P %   |  |
| 9-10       | 27.48 | 47.68  | 3.94    | 0.033 |  |
| 19-20      | 32.73 | 40.69  | 4.51    | 0.042 |  |
| 29-30      | 21.22 | 51.17  | 6.79    | 0.040 |  |

## **HOLE NO-26**

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 57.53 | 8.36   | 3.86    | 0.050 |
| 19-20     | 24.80 | 46.79  | 6.26    | 0.055 |
| 29-30     | 19.44 | 53.12  | 5.54    | 0.042 |

#### **HOLE NO-27**

| Matan     | 1     | 0:02.04 | 11000 07 | 72.07 |
|-----------|-------|---------|----------|-------|
| Meter No. | Fe %  | SiO2 %  | Al2O3 %  | P %   |
| 9-10      | 62.33 | 5.59    | 2.26     | 0.052 |
| 19-20     | 61.10 | 7.33    | 2.13     | 0.019 |
| 29-30     | 58.42 | 12.28   | 1.03     | 0.029 |
| 39-40     | 23.68 | 51.23   | 6.27     | 0.026 |

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HOLE NO-28

|           | 40.5 (2 |        |         |       |
|-----------|---------|--------|---------|-------|
| Meter No. | Fe %    | SiO2 % | Al2O3 % | Р%    |
| 9-10      | 63.22   | 5.26   | 1.56    | 0.060 |
| 19-20     | 12.40   | 78.89  | 1.23    | 0.040 |
| 29-30     | 27.93   | 56.27  | 1.11    | 0.039 |

HOLE NO-29

| Meter No. | , Fe % | SiO2 % | Al2O3 % | P %   |
|-----------|--------|--------|---------|-------|
| 9-10      | 30.94  | 37.68  | 6.38    | 0.059 |
| 19-20     | 17.65  | 57.29  | 6.19    | 0.044 |
| 29-30     | 61.77  | 7.64   | 1.23    | 0.037 |
| 39-40     | 45.13  | 31.74  | 1.68    | 0.051 |

HOLE NO-30

| 1102211000 |       |        |         |       |  |  |
|------------|-------|--------|---------|-------|--|--|
| Meter No.  | Fe %  | SiO2 % | Al2O3 % | P %   |  |  |
| 9-10       | 62.66 | 5.77   | 1.49    | 0.018 |  |  |
| 19-20      | 12.18 | 79.80  | 0.98    | 0.021 |  |  |

HOLE NO-31

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 55.51 | 12.88  | 2.52    | 0.017 |
| 19-20     | 61.21 | 7.04   | 1.76    | 0.049 |
| 29-30     | 49.15 | 27.23  | 0.90    | 0.027 |
| 39-40     | 38.87 | 41.89  | 0.74    | 0.069 |
| 49-50     | 40.21 | 40.18  | 0.49    | 0.058 |

(Quality Manager)



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HOLE NO-32

| TIODE IV  | 110DE 110-32 |        |         |       |  |  |
|-----------|--------------|--------|---------|-------|--|--|
| Meter No. | Fe %         | SiO2 % | Al2O3 % | P %   |  |  |
| 9-10      | 63.00        | 6.13   | 1.03    | 0.042 |  |  |
| 19-20     | 20.78        | 56.32  | 3.49    | 0.044 |  |  |
| 29-30     | 11.28        | 64.29  | 7.23    | 0.051 |  |  |

HOLE NO-33

| Meter No. | Fe %  | SiO2 % | Al2O3 % | P %   |
|-----------|-------|--------|---------|-------|
| 9-10      | 36.75 | 43.84  | 1.39    | 0.038 |
| 19-20     | 38.87 | 41.67  | 1.23    | 0.019 |
| 29-30     | 32.95 | 50.26  | 0.86    | 0.030 |

## Sample Not Drawn by Laboratory

We will retain sealed packet of the samples for a period of 3 months only.

- 1. This result pertains only to the samples submitted for testing.
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Ms.Uma Maheshwari Chemist/Technical Manager Alexander of the second

For Chaithanya Geo Chem

Authorized Signature H. Gurunatha Rao (Quality Manager)



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# THE FEASIBILITY REPORT OF MINING OPERATION AT KARADIKOLLA IRON ORE MINING BLOCK (ML NO 2487) IS FURNISHED AS UNDER

## 1. GENERAL MINE DESCRIPTION:

Karadikolla Iron ore Mining Block (ML No 2487) with an area of 86.12 Ha (as per CEC survey) is falls in Survey of India toposheet No D43E8 (57 A/8) and D43E12 (57 A/12), co-ordinates of the ML boundary is given below.

| Sl.No | Boundary point code | Latitude       | Longitude      |
|-------|---------------------|----------------|----------------|
| 1     | BP-A                | N15° 11' 04.9" | E76° 28' 51.9" |
| 2     | BP-B                | N15° 09' 45.8" | E76° 30' 02.4" |
| 3     | BP-C                | N15° 09' 40.5" | E76° 29' 59.3" |
| 4     | BP-D                | N15° 10' 52.7" | E76° 28' 47.4" |

#### Regional Geology:

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The Ballari - Hosapete region forms a part of the 'Sandur Schist Belt', referable as, the "Dharwars", a group of Precambrian schistose rocks of Mysore. The lithological units include green stones which are the metamorphosed basic igneous rocks occupying the valley regions, with phyllite - quartzite's forming the canoe-shaped amphitheater of hills, trending NNW-SSE and enclosing Sandur. The phyllite are locally shale and the quartzite are of the nature of banded hematite jasper, and banded hematite quartzite, interred bedded with each other. The banded hematite jasper, the important source rocks for the iron ores in the area are prominent in the northern and western part of the ranges, where as the associated shale become prominent in the southern and eastern parts of the area. The iron ores form a capping over the quartzite and shale and overlie a sequence of manganiferous phyllitic rocks. Lateritisation is widespread in most of the flat topped ridges. Structurally, the Sandur hills form a tightly folded synclinorium, plunging gently to NNW and the hill ranges broadly delineate the folded limbs of synclines, with close repetition of strata due to minor folds. The strike of the ore bodies is generally parallel to the trend of the hill ranges; the dips are often steep,

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being vertical at number of places. Opposing dips towards NE and SW are found as in the ramandurg and NEB ranges respectively. The general sequences of rock formations found in the area are as given below:

Soil Cover
Laterite/ Lateritised ore
Banded Ferruginous Quatzite/Jasper
Ferruginous Shale and Phyllite and
Iron ore formation

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The Ballari-Hosapete region covers part of the highly folded and metamorphosed Dharwarian formations (Archean) of the Karnataka State. The hill ranges and contained valleys in the region constitute the "Sandur Synclinorium" with aerial trend of NW-SE to NNW-SSE. The strata have been tightly folded into isoclinals anticlines and synclines in the synclinorium. The weathering and denudation cycles have subsequently carved out valleys in the anticlines and hills in the syncline. The iron ore deposits of Ballari-Hosapete constitute part of Ramanadurg range of the "Sandur Synclinorium". The ore bearing localities, south of Ballari-Hosapete railway line comprises of Ramanadurg, Kumaraswamy, Donimalai, Thimmappanagudi and Devadarigudda sections along the eastern and western regions of the Sandur hills.

## Geology of the Mining Block:

The lease area occupied by part of the NEB range which exposes rocks of Donimalai formation. The stratigraphic sequence of the mines area comprises Laterite, Friable iron ore, Ferruginous shale, BHJ & Gabbro. The ore body is associated with Ferruginous-phyllite, banded hematite jasper and iron ore bands are compact in nature and formed on hill ranges.

There are six prominent friable iron ore bands occurring consistently. The strike of iron ore band is in line with strike of the country rock ranging N  $70^{\circ}$  W - S  $70^{\circ}$  E to N  $50^{\circ}$  W - S  $50^{\circ}$  E with dip of  $80^{\circ}$  to  $85^{\circ}$  due east. Minor variations in dip and strike are seen due folding. At some place strike joints are also noticed, no major Fold & Fault are observed in the lease area, the Banded hematite jasper play major role of mineralization of friable iron ore, and there are two processes for enrichment & mineralization of Iron ore formation.

- 1. Removal of Silica from BHQ / BHJ.
- 2. Segregation of Iron ore minerals.

The geological mapping and detailed exploration carried out in the leasehold area various lithological unit are traced out.

Laterite / soil
Iron Ore (Friable)
Banded hematite jasper/ Banded hematite quartzite
Shale
Gabbro

**Laterite / soil:** Laterite capping is seen both mineralized and non mineralized area, the thickness of lateralization varies from 1 to 5 m.

**Iron Ore (Friable):** Elongated iron ore bands are found on hill terrain, the trends of the hill range is NW-SE direction. The mineralized ore body was formed by secondary enrichment due to leaching and replacement of silica from BHQ. The depth persistence of mineralization zone has been established by Diamond core drilling and RC drilling. On the bases of mapping/drilling six major iron ore bands are identified. The Wt. Avg. of iron ore bands in the lease area is <55% Fe, and details of mineralized friable iron ore bands occurs in the lease area is as tabulated below.

| Bands | Cumulative<br>strike length (m) | Av.Width<br>(m) | Depth (m) | Grade<br>Fe % |
|-------|---------------------------------|-----------------|-----------|---------------|
| А     | 615                             | 55              | 20-50     | 54.91         |
| A1    | 575                             | 100             | 20-65     | 48.64         |
| В     | 745                             | 30              | 20-40     | 57.43         |
| С     | 265                             | 50              | 70-90     | 60.99         |
| D     | 90                              | 35              | 40-50     | 56,03         |
| E     | 200                             | 110             | 10-70     | 61.70         |
|       | Wt. Avg                         | .Fe%            |           | 54.44         |

**BHJ / BHQ:** It is found elongated ridged throughout the mining lease area. The BHQ outcrops are exposed average width 40 m to 90 m and few samples analyzed. The average of Fe 20 to 30 %, SiO2 50 to 60% and Al2O3 0.50 to 5.0 %.

**Shale:** These are cherry red to brown in color, they generally fallow the non mineralized ore body but they contains considerable amount of iron oxide (FeO).

## 2. EXPLORATION:

## Exploration carried out by MECL:

Geological mapping of lease area for 86.12 Ha. A total of 56 boreholes drilled, out of which 11 boreholes for diamond core drilling and 45 boreholes for reverse circulation (RC) non core drilling, 28 geological cross sections have been prepared, bulk density considered 3.85 t/Cu m is considered for calculation purpose and the reserves were estimated are tabulated below:

| Category | UNFC |                    | Reserve (Tonnes) |          |
|----------|------|--------------------|------------------|----------|
| Proved   |      | Geological         | Net Geological   | Mineable |
| Probable | 111  | 10966554           | 9869898          | 8036917  |
| Inferred | 121  | 1196014<br>4181240 | 1076413          | 876507   |
| Total    |      | 16343808           | 3763116          | 3064252  |
| Fe%      |      | 10343006           | 14709427         | 11977676 |
|          |      |                    | <u>52.91%</u>    |          |

## Exploration carried out by MSPL:

MSPL conducted detailed exploration and drilled 34 Nos of reverse circulation (RC) drilling non core boreholes, that have been at the spacing of less than 100 m interval and between two consecutive holes.

Based on the recent detailed exploration data conducted by MSPL & considering the MECL data, the area where the bore holes are drilled at 100 m interval, the reserves are categorized as proved reserves (111) to the lowest depth. Some reserves are beyond ultimate pit limit and are categorized as measured mineral resources (211). Beyond the lowest depth the drilled bore hole the resources are classified as Inferred Mineral Resource (333). The reserves/resources calculation by cross section method, band wise, category wise are re-estimated as on 01.10.2017 (under UNFC Category).

Four bulk density tests were conducted by SGS India Private Limited approved NABL laboratory, the avg. bulk density considered 3.6 t /Cu m for calculation purpose. The updated category wise reserves and resources as on 01.10.2017 is 9.473 MMT and 3.270 MMT respectively.

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The summary of diamond core drilling boreholes and RC drilling boreholes that have been drilled at the spacing of less than 100 m interval and between two consecutive holes, along strike interval drilled by MECL & MSPL Limited so far is tabulated below.

| Year                                  | No of I          | Boreholes   | Tota             | l depth     | Prospected<br>by |
|---------------------------------------|------------------|-------------|------------------|-------------|------------------|
|                                       | Core<br>drilling | RC drilling | Core<br>drilling | RC drilling |                  |
| 2014-15<br>(23.08.14 to 04.10.2014)   | 11               | 45          | 333.50           | 1310.00     | MECL             |
| 2016-17<br>(06.02.2017 to 26.02.2017) |                  | 34          |                  | 1198.00     | MSPL             |
| TOTAL                                 | 11               | 79          | 333.50           | 2508.00     |                  |

The complex nature of mineralization of this mining block few bore holes are proposed to drill to ascertain to continuity of mineralization. By taking into consideration the future tentative excavation programme planned in next five years is given below.

| Year  | No.of Boreholes<br>(Core / RC / DTH) | Grid<br>Interval | Total<br>Meterage | Remarks                                         |
|-------|--------------------------------------|------------------|-------------------|-------------------------------------------------|
| I     | 1                                    | <100 m           | 30                | Proposed Backfilled area<br>(PBH-1 - DTH)       |
| II    | 3<br>(50 m each)                     | <100 m           | 150               | Contact zone at Shale & BHQ (PBH - 2 to 4 - RC) |
| III   | 1                                    | <100 m           | 80                | Continuity of C and D band                      |
|       |                                      |                  |                   | (PBH-5 - RC)                                    |
| IV    | -                                    | -                | •                 | -                                               |
| V     | _                                    | -                | -                 | -                                               |
| Total | 5                                    |                  | 260               | LIII.                                           |

### 3. RESERVE ASSESSMENT:

Based on the recent detailed exploration data conducted by MSPL & considering the MECL data, the area where the bore holes are drilled at 100 m interval, the reserves are categorized as proved reserves (111) to the lowest depth. Some reserves are beyond ultimate pit limit and are categorized as measured mineral resources (211). Beyond the lowest depth the drilled bore hole the resources are classified as Inferred Mineral Resource (333). The reserves/resources calculation by cross section method, band wise, category wise are re-estimated as on 01.10.2017 (under UNFC Category).

Four bulk density tests were conducted by SGS approved NABL laboratory, the avg. bulk density considered 3.6 t /Cu m for calculation purpose.

|                                   | UNFC<br>Code |      | Quantity in million tons | Grade %Fe |
|-----------------------------------|--------------|------|--------------------------|-----------|
| A. Total Mineral Reserve          |              |      |                          |           |
| Proved Mineral Reserve            | 111          |      | 9.473                    | ]         |
| Probable Mineral Reserve          |              | and  | <del>- 2,473</del>       |           |
|                                   | Sub To       | otal | 9.473                    | •         |
| B. Total Remaining Resources      |              |      |                          |           |
| Feasibility Mineral Resource      | 211          | 7    | 2.031                    |           |
| Prefeasibility Mineral Resource   | 221 a        | and  | -                        | 54.44     |
| Measured Mineral Resource         | 331          |      | -                        |           |
| Indicated Mineral Resource        | 332          |      |                          |           |
| Inferred Mineral Resource         | 333          | -+   | 1.239                    |           |
| Reconnaissance Mineral Resource   | 334          | - +  |                          |           |
|                                   | Sub To       | tal  | 3.270                    |           |
| Total Reserve (111) + Resources(2 | 11+333)      |      | 12.743                   | •         |

<u>Note:</u> It may not be 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.

## 4. PRODUCTION SCHEDULE:

The updated category wise reserves and resources as on 01.10.2017 is 9.473 MMT and 3.270 MMT respectively. However at the present rate of production capacity 0.510 MTPA, the life of the mine will be 19 years. Whereas LOI issued has been for period of 50 years.

The total handling of ore and waste is 9.473 million tonnes and 78.47 million tonnes respectively. The total ROM ore produced from this mine will be crushed and screened, the ore has been dispatched to MSPL Pellet Plant for its captive use. Physical specification of ore is 100% -10 mm, the chemical composition Wt. Avg. less than 55% Fe. The waste consists of shale, gabbro & BHQ will be disposed on dumps.

#### 5. MINING METHOD:

It is proposed to maintain the height of the bench is 9 m and width of bench will be 9 - 10 m with road gradient maintained at 1:16. Pit slope angle will be at 40° to 55° and bench slope angle will be 85°. It will be maintained as per statutory requirement, the benches are being providing with connecting ramps which is having the gradient 1:10 will be mentioned for a distance of not exceeding 100 m as per the statutory requirements.

The activities are involved in the opencast mining are drilling and blasting in ore and waste separately. The ore benches are first worked and extended across and along the strike. Side burden will be removed as benches advances, first the production will be taken up in North & South block at higher RLs. The friable ore deposit of the south block will be exhausted partly during this five years period, and back filling will be taken place on 2<sup>nd</sup> year onwards.

For the conceptual period it is proposed to exhaust first south block then north block for back filling will be taken place to reclaim the mined out area, ultimately the height and width of the benches are about 9-10 m southern side, 9-5 m in northern side, with haul road width more than 10 m with gradient maintained at 1:16. Pit slope angle is maintained at 40° to 55° and bench slopes are 85°. To win the blocked ore 2.031 MMT under 211 category additional area is required, accordingly we are requesting the state government in future.

Estimation of ore and waste is calculated up to the life of the mine. The ore to overburden ratio is 1:0.83. Processed ore will be dispatched to MSPL Pellet Plant for its captive use.

## 6. BENEFICIATION:

Processing of ROM: Mobile crushing and screening plant (150 TPH)

ROM comes to the crushing & screening plant through the trucks and gets delivered to grizzly. Oversize of grizzly flows directly to one number jaw crusher. Jaw crusher product passes through one triple deck screen (40, 20, 10 mm opening), with the lowest deck as 10 mm. -10 mm material from this screen is diverted to product stockpile, whereas the -20+10mm goes to one number tertiary crusher. +20 mm material goes to one number secondary crusher. The product of secondary crusher goes to

same triple deck screen and follows path as described above.

Product of tertiary crusher goes to one vibrating screening of 10 mm. -10 mm material reports to the product stockpile, whereas +10mm material goes back to tertiary crusher. Thus product of 100% -10mm is produced out of the crushing and screening plant. The product which is coming out from crushers will be loaded to the Tippers / Dumpers and it will be transported and unloaded in to the designated stock piles. The external tippers will utilised for the dispatch of products from stock piles/Crushers.

There is no beatification process at mine site.

## 7. MARKETING:

The total ROM ore produced from this mine will be crushed and screened, the ore has been dispatched to MSPL Pellet Plant for its captive use. Physical specification of ore is 100% -10 mm, the chemical composition Wt. Avg. less than 55% Fe. The present sale prize for calibrated Rs. 1236/- per ton and for fines Rs.817/- per ton on the basis of information of IBM for the month of March 2017.

## 8. INFRASTRUCTURE:

The mining lease is located at about 20 kms from Hospet town, near Siddapura village, Sandur-Hosapete State Highway road SH 49 is 5 kms.

Major site services are proposed at the mine for workshop, store, electric sub station, first aid room, water quality, canteen, mine office, HSD layout, computer section. The manpower employed at Karadikolla Iron ore mining block for mining and related operations is 155 (Highly Skilled - 33, Skilled-55, Semi-Skilled -30, Un-Skilled- 10) and 25 statutory requirement.

## 9. ENVIRONMENTAL REQUIREMENTS:

The mining block has environmental clearance, forest clearance. The Mining Plan (including Progressive mine closure plan) to be obtained from Indian Bureau of Mines, Bengaluru, and consent for operation from SPCB. The final mine closure plan will be submitted at the time of final closure. The reclamation and rehabilitation plans were prepared by ICFRE and approved by CEC. The annual capacity of the production is 0.510 MTPA fixed by CEC.

10. OTHERS LIKE LEGAL FACTORS LIKE TRIBAL ISSUES, NATIONAL PARKS ETC.,: Nil.

## 11. ECONOMIC EVALUATION:

|                       | Buc                                                    | lget for Proposed                        | Mining                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <u> </u>               |
|-----------------------|--------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Activities            | Areas of investment                                    | Method of<br>Calclation                  | Basics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Expenses (In Lakh Rs.) |
| Capital<br>Investment |                                                        |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3771.34                |
| I                     | Land •                                                 |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 691.54                 |
| a                     | Land cost expenditure                                  | Rs 8.03 Lakh /<br>Ha. For forest<br>land | Area: 86.12 Ha.<br>Forest land                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 691.54                 |
| b                     | Cost on relief<br>and<br>rehabilitation<br>action plan |                                          | Rehabilitation not required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.00                   |
| c.                    | compensation<br>to the land<br>outstees                |                                          | No land outstees                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.00                   |
| d.                    | Cost of acquiring surface Rights                       |                                          | Not required as it is<br>Forest land                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.00                   |
| II.                   | Mining                                                 |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2258.00                |
| a.                    | Cost of<br>Infrastructure &<br>equipments              |                                          | Mechanized mining                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2258.00                |
| III.                  | Environment                                            | al protection                            | and the second s | 761.80                 |
| a.                    | Pollution Contro                                       | ol ( check dam, gu<br>water tanker, e    | lly plug, settling tanks,<br>tc.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |
|                       | Garland Drain                                          |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |
| <u> </u>              | Retaining Walls                                        |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |
|                       | Settling ponds                                         |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4                      |
|                       | Plantation,<br>Terrecing                               |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |
|                       | Water Tanker                                           |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 761.80                 |
|                       | Bund with stone boulders                               |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |
|                       | Masonary<br>check dam                                  |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |
|                       | Gully plugs                                            |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |

|     | Reclaming area under encroachment                                | 1 .                                                                        |                             |         |
|-----|------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------|---------|
| IV. | Socio-economic development                                       |                                                                            |                             | 55      |
| a.  | Infrastructure development (Edu, Medical, etc)                   |                                                                            |                             |         |
| Ĭ.  | Educational facilities                                           | Free Scholarship for higher education in the buffer zone                   |                             | 18      |
| ii. | Medical<br>facilities                                            | Health check up<br>of villagers<br>villages in<br>buffer zone &<br>workers | ·                           | 12      |
| îii | Others                                                           |                                                                            |                             | 5       |
| b.  | Income<br>Generation<br>Activities                               | Financial<br>support for<br>interest free<br>loans                         | Financial Support to<br>SHG | 20      |
| V.  | Occupational Health & Safety                                     |                                                                            |                             | 5       |
| a.  | Infrastructure & PPEs                                            |                                                                            |                             | 5       |
| VI  | Payment to Govenment-Auction Charges                             |                                                                            |                             | 1310.22 |
| a   | Payments regarding Exploration.DGPS survey & RR preparation, etc |                                                                            |                             | 494.12  |
| b   |                                                                  | ymnet including al                                                         | l installments              | 816.1   |
|     | Total Capital Investment                                         |                                                                            |                             | 5081.56 |
|     | Say Rs. 508                                                      |                                                                            | 2 lakhs                     |         |

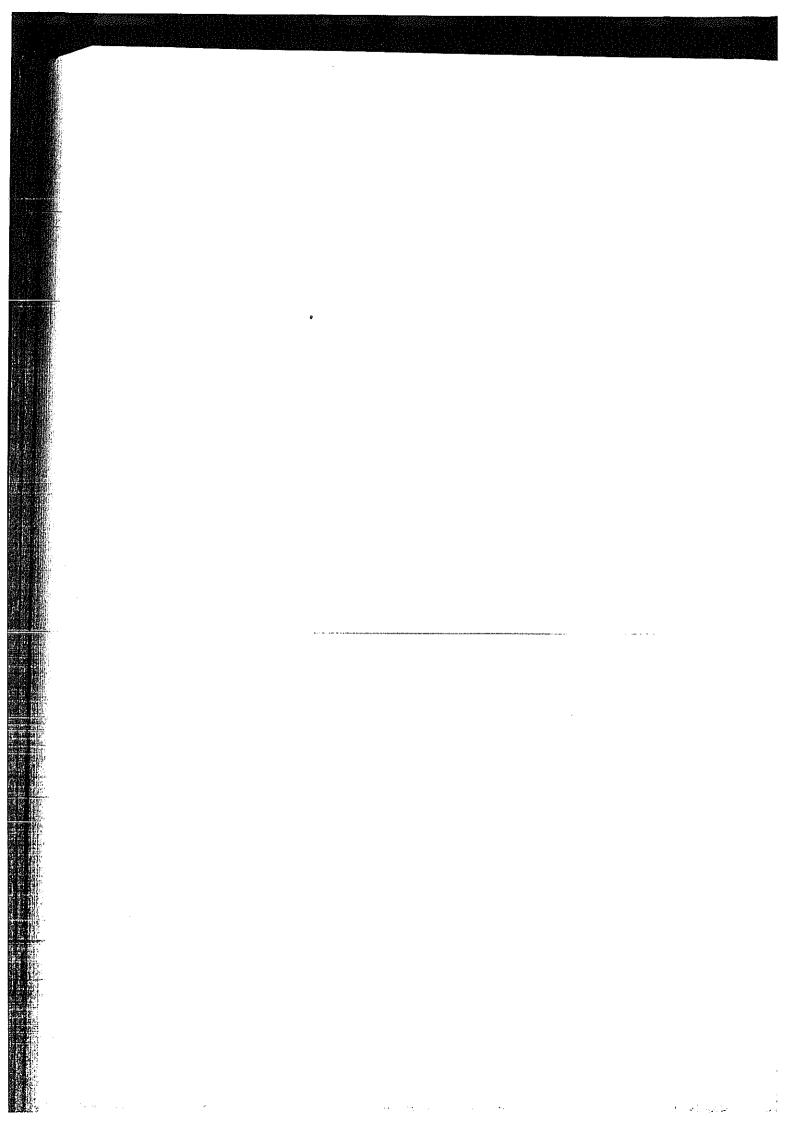
|                          |                                                          |                             |                                                            | <u>` ; .</u>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|----------------------------------------------------------|-----------------------------|------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                                                          | Budget for Pro              | posed Mining                                               |                        | in the state of th |
| Activities               | Areas of investment                                      | Method of<br>Calclation     | Basics                                                     | Expenses (In Lakh Rs.) | Cost potential tonne in Rs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Recurring<br>Expenditure |                                                          |                             |                                                            | 3,508.51               | 687.9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| i                        | Mining                                                   |                             |                                                            |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| a.                       | Expenditure for infrastructure and equipment maintenance |                             | 15 % of direct investment for infrastructure & maintenance | 338.70                 | 66.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| b.                       | Mining of ore and waste                                  | Rs. Per ton                 | Rs. 260 / ton                                              | 1,326.00               | 260.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| c.                       | Salaries &<br>Wages of 154<br>staffs                     | No of<br>workers X<br>Wages | Rs. 1,40,777/-<br>per Annum                                | 216.80                 | 42.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| d.                       | Royalty on<br>mineral &<br>miscellaneous                 | Rs. Per ton                 | Royalty 15% on<br>Sale Price,<br>NMET -2% on<br>Royalty    | 767.82                 | 150.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ii.                      | Socio-econor<br>10% on sale<br>royalty                   |                             | ient -SPV-                                                 | 577.12                 | 113.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| a.                       | Crop Damage C                                            | Compensation                |                                                            |                        | 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| b.                       | Corporate<br>Social<br>Responsibility                    |                             |                                                            |                        | 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| c.                       | Income<br>Generation<br>Activities                       |                             | SPV -10% on sale<br>10% on Royalty                         |                        | 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| d.                       | Community<br>Health<br>checkup                           |                             |                                                            |                        | 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| iii.                     | Occupationa                                              | l Health & S                | afety                                                      |                        | 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| a.                       | For routine checkup                                      | 154 persons<br>X per annum  | Budget<br>Rs.2000/- per<br>annum per<br>employee           | 3.08                   | 0.60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| b.                       | Medical aid as<br>under ESI<br>scheme                    | V                           | Rs.2544/- per<br>annum per<br>employee                     | 3.92                   | 0.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



| c.                                    | Budget for            |                     | per year                       | 10.00       | 1.96   |
|---------------------------------------|-----------------------|---------------------|--------------------------------|-------------|--------|
| d.                                    | training Compensation | Rs. 100,000         | Antioinat 3                    | <u> </u>    |        |
|                                       | for accident          | X                   | Anticipated rate of Injury: 1% | 1.54        | 0.30   |
|                                       | and injuries          | Anticipated rate of |                                |             |        |
|                                       |                       | injuries (No        |                                |             |        |
| <del></del>                           |                       | of workers)         |                                |             |        |
| iv.                                   | Environmen            | t Managemei         | nt                             |             | 0.00   |
| a.                                    | Maintenance           |                     |                                |             |        |
| ц.                                    | of Pollution          |                     | 30 % Capital                   | 228.54      | 44.81  |
|                                       | control               |                     | Investment                     |             |        |
| · · · · · · · · · · · · · · · · · · · | Facilities            |                     | j                              |             |        |
| b.                                    | Dust                  |                     |                                | 10.00       | 1.96   |
|                                       | Suppression &         |                     |                                | 10.00       | 1.90   |
|                                       | Pollution<br>Control  |                     |                                |             |        |
| C.                                    | Environmental         |                     |                                |             |        |
|                                       | Monitoring            |                     |                                | 15.00       | 2.94   |
| d.                                    | Environmental         |                     |                                | 10.00       | 100    |
|                                       | division              |                     |                                | 10.00       | 1.96   |
|                                       | Total Recurri         | ng Expenditi        | ıre                            | 3,508.51    | 687.94 |
|                                       |                       |                     |                                | Say Rs. 688 | 3/-    |

| Capital investment including Pre -emptive expences:                                                               |              |          |                   | 3771.34                                | Lakhs |
|-------------------------------------------------------------------------------------------------------------------|--------------|----------|-------------------|----------------------------------------|-------|
|                                                                                                                   | Τ            | Τ        |                   |                                        |       |
| Capital investment for Mining and Environmental Manager                                                           | nen          | t:       |                   | 3079.80                                | Lakhs |
| (Environmental controle.social development etc)                                                                   |              |          |                   |                                        |       |
| Consideration of per tonne Working cost as on date is g                                                           | rive         | m        | <u> </u><br>below |                                        |       |
| Recurring cost (Rs/MT)                                                                                            |              |          |                   | Rs/tonne                               |       |
| Expenditure on cost of Mining                                                                                     |              | J        |                   | 519.47                                 |       |
| Expenditure for Socio-economic development                                                                        |              |          |                   | 113.16                                 |       |
| Expenditure for Occupational Health and safety                                                                    |              |          |                   | 3.63                                   |       |
| Expenditure for Environmental Management                                                                          |              |          |                   | 51.67                                  |       |
|                                                                                                                   |              |          |                   |                                        |       |
| Total                                                                                                             |              |          |                   | 687.94                                 |       |
| Value of Mineral at pit head                                                                                      |              |          | Rs/tonne          | 984.00                                 |       |
| Lessee has to pay 100.30% on sale price as auction money                                                          |              |          | Rs/tonne          | 986.952                                |       |
| Summary of Viability:                                                                                             | 1            |          |                   |                                        |       |
| Expenditure calculated at Working cost Rs 687.94.19/- per tonne.IRR found for 20 years is 20%. Hence this project | onr<br>et is | ne a     | and Revenue       | e at Rs 984 /-                         |       |
| 100-50000000000000000000000000000000000                                                                           |              |          |                   |                                        |       |
| Considerations:                                                                                                   |              |          |                   |                                        |       |
| 1. Sale price of Iron ore lumps & fines considered as per the                                                     | L<br>IBi     | ∐<br>√Ii | nputs. Mav        | '2017 data                             |       |
| 2. Below 55% fe lumps cost- Rs 944/- per tonne                                                                    |              |          |                   |                                        | 944   |
| 3. Below 55% fe Fines cost-Rs 984/- per tonne                                                                     |              |          |                   | ······································ | 984   |

S. Shivallian S. SHIVAKUMAR M.Sc.Geology Qualified Person



### **ANNEXURE 10**

### KARADIKOLLA IRON ORE MINING BLOCK OF MSPL LIMITED (ML No 2467) ESTIMATION OF ORE RESERVES / RESOURCES AS ON 01.10.2017

| BAND    | SECTION |      | AREA |       | INFLU | ,      | OLUME  |         |         | GE (Bulk D<br>3,6 t/Cu,m) | ensity- | IN N  | MILLION TO | NS     | GRAND<br>TOTAL        | Fe %          |
|---------|---------|------|------|-------|-------|--------|--------|---------|---------|---------------------------|---------|-------|------------|--------|-----------------------|---------------|
| BANU    | SECTION | 111  | 333  | 211   | IIII  | 111    | 333    | 211     | 111     | 333                       | 211     | 111   | 333        | 211    | ( IN MILLION<br>TONS) | 1 6 76        |
|         | S-0     | 700  | o    | 0     | 70    | 49000  | 0      | O       | 176400  | 0                         | 0       | 0.176 | 0.000      | 0.000  | 0.176                 | 56.1          |
|         | S-1     | 644  | 0    | 0     | 80    | 51520  | 0      | 0       | 185472  | 0                         | 0       | 0.185 | 0.000      | 0.000  | 0.185                 | 46.1          |
|         | S-2     | 709  | 0    | 0     | 90    | 63810  | o      | O       | 229716  | 0                         | 0       | 0.230 | 0.000      | 0.000  | 0.230                 | 58.5          |
| A       | S-3     | 2180 | 0    | 0     | 74    | 161320 | 0      | 0       | 580752  | 0                         | 0       | 0.581 | 0.000      | 0.000  | 0.581                 | 57.9          |
|         | S-4     | 470  | 0    | 0     | 100   | 47000  | 0      | 0       | .169200 | 0                         | 0       | 0.169 | 0.000      | 0.000  | 0.169                 | 48,8          |
| Ì       | S-5     | 1998 | 0    | O     | 100   | 199800 | 0      | 0       | 719280  | 0                         | 0       | 0.719 | 0.000      | 0.000  | 0.719                 | 56.9          |
|         | S-6     | 1001 | 0    | 0     | 100   | 100100 | 0      | 0       | 360360  | 0                         | 0       | 0.360 | 0.000      | 0.000  | 0.360                 | 50.0          |
| SUB     | TOTAL   | 7702 | 0    | 0     | 614   | 672550 | 0      | 0       | 2421180 | 0.000                     | 0.000   | 2.421 | 0.000      | 0.000  | 2.421                 | 54,           |
|         | S-8     | 1309 | 0    | 0     | 95    | 124355 | 0      | 0       | 447678  | 0                         | 0       | 0.448 | 0.000      | 0.000  | 0.448                 | <b>4</b> 53.0 |
|         | S-9     | 3408 | 1671 | 860   | 100   | 340800 | 167100 | 86000   | 1226880 | 601560                    | 309600  | 1.227 | 0.602      | 0.310  | 2.138                 | 17.           |
| A1      | S-10    | 2256 | 1355 | 1074  | 100   | 225600 | 135500 | 107400  | 312160  | 487800                    | 386640  | 0.812 | 0.488      | 0.387  | 1.687                 | 48.           |
|         | S-11    | 2039 | 0    | 99    | 90    | 183510 | 0      | 8910    | 560636  | 0                         | 32076   | 0.661 | 0.000      | 0.032  | 0.693                 | <b>EO</b> .   |
|         | S-13    | 153  | O    | 0     | 100   | 15300  | 0      | 0       | 55080   | 0                         | 0       | 0.055 | 0.000      | 0.000  | 0.055                 | 45.           |
| UB TOTA | L       | 9165 | 3026 | 2033  | 485   | 889565 | 302600 | 202310  | 3202434 | 1089360                   | 728316  | 3,202 | 1.089      | 0.728  | 5.020                 | 48.           |
|         | S-8     | 0    | o    | 252   | 50    | С      | 0      | 12600   | 0       | 0                         | 45360   | 0.000 | 0.000      | 0.045  | 0.045                 | €1.           |
|         | S-9     | 64   | 0    | 157   | 100   | 6400   | O      | 15700   | 23040   | 0                         | 56520   | 0.023 | 0.000      | 0.057  | 0.080                 | 61.           |
|         | S-10    | 141  | 0    | 433   | 100   | 14100  | 0      | 43300   | 50760   | 0                         | 155880  | 0.051 | 0.000      | 0.156  | 0.207                 | 61.           |
| В       | S-11    | 394  | 0    | 746   | 95    | 37430  | 0      | 70870   | 134748  | 0                         | 255132  | 0.135 | 0.000      | 0.255  | 0.390                 | 56.           |
|         | S-12    | 246  | o    | . 202 | 90    | 22140  | 0      | 18180   | 79704   | 0                         | 65448   | 0.080 | 0.000      | 0.065  | 0.145                 | 54.           |
|         | S-13    | 779  | c    | 365   | 130   | 101270 | 0      | 47450   | 364572  | 0                         | 170820  | 0.365 | 0 000      | 0.171  | 0.535                 | 67.           |
|         | S-16    | 856  | 0    | 0     | 100   | 85600  | 0      | 0       | 308160  | 0                         | 0       | 0.308 | 0.000      | 0.000  | 0.308                 | 56.           |
| SUB     | TOTAL   | 2480 | 0    | 2155  | 665   | 266940 | 0      | 208100  | 960984  | 0                         | 749160  | 0.961 | 0.000      | 0.749  | 1.710                 | 57.           |
|         | S-21    | 1080 | 0    | 0     | 35    | 37800  | 0      | 0       | 136080  | 0                         | 0       | 0.136 | 0.000      | 0.000  | 0 136                 | 61.           |
| С       | S-22    | 2157 | o    | 303   | 75    | 161775 | 0      | 22725   | 582390  | 0                         | 81810   | 0.582 | 0.000      | 0.082  | 0.664                 | 61.           |
| ٠       | S-23    | 1667 | 344  | 0     | 95    | 158365 | 32680  | 0       | 570114  | 117648                    | 0       | 0.570 | 0.118      | 0.000  | 0.688                 | 60.           |
|         | S-24    | 1612 | 150  | 0     | 60    | 96720  | 9000   | 0       | 348192  | 32400                     | 0       | 0.348 | 0 032      | 0.000  | 0.381                 | 61,           |
| SUB     | TOTAL   | 6516 | 494  | 303   | 265   | 454660 | 41680  | 22725   | (636776 | 150048                    | 81810   | 1.637 | 0.150      | 0.082  | 1.869                 | 60.           |
| D       | S-25    | 956  | 0    | 67    | 90    | 86040  | 0      | 6030    | 309744  | 0                         | 21708   | 0.310 | 0.000      | 0.022  | 0.331                 | 56.           |
| SUB     | TOTAL   | 956  | 0    | 67    | 90    | 86040  | 0      | 6030    | 309744  | 0                         | 21708   | 0,310 | 0.000      | 0.022  | 0.331                 | 56.           |
|         | S-27    | 256  | 0    | 0     | 50    | 12800  | 0      | 0       | 46080   | 0                         | O       | 0.046 | 0.000      | 0.000  | 0.046                 | 53.           |
| E       | S-28    | 1211 | 0    | 558   | 80    | 96880  | 0      | 44640   | 348768  | 0                         | 160704  | 0.349 | 0.000      | 0.161  | 0.509                 | 63.           |
|         | S-29    | 2169 | 0    | 1148  | 70    | 151830 | 0      | 80360   | 546588  | 0                         | 289296  | 0.547 | 0.000      | 0.289  | 0 836                 | 61.           |
| SUB     | TOTAL   | 3636 | o    | 1706  | 200   | 261510 | 0      | 125000  | 941436  | 0                         | 450000  | 0.941 | 0.000      | 0,450  | 1,391                 | 61            |
| GRAN    |         |      |      |       |       |        | 564165 | 9472554 | 1239408 | 2030994                   | 9.473   | 1.239 | 2.031      | 12,743 | §i4.                  |               |

| DIAB    | In MMT | Wt. Avg |
|---------|--------|---------|
| A BAND  | 2,421  | 54.91   |
| A1 BAND | 5.020  | 48.64   |
| B BAND  | 1.710  | 57.43   |
| C BAND  | 1.869  | 60.99   |
| D BAND  | 0.331  | 56.03   |
| E BAND  | 1.391  | 61.70   |
| TOTAL : | 12.743 | 54,44   |

| UNFC        | în MMT |
|-------------|--------|
| 111         | 9.473  |
| 211         | 2.031  |
| 333         | 1.239  |
| GRAND TOTAL | 12.743 |



#### KARADIKOLLA IRON ORE MINING BLOCK OF MSPL LIMITED (MI, No 2487) ESTIMATION OF WASTE AS ON 01.10.2017

| BAND                                  | SECTION |       | AR.     | EA       |      | INFLU |         | VOL     | UME      |        | 1       | TONNAGE (Bulk Density-<br>2.0 UCu.m) |          |        |  |
|---------------------------------------|---------|-------|---------|----------|------|-------|---------|---------|----------|--------|---------|--------------------------------------|----------|--------|--|
|                                       |         | SHALE | вну/вно | LAT/SOIL | ĐUMP |       | SHALE   | вну/вно | LAT/SOIL | DUMP   | SHALE   | вну/вна                              | LAT/SOIL | DUMP   |  |
|                                       | S-0     | 339   | 689     | 97       | 0    | 70    | 23730   | 4823C   | 6790     | 0      | 47460   | 96460                                | 13580    | 0,     |  |
|                                       | S-1     | 344   | 0       | 0        | 37   | 80    | 27520   | C       | 0        | 2960   | 55040   | 0                                    | 0        | 5920   |  |
|                                       | S-2     | 858   | 832     | 176      | 0    | 90    | 77220   | 7488C   | 15840    | 0      | 154440  | 149760                               | 31680    | 0      |  |
| A                                     | S-3     | 813   | 917     | 224      | 0    | 74    | 60162   | 67858   | 16576    | 0      | 120324  | 135716                               | 33152    | 0      |  |
| _ ^                                   | S-4     | 289   | 1076    | 301      | 0    | 100   | 28900   | 107600  | 30100    | 0      | 57800   | 215200                               | 60200    | 0      |  |
|                                       | S-5     | 1214  | 406     | 411      | 0    | 100   | 121400  | 40600   | 41100    | 0      | 242800  | 81200                                | 82200    | 0      |  |
|                                       | S-6     | 1287  | 628     | 280      | o    | 100   | 128700  | 62800   | 28000    | 0      | 257400  | 125600                               | 56000    | o      |  |
| SUB TOTA                              | AL .    | 5144  | 4548    | 1489     | 37   | 614   | 467632  | 401988  | 138406   | 2960   | 935264  | 803936                               | 276812   | 5920   |  |
|                                       | S-8     | 195   | 1144    | 94       | 0    | 95    | 18525   | 108680  | 8930     | 0      | 37050   | 217360                               | 17860    | 0      |  |
|                                       | S-9     | 370   | 1648    | 0        | 0    | 100   | 37000   | 164800  | 0        | 0      | 74000   |                                      |          |        |  |
|                                       | S-10    | 0     | 1201    | 0        | 0    | 100   | 0       | 120100  | 0        | 0      | 0       | <u> </u>                             | 0        | 0      |  |
| A1                                    | Ĩ-11-S  | o     | 1046    | 0        | 574  | 90    | 0       | 94140   | 0        | 51660  | 0       |                                      | 0        | 103320 |  |
|                                       | S-12    | o     | 386     |          | 1803 | 90    | 0       | 34740   | 0        | 162270 | 0       | 69480                                | 0        | 324540 |  |
|                                       | S-13    | 467   | 49      | 0        | 69   | 100   | 46700   | 4900    | 0        | 6900   | 93400   | 9800                                 | 0        | 13800  |  |
| SUB TOTA                              | AL.     | 1032  | 5474    | 94       | 2446 | 575   | 102225  | 527360  | 8930     | 220830 | 204450  | 1054720                              | 17860    | 441660 |  |
|                                       | S-8     | 0     | 0       | 0        | 0    | 50    | 0       | 0       | 0        | 0      | 0       | 0                                    | 0        | Q      |  |
|                                       | S-9     | 219   | 11      | 0        | 0    | 100   | 21900   | 1100    | 0        | 0      | 43800   | 2200                                 | 0        | 0      |  |
|                                       | \$-10   | 370   | 12      | 0        | 0    | 100   | 37000   | 1200    | 0        | 0      | 74000   | 2400                                 | 0        | 0.     |  |
| В                                     | S-11    | 1339  | 74      | 0        | 0    | 95    | 127205  | 7030    | 0        | O      | 254410  | 14060                                | 0        | 0      |  |
|                                       | S-12    | 528   | 149     | 0        | 0    | 90    | 47520   | 13410   | 0        | 0      | 95040   | 26820                                | 0        | 0      |  |
|                                       | S-13    | 1306  | 213     | 0        | 0    | 130   | 169780  | 27690   | 0        | 0      | 339560  | 55380                                | 0        | 0      |  |
|                                       | S-16    | 216   | 1626    | 0        | 1491 | 100   | 21600   | 162600  | 0        | 149100 | 43200   | 325200                               | 0        | 298200 |  |
|                                       | S-17    | 470   | 1893    |          | 449  | 80    | 37600   | 151440  | 0        | 35920  | 75200   | 302880                               | 0        | 71840  |  |
| SUB                                   | TOTAL   | 4448  | 3978    | 0        | 1940 | 745   | 462605  | 364470  | 0        | 185020 | 925210  | 728940                               | 0        | 370040 |  |
|                                       | S-21    | 2724  | 1780    | 153      | 73   | 35    | 95340   | 62300   | 5355     | 2555   | 190680  | 124600                               | 10710    | 5110   |  |
| С                                     | S-22    | 2055  | 2557    | 84       | 106  | 75    | 154125  | 191775  | 6300     | 7950   | 308250  | 383550                               | 12600    | 15900  |  |
|                                       | S-23    | § 132 | 1299    | 134      | 57   | 95    | 107540  | 123405  | 12730    | 5415   | 215080  | 246810                               | 25460    | 10830  |  |
|                                       | S-24    | 593   | 1242    | 86       | o    | 60    | 35580   | 74520   | 5160     | 0      | 71160   | 149040                               | 10320    | 0,     |  |
| 5UB 1                                 | TOTAL   | 6504  | 6878    | 457      | 236  | 265   | 392585  | 452000  | 29545    | 15920  | 785170  | 904000                               | 59090    | 31840  |  |
| D                                     | S-25    | 57    | 732     | O        | 57   | 90    | 5130    | 65880   | 0        | 5130   | 10260   | 131760                               | О        | 10260  |  |
| SUB                                   | TOTAL   | 57    | 732     | . 0      | 57   | 90    | 5130    | 65880   | 0        | 5130   | 10260   | 131760                               | 0        | 10260  |  |
|                                       | S-27    | 281   | 163     | 0        | 0    | 50    | 14050   | 8150    | 0        | 0      | 28100   | 16300                                | 0        | 0      |  |
| E                                     | S-28    | 84    | 304     | 0        | 0    | 80    | 6720    | 24320   | 0        | О      | 13440   | 48640                                | 0        | 0      |  |
|                                       | S-29    | 153   | 161     | 0        | 0    | 70    | 10710   | 11270   | 0        | 0      | 21420   | 22540                                | 0        | 0      |  |
| · · · · · · · · · · · · · · · · · · · | TOTAL   | 518   | 628     | 0        | O    | 200   | 31480   | 43740   | 0        | 0      | 62960   | 87480                                | 0        | 0      |  |
| GRAND                                 | TOTAL   | 17703 | 22238   | 2040     | 4716 | 2489  | 1461657 | 1855418 | 176881   | 429860 | 2923314 | 3710836                              | 353762   | 859720 |  |

|         |                 | VOLUMETRIC            |       | TONHAGE      |                       |      |  |  |
|---------|-----------------|-----------------------|-------|--------------|-----------------------|------|--|--|
| BAND    | Reserves<br>111 | DEVELOPMENT<br>(CU.M) | RATIO | Reserves 111 | DEVELOPMENT<br>(TONS) | натю |  |  |
| A BAND  | 672550          | 1010966               | 1.50  | 2421180      | 2021932               | 0.8  |  |  |
| AT BAND | 889565          | 859345                | 0.97  | 3202434      | 1718690               | 0.5  |  |  |
| B BAND  | 266940          | 1012095               | 3.79  | 960984       | 2024190               | 2.1  |  |  |
| C BAND  | 454660          | 890050                | 1.98  | 1636776      | 1780100               | 1.0  |  |  |
| DBAND   | 86040           | 76140                 | 0.8B  | 309744       | 152280                | 0.4  |  |  |
| E BAND  | 261510          | 75220                 | 0.29  | 941436       | 150440                | 0.10 |  |  |
| TOTAL   | 2631265         | 3923816               | 1.49  | 9472554      | 7847632               | 0.8: |  |  |





#### Client: MSPL Limited

Boss order Numer: 2000791

Mines Name: Karadi Kolla Iron Ore Mine Details of Inspection : In-Situ Bulk density Place of Sampling: Karadi Kolla Iron Ore Mine

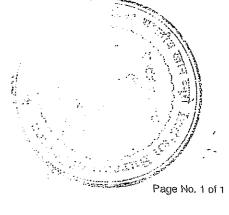
Sampling Date :10-11/3/2017

| _ |       | ,      |                                    |                           |                            |                                     |
|---|-------|--------|------------------------------------|---------------------------|----------------------------|-------------------------------------|
|   | St.No | Pit No | Lithology as<br>declared by client | Vass of Sample<br>in Kegs | Volume in cms <sup>3</sup> | in-Situ Density<br>Tons/Cubic Meter |
| 1 | 1.    | 1      | Iron ore (South Pit<br>Band E)     | 95.01                     | 26.20                      | 3.63 _/                             |
|   | 2     | 2      | Iron ore (South Pit<br>Band C)     | 92.71                     | 26.00                      | 3.57                                |
|   | 3     | 3      | Iron ore (North Pit<br>Band A)     | ชย.25                     | 26.10                      | 3.42 ~ ′                            |
| [ | 4     | 4      | Iron ore (North & West Pit Band B) | 98.81                     | 26.00                      | 3.80                                |

<sup>&</sup>quot;The above reflects our findings at time and place of Inspection. This status applied to the properties of the propertie

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ANNEXURE

Report N°: 170316014B



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DATE: 16.03.2017

#### INSPECTION REPORT

REF: 2000799

CARGO DESCRIBED AS

PRINCIPAL

Pit No

PLACE & DATE OF

**ATTENDANCE** 

Iron ore (ROM) M/s. MSPL LIMITED

At KARADI KOLLA IRON ORE MINES

On 10-11/3/2017

01 - Iron ore , South pit band E (As declared by client) 

In accordance with Instructions received from our principal, M/s. MSPL LIMITED for In-Situ bulk density at KARADI KOLLA IRONORE MINES. We have attended the In-Situ density test. In-Situ test was carried out as per IS: 2720-Part-28 the details are as under:

#### IN-SITU DENSITY TEST PROCEDURE:

The basic principle of sand replacement method is to measure the in-situ volume of hole from which the material is excavated from the weight of sand with known density filling in the hole. The in-situ density of material is given by the weight of the excavated material divided by the in-situ volume.

Following Apparatus are used to carry out the tests,

Box: Metal Box of known dimension (30cmx30cmx30cm)

Sand: Dry and clean sand of uniform gradation passing 1.0mm and retained 600micron sieve.

Sand pouring cylinder: A plastic cylinder with a known volume of 1 litre capacity.

Tools for leveling and excavating: Hand tools such as scraper with a handle for leveling the surface, a digger or an elongated trowel for digging and excavating the material.

Balance: A suitable balance of capacity 20 - 40kgs and accuracy of 1gm.

#### Procedure:

> The site where the density is to be conducted is cleaned and levelled using a scraper for an area of about 2500 sq cm.

The metal box is placed on the prepared surface. Using the square box as a pattern, the material is excavated using a digger or a trowel up to a required depth and the loose material removed is carefully collected in a sample collection bag and is weighed M.

The sand pouring cylinder with known volume is filled with fine, dry sand and filled in the excavated hole. The sand is measured into the pit with a measuring cylinder to give a reliable estimate of volume.

The surface is leveled but the sand is not tamped down as it might give erroneous data.

The following formula is used to calculate the density of the material:

FORMULAE: Density = Mass/Volume, T/cm

Mass: Weight of sample collected in the bag

Volume: Volume of sand filled into the pit

SGS India Private Limited

SGS House

4B Adi Shankaracharya Marg

Wikhroli (W), Mumbai 400 083

t \$91 22 6640 5888

f: +91 22 6640 8833

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DATE: 16.03.2017

REF: 2000799

IN-SITU DENSITY RESULTS ASCERTAINED ARE AS UNDER:

| Wass of Sample in Kegs | Volume in cms³ | In-Situ Density Tons/Cubic Meter |
|------------------------|----------------|----------------------------------|
| 95.01                  | 26.20          | 3,63                             |

The manual sampling method was agreed with the SGS Principal, as sampling by more reliable methods that provide probability samples was not possible. The Holder of this document is cautioned that collected MANUAL samples of this type do not satisfy the minimum requirements for probability sampling, and as such cannot be used to draw statistical inferences such as precision, standard error or bias.

The consignment from which the samples were collected had a nominal top size of over 80 millimeter. While the sampling method was agreed upon by all parties to this report, due to the limited ability to extract representative increments from the cargo, the samples collected will not necessarily be representative of the entire cargo. SGS has no responsibility and / or liability for the consequences of any action taken or not taken on the basis of this certificate /

This certificate reflects our findings at the time, date and place of inspection only and does not refer to a other matter.

SGS India Private Limited SGS House

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Report Nº: 170316014C





Page N°: 1/2

DATE: 16.03.2017

#### **INSPECTION REPORT**

REF: 2000799

CARGO DESCRIBED AS

PRINCIPAL

PLACE & DATE OF

ATTENDANCE

Pit No

Iron ore (ROM)

M/s. MSPL LIMITED

ALKARADI KOLLA IRON ORE MINES

-On-10-11/3/2017

02 = Iron ore South pit band C (As declared by client)

In accordance with instructions received from our principal, M/s. MSPL LIMITED for In-Situ bulk density at KARADI KOLLA IRONORE MINES. We have attended the In-Situ density test, In-Situ test was carried out as per IS: 2720-Part-28 the details are as under: IN-SITU DENSITY TEST PROCEDURE:

The basic principle of sand replacement method is to measure the in-situ volume of hole from which the material is excavated from the weight of sand with known density filling in the hole. The in-situ density of material is given by the weight of the excavated material divided by the in-situ volume. Following Apparatus are used to carry out the tests,

o Box: Metal Box of known dimension (30cmx30cmx30cm)

Sand, Dry and clean sand of uniform gradation passing 1.0mm and retained 600micron sieve.

Sand pouring cylinder: A plastic cylinder with a known volume of 1 litre capacity.

Tools for leveling and excavating: Hand tools such as scraper with a handle for leveling the surface, a digger of an elongated trowel for digging and excavating the material.

Balance: A suitable balance of capacity 20 40kgs and accuracy of 1gm.

#### Procedure;

Ę.,

> The site where the density is to be conducted is cleaned and levelled using a scraper for an area of about 2500 sq cm.

The metal box is placed on the prepared surface. Using the square box as a pattern, the material is excavated using a digger or a trowel up to a required depth and the loose material removed is carefully collected in a sample collection bag and is weighed M.

The sand pouring cylinder with known volume is filled with fine, dry sand and filled in the excavated hole. The sand is measured into the pit with a measuring cylinder to give a reliable estimate of

> The surface is leveled but the sand is not tamped down as it might give erroneous data. The following formula is used to calculate the density of the material:

FORMULAE: Density = Mass/Volume, T/cm

Mass: Weight of sample collected in the bag

Volume: Volume of sand filled into the pit

# SGS:India-Private-Limited SGS:Holise 4B:Adi.Shenkaracharya-Marg

Viknroli (W); Mumbai: 400:083 t:-+91:22:6640:8888

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Report Nº: 170316014C





REF: 2000799

(1)

IN-SITU DENSITY RESULTS ASCERTAINED ARE AS UNDER:

DATE: 16.03.2017

|         | Mass of Sample in Kegs Volume in cms <sup>3</sup> | In-Situ Density Tons/Cubic Meter |
|---------|---------------------------------------------------|----------------------------------|
| 2 - 2 m | 92.71 26.00                                       | 3.57                             |

The manual sampling method was agreed with the SGS Principal, as sampling by more reliable methods that provide probability samples was not possible. The Holder of this document is cautioned that collected MANUAL samples of this type do not satisfy the minimum requirements for probability sampling, and as such cannot be used to draw statistical inferences such as precision, standard error or bias.

The consignment from which the samples were collected had a nominal top size of over 80 millimeter. While the sampling method was agreed upon by all parties to this report, due to the limited ability to extract representative increments from the cargo, the samples collected will not necessarily be representative of the entire cargo. SGS has no responsibility and / or liability for the consequences of any action taken or not taken on the basis of this certificate /

This certificate reflects our findings at the time, date and place of inspection other matter.

SGS India Private Limited

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Report Nº: 170316014D





Page Nº: 1/2

DATE: 16.03.2017

#### INSPECTION REPORT

REF: 2000799

CARGO DESCRIBED AS

PRINCIPAL

PLACE & DATE OF

ATTENDANCE

Pit No\_\_\_\_

Iron ore (ROM)

M/s. MSPL LIMITED

At KARADI KOLLA IRON ORE MINES

On 10-11/3/2017

03 iron ore. North pit band A (As declared by client)

In accordance with instructions received from our principal, M/s. MSPL LIMITED for In-Situ bulk density at KARADI KOLLA IRONORE MINES. We have attended the In-Situ density test. In-Situ test was carried out as per IS: 2720-Part-28 the details are as under:

#### IN-SITU DENSITY TEST PROCEDURE:

The basic principle of sand replacement method is to measure the in-situ volume of hole from which the material is excavated from the weight of sand with known density filling in the hole. The in-situ density of material is given by the weight of the excavated material divided by the in-situ volume. Following Apparatus are used to carry out the tests,

- o: Box: Metal Box of known dimension (30cmx30cmx30cm)
- o Sand: Dry and clean sand of uniform gradation passing 1.0mm and retained 600micron sieve.
- o Sand pouring cylinder: A plastic cylinder with a known volume of 1 litre capacity.
- Tools for leveling and excavating: Hand tools such as scraper with a handle for leveling the surface, a digger or an elongated trowel for digging and excavating the material.
- o Balance: A suitable balance of capacity 20 40kgs and accuracy of 1gm.

#### Procedure:

- The site where the density is to be conducted is cleaned and levelled using a scraper for an area of about 2500 sg cm.
- > The metal box is placed on the prepared surface. Using the square box as a pattern, the material is excavated using a digger or a trowel up to a required depth and the loose material removed is carefully collected in a sample collection bag and is weighed M.
- > The sand pouring cylinder with known volume is filled with fine, dry sand and filled in the excavated hole. The sand is measured into the pit with a measuring cylinder to give a reliable estimate of volume.
- The surface is leveled but the sand is not tamped down as it might give erroneous data.

The following formula is used to calculate the density of the material:

FORMULAE: Density = Mass/Volume, T/cm

Mass: Weight of sample collected in the bag

Volume: Volume of sand filled into the pit

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Page N°: 2/ 2

REF: 2000799

Report Nº: 170316014D

IN-SITU DENSITY RESULTS ASCERTAINED ARE AS UNDER:

DATE: 16.03,2017

| Mass of Sample in Kegs | In-Situ Density Tons/Cubic Meter |
|------------------------|----------------------------------|
| 89.25                  |                                  |

The manual sampling method was agreed with the SGS Principal, as sampling by more reliable methods that provide probability samples was not possible. The Holder of this document is cautioned that collected MANUAL samples of this type do not satisfy the minimum regulrements for probability sampling, and as such cannot be used to draw statistical inferences such as precision, standard error or bias:

The consignment from which the samples were collected had a nominal top size of over 80 millimeter. While the sampling method was agreed upon by all parties to this report, due to the limited ability to extract representative increments from the cargo, the samples collected will not necessarily be representative of the entire cargo. SGS has no responsibility and her liability for the consequences of any action taken or not taken on the basis of this certificate /

This certificate reflects our findings at the time, date and place of firspection other matter.

SGS-India Private Limited

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Report Nº: 170316014E





Page Ѱ: 1/ 2

DATE: 16.03.2017

#### INSPECTION REPORT

REF: 2000799

CARGO DESCRIBED AS PRINCIPAL

PLACE & DATE OF

ATTENDANCE

Iron ore (ROM)

M/s. MSPL LIMITED

Af KARADI KOLLA IRON ORE MINES

In accordance with Instructions received from our principal, M/s. MSPL LIMITED for in-Situ bulk density at KARADI KOLLA IRONORE MINES. We have attended the In-Situ density test. In-Situ test was carried out as per IS: 2720-Part-28 the details are as under IN-SITU DENSITY TEST PROCEDURE:

The basic principle of sand replacement method is to measure the in-situ volume of hole from which the material is excavated from the weight of sand with known density filling in the hole. The in-situ density of material is given by the weight of the excavated material divided by the in-situ volume. Following Apparatus are used to carry out the tests,

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- o Tools for leveling and excavating: Hand tools such as scraper with a handle for leveling the surface, a digger of an elongated trowel for digging and excavating the material.
- o Balance: A suitable balance of capacity 20 40kgs and accuracy of 1gm. Procedure:

THE STREET STREET, THE STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET,

- > The site where the density is to be conducted is cleaned and levelled using a scraper for an area of about 2500 sq cm.
- The metal box is placed on the prepared surface. Using the square box as a pattern, the material is excavated using a digger or a trowel up to a required depth and the loose material removed is carefully collected in a sample collection bag and is weighed M.
- The sand pouring cylinder with known volume is filled with fine, dry sand and filled in the excavated hole. The sand is measured into the pit with a measuring cylinder to give a reliable estimate of volume.
- The surface is leveled but the sand is not tamped down as it might give erroneous data.

The following formula is used to calculate the density of the material:

FORMULAE: Density = Mass/Volume, T/cm Volume: Volume of sand filled into the pit

Mass: Weight of sample collected in the bag

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Report Nº: 170316014E



Page N°: 2/ 2

REF: 2000799

(

DATE: 16.03.2017

| IN-SITU DENSITY | 'RESULTS | ASCERTAINED | ARE AS UNDER: |
|-----------------|----------|-------------|---------------|
|-----------------|----------|-------------|---------------|

| Mass of Sample in Kegs | Volume in cms <sup>3</sup> | In-Situ Density Tons/Cubic Meter |
|------------------------|----------------------------|----------------------------------|
| 98.81                  | -26.00                     | 3.80                             |

The manual sampling method was agreed with the SGS Principal, as sampling by more reliable methods that provide probability samples was not possible. The Holder of this document is cautioned that collected MANUAL samples of this type do not satisfy the minimum requirements for probability sampling, and as such cannot be used to draw statistical inferences such as precision, standard error or bias.

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SGS India Private Limited 

4B-Adi Shankaracharya Marg

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DEVELOPMENT & PRODUCTION FOR THE LATYEAR

|      |          |                |       | Ore              |                                          |                    |      |
|------|----------|----------------|-------|------------------|------------------------------------------|--------------------|------|
| BAND | SECTION  | AREA<br>(Sq.M) | INFLU | VOLUME<br>(Cu.M) | TONNAGE<br>(Bulk Density-<br>3.6 (/Cu.m) | IN MILLION<br>TONS | Fe % |
|      | S-8      | 367            | 95    | 34865            | 125514                                   | 0.126              | 53.1 |
|      | S-9      | 80             | 100   | aono             | 28800                                    | 0.029              | 47.3 |
| A1   | S-10     | 0              | 100   | 0                | 0                                        | 0.000              | 48.6 |
|      | S-11     | 0              | 90)   | 0                | 0                                        | 0.000              | 50.0 |
| SUE  | TOTAL    | 447            |       | 42865            | 154314                                   | 0.154              | 51,9 |
| ¢    | S-24     | 0              | 50    | 0                | 0                                        | 0.000              | 61,7 |
| SUE  | TOTAL    | ē[             |       | 0                | 0                                        | 0.000              | 61,7 |
| D    | S-25     | 956            | 90    | 86040            | 309744                                   | 0.310              | 56.3 |
| SUE  | TOTAL    | 956            |       | 86040            | 309744                                   | 0,310              | 56.3 |
|      | S-27     | 256            | 50    | 12800            | 46080                                    | 0.040              | 53.1 |
| E    | S-78     | O              | 80    | 0                | 0                                        | 0,000              | 63,3 |
|      | S-29     | 0              | 70    | O                | 0                                        | 0.000              | 61.1 |
| SUE  | TOTAL    | 256            |       | 12800            | 46080                                    | 0.046              | 53,1 |
| GRAI | ND TOTAL | 1659           |       | 141705           | 51013B                                   | 0,510              | 54.5 |

| BAND    | In MMT | Wt. Avg |
|---------|--------|---------|
| A1 BAND | 0.151  | 51,98   |
| C BAND  | 0.000  | 61.73   |
| D BAND  | 0,310  | 56.03   |
| E BAND  | 0.046  | 63,10   |
| TOTAL   | 0.510  | 54.54   |

|   | RATIO 1: | VOLUMETRIC | TONNAGE |
|---|----------|------------|---------|
| • | KAIIG I. | 0.77       | 0.43    |

| ·    |          |       |        |          |      |       |             |        | DEVELO   | PMENT |        |       |                 |                   |       | · · · · · ·                           | 0037          |
|------|----------|-------|--------|----------|------|-------|-------------|--------|----------|-------|--------|-------|-----------------|-------------------|-------|---------------------------------------|---------------|
|      |          | I     |        | AREA     |      |       |             | i      | VOLUME   |       | TOTAL  | то    | NNAGE (Bulk Der | nsity-2.0 f/Cu.m) |       |                                       | าหสตเนีย์ดั่น |
| BAND | SECTION  | SHALE | внувна | LATISOIL | DUMP | INFLU | SHALE       | внувно | LATISOIL | DUMP  | VOLUME | SHALE | внувно          | LATISOIL          | DUMP  | TOTAL TONS                            | TONS          |
|      | S-8      | 27    | 0      | 69       | 0    | 95    | 266         |        | 0 6455   | 0     | 11020  | 5130  | 1)              | 16910             | 0     | 22040                                 |               |
|      | 5-9      | n     | U      | 0        | 5)   | 100   | ()          |        | O O      | 10    | 0      | 0     | 0               | n                 | 0     | 0                                     | i             |
| Al   | S-10     | a     | O      | 0        | O    | 100   | b           |        | 0 0      | 0     | 0      | D     | 0               | 0                 | 0     | 0                                     |               |
|      | S-11     | 0     | 0      | 0        | 0    | 91)   | į)          |        | 0 0      | 0     | 0      | 0     | 9               | 0                 | 0     | 0                                     | . !           |
| SUE  | TOTAL    | 27    | 0      | 69       | 0    |       | 2565        |        | 0 8455   | 0     | 11020  | 5130  | 0               | 1G910             | 0     | 22040                                 | i l           |
| G    | S-24     | O     | Ð      | 0        | 0    | 60    | 0           | 1      | 0 0      | 0     | Û      | 0     | 0               | 0                 | 0     | 0                                     | . !           |
| รบเ  | S TOTAL  | 0     | 0      | 0        | 0    |       | <u>'</u> '0 | 1      | 0        | D     | 0      | 0     | 0               | 0                 | 0     | 0                                     | ı             |
| D    | S-25     | 57    | 732    | O        | 57   | 90    | 5120        | 6506   | 0 0      | 5130  | ļ      | 10200 | 131760          |                   | 10260 | 152280                                | , 1           |
| SUI  | S TOTAL  | 57    | 732    | 0        | 57   |       | 5120        | 6988   | Ω 0      | 5130  |        | 10260 |                 |                   | 10260 | · · · · · · · · · · · · · · · · · · · | ı             |
|      | S-27     | 201   | 163    | 0        | t)   | 50    | 1465.0      | 815    | 0 0      | 0     | 22200  | 20100 | 16300           | 0                 | 0     | 44400                                 | į             |
| E    | 5-28     |       | 0      | U        | O    | 80    |             |        | 0 0      | 0     | 0      | 0     | 0               | 0                 | 0     | 0                                     |               |
|      | S-29     | C     | 0      | 0        | 0    | 70    | 0           |        | 0 0      | 0     | 0      | 0     | .0.             | 0                 |       | 0                                     | į             |
| SUI  | BTOTAL   | 281   | 163    | 0        | Ð    |       | 14050       | 815    | 0 0      | 0     | 22200  | 28100 | 16300           |                   | 0     | 44400                                 |               |
| GRAI | ND TOTAL | 355   | 095    | 89       | 57   |       | 21745       | 740:   | U 8455   | 5130  | 109360 | 43490 | 148060          | 16910             | 10260 | 218720                                | 0.22          |

DEVELOPMENT & PRODUCTION FOR THE II nd YEAR

|      |          |                |       | Ore              |                                          |                    |      |
|------|----------|----------------|-------|------------------|------------------------------------------|--------------------|------|
| BAND | SECTION  | AREA<br>(Sq.M) | INFLU | VOLUME<br>(Ca.M) | TONNAGE<br>(Bulk Density-<br>3.6 ((Cu.m) | IN MILLION<br>TONS | Fe % |
|      | 5-8      | l 10           | 95    | 10450            | 37620                                    | 0.038              | 53.0 |
| A1   | S-9      | 353            | 100   | 36300            | t30680                                   | 0.131              | 47,3 |
| A( 3 | S-10     | 286            | 108   | 28600            | 102960                                   | 0.103              | 48.6 |
| ĺ    | S-11     | o              | 90    | 0                | 0                                        | 0.000              | 50.0 |
| รบย  | TOTAL    | 759            |       | 75350            | 271260                                   | 0.271              | 48.6 |
| C    | S-24     | n)             | 60    | 0                | 0                                        | 0,000              | 01.7 |
| SUE  | TOTAL    | 0              |       | 0                | 0                                        | 0.000              | 61.7 |
| Ð    | S-25     | 0              | 90    | 0                | 0                                        | 0.000              | 56,6 |
| SUE  | TOTAL    | 0              |       | 0                | 0                                        | 0.000              | 56.0 |
|      | S-27     | O              | 50    | υ                | 0                                        | 0.000              | 53.1 |
| E    | S-28     | 277            | 80    | 22160            | 79776                                    | 0.080              | 63.3 |
|      | 8-29     | G31            | 70    | 44170            | 159012                                   | 0,159              | 61.1 |
| SUD  | TOTAL    | 808            |       | 66330            | 238788                                   | 0.239              | 8,13 |
| GRAN | ID TOTAL | 1667           |       | 141600           | 510040                                   | 0.510              | 54.6 |

| DAND    | In MMT | Wt. Avg |
|---------|--------|---------|
| AT BAND | 0.271  | 4B.G2   |
| C BAND  | 0.000  | 61.73   |
| D BAND  | 0.000  | 56,03   |
| E BAND  | 0.239  | 61.89   |
| TOTAL   | 0.510  | 54.03   |

| VOLUMETRIC | TONNAGE |
|------------|---------|
| 0.36       | 0,2     |
|            |         |

|      |          |       |         | *************************************** |      | ····· |       | <del></del> ; |          | ***   |        |       |                |                   |                                         | , -        |            |
|------|----------|-------|---------|-----------------------------------------|------|-------|-------|---------------|----------|-------|--------|-------|----------------|-------------------|-----------------------------------------|------------|------------|
|      | r        | ·     |         |                                         |      |       |       |               | DEVELO   | PMENT |        |       |                |                   |                                         | <b>%</b>   |            |
| BAND | SECTION  |       | ,       | AREA                                    |      | INFLU |       |               | VOLUME   |       | JATOT  | TO    | NAGE (Bulk Der | isity-2.0 l/Cu.m) |                                         |            |            |
| BAND | SECTION  | SHALE | анл/вно | LAT/SOIL                                | DUMP | MPLU  | SHALE | енливно       | LAT/SOIL | OUMP  | VOLUME | SHALE | BHJ/BHQ        | LAT/SOIL          | DUMP                                    | TOTAL TONS | TONS       |
|      | S-B      | 166   | 2       | 74                                      | ()   | 95    | 1767  | , 190         | 7030     | n     | 24690  | 35340 | 330            | 14060             |                                         | 0 49780    | The Parket |
| Δ1   | S-9      | 0     | 199     | 0                                       | 0    | 100   | J     | 19900         | o o      | D     | 18900  | Ð     | 39800          | 0                 |                                         | 39800      | ĺ          |
| ~ `  | S-10     | Đ     | 0       | 0                                       | 0    | 100   |       | (             | 0        | ()    | 0      | ō     | Ō              | 0                 |                                         | 0 0        |            |
|      | 8-11     | 0     | 0       | ()                                      | G    | 90    | 5     |               | 0        | 0     | 0      | 0     | 0              | 0                 |                                         | 3 0        |            |
| SUE  | TOTAL    | 186   | 201     | 74                                      | 0    |       | 17G7) | 20090         | 7030     | 0     | 44790  | 35340 | 40130          | 14060             |                                         | 89580      |            |
| c    | \$-24    | 0     | 0       | 0                                       | 0    | 60    | ()    | i c           | 0        | 0     | 0      | 0     | 0              | Ü                 |                                         | 0          |            |
| SUE  | TOTAL    | O     | 0       | Û                                       | 0    |       | ()    | 0             | 0        | 0     | Ð      | 0     | ō              | 0                 |                                         | 0 0        |            |
| ט    | S-25     | Ü     | 0       | 0                                       | O    | 90    | þ     | ; 0           | u u      | 0     | 0      | 0     | 0              | 0                 |                                         | 1 0        | 1          |
| SUE  | TOTAL    | Ü     | 0       | 0                                       | Ū    |       | h     | 0             | 0        | 0     | Ö      | 0     | 0              |                   |                                         | <u>-</u>   | 1          |
|      | 5-27     | 0     | υ       | 0                                       | 0    | 60    | þ     | ; 0           | 0        | 0     | 0      | 0     | 0              | 0                 |                                         | 0          |            |
| E    | S-28     | 0     | Ð       | 0                                       | 0    | 80    | þ     | ; 0           | 0        | 0     | 0      | Ð     | 0              | 0                 |                                         | 1          |            |
|      | S-29     | 95    | 2       | 0                                       | 0    | 70    | 6650  | 140           | 0        | 1)    | 6790   | 13300 | 2110           | 0                 |                                         | 13560      |            |
| SUB  | TOTAL    | 95    | 2       | 0                                       | 0    |       | 6650  | 140           | 0        | 0     | G790   | 13300 | 200            | 0                 |                                         | 13580      |            |
| GRAN | ID TOTAL | 201   | 203     | 74                                      | 0    |       | 24320 | 20230         | 7030     | 0     | S1580  | 48640 | 40460          | 1/1060            | *************************************** | 103160     | 0.10       |

#### DEVELOPMENT & PRODUCTION FOR THE III rd YEAR

|      |         |                |       | Ω <i>r</i> e |                                          |                    |       |
|------|---------|----------------|-------|--------------|------------------------------------------|--------------------|-------|
| BAND | SECTION | AREA<br>(Sq.M) | INFLU | (Cn'W)       | TONNAGE<br>(Bulk Density-<br>3.6 ((Cu.m) | IN MILLION<br>TONS | Fo %  |
|      | 8-8     | 0              | 96    | 0            | 0                                        | 0,900              | 53.6  |
| Λí   | S-9     | 250            | 100   | 25000        | 90000                                    | 0 090              | 47,0  |
| ~    | 5-10    | 130            | 100   | 13000        | 46800                                    | 0.047              | 48.C  |
|      | S-11    | 443            | 90    | 39870        | 143532                                   | 0.144              | 50.C  |
| รบอ  | TOTAL   | 823            |       | 77870        | 280332                                   | 0.200              | 48.5  |
| C    | S-24    | G              | 60    | 0            | 0                                        | 0.000              | G1.7  |
| SUB  | TOTAL   | 0              |       | 0            | a                                        | 0.000              | 61.7  |
| D    | S-25    | 0              | 90    | 0            | 0                                        | 0.000              | 56,03 |
| SUB  | TOTAL   | 0              |       | 0            | 0                                        | 0.000              | 56.03 |
|      | S-27    | Ü              | 50    | 0            | ก                                        | 0.000              | 53.10 |
| Œ    | 5-20    | 365            | 80    | 29200        | 105120                                   | 0.105              | 63.32 |
| [    | S-29    | 194            | 70    | 34580        | 124488                                   | 0.124              | 61.18 |
| SUB  | TOTAL   | 659            |       | 63780        | 229608                                   | 0.230              | G2.16 |
| GRAN | D TOTAL | 1682           |       | 141050       | 509940                                   | 0.510              | 54,09 |

| BAND    | In MMT | Wt. Avg |
|---------|--------|---------|
| A1 BAND | 0.280  | 48.94   |
| C BAND  | 0.000  | 61.73   |
| D BAND  | 0.000  | 56.03   |
| E BAND  | 0.230  | G2.16   |
| TOTAL   | 0.510  | 54.89   |

| RATIO 1: | VOLUMETRIC | TONNAGE |
|----------|------------|---------|
|          | 0.97       | 0.54    |

|      | T        | 1        | ************************************** | ·        | *************************************** |           |       | i                      | DEVELOR  | MENT |        |       |                                   |          |                                        |                 |             |
|------|----------|----------|----------------------------------------|----------|-----------------------------------------|-----------|-------|------------------------|----------|------|--------|-------|-----------------------------------|----------|----------------------------------------|-----------------|-------------|
| BAND | SECTION  | <u> </u> | ·                                      | VLEV     |                                         | INFLU     |       | VOLUME                 |          |      | TOTAL  | 10T   | TONNAGE (Bulk Donsity-2.0 f/Cu.m) |          |                                        |                 |             |
|      |          | SHALE    | внуюна                                 | LATISOIL | DUMP                                    | 1111 4412 | SHALE | e <sup>j</sup> អារធារថ | LAT/SOIL | DUMP | VOLUME | SHALE | внувно                            | LAT/SOIL | DUMP                                   | TOTAL TOUS      | IN MILLION" |
|      | S-8      | 0        | 0                                      | 0.       | 0                                       | 95        | - 6   | 0                      | 0        | 0    | 0      | 0     | n                                 |          |                                        |                 |             |
| A1   | 5-9      | 0        | 0                                      | 0        | O                                       | 100       | ď     | 1 0                    | 0        | 0    | 0      | 0     |                                   |          |                                        |                 | ]           |
|      | \$-10    | 85       | 367                                    | 0        | 0                                       | 100       | 8500  | : 3G700                | 0        | Ú    | 45200  | 17000 | 73400                             |          |                                        | 90400           | 1           |
|      | S-11     | ()       | 863                                    | 0        | 0                                       | 90        | 0     | 79470                  | 0        | 0    | 79470  | 0     | 158940                            |          |                                        | 158940          |             |
| SUE  | TOTAL    | 85       | 1250                                   | 0        | 0                                       |           | 8500  | 116170                 | 0        | 0    | 124670 | 17000 | 232340                            |          |                                        | 249340          | 1           |
| C    | S-24     | 0        | 0                                      | Đ        | o                                       | GD        | Ü     | : 0                    | n        | 0    | U      | 0     | n i                               |          |                                        | 249340          | {           |
| SUE  | TOTAL    | 0        | 0                                      | Ð        | Ü                                       |           | C     | 0                      | 0        | 0    | 0      |       |                                   |          | <u>u</u>                               |                 | }           |
| D    | S-25     | 0        | Ü                                      | Ø        | Ð                                       | 90        | 0     | 9                      | 0        | 0    | 0      | 0     | <u>-</u>                          |          | ······································ | U U             | 1           |
| SUE  | TOTAL    | D        | 0                                      | 0        | 0                                       |           | £     | 0                      | 0        | 0    | 0      | 0     | <u>`</u>                          |          |                                        |                 |             |
|      | S-27     | 0        | 0                                      | Ω        | υ                                       | 50        | C.    | . 0                    | 0        | Q    | 0      |       |                                   |          | - 0                                    |                 |             |
| E    | S-28     | 74       | 10                                     | 0        | q                                       | 80        | 5920  | 100                    | D        | 0    | 6720   | 11840 | 1600                              |          |                                        | 40.440          |             |
|      | S-29     | 00       | 11                                     | 0        | Ü                                       | 70        | 560C  | 770                    | 0        | G.   | 6370   | 11200 | 1540                              |          | n.                                     | 13440           |             |
| SUE  | TOTAL    | 154      | 21                                     | Đ        | U                                       |           | 11520 | 1570                   | 0        | 0    | 13090  | 23040 | 3140                              |          |                                        | 12740           |             |
| GRAN | ID TOTAL | 239      | 1271                                   | 0        | D                                       |           | 2002€ | 117740                 | C        | 0    | 137760 | 40040 | 235400                            |          | · · ·                                  | 26180<br>275520 | 0.28        |

DEVELOPMENT & PRODUCTION FOR THE IVIII YEAR

|      |          |                |       | Ore              |                                          |                    |      |
|------|----------|----------------|-------|------------------|------------------------------------------|--------------------|------|
| BAND | SECTION  | AREA<br>(Sq.M) | INITU | VOLUME<br>(Cu.M) | TONNAGE<br>(Bulk Dansily-<br>3.6 (/Cu.m) | IN MILLION<br>TONS | Fe % |
|      | \$-8     | O              | 95    | 0                | O                                        | 0.000              | 53 0 |
| A1   | 5-9      | 314            | 100   | 31400            | 113040                                   | 0.133              | 47.3 |
| Ai   | S-10     | 270            | 100   | 27000            | 97200                                    | 0.097              | 48.5 |
|      | S-11     | 210            | 90    | 18900            | 68040                                    | 0.068              | 50.0 |
| SUE  | TOTAL    | 794            |       | 77300            | 270200                                   | 0.278              | 48.4 |
| С    | S-24     | υ              | 60    | 0                | 0                                        | 0 000              | 61.7 |
| SUE  | TOTAL    | 0              |       | 0                | 0                                        | 0.000              | 61.7 |
| D    | 5-25     | 0              | 90    | 0                | υ                                        | 0.000              | 50.0 |
| SÚE  | TOTAL    | 0              |       | Ð                | 0                                        | 0.000              | 56.0 |
|      | S-27     | 0              | 50    | 0                | 0                                        | 0.000              | 53,1 |
| Æ    | S-28     | 272            | ยอ    | 21760            | 78336                                    | 0.078              | 63.3 |
|      | S-29     | 609            | 70    | 42630            | 153498                                   | 0.153              | 61,1 |
| SUB  | TOTAL    | UC1            |       | 64390            | 231804                                   | 0.232              | 61,9 |
| GRAN | ID TOTAL | 1675           |       | 141690           | 510084                                   | 0,510              | 54.5 |

| BAND    | In MMT | Wt. Avg |
|---------|--------|---------|
| A1 BAND | 0.278  | 48,45   |
| C BAND  | 0.000  | 61.73   |
| D BAND  | 0.000  | 56,03   |
| E BAND  | 0.232  | 61.90   |
| TOTAL   | 0.510  | 54.56   |

| RATIO 1: | VOLUMETRIC | TONNAGE |
|----------|------------|---------|
| KATIO 1. | 0.45       | 0.25    |

|      |          |       | ************* | - Autre & Countries Antonio ag 3 bet Articles Augen | ***************** |       |       | 1       | DEVELO   | PMENT |                          |       | · · · · · · · · · · · · · · · · · · · |                  |      | رين<br>درست ما او او | ين ورائز<br>موانع و تسمور |
|------|----------|-------|---------------|-----------------------------------------------------|-------------------|-------|-------|---------|----------|-------|--------------------------|-------|---------------------------------------|------------------|------|----------------------|---------------------------|
|      |          |       |               | AREA                                                |                   |       |       |         | /OLUME   |       | TOTAL TONNAGE (Bulk Dent |       |                                       | sity-2.0 t/Cu.m) |      | 1. 1.86              |                           |
| GMAB | SECTION  | SHALE | внивна        | LAT/SQIL                                            | DUMP              | (NFL) | SHALE | внувка  | LAT/SOIL | DUMP  | VOLUME                   | SHALE | внувно                                | LAT/SOIL         | DUMP | TOTALJONS            | TONS                      |
|      | S-B      | 0     | a             | O                                                   | 0                 | 95    | ,     |         | 0        | 0     | 0                        | 0     | 0                                     | 0                |      | 0                    |                           |
| A1   | S-9      | 58    | 284           | 0                                                   | 0                 | 100   | 680   | 28400   | D        | 0     | 34200                    | 11600 | 56800                                 | 0                |      | 68100                | !                         |
| ~,   | S-10     | 0     | 0             | 0                                                   | v                 | 300   | þ     | •       | 1)       | 0     | 0                        | U     | 0                                     | 0                |      | 0                    |                           |
|      | S-11     | 0     | 191           | 0                                                   | O                 | 90    | h     | , 17100 | 0        | 0     | 17190                    | 0     | 34380                                 | 0                |      | 34380                |                           |
| SUE  | B TOTAL  | 50    | 475           | 0                                                   | 0                 |       | 5800  | 45590   | n        | 9     | 51390                    | 11600 | 91180                                 | 0                | 0    | 102780               |                           |
| C    | S-24     | 0     | 0             | 0                                                   | 0                 | 60    | j b   |         | Ü        | 0     | 0                        | O     | 0                                     | (1               | 0    | 0                    |                           |
| SUE  | TOTAL    | 0     | 0             | Ó                                                   | g                 |       | į į   | ŧ       | 0        | 9     | 0                        | U     | 0                                     | 0                | 0    | 0                    |                           |
| D    | S-25     | 0     | 0             | υ                                                   | 0                 | 90    | į)    | 0       | Ü        | n     | 0                        | D     | 0                                     | 0                | 0    | 0                    | i i                       |
| SUE  | 3 TOTAL  | 0     | 0             | 0                                                   | Û                 |       | Į     | : 0     | G.       | 0     | 0                        | U     | ()                                    | 0                | 0    | 0                    |                           |
|      | 9-27     | 0     | 0             | 0                                                   | Ð                 | 50    | þ     | 13      | ()       | 0     | 0                        | O     | 0                                     | 0                | 0    | 0                    |                           |
| E    | S-28     | U     | ŋ             | 0                                                   | Ü                 | 80    | ()    | . 0     | G        | 0     | 0                        | 0     | 0                                     | 0                | 0    | 0                    |                           |
|      | 5-29     | 169   | 0             | 0                                                   | 0                 | 70    | 11835 | ' ()    | 0        | 0     | 11830                    | 23660 | 0                                     | 0                | Û    | 23660                |                           |
| SUE  | 3 TOTAL  | 169   | 0             | 0                                                   | 0                 |       | 11830 | 0       | 0        | 0     | 11830                    | 23660 | 0                                     | 0                | 0    | 23660                | }                         |
| GRAN | ND TOTAL | 227   | 475           | 0                                                   | 0                 |       | 17630 | ( 45590 | o        | 0     | 63220                    | 35260 | 91180                                 | 0                | 0    | 126440               | 0.13                      |

#### DEVELOPMENT & PRODUCTION FOR THE VIII YEAR

|      |          |                |       | Ore              |                                         |                    |      |
|------|----------|----------------|-------|------------------|-----------------------------------------|--------------------|------|
| BAND | SECTION  | AREA<br>(5q.M) | iNFLU | VOLUME<br>(Cu.M) | TONNAGE<br>(Bulk Density-<br>3.6 (Cu.m) | IN MILLION<br>TONS | Fe % |
|      | 5.6      | 0              | 95    | 0                | O                                       | 0.000              | 53.0 |
| Α1   | S-9      | 120            | 100   | 12000            | 43200                                   | 0.043              | 47.3 |
| Α1   | S-10     | 302            | 100   | 30200            | 108720                                  | 0.109              | 43.0 |
|      | S-11     | 450            | 90    | 40500            | 14500D                                  | 0,146              | 50.0 |
| SUE  | TOTAL    | 872            |       | 82700            | 297720                                  | 0.298              | 49.3 |
| C    | S-24     | 85             | 50    | 5100             | 18360                                   | 0.018              | 61.7 |
| SUE  | TOTAL    | 65             |       | 5100             | 18360                                   | 0.010              | 61.7 |
| D    | S-25     | 0              | 90    | 0                | O                                       | 0.000              | 53.0 |
| SUE  | TOTAL    | o              |       | 0                | 0                                       | 0.000              | 55,( |
|      | 5-27     | 0              | 50    | 0                | 0                                       | 0.000              | 53.1 |
| E    | S-28     | 296            | on    | 23600            | 85248                                   | 0.085              | 63.2 |
|      | \$-29    | 432            | 70    | 30240            | 108864                                  | D. 109             | 61.1 |
| SUE  | TOTAL    | 728            |       | 53920            | 194112                                  | 0.194              | 62.1 |
| GRAN | ID TOTAL | 1685           |       | 141720           | 510192                                  | 0.510              | 54.5 |

| BAND    | ln MMT | Wt. Ayg |
|---------|--------|---------|
| A1 BAND | 0,298  | 49.13   |
| C BAND  | 0.018  | 61.73   |
| D BAND  | 0.000  | 56,03   |
| E BAND  | 0.194  | 62.12   |
| TOTAL   | 0.510  | 54.53   |

| RATIO 1: | VOLUMETRIC | TONNAGE |
|----------|------------|---------|
|          | 0.44       | 0.20    |

|      | *****                                          |       |        |          |      |             |          |         |          |            |        |       |                |                  | - 13 A |            | ;                                        |
|------|------------------------------------------------|-------|--------|----------|------|-------------|----------|---------|----------|------------|--------|-------|----------------|------------------|--------|------------|------------------------------------------|
|      | y w 1970 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | ·     |        |          |      |             |          |         | DEVELO   | OPMENT     |        |       |                |                  | 11     |            |                                          |
| BAND | SECTION                                        |       |        | AREA     | H-1  | 45.1171.115 |          | 1       | VOLUME   |            | TOTAL  | TO    | NAGE (Bulk Den | sity-2.0 (/Co.m) | 1      |            |                                          |
| טאאט | SECTION                                        | SHALE | рнакна | LATISOIL | DUMP | INFLU       | SHALE    | вни/вно | LATISOIL | DUMP       | AOLIME | SHALE | внувно         | LATISOIL         | DUMP,  | TOTAL TONS | IN MILLION<br>TONS                       |
| 1    | S-8                                            | 0     | 0      | 0        | 0    | 95          | J        | ) . (   | 0        | 0          | 0      | 0     | ŋ              | 0                | u .    | n          | ······································   |
| Λ1   | \$-9                                           | 0     | e      | 0        | 0    | 100         |          | ) ; (   | 0        | 0          | 0      | 0     | 0              | O                |        | 0          | 18 18 18 18 18 18 18 18 18 18 18 18 18 1 |
|      | S-10                                           | 0     | c      | 0        | 0    | 100         | ļ ,      | ) (     | 0        | 0          | Ü      | ()    | 0              | g                | G      | 1 32.30    | ما م                                     |
|      | 5-11                                           | 0     | 207    | 0        | 16   | 93          | <u> </u> | 18630   | 0        | 1440       | 20070  | U     | 37260          | 0                | 2880   | 40140      | THE PERSON NAMED OF                      |
| SUP  | TOTAL                                          | Ü     | 207    | ū        | 16   |             | Į.       | 10636   | ŋ        | 1440       | 20070  | D     | 37260          | C                | 2880   | 40140      |                                          |
| С    | 5-24                                           | 85    | 16     | 0        | Ú    | 63          | 5100     |         | ε        | 0.         | 5700   | 10200 | 1200           | 0                | 0      | 11400      | i                                        |
| SUE  | TOTAL                                          | 85    | 10     | 0        | Üş   |             | 510      | , end   | 0        | 0          | 5700   | 10200 | 1200           | 0                | 0      | 11400      | ļ                                        |
| υ    | S-25                                           | 0     | 0      | 0        | υ    | 99          | l t      | ) ! (   | Ü        | 0          | 0      | 0     | 0              | 0                | 0      | 8          |                                          |
| SUE  | 3 TOTAL                                        | 0     | 0      | 0        | 0    |             | i k      | , ,     | 0        | O          | Ø      | 0     | 0              | 0                | 0      |            | İ                                        |
|      | S-27                                           | 0     | 0      | Q        | 0    | 50          |          | ) į (   | ט        | <b>f</b> ] | 0      | 0     | j              | o o              | 0      |            |                                          |
| E    | \$-20                                          | 0     | 303    | U        | 0    | 83          | 1        | 24240   | 0        | Ø          | 24240  | 0     | 48480          | 0                | . 0    | 48480      |                                          |
|      | S-29                                           | 20    | 150    | 0        | 0    | 73          | 1960     | 11060   | Ű        | 0          | 13026  | 3920  | 22120          | 0                | 0      | 26040      | Į                                        |
|      | TOTAL                                          | 28    |        | 0        | U    |             | 1260     | 35300   | 0        | 0          | 37260  | 3920  | 70600          | 0                | 0      | 74520      |                                          |
| GRAN | ID TOTAL                                       | 113   | 678    |          | 16   |             | 7050     | 54530   | 0        | 1440       | 63030  | 14120 | 109063         | Ö                | 2880   | 126050     | 0.13                                     |



Year-wise opening reserves, pit-wise / mRL, Production and Balance reserves

|             |           | IST Y | EAR ( In Tons)      |            |                    |
|-------------|-----------|-------|---------------------|------------|--------------------|
| BLOCK       | MrI       | BAND  | OPENING<br>RESERVES | PRODUCTION | CLOSING<br>BALANCE |
|             |           | Α     | 2421180             | 0          | 2421180            |
| NORTH BLOCK | 952 - 938 | A1    | 3202434             | 154314     | 3048120            |
|             |           | В     | 960984              | D          | 960984             |
|             |           | С     | 1636776             | 0          | 1636776            |
| SOUTH BLOCK | 933 - 884 | D     | 309744              | 309744     | 0                  |
|             |           | Е     | 941436              | 46080      | 895356             |
|             | TOTAL     |       | 9472554             | 510138     | 8962416            |

|             |         | Y GN 11 | EAR ( In Tons)      |            |                    |
|-------------|---------|---------|---------------------|------------|--------------------|
| вьоск       | MrI     | BAND    | OPENING<br>RESERVES | PRODUCTION | CLOSING<br>BALANCE |
|             |         | Α       | 2421180             | 0          | 2421180            |
| NORTH BLOCK | 970-938 | A1      | 3048120             | 271260     | 2776860            |
|             |         | В       | 960984              | 0          | 960984             |
|             |         | С       | 1636776             | 0          | 1636776            |
| SOUTH BLOCK | 950-925 | D       | 0                   | 0          | 0                  |
|             |         | E       | 895356              | 238788     | 656568             |
| 7           | TOTAL.  |         | 8962416             | 510048     | 8452368            |

|             |         | III RD Y | EAR ( In Tons)      |            | *************************************** |
|-------------|---------|----------|---------------------|------------|-----------------------------------------|
| вгоск       | Mrl     | BAND     | OPENING<br>RESERVES | PRODUCTION | CLOSING<br>BALANCE                      |
|             |         | A        | 2421180             | 0          | 2421180                                 |
| NORTH BLOCK | 965-938 | A1       | 2776860             | 280332     | 2496528                                 |
|             |         | В        | 960984              | 0          | 960984                                  |
|             |         | С        | 1636776             | 0          | 1636776                                 |
| SOUTH BLOCK | 929-911 | D        | 0                   | 0          | 0                                       |
| ale de      | Ξ       | Ε        | 656566              | - 229608   | 428980                                  |
| •           | TOTAL   |          | 8452368             | 509940     | 7942428                                 |

|             |                                 | IV TH Y  | 'EAR ( In Tons)    |        |         |
|-------------|---------------------------------|----------|--------------------|--------|---------|
| BLOCK       | OCK Mrl BAND OPENING PRODUCTION |          | CLOSING<br>BALANCE |        |         |
|             |                                 | A        | 2421180            | 0      | 2421180 |
| NORTH BLOCK | 956-938                         | A1       | 2496528            | 278280 | 2218248 |
|             |                                 | В        | 960984             | 0      | 960984  |
|             |                                 | С        | 1636776            | 0      | 1636776 |
| SOUTH BLOCK | 929-902 D                       | D        | o                  | 0      | С       |
| - Allery    |                                 | E 426960 | 426960             | 231804 | 195156  |
| •           | TOTAL                           | -        | 7942428            | 510084 | 7432344 |

|             |                  | V TH Y | EAR ( In Tons)      |            |                    |
|-------------|------------------|--------|---------------------|------------|--------------------|
| BLOCK       | Mrl              | BAND   | OPENING<br>RESERVES | PRODUCTION | CLOSING<br>BALANCE |
|             | 970-938          | A      | 2421180             | 0          | 2421180            |
| NORTH BLOCK |                  | A1     | 2218248             | 297720     | 1920528            |
|             |                  | В      | 960984              | 0          | 960984             |
|             | 911-884 <u>D</u> | С      | 1636776             | 18360      | 1618416            |
| SOUTH BLOCK |                  | D      | 0                   | 0          | 0                  |
|             |                  | E      | 195156              | 194112     | 1044               |
| -           | TOTAL            |        | 7432344             | 510192     | 6922152            |

Annexure - 13(a)

| ITEMS                    | RECLAMATION & REHABIL                    | I breness          |                     |                             |  |
|--------------------------|------------------------------------------|--------------------|---------------------|-----------------------------|--|
| 1                        | 2                                        | PROPOSED AREA (Ha) | PROPOSED QUANTITY   | PROPOSED EXPENDITURE (LACS) |  |
|                          | (i) Backfilling                          | 3                  | 4                   | 5                           |  |
|                          | (li) Afforestation on backfilled area    | -                  |                     | -                           |  |
| RECLAMATION &            | (ii) Altorestation on packfilled area    | -                  |                     | -                           |  |
| REHABILITATION OF        | 1003 CD   101 15                         | <u> </u>           |                     |                             |  |
| MINED OUT                | (iii) Others (Please specify) e.g.       | -                  | -                   | _                           |  |
| PIT/LAND/AREA            | Afforestation on exhausted benches       | -                  |                     | 1                           |  |
| 11176/44/07/4/30/4       | (iv) Pisciculture                        | -                  |                     | -                           |  |
|                          | (v) Converting into water reservoir      | <u>.</u>           |                     | -                           |  |
|                          | (vi) Picnic spot                         | -                  | -                   | -                           |  |
|                          | (i) Terracing                            | 2.682              | -                   | 4.023                       |  |
|                          | (ii) Pitching                            | -                  | -                   |                             |  |
|                          | (iii) Construction of Parapet Wall /     |                    |                     |                             |  |
|                          | Retaining Wall at the toe of dumps (     |                    | 1000                |                             |  |
|                          | including foundation,PCC, toe walks      |                    | 1064 meters         | 42.07                       |  |
|                          | Garlan drainage etc)                     |                    |                     | ,                           |  |
| STABILIZATION &          |                                          |                    | SMCD-1,LBCD-S,LWCD- |                             |  |
| REHABILIATION OF         | (iv) Construction of Check dams along    |                    | 10,BWCD-18,GCD-5    |                             |  |
| DUMPS (within & Out side | slope of vallies etc.                    |                    | , , == 25,402.5     | 10.28                       |  |
| t i                      | SIMICE, LICED, LANCED, DANCED, GCED 64C" |                    |                     |                             |  |
| 100307                   | (v) Construction of Settling ponds       |                    |                     |                             |  |
|                          | (SST,ST,RWHP etc.)                       | -                  | SST-1,ST-1,RWHP-2   | 11.70                       |  |
|                          |                                          |                    |                     |                             |  |
|                          | (vi) Desilting of Settling ponds, channe | s -                | _                   | ļ                           |  |
| 4                        |                                          | 3.45               |                     |                             |  |
|                          | (vii) Afforestation on dumps             | 3,47               | <u>-</u>            | 5.99                        |  |
|                          | (viil) others (Coir- Matting)            | 5.10               |                     | 50.98                       |  |
|                          |                                          |                    |                     | 3030                        |  |
| rehabiliation of         | (i) Afforestation (Green belt buildings  | 1.02               | _                   | 2.62                        |  |
| BARREN AREA WITHIN       | (ii) others (Road Plantation in KM)      | 0.96               | _                   | 0.760                       |  |
| EASE (Out side lease)    | Mining pit area                          | 4.56               |                     | 0.768                       |  |
|                          | Others (CEC area)                        | 8.32               |                     | 7.93                        |  |
|                          | (i) Ambient Air Quality                  | -                  | 1.Stn               | 14.48                       |  |
| NVIRONMENTAL             | (ii) Water Quality                       | -                  |                     | 2.96                        |  |
| MONITORING (Core zone)   | (iii) Noise level data                   |                    | 1 Stn               |                             |  |
| nomioning (core solle)   | (iv) Ground Vibration                    | -                  |                     | -                           |  |
|                          | (v) Others (Please Specify)              | 3                  |                     |                             |  |
|                          | (i) Ambient Air Quality                  | _                  | 3 Stns              |                             |  |
|                          | (ii) Water Quality                       |                    | 3 Stris             | 8.88                        |  |
| 10NITORING (Buffer       | (iii) Noise level data                   |                    | े stris             | 0.075                       |  |
|                          | (iv) Ground Vibration                    |                    | 7 5(1)5             | - 3,                        |  |
|                          | (v) Others (Please Specify)              |                    | -                   | <u> </u>                    |  |
|                          |                                          |                    |                     |                             |  |
|                          |                                          |                    | Total               | 162.77                      |  |

| Annexure - | 13 | ſh' |
|------------|----|-----|
|            |    |     |

| ITEMS                                                  | DETAILS                                                                                                                                       | PROPOSED AREA (Ha) | PROPOSED QUANTITY                       | PROPOSED EXPENDITURE (LACS) |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------|-----------------------------|
| 1                                                      | 2                                                                                                                                             | 3                  | 4                                       | 5                           |
|                                                        | (i) Backfilling i                                                                                                                             | -                  | ` `                                     | -                           |
|                                                        | (ii) Afforestation on backfilled area                                                                                                         |                    | -                                       | *                           |
| RECLAMATION &<br>REHABILITATION OF<br>MINED OUT        | (iii) Others (Please specify) e.g.<br>Afforestation on exhausted benches                                                                      | -                  | -                                       | -                           |
| PIT/LAND/AREA                                          | (iv) Pisciculture                                                                                                                             | •                  | -                                       | *                           |
|                                                        | (v) Converting Into water reservoir                                                                                                           | •                  |                                         | ·                           |
|                                                        | (vi) Picnic spot                                                                                                                              | -                  | -                                       | _                           |
|                                                        | (i) Terracing                                                                                                                                 | 2.682              | -                                       | 4.023                       |
|                                                        | (ii) Pitching                                                                                                                                 |                    | *                                       | -                           |
| STABILIZATION &                                        | (iii) Construction of Parapet Wall /<br>Retaining Wall at the toe of dumps (<br>including foundation,PCC, tee wal s &<br>Garlan drainage etc) | -                  | 1.064 meters                            | <b>4</b> 2.07               |
| REHABILIATION OF<br>DUMPS (within & Out side<br>lease) | (iv) Construction of Check dams along slope of vallies etc. ( LBCD,BWCD,GCD etc)                                                              | _                  | SMCD-1,LBCD-5,LWCD-<br>10,BWCD-18,GCD-5 | 10.28                       |
|                                                        | (v) Construction of Settling pends<br>(SST,ST,RWHP etc.)                                                                                      | *                  | SST-1,ST-1,RWHP-2                       | 8.70                        |
|                                                        | (vi) Desilting of Settling ponds, charnels<br>(vii) Afforestation on dumps                                                                    | 1.41               |                                         |                             |
|                                                        |                                                                                                                                               | 3.45               |                                         | 5.99                        |
|                                                        | (viii) others (Coir- Matting)                                                                                                                 | 5.10               |                                         | 50.98                       |
| REHABILIATION OF                                       | (i) Afforestation (Green belt building)                                                                                                       | 1.02               | _                                       | 2.62                        |
| BARREN AREA WITHIN                                     | (ii) others (Road Plantation)                                                                                                                 | 0.96               | -                                       | 0.768                       |
| .EASE (Out side lense)                                 | Mining pit area                                                                                                                               | 4.56               |                                         | 7.93                        |
|                                                        | Others                                                                                                                                        | 8.32               | -                                       | 14.48                       |
| :NVIRONMENTAL                                          | (I) Ambient Air Quality                                                                                                                       | -                  | 15tn                                    | 2.96                        |
| · · · · · · · · · · · · · · · · · · ·                  | (ii) Water Quality                                                                                                                            | -                  |                                         |                             |
| AOURTOWING (Cots 2016)                                 | (iii) Noise level data                                                                                                                        | •                  | 1, Stn                                  | -                           |
|                                                        | (iv) Ground Vibration                                                                                                                         | -                  |                                         | -                           |
|                                                        | (v) Others (Please Specify)                                                                                                                   | -                  |                                         |                             |
| ENVIRONMENTAL                                          | (i) Ambient Air Quality                                                                                                                       | *                  | 3 Stns                                  | 8.88                        |
| MONITORING (Buffer                                     | (ii) Water Quality                                                                                                                            | -                  | 3 Stns                                  | 0.075                       |
| one)                                                   | (iii) Noise level data                                                                                                                        | *                  | 4 stns                                  |                             |
| r                                                      | (iv) Ground Vibration                                                                                                                         | -                  | *                                       |                             |
|                                                        | (v) Others (Please Specify)                                                                                                                   | •                  | <u>.</u>                                | -                           |
|                                                        |                                                                                                                                               |                    | Total                                   | 159.77                      |

Annexure ~ 13(c)

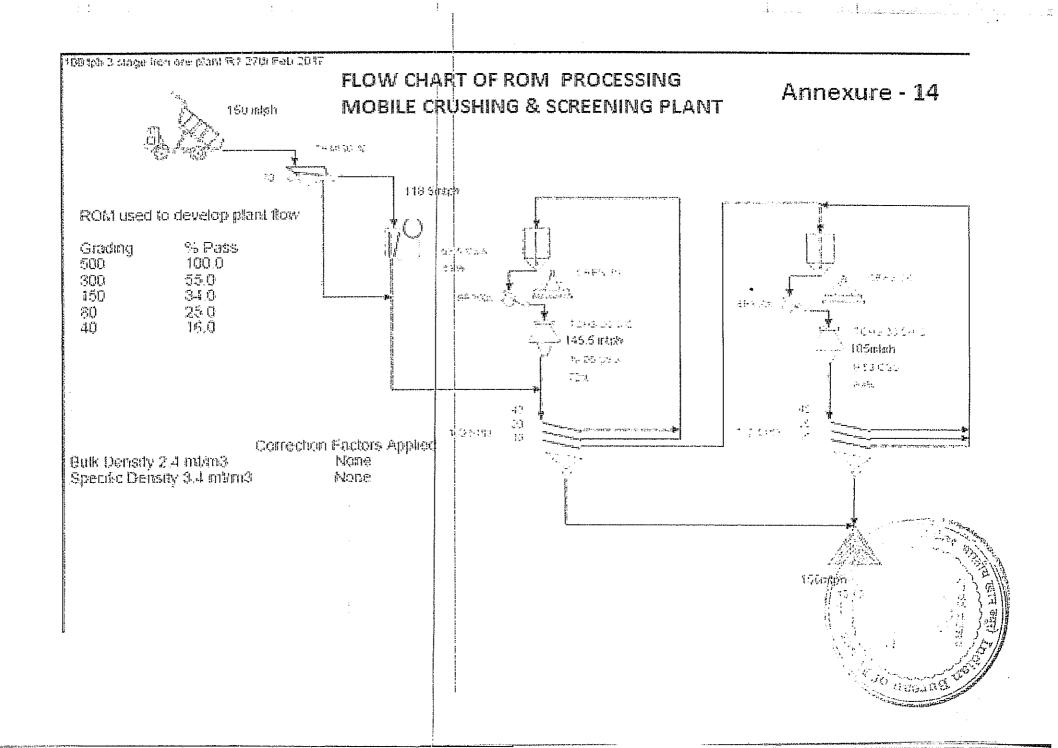
| ITEMS                                   | DETAILS                                 | PROPOSED AREA (Ha) | PROPOSED QUANTITY                       | PROPOSED EXPENDITURE (LACS) |  |
|-----------------------------------------|-----------------------------------------|--------------------|-----------------------------------------|-----------------------------|--|
| 1.                                      | 2 :                                     | 3                  | 4                                       | 5                           |  |
|                                         | (I) Backfilling                         | и                  |                                         |                             |  |
|                                         | (ii) Afforestation on backfilled area   |                    |                                         | -                           |  |
| <b>RECLAMATION &amp;</b>                | F r                                     |                    |                                         |                             |  |
| REHABILITATION OF                       | (iii) Others (Please specify) e.g.      | -                  | _                                       | _                           |  |
| MINED OUT                               | Afforestation on exhausted benches      |                    |                                         |                             |  |
| PIT/LAND/AREA                           | (iv) Pisciculture                       | •                  |                                         |                             |  |
|                                         | (v) Converting into water reservoir;    | h                  |                                         |                             |  |
|                                         | (vi) Picnic spot                        | -                  | -                                       | -                           |  |
|                                         | (i) Terracing                           | 7.682              |                                         | 4.023                       |  |
|                                         | (ii) Pitching                           | •                  |                                         |                             |  |
|                                         | (iii) Construction of Parapet Wall /    |                    |                                         |                             |  |
|                                         | Retaining Wall at the toe of dumps: {   |                    |                                         |                             |  |
|                                         | including foundation, PCC, toe walls &  | •                  | 1064 meters                             | 42.07                       |  |
|                                         | Garlan drainage etc)                    |                    |                                         |                             |  |
| STABILIZATION &                         | (iv) Construction of Check dams along   |                    | SMCD-1,LBCD-5,LWCD-                     |                             |  |
| REHABILIATION OF                        | slope of vallies etc.                   | - 10,8WCD-18,GCD-5 |                                         | 10.28                       |  |
| DUMPS (within & Out side                | LBCD,BWCD,GCD etc)                      |                    |                                         |                             |  |
| lease)                                  | (v) Construction of Settling pands      |                    |                                         |                             |  |
|                                         | (SST,ST,RWHP etc.)                      |                    | SST-1,RWHP-2                            | 6.70                        |  |
|                                         | (vi) Desilting of Settling poncs,       | 77777777777        | *************************************** |                             |  |
|                                         | channels                                | -                  | _                                       |                             |  |
|                                         | (vii) Afforestation on dumps            |                    |                                         |                             |  |
|                                         | (viii) others (Coir- Matting)           | 5,10               |                                         | 50.98                       |  |
| *************************************** |                                         |                    |                                         | 30.38                       |  |
| REHABILIATION OF                        | (i) Afforestation (Green belt building) | 1.02               | ₩                                       | 2.62                        |  |
| BARREN AREA WITHIN                      | (ii) others (Road P antation)           | 0.96               |                                         | 0.768                       |  |
| .EASE (Out side lease)                  | Mining plt area                         | <del>-</del>       |                                         | 0.00                        |  |
|                                         | Others :                                | _                  | -                                       | 0.00                        |  |
|                                         | (i) Ambient Air Quality                 | *****              | 1Stn                                    | 2.96                        |  |
| TOUR HITS COME A COME TO A S            | (ii) Water Quality                      | -                  |                                         | 2.50                        |  |
| THANKOLAIME IA LVII.                    | (ili) Noise level data                  | -                  | 1 Stn                                   |                             |  |
| MONITORING (Core zone)                  | (iv) Ground Vibration                   | -                  | -                                       |                             |  |
|                                         | (v) Others (Please Specify)             | *                  | -                                       |                             |  |
|                                         | (i) Ambient Air Quality                 | -                  | 3 Stns                                  | 8.88                        |  |
| ENVIRONMENTAL                           | (ii) Water Quality :                    | -                  | 3 Stns                                  | 0.075                       |  |
| MONITORING (Buffer                      | (iii) Noise level data                  | ×                  | 4 stns                                  | 7,073                       |  |
| one)                                    | (iv) Ground Vibration                   | •                  | -                                       | -                           |  |
|                                         | (v) Others (Please Specify)             | -                  | -                                       |                             |  |
|                                         | ······································  |                    | Total                                   | 129.36                      |  |

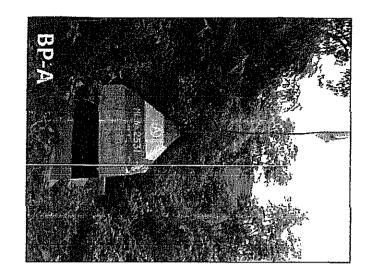
Annexure - 13(d)

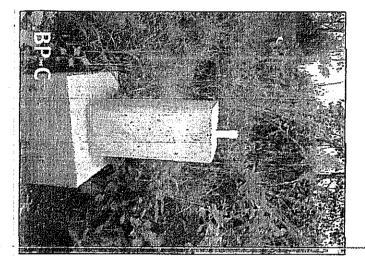
|                                                        | ECLAMATION & REHABILIAȚIO                                                                                                                     | N MEASURES TO BE   |                                                  | URTH YEAR                   |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------|-----------------------------|
| ITEMS                                                  | DETAILS                                                                                                                                       | PROPOSED AREA (Ha) | PROPOSED QUANTITY                                | PROPOSED EXPENDITURE (LACS) |
| 1                                                      | 2                                                                                                                                             | 3                  | 1                                                | 5                           |
|                                                        | (I) Backfilling :                                                                                                                             | -                  | ·                                                |                             |
|                                                        | (ii) Afforestation on backfilled area                                                                                                         | -                  | -                                                | -                           |
| RECLAMATION &<br>REHABILITATION OF<br>MINED OUT        | (iii) Others (Please specify) e.g.<br>Afforestation on exhausted benches                                                                      | -                  | -                                                | -                           |
| PIT/LAND/AREA                                          | (iv) Pisciculture                                                                                                                             |                    |                                                  |                             |
|                                                        | (v) Converting into water reservoir                                                                                                           | -                  | <del>                                     </del> | <u>-</u>                    |
|                                                        | (vi) Picnic spot                                                                                                                              |                    |                                                  | -                           |
|                                                        | (i) Terracing                                                                                                                                 | 2,682              | -                                                | -                           |
|                                                        | (ii) Pitching                                                                                                                                 | 2.002              | -                                                | 4.023                       |
|                                                        | (u) Pitching                                                                                                                                  | *                  | -                                                | •                           |
| STABILIZATION &                                        | (iii) Construction of Parapet Wall ,<br>Retaining Wall at the toe of dumps(<br>including foundation,PCC , toe walls<br>& Garlan drainage etc) | -                  | 1064 meters                                      | 42.07                       |
| REHABILIATION OF<br>DUMPS (within & Out side<br>lease) | LBCD,BWCD,GCD etc)                                                                                                                            | -                  | LBCD-5,LWCD-<br>10,BWCD-18,GCD-5                 | 7.98                        |
|                                                        | (v) Construction of Settling prinds<br>(SST,ST,RWHP etc.)                                                                                     | •                  | SST-1,RWHP-2                                     | 6.70                        |
|                                                        | (vi) Desilting of Settling ponds, channels , (vii) Afforestation on dumps                                                                     | -                  | _                                                |                             |
|                                                        |                                                                                                                                               |                    |                                                  |                             |
|                                                        | (viii) others (Coir- Matting)                                                                                                                 | 5.10               |                                                  | 50.98                       |
| REHABILIATION OF                                       | (i) Afforestation (Green belt building)                                                                                                       | 1.02               | -                                                | 2.62                        |
| ARREN AREA WITHIN                                      | (ii) others (Road Plantation) ;                                                                                                               | 0.96               |                                                  | 0.768                       |
| EASE (Out side lease)                                  | Mining pit area                                                                                                                               | _                  |                                                  | 0.00                        |
|                                                        | Others                                                                                                                                        | -                  | -                                                | 0.00                        |
|                                                        | (i) Ambient Air Quality                                                                                                                       | _                  | 1Stn                                             | 2.96                        |
| NVIRONMENTAL                                           | (ii) Water Quality                                                                                                                            | _                  |                                                  |                             |
| AONITORING (Core zona)                                 | (iii) Noise level data ,                                                                                                                      |                    | 1. Stn                                           | - 7                         |
| •                                                      | (iv) Ground Vibration :                                                                                                                       | -                  | *                                                | - /                         |
| , , , , , , , , , , , , , , , , , , , ,                | (v) Others (Please Specify)                                                                                                                   | *                  | -                                                | - :                         |
|                                                        | (i) Ambient Air Quality                                                                                                                       | -                  | 3 Stns                                           | 8.88                        |
| NVIRONMENTAL                                           | (ii) Water Quality ;                                                                                                                          | -                  | 3 Stns                                           | 0.075                       |
| AONITORING (Buffer                                     | (iii) Noise level data                                                                                                                        | -                  | 4 stas                                           |                             |
|                                                        | (iv) Ground Vibration                                                                                                                         | *                  |                                                  | -                           |
|                                                        | (v) Others (Please Specify)                                                                                                                   | -                  | -                                                | -                           |
|                                                        | 1                                                                                                                                             |                    | Total                                            | 127.06                      |
| 4142444                                                |                                                                                                                                               |                    | ιυιαι                                            | 127.00                      |

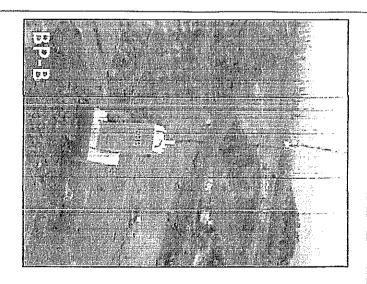
| Annexure - | 13(e |
|------------|------|
|------------|------|

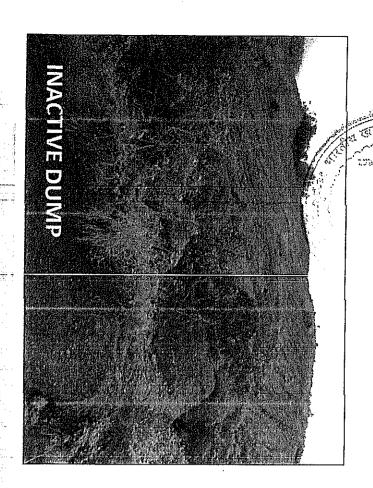
|                                                                           | RECLAMATION & REHABILIÁTION                                                                                                           |                    |                                  |                             |
|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------|-----------------------------|
| ITEMS                                                                     | DETAILS                                                                                                                               | PROPOSED AREA (Ha) | PROPOSED QUANTITY                | PROPOSED EXPENDITURE (LACS) |
| 1                                                                         | 2                                                                                                                                     | 3                  | 4                                | 5                           |
|                                                                           | (i) Backfilling                                                                                                                       | *                  | · ·                              | _                           |
|                                                                           | (ii) Afforestation on backfilled area                                                                                                 | μ                  | -                                | -                           |
| RECLAMATION &<br>REHABILITATION OF<br>MINED OUT                           | (iii) Others (Please specify) e.g. Afforestation on exhausted benches                                                                 | ,                  | -                                | -                           |
| PIT/LAND/AREA                                                             | (iv) Pisciculture                                                                                                                     | +                  | -                                | *                           |
|                                                                           | (v) Converting into water reservoir                                                                                                   | -                  | -                                | -                           |
|                                                                           | (vl) Planic spot                                                                                                                      | -                  | -                                |                             |
| **************************************                                    | (i) Terracing                                                                                                                         | 2.682              | -                                | 1.023                       |
|                                                                           | (ii) Pitching                                                                                                                         | -                  | ,                                |                             |
| STABILIZATION &<br>REHABILIATION OF<br>DUMPS (within & Out side<br>lease) | (iii) Construction of Parapet Wall / Retaining Wall at the toe of dumps' (including foundation, PCC, toe walls & Garlan drainage etc) | -                  | 1064 meters                      | 42.07                       |
|                                                                           | LBCD,BWCD,GCD etc)                                                                                                                    | -                  | LBCD-5,LWCD-10,BWCD-<br>18,GCD-5 | 7.98                        |
| ,                                                                         | (v) Construction of Settling ponds<br>(SST,ST,RWHP etc.)                                                                              | -                  | RWHP-2                           | 0.70                        |
|                                                                           | (vi) Desilting of Settling ponds, channels                                                                                            | •                  | _                                |                             |
|                                                                           | (vii) Afforestation on dumps                                                                                                          | -                  | <u> </u>                         |                             |
|                                                                           | (viii) others (Coir- Matting)                                                                                                         | 5.10               |                                  | 50.98                       |
| REHABILIATION OF                                                          | (i) Afforestation (Green belt building)                                                                                               | 1.02               |                                  | 2.62                        |
| BARREN AREA WITHIN                                                        | (ii) others (Road Plantation)                                                                                                         | 0.96               | -                                | 0.768                       |
| EASE (Out side lease)                                                     | Mining pit area                                                                                                                       | <u> </u>           |                                  | 0.00                        |
|                                                                           | Others                                                                                                                                |                    | -                                | 0.00                        |
|                                                                           | (i) Ambient Air Quality                                                                                                               | *                  | 1Stn                             | 2.96                        |
| ENVIRONMENTAL                                                             | (ii) Water Quality                                                                                                                    |                    |                                  |                             |
| MONITORING (Core zone)                                                    | (iii) Noise level data .                                                                                                              | •                  | 1. Stn                           |                             |
| mentioning (serie zerie)                                                  | (iv) Ground Vibration                                                                                                                 | <u>-</u>           | -                                | - ;                         |
|                                                                           | (v) Others (Please Specify)                                                                                                           | -                  | -                                |                             |
|                                                                           | (i) Ambient Air Quality                                                                                                               | -                  | 3 Stns                           | 8.88                        |
| ENVIRONMENTAL                                                             | (ii) Water Quality                                                                                                                    | м                  | 3 Stns                           | 0,075                       |
| MONITORING (Buffer                                                        | (iii) Noise level data                                                                                                                | -                  | 4 stns                           | 3.07.2                      |
| one)                                                                      | (iv) Ground Vibration                                                                                                                 |                    | -                                | h                           |
|                                                                           | (v) Others (Please Specify)                                                                                                           | *                  | -                                |                             |
|                                                                           |                                                                                                                                       |                    | Total                            | 121.06                      |
|                                                                           |                                                                                                                                       |                    | 10(a)                            | .12.1.00                    |

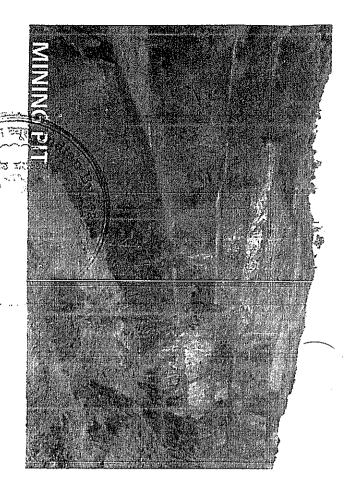




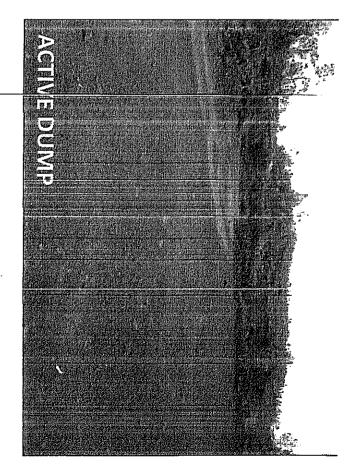


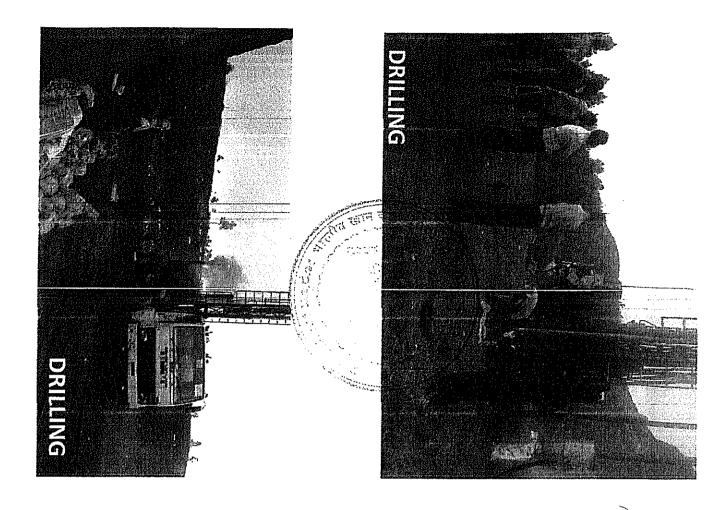


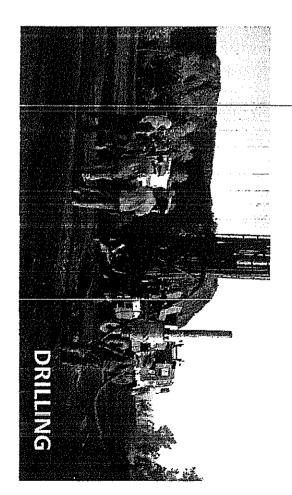


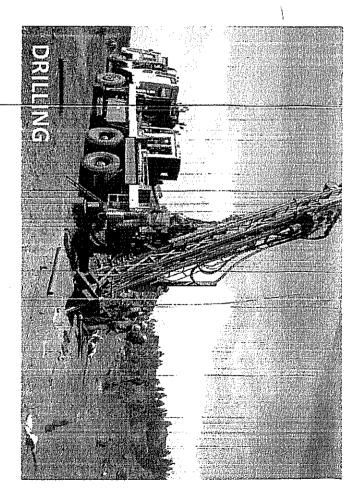












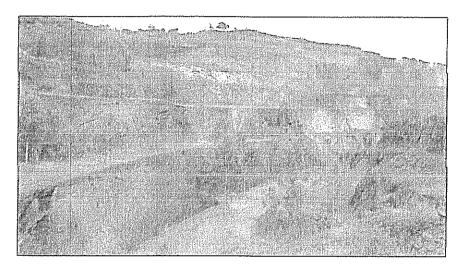
Total Control



# MINING PLAN (Including Progressive Mine Closure Plan)

Karadikolla Iron Ore Mining Block M/s. Lakshminarayana Mining Company ML No. 2487

Submitted under Rule 16(1) of MCR 2016
By Preferred Bidder M/s. MSPL LIMITED



#### Volume 3: Plates

ML Area: 86.12 Ha LOI: No: DMG/MLS/CCA/12/2487/2016-17/5963 Dated 26 OCT 2016

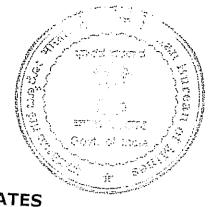
Opencast, Category 'A' Fully Mechanized
Proposed for 'Captive Mine'
Total area: 86.12 Ha
Forest Area: 86.12 Ha
Name of the Forest: Sandur Reserve Forest
Reg No: IBM / 199 / 2011

Prepared By

S.Shivakumar M.Sc.Geology

Qualified Person October 2017

Salar Salar



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