

**M/s SMC POWER GENERATION LIMITED**

APPLICANT

Village : Hirma, Dist : Jharsuguda, Odisha-768202
 Tel : (06645) 227089 / 93, Fax : (06645) 227073 / 274314,
 E-mail : site@smcpower.co.in

MODIFICATION OF MINING PLAN

(Under Rule 17(3) of MCR, 2016)

AND

PROGRESSIVE MINE CLOSURE PLAN

(Under Rule 23B(2) of MCDR, 1988)

OF

Proposed KHANDBANDH IRON ORE MINE

Over an area of 178.908 hectares in village Khandbandh, Jalhari and
 Baitarani R.F, district Keonjhar, Odisha.

Mine Category	Date of Execution	Period as per letter of intent	Forest Land	Non-Forest Land	Total
A (FM)	To be executed	25 years	176.007 ha	2.901 ha	178.908 ha

Lease period shall be deemed to have been extended for a period of 50 years
 in view of section 8A(6) of MM (D & R) Act, 2015 (as amended).

Prepared by

S.C. Nayak,
 Qualified Person

M/s MINESKETCH Consultants (P) Ltd.,

A/185, Saheed Nagar, Bhubaneswar-751007
 Phone : 0674-2548607, Tele / Fax : 0674-2549508
 E-mail : minesketch2005@gmail.com

PREPARED FOR A PERIOD OF FIVE (5) YEARS



M/s SMC POWER GENERATION LIMITED
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CONSENT LETTER / UNDERTAKING / CERTIFICATE FROM THE APPLICANT

The Modification of Mining Plan in respect of Proposed Khandbandh Iron Ore Mine of M/s SMC Power Generation Limited over an area of 178.908 hectares in Keonjhar district of Odisha under Rule 17 of MCR, 2016 has been prepared under Rule 15 of MCR, 2016 by the Qualified Person, Sri S.C. Nayak. This is to request the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar, to make any further correspondence regarding any correction of the Modification of Mining Plan with the said Qualified Persons at his address below:

S.C. Nayak,

Qualified Person

MINESKETCH Consultants (P) Ltd., A/185, Saheed Nagar, Bhubaneswar-751007

Phone : 0674-2548607 / 2549508, Mob : 94384-71176, e-mail : minesketch2005@gmail.com

We hereby undertake that all modifications / updating as made in the said Modification of 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's Circular No.-2/2010 will be implemented and complied with when an authorized agency is approved by the State Government.

03. It is certified that the Progressive Mine Closure Plan of Proposed Khandbandh Iron Ore Mine of M/s SMC Power Generation Limited over an area of 178.908 hectares complies with all statutory Rules, Regulations, Orders made by the Central or State Government, Statutory Organization, Court etc. which have been taken into consideration and wherever any specific permission is required, the Applicant will approach the concerned authorities.

Corporate Office	Liasion Office	Works
E-1329, 2nd Floor, Hansa Bhawan, Middle Circle Connaught Place, New Delhi-110001 Phone : 011-41517501-04, Fax : 011-41517516 email : cmo@smcpower.co.in	Plot - 887/A, Nilakantheswar Marg, Baramunda VII, Bhubaneswar-751003. Phone/Fax-0674-2561575 Mob : 9437353886 E-mail : skpanda2007@rediffmail.com	Works : Village - HIRMA Dist. Jharsuguda, Odisha-768202 Phone : 06645-227089, 93, Fax : 06645-227073, 274314 email : site@smcpower.co.in
www.smcpower.co.in		



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 Modification of Mining Plan over an area of 178.908 hectares in Keonjhar district in Odisha State belonging to Proposed **Khandbandh Iron Ore Mine** and where specific permissions are required, the Applicant will approach the DGMS. Further, standards prescribed by DGMS in respect of miners' health will be strictly implemented.

05. We do hereby undertake to implement the CCOM's Circular No.2/2010 vide his letter No.N-11013/3/MP/90-CCOM, Vol-VII, Nagpur, dated 06.04.2010 and regarding geo-reference mining lease map and its addendum regarding boundary pillars within six (6) months of the issue of this letter.

06. We do hereby undertake to complete exploration in time bound manner in accordance with Ministry of Mines letter No.10/75/2008-MV dated 23.12.2010.

(Mool Chand Aggarwal)
Nominated Owner

Place : *Bhubaneswar*
Date : *05-08-2016*

S.C. Nayak, M.Tech, ISM
Qualified Person



MINESKETCH Consultants (P) Ltd

A/185, Saheed Nagar, Bhubaneswar - 751007
Ph : 0674-2548607 / 2549508



Letter No.:.....

CERTIFICATE FROM THE QUALIFIED PERSON

The provisions of the Mineral Conservation & Development Rules, 1988 have been observed in the preparation of Modification of Mining Plan including Progressive Mine Closure Plan in respect of Proposed Khandbandh Iron Ore Mine over an area of 178.908 hectares in village Khandbandh, Jalhari and Baitarani R.F, district Keonjhar, Odisha of M/s SMC Power Generation Limited and wherever specific permissions are required, the Applicant will approach the concerned authorities of Indian Bureau of Mines.

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

(S.C. Nayak)
Qualified Person



S.C. Nayak, Qualified Person
M/s MINESKETCH Consultants (P) Ltd

M/s SMC Power Generation Ltd



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M/s MINESKETCH Consultants (P) Ltd

M/s SMC Power Generation Ltd
Applicant



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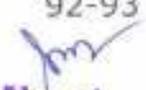
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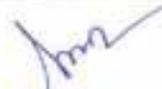
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 <p>S.C. Nayak, Qualified Person M/s MINESKETCH Consultants (P) Ltd</p>	<p>M/s SMC Power Generation Ltd Applicant</p> 
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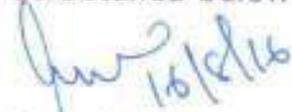

S.C. Nayak
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INTRODUCTION

Grant Details : Govt. of India, Ministry of Mines accorded permission under Section 5(1) of MM (D & R) Act, 1957 for grant of mining lease for iron ore over an area of 246.039 hectares in villages Khandbandh & Jalahari and Baitarani reserved forest, district Keonjhar, Odisha (ref : Annexure-9) are accordingly terms & conditions was issued by the State Govt. to grant in favour of M/s SMC Power Generation Limited, Hirma, Jharsuguda for mining of iron ore vide letter No.4469/SM dated 16.07.2010 (ref : Annexure-10) for a period of twenty five (25) years from the date of execution of the lease deed with the State Govt. On subsequent field survey & demarcation of the mining lease area by the DDM, Joda, the précised area map was issued by the Directorate of Mines, Odisha over an area of 244.030 hectares. As such the mining plan was prepared and duly approved by IBM vide letter No. 314(3)/2011-MCCM(CZ)/MP-01, dated 01.06.2011 (ref : Annexure-11).

The extent of applied M.L area has been reduced from 246.039 hectares to 244.030 hectares and finally to 178.908 hectares after exclusion of schedule tribe land vide Govt. of India letter No.5/16/2010-M-IV dated 18.11.2015 (ref : Annexure-12) and Govt. of Odisha letter No.3904/SM, Bhubaneswar dated 13.05.2016 (ref : Annexure-13). Accordingly, Director of Mines, Govt. of Odisha has issued authentic précised area map, boundary description and land schedule of applied M.L area vide letter No.M-IV-(A)-25/2006/4693/DM dated 28.05.2016.

As per the land schedule, applied M.L area over 178.908 hectares consists of 176.007 hectares forest land and 2.901 hectares non-forest land as detailed below :


REGIONAL CONTROLLER OF MINES
भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
भुवनेश्वर/BHUBANESWAR

Proposed Khandbandh Iron Ore Mine (178.908 ha).


S.C. Nayak
Qualified Person



Type of land		Name of village	Area in Acres	Area in hectares
Forest land	DLC land	Khandbandha	192.02	77.708
	Jungle	-do-	39.70	16.066
	Gramya Jungle	-do-	35.80	14.488
	-do-	Jalahari	2.12	0.858
	-do-	Baitarani R.F	165.28	66.887
	Sub-total	---	---	434.92
Non-forest land	Rasta	Khandbandha	1.31	0.530
	Pathargada	-do-	5.30	2.145
	Bajephasal-II	-do-	0.56	0.226
	Sub-total	---	---	7.17
Total	---	---	442.09	178.908

This applied M.L area over 178.908 hectares is a part of the relinquished area of Khandbandh Iron Ore Mine held by M/s TATA STEEL Limited (erstwhile M/s TISCO Ltd).

Preparation of Modification of Mining plan : Mining Plan of the earlier applied M.L area over 244.030 hectares prepared under Rule 22 of MCR, 1960 by the RQP Sri S.C. Nayak (RQP/CAL/211/95/A) was approved by the Indian Bureau of Mines, Nagpur vide letter No.314(3)/2011-MCCM(CZ)/MP-01, dated 01.06.2011 (ref : Annexure-11).

As the extent of M.L area has been reduced from 244.030 hectares to 178.908 hectares, this Modification of Mining plan is prepared under Rule 17(3) of MCR, 2016 by the Qualified Person, Sri S.C. Nayak in accordance with the guidelines of Indian Bureau of Mines, Govt. of India.


S.C. Nayak
Qualified Person

 <p>S.C. Nayak, Qualified Person M/s MINESKETCH Consultants (P) Ltd</p>	<p>M/s SMC Power Generation Ltd</p> 
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Statutory Clearances : M.L Applicant / User Agency / Project Proponent have obtained Geo-coordinated / referenced DGPS survey map superimposed on high resolution satellite image covering 500m buffer of applied M.L area authenticated by the Odisha Space Applications Centre (ORSAC), Department of Science & Technology, Govt. of Odisha, Bhubaneswar vide letter No.2329 dated 03.08.2016 (ref : Annexure-17) where latitude, longitude and UTM values of boundary pillars have been incorporated.

Applied M.L area over 178.908 hectares consists of 176.007 hectares forest land and 2.901 hectares non-forest land. Forest and Environment Department, Govt. of Odisha has recommended to the Asst. Inspector General of Forests, MoEF & CC, Govt. of India dated 01.08.2016 to consider the approval of entire forest land of 176.007 ha under section 2(iii) of F.C Act, 1980 (ref : Annexure-18). Applicant has submitted online registration form (ref : 1st page of Annexure-19) in Ministry of Environment, Forest & Climate Change (MoEF & CC). After approval of this Modification of Mining Plan, Applicant will submit Forest Diversion Proposal (FDP) to Forest Department under Forest (Conservation) Act, 1980 for obtaining of Forest Clearance (FC) from Ministry of Environment, Forest & Climate Change (MoEF & CC).

Applicant will submit the requisite documents to the State Pollution Control Board (SPCB), Odisha, Bhubaneswar for obtaining of Consent To Establish (CTE) order in respect of air and water.

Applicant has submitted the requisite documents for obtaining TOR / Terms of Reference (ref : Online registration form as well as acknowledgement slip for TOR application dated 02.08.2016 vide Annexure-19) and (b) Environmental Impact Assessment / Environment Management Plan (EIA /EMP) for obtaining Environmental Clearance from MoEF & CC.


S.C. Nayak
Qualified Person



S.C. Nayak, Qualified Person
M/s MINESKETCH Consultants (P) Ltd

M/s SMC Power Generation Ltd



Applicant will submit the requisite documents to the State Pollution Control Board (SPCB), Odisha, Bhubaneswar for obtaining of Consent To Operate (CTO) order in respect of air and water.

Applicant will submit the requisite documents to the Collector, Keonjhar for obtaining surface right order for commencement of mining operation.

Production Proposed : Since the deposit will be operated exclusively for captive use, the production target of usable iron ore has been fixed at 1.123 Mt/annum which will be achieved in 5th year of the plan period and onwards as per the following calculation:

Capacity of steel plant to set up as per Memorandum of Understanding (MoU) dated 26.12.2003 between Govt. of Odisha and Applicant, M/s SMC Power Generation Ltd (ref : Annexure-8) : = 0.4Mtpa
= 400,000tpa

Lumps (calibrated ore) required/tonne of sponge iron/steel : = 1.6t

Lumps required / annum : = 400,000 x 1.6
= 640,000tpa (+63% Fe)

Percentage of lumps expected from the crushing and screening units : = 57%

Run-off mine ore (+45% Fe) planned for production : = 640,000/57%
= 1,122,800 tpa, say 1.123 Mtpa

There is no proposal for enhancement of production of iron ore in this plan period than the earlier approved document and this proposed Khandbandha Iron Ore Mine will be worked as a Category-A mine to produce iron ore @1.123 Mt / annum with the deployment of shovel-dumper-drill combination.


S.C. Nayak
Qualified Person



S.C. Nayak, Qualified Person
M/s MINESKETCH Consultants (P) Ltd

M/s SMC Power Generation Ltd
Applicant

(5)

CHAPTER-1

1.0 GENERAL

1.1 Name and Address of the Applicant

M/s SMC Power Generation Limited

Registered Address	Permanent Address	Present Address
E-13/29, 2 nd Floor, Harsha Bhawan, Middle Circle, Connaught Place, New Delhi-110001, Phone : 011-41517501-04, Fax : 011-41517516 E-mail : moolchand@smcpower.co.in	B-42, Greater Kailash-I, New Delhi-110048	Village : Hirna, Dist : Jharsuguda Orissa-768202 Tel : (06645) 227089 Fax : (06645) 227073 E-mail : site@smcpower.co.in

Rule 45 registration No. : To be applied before opening of the mine.

1.2 Status of the Applicant

The applicant is a limited company of nine (9) Directors in the name & style of M/s SMC Power Generation Limited. Legal status of the company / Applicant is private. The company has started commercial production of sponge iron, billets & captive power on 21.12.2004 and subsequently steel bar from the integrated Steel Plant. The company is manned with a team of dedicated experts & professionals in various disciplines. The applicant has signed Memorandum of Understanding (MOU) with Govt. of Odisha to produce 0.4MTPA Steel in his Integrated Steel Plant (ref : Annexure-8). Applicant has also applied for other 17 nos. P.L / M.L areas for iron and manganese ore in Keonjhar district of Odisha.

Mr. Mool Chand Aggarwal, Chairman-cum-Managing Director of the Company, has been nominated as the owner of the mine through a resolution of Board of Directors (ref : Annexure-5) and has signed consent letter etc. of this document. However, name, designation and address of Board of Directors are given in Annexure-6.


S.C. Nayak
Qualified Person

Proposed Khandbandh Iron Ore Mine (178.908 ha).



S.C. Nayak, Qualified Person
M/s MINESKETCH Consultants (P) Ltd

M/s SMC Power Generation Ltd



(6)

1.3 Mineral(s) which is / are included in the prospecting license (For Fresh grant)

Not applicable since it is relinquished area of Khandbandh Iron Ore Mine of M/s TATA STEEL LTD.

1.4 Mineral(s) which is / are included in the letter of Intent / lease deed

Iron ore is included in the terms & conditions letter (ref : Annexure-10) issued to the M.L Applicant by the State Govt.

1.5 Mineral(s) which is the applicant / lessee intends to mine

Applicant intends to mine iron ore which is established as yet and included in the terms & conditions letter of State Govt.

1.6 Name and Address, Registration No. of the Qualified Person under Rule 15 of MCR, 2016 who has prepared the Modification of Mining Plan

Name : Mr. S.C. Nayak

Address : MINESKETCH Consultants (P) Ltd.
A/185, Saheed Nagar, Bhubaneswar-751007
Phone : 0674-2548607, Fax : 0674-2549508
E-mail : minesketch2005@gmail.com


S.C. Nayak
Qualified Person



CHAPTER-2

2.0 LOCATION AND ACCESSIBILITY

2.1 Lease Details

Name of the Mine : Khandbandh Iron Ore Mine (Proposed).

Latitude and Longitude of boundary pillars : Khandabandh applied mining lease area over 178.908 hectares in villages Khandabandh & Jalahari, tahasil Barbil, district Keonjhar, Odisha is a part of Survey of India toposheet No. 73G/5 on a scale of 1 : 50,000 and is located within the latitudes $21^{\circ}56'34.85''$ to $21^{\circ}58'00.81''$ N and longitudes $85^{\circ}22'56.29''$ to $85^{\circ}24'06.01''$ E. DGPS Map of M.L area authenticated by the ORSAC has been enclosed (ref : Plate-IA). In addition to this, Applicant has submitted an undertaking for implementation of CCOM's Circular No.2/2010 and its addendum regarding geo-reference mining lease map and boundary pillars (ref : consent letter etc.).

Date of execution of lease : Mining lease area has not been executed till date. Letter of intent / Terms & conditions letter has been issued to the Applicant from the State Govt. for (a) compliances of the terms & conditions and (b) execution thereafter (ref : Annexure-10).

Period of lease : Twenty five (25) years from the date of execution of the lease deed with the State Govt. as per the terms & conditions letter issued by the State Govt. In view of section 8A of Mines and Minerals (Development and Regulation) Act, 2015 (as amended), the period of lease shall be deemed to have been extended up to 50 years subject to the execution of the lease deed with the State Govt.

Date of expiry of lease : As per lease deed which is yet to be executed after obtaining statutory clearances.

Name and Address of the Lessee : Ref Para-1.1 of Chapter-1


S.C. Nayak
Qualified Person

 <p>S.C. Nayak, Qualified Person M/s MINESKETCH Consultants (P) Ltd</p>	<p>M/s SMC Power Generation Ltd Applicant</p> <p>(8)</p>
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2.2 Details of applied /lease area with location map (fresh area /mine)

Total lease area / applied area : 178.908 hectares

District & State : Keonjhar & Odisha

Taluka : Barbil

Village : Khandbandh & Jalahari

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

If yes, details thereof : Not applicable

Existence of public road / railway line (accessibility) : There is no state or national highway or railway line within lease area. Village road of Khandabandh village and mine road of TATA Steel exist in the applied M.L area.

Applied lease area is accessible from Joda via Bichhakhundi through 13 km long all weather road and via Jururhi through 17km long all weathered roads. The nearest railhead is Banspani at a distance of 14Km, via Jururhi and at a distance of 17km via Bichhakhundi.

Toposheet No. with latitude & longitude of all boundary point/ pillar :
Toposheet No. is 73G/5 and latitude & longitude of corner boundary pillars as per DGPS are as follows :


S.C. Nayak
Qualified Person



S.C. Nayak, Qualified Person
M/s MINESKETCH Consultants (P) Ltd

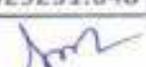
M/s SMC Power Generation Ltd
Applicant

(9)



DGPS SURVEY ML PILLAR CO-ORDINATES

Sl_No	Pillar_Id	Latitude	Longitude	Easting	Northing
1	1	N21°56'53.00528"	E85°23'30.53869"	333925.715	2427948.908
2	2	N21°56'50.54522"	E85°23'30.41742"	333921.442	2427873.286
3	3	N21°56'47.50285"	E85°23'26.11523"	333797.024	2427781.015
4	4	N21°56'46.86823"	E85°23'22.15205"	333683.11	2427762.692
5	5	N21°56'43.30608"	E85°23'21.44977"	333661.809	2427653.35
6	6	N21°56'34.86005"	E85°23'23.90168"	333729.43	2427392.856
7	7	N21°56'34.85118"	E85°23'29.53696"	333891.115	2427390.886
8	8	N21°56'37.27523"	E85°23'29.53257"	333891.771	2427465.438
9	9	N21°56'37.33020"	E85°23'36.53158"	334092.604	2427465.023
10	10	N21°56'50.44783"	E85°23'36.42102"	334093.661	2427868.484
11	11	N21°56'50.38778"	E85°23'45.30819"	334348.625	2427863.967
12	12	N21°57'01.25765"	E85°23'48.53330"	334444.655	2428197.297
13	13	N21°57'05.34134"	E85°23'40.79572"	334223.975	2428325.214
14	14	N21°57'12.24637"	E85°23'36.28442"	334096.771	2428538.933
15	15	N21°57'14.40796"	E85°23'39.74299"	334196.693	2428604.372
16	16	N21°57'22.89819"	E85°23'39.45724"	334191.232	2428865.572
17	17	N21°57'26.32267"	E85°23'35.73832"	334085.643	2428972.01
18	18	N21°57'28.54615"	E85°23'36.44247"	334106.562	2429040.18
19	19	N21°57'28.29099"	E85°23'39.81393"	334203.203	2429031.319
20	20	N21°57'29.52311"	E85°23'39.89599"	334205.955	2429069.188
21	21	N21°57'26.36896"	E85°23'56.19269"	334672.477	2428967.289
22	A	N21°58'00.81162"	E85°24'06.01387"	334965.293	2430023.619
23	A/1	N21°58'00.05531"	E85°24'00.76947"	334814.602	2430001.93
24	A/2	N21°57'59.12579"	E85°23'54.70221"	334640.25	2429975.162
25	A/3	N21°57'58.40245"	E85°23'49.51015"	334491.071	2429954.474
26	A/4	N21°57'57.42411"	E85°23'43.39041"	334315.196	2429926.224
27	A/5	N21°57'56.24731"	E85°23'35.66460"	334093.183	2429892.356
28	A/6	N21°57'54.65627"	E85°23'25.35167"	333796.816	2429846.531
29	A/7	N21°57'53.25490"	E85°23'16.02527"	333528.809	2429806.247
30	A/8	N21°57'52.02404"	E85°23'07.81029"	333292.741	2429770.875
31	A/9	N21°57'50.73559"	E85°22'59.65263"	333058.296	2429733.717
32	B	N21°57'50.21778"	E85°22'56.29109"	332961.693	2429718.811
33	B/1	21°57'43.64388"	85°22'58.41120"	333020.338	2429515.987
34	C	21°57'37.59516"	85°23'00.35160"	333074.036	2429329.369
35	D	21°57'35.15436"	85°23'09.15000"	333325.721	2429251.648


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Proposed Khandbandh Iron Ore Mine (178.908 ha).

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36	E	21°57'37.80432"	85°23'15.94320"	333521.422	2429331.089
37	F	21°57'43.53804"	85°23'18.99960"	333610.957	2429506.513
38	G	21°57'46.03248"	85°23'30.78960"	333950.048	2429579.666
39	H	N21°57'32.92874"	E85°23'31.39565"	333963.188	2429176.485
40	I	N21°57'33.09897"	E85°23'34.85689"	334062.542	2429180.678
41	I/1	N21°57'25.33808"	E85°23'32.39621"	333989.443	2428942.735
42	I/2	N21°57'19.26155"	E85°23'30.35248"	333928.848	2428756.468
43	I/3	N21°57'12.31371"	E85°23'28.08541"	333861.562	2428543.472
44	I/4	N21°57'05.46935"	E85°23'25.86220"	333795.568	2428333.646
45	I/5	N21°57'00.48357"	E85°23'24.21918"	333746.818	2428180.805
46	J	N21°56'52.80633"	E85°23'21.72076"	333672.655	2427945.446
47	L/10	N21°57'52.12379"	E85°24'03.52659"	334891.149	2429757.172
48	L/11	N21°57'56.51087"	E85°24'04.78182"	334928.568	2429891.72
49	L/6	N21°57'30.55624"	E85°23'57.44724"	334709.815	2429095.692
50	L/7	N21°57'34.54453"	E85°23'58.59081"	334743.904	2429218.007
51	L/8	N21°57'42.08319"	E85°24'00.69995"	334806.834	2429449.224
52	L/9	N21°57'49.34172"	E85°24'02.75749"	334868.192	2429671.841

Geo-reference cadastral map is under preparation which will be authenticated by ORSAC (ref : Plate-IA).

2.3 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.

Ref : Plate-I where M.L boundaries are shown in the mining lease plan on 16" = 1 mile scale authenticated by the state Govt. and location plan prepared by using Survey of India Toposheet No.73G/5 on 1 : 50,000 scale.


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CHAPTER-3

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

3.1 Date and reference of earlier approved MP/SOM

Date and reference of earlier approved MP/SOM are given in table as follows :

Sl. No.	Plan/Scheme	Period	Rule	Prepared By	Letter No & Date of approval
1	Mining Plan	5 years	22 MCR, 1960	S.C. Nayak (RQP/CAL/211/95/A)	314(3)/2011-MCCM(CZ)/MP-01, dated 01.06.2011

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

No modifications were approved in the past after the approval of Mining Plan.

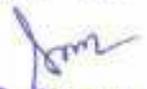
3.3 Give review of earlier approved proposal (if any) in respect of exploration, excavation, reclamation etc.

Earlier approved proposal in respect of exploration, excavation, reclamation etc. have been reviewed as follows :

❖ Exploration

Commitment: In order to define the various type of ore boundaries very clearly, obtain more information on different parameters of the ore zone like thickness, grade, ore incidence etc. and add more reserves into proved category, a total of 60 core drill holes had been proposed at 200m x 200m grid pattern in north-eastern part and 100m x 100m grid pattern in remaining ore exposures in the entire applied M.L area during the plan period up to the end of mineralization as per the following table :

Proposed Khandbandh Iron Ore Mine (178.908 ha),


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Year	Borehole No.	No. of holes	Depth	Purpose
1 st	BH ₁ and BH ₂	2	Up to the end of mineralization	Barren Proving
	BH ₃ to BH ₃₀	28	-do-	Ore Proving
2 nd	BH ₃₁ to BH ₆₀	30	-do-	-do-
Total	---	60	---	---

Compliance, Deviation & Justification thereof : Exploration could not be conducted in the applied M.L area since lease area has not been executed so far.

❖ Excavation (Industrial Ore)

Commitment, compliance, deviation and reasons thereof : The committed and complied production figures along with deviation have been kept side by side in the following table:

Year	Planned Industrial ore (t)	Achieved Industrial ore (t)	Deviation	Reasons thereof
1 st	450240	Nil	100%	Industrial ore could not be achieved since lease area has not been executed so far.
2 nd	580160	Nil	100%	
3 rd	700000	Nil	100%	
4 th	900480	Nil	100%	
5 th	1122800	Nil	100%	
Total	3,753,680	---	---	

❖ Excavation (Sub-grade ore)

Commitment, compliance, deviation and reasons thereof : The committed and complied production figures along with deviation have been kept side by side in the following table:


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 S.C. Nayak, Qualified Person M/s MINESKETCH Consultants (P) Ltd	M/s SMC Power Generation Ltd Applicant
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Year	Planned Sub-grade Ore (m ³)	Achieved Sub-grade Ore (m ³)	Deviation	Reasons thereof
1 st	16080	Nil	100%	Sub-grade could not be achieved since lease area has not been executed so far.
2 nd	20720	Nil	100%	
3 rd	25000	Nil	100%	
4 th	32160	Nil	100%	
5 th	40100	Nil	100%	
Total	134,060	---	---	

❖ Waste Generation / Excavation

Commitment & Compliance : A total of 134,060m³ waste was proposed to be generated whereas no waste is generated so far as given below :

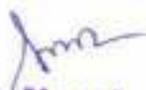
Year	Proposed Waste (m ³)	Achieved Waste (m ³)
1 st	16080	Nil
2 nd	20720	Nil
3 rd	25000	Nil
4 th	32160	Nil
5 th	40100	Nil
Total	134,060	---

Deviation and reasons thereof : Waste is not generated since lease area has not been executed so far.

❖ Reclamation

Commitment : There was no commitment in the last mining plan for reclamation in plan period due to existence of ore at depth.

Compliance, Deviation & Justification thereof : Applied M.L area has not been executed so far. Therefore, question does not arise for reclamation.


S.C. Nayak
 Qualified Person

 <p>S.C. Nayak, Qualified Person M/s MINESKETCH Consultants (P) Ltd</p>	<p>M/s SMC Power Generation Ltd Applicant</p> 
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3.4 Give status of compliance of violations pointed out by IBM

Mining lease area has not been granted / executed till date.

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

Not applicable since mining operation has not been commenced so far.

3.6 In case the MP/SOM is submitted under rules 9 and 10 of the MCDR'88 or under rule 17 of the MCR, 2016 for approval of modification, specify reason and justification for modification under these rules.

Mining Plan prepared over an area of 244.030 hectares under Rule 22 of MCR, 1960 by the RQP Sri S.C Nayak (RQP/CAL/211/95/A) was approved by the Indian Bureau of Mines, Nagpur vide letter No.314(3)/2011-MCCM(CZ)/MP-01 dated 01.06.2011 (ref : Approval letter vide Annexure-11) for grant / execution of M.L area.

Modification of Mining Plan has been prepared under Rule 17(3) of MCR, 2016 for a period of 5 years since the extent of M.L area has been reduced from 244.030 hectares to 178.908 hectares as per the State Govt. letter No.3904 dated 13.05.2016 (ref : Annexure-13) excluding the areas held by the scheduled tribes.


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CHAPTER-4

4.0 GEOLOGY AND EXPLORATION

4.1 Briefly describe the topography, drainage pattern, vegetation, climate, rainfall data of the area applied/mining lease area.

Topography : Applied mining lease area is mainly dominated by the hill slopes and valleys. NNE part of the applied M.L area is dominated by the Dalpahar hill while SW part is the NE slope of another hill. Between these two hills, a wide mine road exists between Khandbandh iron ore mine and Bichhakundi iron & manganese ore mine of TATA Steel Ltd. North-western and southern parts are flat respectively. The highest and lowest altitudes are at 690mRL and 550mRL. The elevation difference is $690 - 550 = 140\text{m}$.

Drainage : The natural drainage system is distinct and dendritic due to hilly topography. There is no perennial nala in the applied M.L area. Surface run-off water flows along the natural slopes, valleys and finally in to the seasonal nalas in northern side to meet Kundra/Suna Nala. The confluence point of these seasonal nalas and Suna Nala is located at a linear distance of 4.5 Km North of the area. Buffer zone (5 km radius of M.L area) falls within the catchments of Suna Nala which is perennial in nature. Kundra/Suna Nala is the tributary of Baitarani River which (a) controls the drainages system of the region and (b) flows due north & then east to meet the Bay of Bengal.

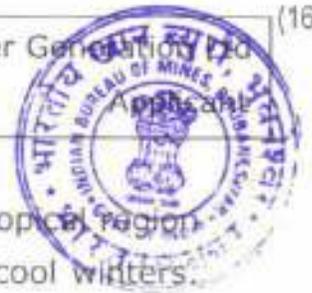
Vegetation : Applied area constitutes 43% DLC forest, 37% Baitarani Reserved Forest, 18% village forest and 2% non-forest land approximately as per land schedule (ref : Annexure-16). Forest growth is observed to be sparse in the places of insitu/conga iron ore exposures and dense in float / bouldery iron ore zone. A part of the area has been made free from forest growth due to the development of pits and roads.


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M/s SMC Power Generation Co

M/s MINESKETCH Consultants (P) Ltd



Climate and rainfall data : Applied M.L area is located in tropical region where climate is characterized by very hot summers and cool winters. The climate in the area is generally cold in winter between November and February and hot in summer between March and June. The monsoon sets in late June and continues upto the end of August.

Temperature shows the variation between 4^o C to 47.5^o C. Average annual rainfall is 1400mm. The south-west monsoon lasts from mid June to mid September and the area receives more than 80% of the annual rainfall during the period.

Predominant wind direction is South-West. Area remains calm for nearly 50% of the year.

4.2 Brief descriptions of Regional Geology with reference to location of lease/applied area.

Iron ore deposit in the area forms a part of the south-eastern portion of the Singhbhum-Keonjhar-Bonai belt, also known as the Jamda-Koira valley and is represented by narrow north-easterly plunging fold synclinorium of 60 km long and 25 km wide. The precambrian horseshoe shaped belt is well known for its large reserves of iron and manganese ore. The general strike is north east to north and dips are moderate to steep. The western limb of the synclinorium is slightly overturned, at some places.

The belt was first reported by Jones in 1934 and has been studied in detail by several eminent geo-scientists, since then, the major litho types are metamorphosed sandstone, lithic wacke mostly in the east, BIF and iron ore fragments are common. Shale, lavas, volcanic, pyroclastic tuffs, phyllite and Banded Iron Formation (BIF) including Banded Hematite Quartzite (BHQ) and the Kolhan Group of rocks are exposed.


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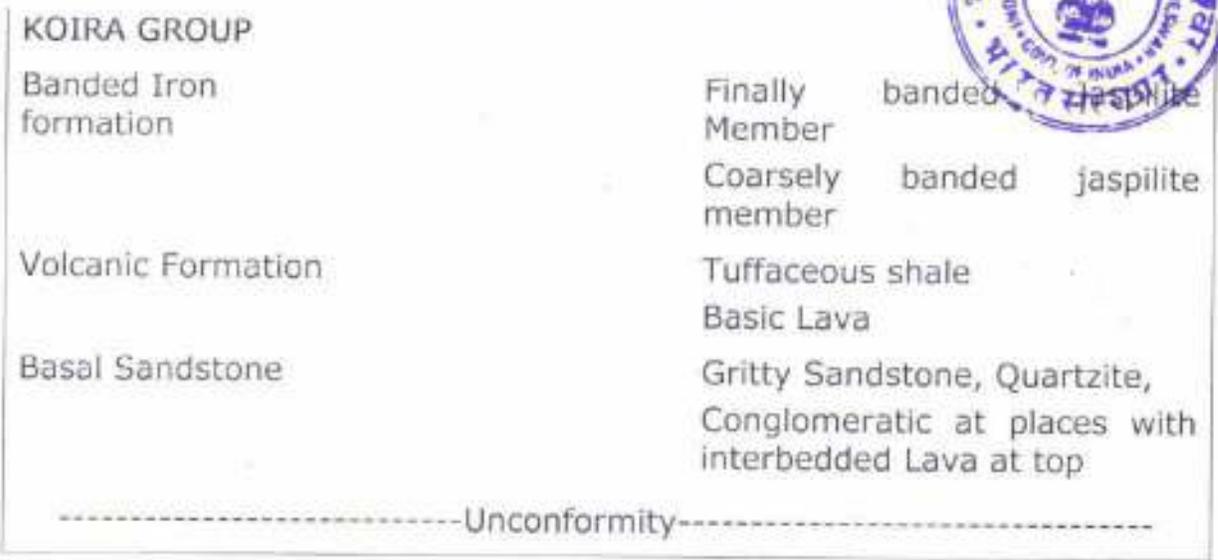


The Precambrian rocks of this region comprising of basic lava tuffs, banded iron formation (BIF), shales, conglomerates and sandstones etc. were mapped for the first time by Jones (1934). The stratigraphic succession established by Jones has largely been modified, later by Dunn (1940) based on details mapping in the northern parts of the belt. Dunn recognized a new group lying unconformably over the Iron Ore Group which he named as the "Kolhan Group". The rock types of the area belonging to the Kolhan group lies to the north of the Noamundi in Bihar.

The most acceptable Litho-stratigraphic succession for the belt was proposed by Murthy and Acharaya (1975). They identified different depositional facies and proposed a more detailed stratigraphic succession. They also proposed a new name the " Kolhan Group" to the rocks of Bonai-Keonjhar belt. The stratigraphic succession suggested by Murthy and Acharya (1975) is as follows :

KOLHAN GROUP	Sandstone, Breccias	Conglomerate,
-----Unconformity-----		
Mixed Facies	Basic Lava, tuffs and tuffites of volcanic facies Iron, Manganese, Lenses of Iron formation, Chert, small dolomite patches of chemical facies. Minor lenses of sandy and silty shale of clastic facies.	
Banded shale Formation	Banded shale member Black shale member Black shale - chert member	

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Singhbhum Granite with enclaves of older meta-basic and meta-sedimentary rocks.

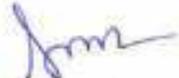
4.3 Detailed description of geology of the lease area such as shape and size of the mineral/ore deposit, disposition various litho-units indicating structural features if any etc. (Applicable for Mining Plan for grant & renewal and not for Scheme of Mining/Modifications in the approved mining plan / scheme of Mining).

Geological mapping over the applied M.L area from the surface as well as pit exposures have helped to understand the geology to a considerable extent. The local geology interpreted from the above has been arranged as follows:

- ❖ Soil & alluvium
- ❖ Laterite
- ❖ BHJ with Iron Ore
- ❖ Iron Ore

- ❖ Soil & alluvium

Soil exposures are seen in northern and southern low lying flat fields. No ore is expected in this part of the applied lease area. Thin layer of soil is found at places over the insitu ore zone located at north-eastern part of the applied M.L area.


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❖ **Laterite**

Due to weathering of rocks, presence of lateralization is a common feature affecting all the rock types. Laterite & Lateritic soil is observed on the surface as well as in the pits which are found admixed with bouldery/float iron ore.

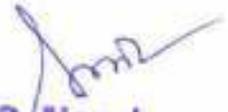
❖ **Banded Hematite Jasper (BHJ) with Iron Ore**

BHJ mixed with float iron ore is predominantly observed in the applied M.L area. BHJ is an evenly laminated sedimentary rock consisting of alternate layers of primary hematite and deep brown coloured chert with admixed dusty inclusions of hematite granules. BHJ is host rock of iron ore which strikes along NNE-SSW direction and dips due SE at low to moderate angles.

❖ **Iron Ore**

Hematite variety of iron ore occurs in the applied M.L. area. Based on physical characteristics like colours, compactness, the deposits have been mapped into float, insitu & conga/recemented iron ore and BHJ with iron ore which strikes from N-S to NE-SW dipping at moderate angles of 30° to 50° due south to south-east.

Insitu iron ore occurs as discontinuous bodies. Hard massive as well as soft laminated iron ore occurs in the central north eastern part of applied M.L. area. Conga zones are found to occur in north-eastern slopes of the area which consists of boulders, cobbles and pebbles of iron ores recemented by lateritic materials. Float iron ore is enriched in the entire area from north to south encircling the BHJ, insitu iron ore etc. Very hard float iron ore occurs to the west of Khandbandh village while north-eastern hill slope is enriched with low grade & friable iron ore.


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4.4 Name and Address of prospecting / exploratory agency

M/s TATA Steel Ltd (erstwhile M/s TISCO Ltd) applied M.L area was held under M.L as applied M.L area was held under M.L by him.

State Govt. who has decided to grant the M.L area in favour of the Applicant for captive use.

The resources have been estimated based on surface exposure, old pit and recent chemical analysis.

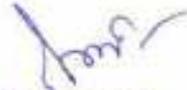
Detailed exploration will be carried as per the proposal given in Para-4.9

4.5 Details of prospecting/exploration already carried out :

Applied M.L. area is the relinquished area of TATA STEEL where iron ore bodies are exposed. State Govt. has decided to grant the applied M.L area over 178.908 hectares in favour of the applicant for iron ore for captive use in his integrated Steel Plant. A number of old pits have been located in the applied M.L area.

The exploration already carried out in the area has been detailed in the following manner :

- ❖ A topographic plan namely surface plan has been prepared on 1:2000 scale at 5m contour interval and 200m x 200m grid pattern showing all the surface features such as contour, road, nala, pit etc. (ref : Plate-II).
- ❖ A geological plan has been prepared separately by placing all the lithounits over the surface plan. Various lithounits have been shown separately with dashed lines.
- ❖ Two dimensional grid sections have been prepared across the ore bodies at 100m interval across the hill and pits. A total of seventeen small pits developed in the applied M.L area and exposures there in have been utilized for delineation of proved ore zone.


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

As per the field survey, a total of seventeen (17) pits are found located in the applied M.L area. However, the details of the pits are as follows :

Name of Pit	Depth (m)	From - To (m)	Lithology
P-1	6	0-6	Float iron ore
P-2	6	0-6	-do-
P-3	6	0-6	Insitu iron ore
P-4	6	0-6	-do-
P-5	6	0-6	-do-
P-6	4	0-4	-do-
P-7	4	0-4	-do-
P-8	3	0-3	-do-
P-9	5	0-5	-do-
P-10	6	0-6	-do-
P-11	5	0-5	-do-
P-12	4	0-4	-do-
P-13	3	0-3	-do-
P-14	3	0-3	-do-
P-15	4	0-4	-do-
P-16	5	0-5	-do-
P-17	2	0-2	Float iron ore

4.5.2 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.

Applied M.L area is the relinquished area of M/s TATA Steel Ltd which has not been executed so far. Therefore, exploration drilling has not been conducted in the applied M.L area.


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4.5.3 Details of samples analysis indicating type of sample (surface/sub surface from pits/trenches/borehole 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 mineralized area may be analyzed meter wise with 10% of 37 check samples. (At least for 10% of total samples may be analyzed in accordance to BIS and reports from NABL accredited/other government laboratory).

As per CCOM's Circular No. 3/2010 dated 14.07.2010 regarding exploration, notified threshold value of hematitic iron ore is 45% Fe while cut-off grade considered by the Applicant for captive use is 58% Fe. Therefore, iron ore resources with +45% to -58% Fe is considered as sub-economic or sub-grade ore and with +58% Fe is considered as usable ore (ref : Table-4.1 & 4.2).

Recently, three representative samples collected from the old pits and eleven surface samples have been analyzed. Out of these, grade of two surface samples are negative i.e. less than 45% Fe and remaining are positive I,e, more than 45% Fe (ref : Annexure-20). So far, 20 samples have been analyzed (ref : Annexure-20 & 21). Grade of iron ore varies from 45% Fe to 68.66% Fe. Average grade of iron ore is calculated to be 62.8% Fe which is supposed to be changed after doing the detailed exploration by way of drilling as per Para-4.9.

4.5.4 Expenditure incurred in various prospecting operations.

Applicant has not done any prospecting operation like pitting, trenching and drilling since applied M.L area is a relinquished part of Khandbandh Iron Ore Mine earlier held by M/s TATA Steel Ltd and decided to be granted in favour of the Applicant by the State Govt. A total of 20 iron ore samples drawn from the old pits and exposures from various locations covering the entire ore zones in the M.L area have been analyzed. Expenditure incurred as per the recent chemical analysis report of 14 samples is Rs.7,700/- (ref : Annexure-21).


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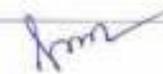
- 4.6 The surface plan of the lease area may be prepared on a scale of 1: 1000 or 1: 2000 with contour interval of maximum of 10 m depending upon the topography and size of the area duly marked by grid lines showing all features indicated under Rule 28(1)(a) of MCDR 1988.

Surface Plan has been prepared on a scale of 1 : 2000 with contour interval of 5m showing all features under Rule 28(1)(a) of MCDR, 1988 (ref : Plate-II).

- 4.7 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 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 28 (1)(b) of MCDR 1988.

Geological plan has been prepared by placing the various litho-units on a scale of 1 : 2000. Ore zones have been placed in the geological plan with respect to various level of exploration such as G₂ and G₄ as per UNFC.

Total Lease area : 178.908 ha						
Item of information	Lease area explored as per UNFC norms (in Ha) as on dated 27.05.2016					Remarks/Comments including reasons for not carrying out the exploration as per UNFC norms.
	Total Lease Area = A + B + C + D + E					
	G1 Level	G2 Level	G3 Level	Explored and found non-mineralized with level of exploration (Remarks)	Unexplored lease area:	
	A	B	C	D	E	
Lease area as per level of exploration	---	19.696 ha	---	---	159.212 ha	Ore zone in & around the old trial pits within 100m lateral influence area up to a depth of 6m from surface level has been considered under G ₂ level of exploration.
No. of BH Drilled	---	---	---	---	---	---
No. of pits located	---	17	---	---	---	---
No. of pits considered for Resource Estimation	---	17	---	---	---	---
Depth proved	---	6m	---	---	---	---
Thickness considered for resource estimation	---	6m	---	---	---	---
Scale of Mapping	---	1:2000	---	---	---	---
Reserve estimated after above exploration as on dated 27.05.2016 : 3.148 Mt iron ore						
Remaining Resource after above exploration as on dated 27.05.2016 : 15.394 Mt iron ore						
Total Reserve / Resource after above exploration as on dated 27.05.2016 : 18.542 Mt iron ore						


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

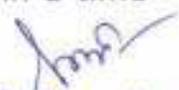
Geological Sections have been prepared on a scale of 1 : 2000 at 100m interval across the ore zone in the applied M.L area from boundary to boundary {ref : Plate-III(A)}.

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

Exploration already carried out so far in the applied M.L area is given in Para-4.5.1 and 4.7. Accordingly, tentative excavation programme has been incorporated in Chapter-V. In view of the above, exploration proposal is given to cover entire lease area by way of sinking 164 bore holes at 100m interval within plan period of 5 years (as per the directives of Ministry of Mines, vide letter number 10/75/2008-MV dated 23rd Dec, 2010.) as shown in Plate-III to assess the mineral / iron ore reserve as per UNFC considering the revised threshold value as per the following table :

Year	Borehole No.	No. of holes	Depth
1 st	PBH-1 to PBH-32	32	Up to the end of iron ore deposit
2 nd	PBH-33 to PBH-65	33	-do-
3 rd	PBH-66 to PBH-98	33	-do-
4 th	PBH-99 to PBH-131	33	-do-
5 th	PBH-132 to PBH-164	33	-do-
Total	---	164	---

Lessee has given an undertaking to complete the exploration in a time bound manner (ref : Consent letter etc.).


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

Geological Plan and Geological Sections where area explored under different level of exploration and UNFC code for area considered for different categories of reserve / resources estimation has been marked.

Ref : Feasibility Study Report vide Annexure-1 along with financial analysis for economic viability of the deposit as specified under the UNFC field guidelines.

4.11 Furnish detailed calculation of reserves/resources section wise (When the mine is fully mechanized and deposit is of complex nature with variation of size, shape of mineralized zones, grade due to intrusion within ore zone etc, an attempt may be made to estimate reserves / resources by slice plan method). In case of deposits where underground mining is proposed, reserve/resources may be estimated by level plan method, as applicable, as per the proposed mining parameters.

As per the Approved Mining Plan dated 01.06.2011, mineral resources were estimated to be as follows :

Reserve/ resources	Type	Quantity of iron ore (t)	Grade	UNFC Code	
Reserves	Proved	---	---	---	
	Probable	4,140,500	+58% Fe	122	
Total (a)	---	4,140,500	+58% Fe	---	
Remaining resources	Feasibility	---	---	---	
	Pre-feasibility	---	---	---	
	Measured		507,000	+45-58% Fe	331
		Indicated	21,179,760	+58% Fe	332
		2,593,440	+45-58% Fe		
	Inferred	---	---	---	
Reconnaissance	---	---	---		
Total (b)	---	21,179,760	+58% Fe	---	
	---	3,100,440	+45-58% Fe	---	
Total (a+b)	---	25,320,260	+58% Fe	---	
	---	3,100,440	+45-58% Fe	---	

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Proposed Khandbandh Iron Ore Mine (178.908 ha).



Due to change in extent of applied M.L area from 244.030 hectares to 178.908 hectares, iron ore resource is re-estimated as per UNFC Minerals (Evidence of Mineral Content) Rule, 2015.

Method of estimation of iron ore resource : Iron ore resource has been estimated by cross sectional area method drawing cross sections lines at 100m interval (ref : Plate-III) oriented approximately across the iron ore bearing hill. Cross sectional area measured from the sections is multiplied with the strike length of influence, bulk density and recovery factor to arrive at the quantity of the ore in tones. The formula implemented to calculate the ore resource is as follows :

M	=	$C \times L \times D \times R$
Where, M	=	Iron ore resource / reserve in tones.
C	=	Cross sectional area in m^2
L	=	Length of influence between two conjugative sections (sum of half distances on either side of each section),
D	=	Bulk density (t/ m^3) which is assumed to be $3.5t/m^3$ on an average tentatively.
R	=	Recovery factor has been assumed to be 80% for iron ore and remaining 20%, as inter-burden tentatively.

The parameters considered for iron ore resource estimation are as follows :

Sl. No.	Parameters	Quantitative Aspects	
1	Length of Influence	100m	
2	ROM ore	80% w.r.t total excavation	
3	Bulk density	$3.5 t/m^3$	
4	Cut-off grade	+58% Fe	
5	Usable ore	Recovery factor	70% w.r.t total excavation
		Grade	+58% Fe
6	Mineral reject/SG	Incidence factor	10% w.r.t total excavation
		Grade	+45-58% Fe
7	Waste materials	20% w.r.t total excavation	


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Strategy for estimation of mineral / iron ore resource :

Applied M.L area is the relinquished area of M/s TATA STEEL Ltd (erstwhile TISCO) which has been decided for grant in favour of the present Applicant, SMC.

Iron ore reserve / resource has been estimated as per Minerals (Evidence of Mineral Content) Rule, 2015. Surface exposures as well as old pits located in iron ore zone of applied M.L area and samples collected from various locations (surface exposures as well as old pits) have been taken in to consideration for estimation of iron ore resources.

Category of Iron Ore Resources as per UNFC :

Indicated Resource (332) : One old pit in float iron ore zone located to the west of boundary line between BP-16 and BP-18 and fifteen old pits in insitu iron ore zone in NE part of M.L area. These pits have been developed up to 6m depth from surface level. Ore zone laterally within 100m from the pit face and depth wise up to the pit floor is considered under G₂ level of exploration and estimated under indicated mineral resource (332) with a higher level of confidence.

Reconnaissance Resource (334) : Only one pit is found located in this zone. Therefore, six (6) meter thick ore zone laterally beyond the ore zone of G₂ level is considered under G₄ level of exploration and estimated under reconnaissance mineral resource (334) with a lowest level of confidence based on one trial pit, iron ore exposures and surface sampling and due to non availability of any kind of exploration (pitting / trenching / drilling) in these areas.

Categorywise updated resource with grade (as on 27.05.2016) :

Before considering the feasibility and economic viability of the mineral, total mineral resources of the applied M.L area are considered under (a) measured, (b) indicated and (c) inferred categories as per the following table :


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Mineral Resources	UNFC Code	Tonnage (t)	Average grade	Threshold value
Indicated Mineral resource	332	3,220,560	62.8% Fe	+45% Fe
Reconnaissance Mineral resource	334	15,321,180		
Total	---	18,541,740	---	---

During mining operation, a part of the mineral resources will be blocked up below (a) 7.5m wide safety zone along lease boundaries and (b) ultimate pit slope. The details of non-mineable / blocked up resources are given below :

Mineral Resources		Mineable Resource (t)	Blocked-up / Non-mineable resource (t)
Category	Quantity (t)		
Indicated Mineral resources (332)	3,220,560	3,147,760	72,800
Reconnaissance Mineral resources (334)	15,321,180	13,602,680	1,718,500
Total	18,541,740	16,750,440	1,791,300

Mineability / economic viability is demonstrated in consecutive feasibility assessment stages in the order of increasing sense of feasibility such as Pre-feasibility Study and Feasibility Study.

Probable Reserve (122) : This category of reserve has been derived from the pre-feasibility study report / mining plan. Mineable part of indicated resource (332) is kept under probable reserve (122).

4.12 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)

Level of Exploration	Iron Ore Resources in million tons		
	Quantity	Average grade	Threshold value
G2 - General Exploration	3.221	62.8% Fe	+45% Fe
G4 - Reconnaissance	15.321		
Total	18.542	---	---

Proposed Khandbandh Iron Ore Mine (178.908 ha).

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

4.12.1 Mining method, Recovery factor, mining losses, processing loss etc.

On account of exposures of iron ore and its limited depth of occurrence, opencast method of mining will be adopted on eight hourly shift basis with the deployment of DTH drill, associated compressor, tipper / dumper, excavator and other auxiliary equipments for development, production, processing, protection of environment and safety. Because of the above machines, applied M.L area will be operated as Category-A (fully mechanized) mine. Run-off mine Iron ore lifted from the mine will be transported to the crushing and screening site in the applied M.L area for breaking, sizing & screening.

4.12.2 Cut off grade, Ultimate pit depth proposed.

As per CCOM's latest Circular No. 3/2010 dated 14.07.2010 regarding exploration, notified threshold value of hematite iron ore is 45% Fe while cut-off grade considered by the Lessee for captive use is 58% Fe. Therefore, iron ore resources with +45%-58% Fe is considered as sub-economic or sub-grade ore / mineral rejects and with +58% Fe is considered as usable ore.

Ultimate pit depth will be 6m from surface level as per the present status of exploration.

4.12.3 Mineral / ore blocked dues 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.

During mining operation, a part of the mineral resource will be blocked up below (a) 7.5m wide safety zone along lease boundary, (b) 10m wide safety zone on either side of village road and (c) ultimate pit slope. The details of block able resources are given below :

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Reserve/ resource	Type	UNFC Code	Fe-Ore		
			Quantity (Mt)	Average grade	Threshold value
Remaining resources	Pre-feasibility	222	0.073	62.8% Fe	+45% Fe
	Reconnaissance	334	1.718		
Total	---	---	1.791	---	---

Resource / reserve & grade of iron ore in the applied M.L area as per United Nations Framework Classification are coded as Follows :

Reserve/ resources	Type	UNFC Code	Iron Ore as on 27.05.2016 (Mt)	Average grade	Threshold value	
Reserves	Proved	111	---	---	---	
	Probable	121	---	---	---	
		122	3.148 (mineable)	62.8% Fe	+45% Fe	
Sub-Total (a)	---	---	3.148	---	---	
Remaining resources	Feasibility	211	---	---	---	
	Pre-feasibility	221	---	---	---	
		222	0.073 (blockable)	---	---	
	Measured	331	---	---	---	
	Indicated	332	---	---	---	
	Inferred	333	334	13.603 (mineable)	---	+45% Fe
				1.718 (blockable)	---	---
Sub-Total (b)	---	---	15.394	---	---	
Total (a + b)	---	---	18.542	---	---	

Note: 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.

Justification in respect of UNFC Codification : Under United Nations Framework Classification (UNFC), the reserves/resources have been categorized by attributing 3-digit codes of (E) economic axis, (F) feasibility axis and (G) geological axis.


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Type as per UNFC	Economic Axis E1 (Economic)	Feasibility Axis F2 (Pre-feasibility Study)	Geological Axis G2 (General exploration)	Code
Probable	<p>Iron ore is the major raw material for steel & sponge iron making and its mining has made significant progress since 2002-03.</p> <p>Khandbandh iron ore mine is mostly enriched with high grade iron ore which is suitable for both steel & sponge iron making in integrated steel plant of Applicant.</p> <p>There exist 176.007 hectares forest land out of applied M.L area over 178.908 hectares.</p> <p>A total of 3.148 Mt (+58% Fe) iron ore has been estimated under this category.</p>	<p>Geology is detailed. Position and availability of surface as well as ground water has been studied.</p> <p>Land use pattern is detailed.</p> <p>The deposit will be feasible for mining as per the feasibility study report (ref : Annexure-1).</p> <p>Reclamation and rehabilitation proposal has been included.</p> <p>Site services such as office, weigh bridge etc will be proposed in the applied M.L area.</p> <p>Mining will commence once all the statutory clearances are obtained.</p>	<p>Geological mapping has been done on 1:2000 scale.</p> <p>Old pit details has been incorporated.</p> <p>Geological plan has been prepared showing the topographical-cum-geological details including surface features; extent of deposit, location of pits etc.</p> <p>Geological sections have been prepared showing disposition of the deposit with respect to the pitting data.</p> <p>Three (3) samples drawn from the old pits have been analyzed (ref : Annexure-21)</p>	122
Reconnaissance	<p>E3 (Intrinsically Economic)</p> <p>This part of resource estimated indirectly based on field inspection, geological inference & extrapolation is kept under reconnaissance mineral resource.</p> <p>A total of 13.603 Mt (+58% Fe) iron ore comes under this category.</p>	<p>F3 (Geological Study)</p> <p>Topographical setting and nature of land has been given.</p> <p>Geological and chemical analysis data of iron ore is incorporated.</p> <p>Meteorological data has been incorporated and available in the mining plan.</p>	<p>G4 (Reconnaissance)</p> <p>This part of the resource remains just below and around the resource under G₂ level of exploration.</p> <p>Lithology, resource and grade have been assessed by the interpretation of the data available for calculation of the resource under G₂ level of exploration.</p> <p>Eleven (11) surface samples drawn from various locations have been analyzed (ref : Annexure-21).</p>	334

Mineable part of iron ore resource under G₂ level of exploration is justified above as probable reserve (122) and non-mineable part is kept under pre-feasibility mineral resource (222).

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TABLE-4.1 : GEOLOGICAL RESOURCE OF IRON ORE

Category	Section Considered	Cross Sectional area	Length of influence	Volume of Excavation	IB (20%)	Iron Ore	
		(m ²)	(m)	(m ³)	(m ³)	Volume (80%) (m ³)	Quantity (at 3.5 t/m ³) (t)
Indicated (332)	400N	1070	100	107000	21400	85600	299600
	300N	1684	100	168400	33680	134720	471520
	200N	2418	100	241800	48360	193440	677040
	100N	2356	100	235600	47120	188480	659680
	00	1594	100	159400	31880	127520	446320
	100S	522	100	52200	10440	41760	146160
	200S	489	100	48900	9780	39120	136920
	300S	970	100	97000	19400	77600	271600
	400S	798	50	39900	7980	31920	111720
	Sub-total	---	---	---	1,150,200	230,040	920,160
Reconnaissance (334)	300W	305	100	30500	6100	24400	85400
	400W	508	100	50800	10160	40640	142240
	500W	910	100	91000	18200	72800	254800
	600W	1694	100	169400	33880	135520	474320
	700W	1253	100	125300	25060	100240	350840
	800W	781	100	78100	15620	62480	218680
	700N	5355	100	535500	107100	428400	1499400
	600N	6304	100	630400	126080	504320	1765120
	500N	5425	100	542500	108500	434000	1519000
	400N	3457	100	345700	69140	276560	967960
	300N	3388	100	338800	67720	270880	948080
	200N	2797	100	279700	55940	223760	783160
	100N	2835	100	283500	56700	226800	793800
	00	3304	100	330400	66080	264320	925120
	100S	3545	100	354500	70900	283600	992600
	400S	1110	100	111000	22200	88800	310800
500S	1251	150	187650	37530	150120	525420	

Proposed Khandbandh Iron Ore Mine (178.908 ha).

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Category	Section Considered	Cross Sectional area	Length of influence	Volume of Excavation	IB (20%)	Iron Ore	
		(m ²)	(m)	(m ³)	(m ³)	Volume (80%) (m ³)	Quantity (at 3.5 t/m ³) (t)
	600S	1887	100	188700	37740	150960	528360
	700S	930	100	93000	18600	74400	260400
	800S	1697	100	169700	33940	135760	475160
	900S	1499	100	149900	29980	119920	419720
	1000S	1577	100	157700	31540	126160	441560
	1100S	821	100	82100	16420	65680	229880
	1200S	382	100	38200	7640	30560	106960
	1500S	175	100	17500	3500	14000	49000
	1600S	405	100	40500	8100	32400	113400
	1700S	500	100	50000	10000	40000	140000
	Sub-total	---	---	5,471,850	1,094,370	4,377,480	15,321,180
Total	---	---	---	6,622,050	1,324,410	5,297,640	18,541,740

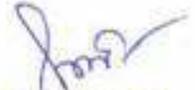

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TABLE-4.2 : MINEABLE RESOURCE OF IRON ORE

Category	Section Considered	Cross Sectional area	Length of influence	Volume of Excavation	IB (20%)	Iron Ore	
		(m ²)	(m)	(m ³)	(m ³)	Volume (80%)	Quantity (at 3.5 t/m ³)
		(m ²)	(m)	(m ³)	(m ³)	(m ³)	(t)
Probable (122)	400N	1070	100	107000	21400	85600	299600
	300N	1684	100	168400	33680	134720	471520
	200N	2418	100	241800	48360	193440	677040
	100N	2356	100	235600	47120	188480	659680
	00	1594	100	159400	31880	127520	446320
	100S	465	100	46500	9300	37200	130200
	200S	414	100	41400	8280	33120	115920
	300S	842	100	84200	16840	67360	235760
	400S	798	50	39900	7980	31920	111720
	Sub-total	---	---	11,242,00	224,840	899,360	3,147,760
Reconnaissance (334)	300W	259	100	25900	5180	20720	72520
	400W	461	100	46100	9220	36880	129080
	500W	823	100	82300	16460	65840	230440
	600W	1647	100	164700	32940	131760	461160
	700W	1205	100	120500	24100	96400	337400
	800W	734	100	73400	14680	58720	205520
	700N	4559	100	455900	91180	364720	1276520
	600N	5767	100	576700	115340	461360	1614760
	500N	4885	100	488500	97700	390800	1367800
	400N	3409	100	340900	68180	272720	954520
	300N	2969	100	296900	59380	237520	831320
	200N	2267	100	226700	45340	181360	634760
	100N	2337	100	233700	46740	186960	654360
	00	2398	100	239800	47960	191840	671440
	100S	3110	100	311000	62200	248800	870800
	400S	1032	100	103200	20640	82560	288960
500S	1136	150	170400	34080	136320	477120	

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Category	Section Considered	Cross Sectional area	Length of influence	Volume of Excavation	IB (20%)	Volume (80%)	Quantity (at 3.5 t/m ³)
		(m ²)	(m)	(m ³)	(m ³)	(m ³)	(t)
	600S	1791	100	179100	35820	143280	501480
	700S	824	100	82400	16480	65920	230720
	800S	1596	100	159600	31920	127680	446880
	900S	1362	100	136200	27240	108960	381360
	1000S	1484	100	148400	29680	118720	415520
	1100S	728	100	72800	14560	58240	203840
	1200S	288	100	28800	5760	23040	80640
	1500S	129	100	12900	2580	10320	36120
	1600S	359	100	35900	7180	28720	100520
	1700S	454	100	45400	9080	36320	127120
	Sub-total	---	---	4,858,100	971,620	3,886,480	13,602,680
Total	---	---	---	5,982,300	1,196,460	4,785,840	16,750,440


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CHAPTER-5

5.0 MINING

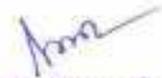
5.1 OPEN CAST MINING

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

Existing method of excavation : Applied M.L. area is a part of the relinquished area of M/s TATA Steel Ltd which is not executed / operated so far by the present applicant, M/s SMC Power Generation Limited.

A total of seventeen (17) small pits have been developed over an area of 11,087m² or 1.109 hectares in the applied M.L area and float as well as insitu iron ore has been encountered. The details of the pits have been incorporated as follows :

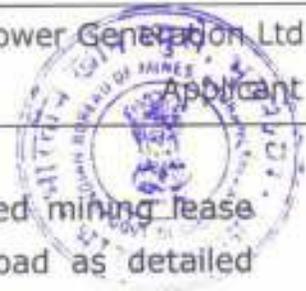
Name of Pit	Length (m)	Width(m)	Area (m ²)	Depth (m)
P-1	166	12	1992	6
P-2	56	7	392	6
P-3	85	20	1700	6
P-4	32	15	480	6
P-5	46	22	1012	6
P-6	26	11	286	4
P-7	40	8	320	4
P-8	26	8	208	3
P-9	12	9	108	5
P-10	90	19	1710	6
P-11	50	11	550	5
P-12	33	20	660	4
P-13	15	9	135	3
P-14	50	9	450	3
P-15	20	15	300	4
P-16	24	10	240	5
P-17	32	17	544	2
Total	---	---	11,087	---


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Haul road developed over 4.850 hectares in the applied mining lease area has been classified as village road and mine road as detailed below :

Name of the Road	Length (m)	Width (m)	Area Occupied	
			(m ²)	(Ha)
Village Road	662.5	8	5,300	0.530
Mine Road	5400	8	43,200	4.320
Total	---	---	48,500	4.850

Proposed method for excavation : Applicant, SMC has signed MOU with State Govt. to produce 0.4 Mtpa Steel which requires 1.123 Mt run-off mine iron ore / annum. Since the development work will be carried out in this newly proposed mine, rated production will be achieved in 5th year of mining operation and onwards.

During the plan period, two quarries namely Quarry-1 and Quarry-2 will be developed simultaneously in two places in & around the old pits between the gridlines as follows :

Year	Quarry-1		Quarry-2	
	Northing	Easting	Northing	Easting
1 st	203 N to 338 N	250 E to 396 E	145 S to 255 S	16 W to 29 E
2 nd	103 N to 359 N	231 E to 472 E	145 S to 355 S	30 W to 29 E
3 rd	8 N to 373 N	206 E to 543 E	145 S to 405 S	40 W to 106 E
4 th	3 S to 456 N	146 E to 560 E	50 S to 405 S	53 W to 106 E
5 th	455 N to 95 S	125 E to 635 E	50 S to 405 S	85 W to 106 E

Method of Mining

On account of exposures of iron ore and its limited depth of occurrence, opencast method of mining will be adopted with the deployment of DTH drills, associated compressors, tippers, excavators and other auxiliary equipments for development, production, processing, protection of environment and safety to achieve the rated production of 1.123 Mt iron ore from 5th year onwards.


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Proposed Khandbandh Iron Ore Mine (178.908 ha).

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Loosening of the hard rock mass will be effected through primary as well as secondary blasting. Primary blasting will be done by charging of 100mm dia blast holes drilled either in single or multi rows on staggered pattern. Secondary blasting will be done to blast the big boulders with the help of 32mm dia jack-hammer drills. 2m³ capacity excavators will be used for excavation & loading of the blasted r.o.m ore in to the 20t capacity tippers which will unload it into the hopper of the 500tph capacity crusher unit.

Sized ore obtained from the crusher unit will be transported to the applicants integrated steel plant in the name & style of M/s SMC Power Generation Ltd located at Hirma, district Jharsuguda, Odisha.

Quarry-1 will be approached from western side by widening & developing the existing roads. Quarry-2, as proposed, will be approached from an all weathered road from eastern side. Net work of haul roads has been proposed to develop at 1:20 gradient or less by cut & fill of the upper uneven surface to connect the other locations planned for r.o.m/lumps/fines stacking, waste dumping, crushing operation etc.

It has been planned to dump waste materials and stack sub-grade ore lumps/fines externally (beyond the ultimate pit limit) on the barren zone of soil exposure.

☉ Bench Geometry

As per the present status of exploration, excavation will be up to a depth of only 6m from surface level by developing only one bench. Height of the bench will be kept at 6m and bench slope angle will be kept nearly vertical (85^o) with the horizontal.


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❶ Plan & Sections

In Plate-IV, yearwise development as well as dumping has been projected. Two dimensional development sections have been prepared showing various litho units & development / production benches and waste dumping pattern.

❷ TIMING

Mining will be done on single shift basis. Time period will be 8 hours from 7 AM to Noon and 2 PM to 5 PM. Lunch time will be provided between 12 noon & 2 PM. One day will be declared as the weekly holiday. Quarry as well as the crusher will be operated yearly for 300 days.

First year : During the year, iron ore will be mined out as Quarry-1 and Quarry-2 up to 6m depth below ground level in and around the old pits as per the following table :

Particulars		Quarry-1	Quarry-2
Bench Geometry	Height	6m	6m
	Width	Single bench	Single bench
	Bench / quarry slope angle	85°	85°
Pit / quarry development	Direction of advancement	In & around existing pits	West of Pit-1
	Size of the quarry	110m x 108m	115m x 20m
	Quarry area	11,880m ²	2,300m ²
	No. of benches to be developed	1	1
	Depth of the Quarry	6m	6m
Nature of excavation	Topsoil	787m ³	---
	Intercalated waste	10,040m ³	2,840 m ³
	Sub-grade ore	5,020m ³	1,420 m ³
	Usable Ore	35,140m ³	9,940 m ³
	Total Excavation	50,987m ³	14,200 m ³

Second year : In this year, Quarry-1 will be extended laterally towards south east and Quarry-2 will be extended due south as well as west in 6m thick ore zone as per the following table :


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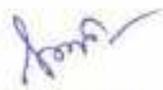
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Particulars		Quarry-1	Quarry-2
Bench Geometry	Height	6m	6m
	Width	Single bench	Single bench
	Bench / quarry slope angle	85 ^o	85 ^o
Pit / quarry development	Direction of advancement	South-east	West & south
	Size of the quarry	210m x 174m	258m x 32m
	Quarry area	36,540m ²	8,256m ²
	No. of benches to be developed	2	1
	Depth of the Quarry	6m	6m
Nature of excavation	Topsoil	3351m ³	---
	Intercalated waste	23,360 m ³	4,560 m ³
	Sub-grade ore	11,680 m ³	2,280 m ³
	Usable Ore	81,760 m ³	15,960 m ³
	Total Excavation	120,151 m ³	22,800 m ³

Third year : During the year, Quarry-1 developed in 2nd year will be extended laterally towards SE, NE & SW and Quarry-2 will be developed towards west & south as follows :

Particulars		Quarry-1	Quarry-2
Bench Geometry	Height	6m	6m
	Width	Single bench	Single bench
	Bench / quarry slope angle	85 ^o	85 ^o
Pit / quarry development	Direction of advancement	NE & SW	West
	Size of the quarry	305m x 222m	308m x 42m
	Quarry area	67,710m ²	12,936m ²
	No. of benches to be developed	2	1
	Depth of the Quarry	6m	6m
Nature of excavation	Topsoil	6,674m ³	---
	Intercalated waste	36,720 m ³	5,120m ³
	Sub-grade ore	18,360 m ³	2,560m ³
	Usable Ore	128,520 m ³	17,920m ³
	Total Excavation	190,274 m ³	25,600m ³

Fourth year : In this year, Quarry-1 developed in 3rd year will be extended laterally towards NW, NE & SW and Quarry-2 will be developed towards west & north as follows :


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Particulars		Quarry-1	Quarry-2
Bench Geometry	Height	6m	6m
	Width	Single bench	Single bench
	Bench / quarry slope angle	85°	85°
Pit / quarry development	Direction of advancement	NW	West
	Size of the quarry	400m x 268m	400m x 50m
	Quarry area	107,200m ²	20,000m ²
	No. of benches to be developed	2	1
	Depth of the Quarry	6m	6m
Nature of excavation	Topsoil	10720m ³	---
	Intercalated waste	49,960 m ³	9,400m ³
	Sub-grade ore	24,980 m ³	4,700m ³
	Usable Ore	174,860 m ³	32,900m ³
	Total Excavation	260,520 m ³	47,000m ³

Fifth year : Size of the quarries will be 500m x 320m x 6m and 400m x 84m x 6m covering the area of 160,000m² and 33,600m² respectively. During the year, Quarry-1 developed in 4th year will be extended laterally towards SE, NE & SW and Quarry-2 will be developed towards west as follows :

Particulars		Quarry-1	Quarry-2
Bench Geometry	Height	6m	6m
	Width	Single bench	Single bench
	Bench / quarry slope angle	85°	85°
Pit / quarry development	Direction of advancement	SW	West
	Size of the quarry	500m x 320m	400m x 84m
	Quarry area	160,000m ²	33,600m ²
	No. of benches to be developed	2	1
	Depth of the Quarry	6m	6m
Nature of excavation	Topsoil	15,985m ³	---
	Intercalated waste	62,360 m ³	17,840 m ³
	Sub-grade ore	31,180 m ³	8,920 m ³
	Usable Ore	218,260 m ³	62,440 m ³
	Total Excavation	327,785 m ³	89,200 m ³

Based on the available information from the pits already developed in the applied M.L area, recovery of ore & waste in the mine is assumed to be as follows :


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Sl. No.	Type of Production	Fe Content	Percentage	
1	Usable Ore	+58%	70%	80%
2	Sub-grade ore / mineral reject	+45%-58%	10%	
3	IB / Waste	-45%	20%	
Total	---	---	100%	

Keeping in view the plant capacity of the applicant and resource availability in respect of quantity & grade, the development & production proposal is given as follows (ref. Table-5.1, 5.2 & 5.3) :

5.1.2 Indicate year-wise tentative Excavation in Cubic Meters indicating development, ROM, pit wise as in table below.

I. Insitu Tentative Excavation (Quarry wise)

Year	Name of Quarry	Total Excavation (m ³)	Top Soil (m ³)	OB/SB/IB (m ³)	ROM (m ³)		Mineral Reject (m ³)	ROM / Waste Ratio
					Ore (m ³)*	Mineral reject (m ³)		
1 st	Quarry-1	50987	787	10,040	35,140	5,020	---	1 : 0.25
2 nd	-do-	120151	3351	23,360	81,760	11,680	---	
3 rd	-do-	190274	6674	36,720	128,520	18,360	---	
4 th	-do-	260520	10720	49,960	174,860	24,980	---	
5 th	-do-	327785	15985	62,360	218,260	31,180	---	
---	Sub-total	949,717	37,517	182,440	638,540	91,220	---	
1 st	Quarry-2	14,200	---	2,840	9,940	1,420	---	---
2 nd	-do-	22,800	---	4,560	15,960	2,280	---	
3 rd	-do-	25,600	---	5,120	17,920	2,560	---	
4 th	-do-	47,000	---	9,400	32,900	4,700	---	
5 th	-do-	89,200	---	17,840	62,440	8,920	---	
---	Sub-total	198,800	---	39,760	139,160	19,880	---	
Total	---	1,148,517	37,517	222,200	777,700	111,100	---	---

* 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.


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II. Insitu Tentative Excavation (Year wise)

Year	Name of Quarry	Total Excavation (m ³)	Top Soil (m ³)	OB/SB/IB (m ³)	ROM (m ³)		Mineral Reject (m ³)	ROM / Waste Ratio
					Ore (m ³)*	Mineral reject (m ³)		
1 st	Quarry-1	50,987	787	10,040	35,140	5,020	---	1 : 0.25
	Quarry-2	14,200	---	2,840	9,940	1,420	---	
	Sub-total	65,187	787	12,880	45,080	6,440	---	
2 nd	Quarry-1	120,151	3,351	23,360	81,760	11,680	---	
	Quarry-2	22,800	---	4,560	15,960	2,280	---	
	Sub-total	142,951	3,351	27,920	97,720	13,960	---	
3 rd	Quarry-1	190,274	6,674	36,720	128,520	18,360	---	
	Quarry-2	25,600	---	5,120	17,920	2,560	---	
	Sub-total	215,874	6,674	41,840	146,440	20,920	---	
4 th	Quarry-1	260,520	10,720	49,960	174,860	24,980	---	
	Quarry-2	47,000	---	9,400	32,900	4,700	---	
	Sub-total	307,520	10,720	59,360	207,760	29,680	---	
5 th	Quarry-1	327,785	15,985	62,360	218,260	31,180	---	
	Quarry-2	89,200	---	17,840	62,440	8,920	---	
	Sub-total	416,985	15,985	80,200	280,700	40,100	---	
Total	---	1,148,517	37,517	222,200	777,700	111,100	---	---

NOTE: Mineral rejects include all the excavated materials that do not constitute useful material. Such material may be either grade or size reject. The mineral reject may be (i) chemically sub-grade which is below the acceptable limits of specifications that is below the cut off grade and above the threshold value, (ii) materials of physical characteristics not acceptable to the market, (iii) material having deleterious constituents.

ROM constitutes the material excavated from mineralized zone and includes mineral reject and useable mineral component.

OB : means overburden capping waste

SB : means side burden waste on both hang wall and foot wall sides of the ore body

IB : means intermediate burden waste between two or more ore body.


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Keeping in view the non-availability of time series data, tentative tonnage of ore production Quarry wise has been arrived considering the approximate bulk density @3.5 t/m³ as given below :

Year	Name of Quarry	IB/Waste (m ³)	Iron Ore (t)		
			ROM	Usable Ore	Mineral reject
1 st	Quarry-1	10,040	140560	122990	17570
2 nd	-do-	23,360	327040	286160	40880
3 rd	-do-	36,720	514080	449820	64260
4 th	-do-	49,960	699440	612010	87430
5 th	-do-	62,360	873040	763910	109130
---	Sub-total	182,440	2,554,160	2,234,890	319,270
1 st	Quarry-2	2,840	39760	34790	4970
2 nd	-do-	4,560	92960	55860	7980
3 rd	-do-	5,120	146160	62720	8960
4 th	-do-	9,400	201040	115150	16450
5 th	-do-	17,840	249760	218540	31220
---	Sub-total	39,760	729,680	487,060	69,580
Total	---	222,200	3,283,840	2,721,950	388,850

ROM to waste ratio = $3,283,840 \text{ t} / 222,200 \text{ m}^3 = 1 : 0.07 \text{ (t/m}^3\text{)}$.

Alternatively to the above table, tentative tonnage of ore production year wise has been arrived as below :

Year	Name of Quarry	IB/Waste (m ³)	Iron Ore (t)		
			ROM	Usable Ore	Mineral reject
1 st	Quarry-1	10,040	140,560	122,990	17,570
	Quarry-2	2,840	39,760	34,790	4,970
	Sub-total	12,880	180,320	157,780	22,540
2 nd	Quarry-1	23,360	327,040	286,160	40,880
	Quarry-2	4,560	92,960	55,860	7,980
	Sub-total	27,920	420,000	342,020	48,860
3 rd	Quarry-1	36,720	514,080	449,820	64,260
	Quarry-2	5,120	146,160	62,720	8,960



Year	Name of Quarry	IB/Waste (m ³)	Iron Ore (t)		
			ROM	Usable Ore	Mineral reject
	Sub-total	41,840	660,240	512,540	73,220
4 th	Quarry-1	49,960	699,440	612,010	87,430
	Quarry-2	9,400	201,040	115,150	16,450
	Sub-total	59,360	900,480	727,160	103,880
5 th	Quarry-1	62,360	873,040	763,910	109,130
	Quarry-2	17,840	249,760	218,540	31,220
	Sub-total	80,200	1,122,800	982,450	140,350
Total	---	222,200	3,283,840	2,721,950	388,850

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

There is no dump in the applied M.L area. Hence, question does not arise in respect of re-handling for the purpose of recovery of mineral.

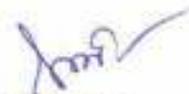
5.1.3 Enclose Individual year wise development plans and sections showing pit layouts, dumps, stacks of mineral reject, if any, etc in case of 'A' category mines. Composite development plans showing pit layouts, dumps, stacks of mineral reject, if any, etc. and year wise sections in case of 'B' category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

Ref : Year wise development plans and sections have been prepared showing pit layout, dump, stack etc.

5.1.4 Describe briefly giving salient features of the proposed method of working indicating Category of mine.

The rate of production ROM ore has been proposed from 180,320 t (1st year) to 1,122,800 t (5th year). Proposed method of working will be opencast with the involvement of mining unit operations like drilling, excavation, loading & unloading, transportation etc.

Drilling : Drilling of the blast holes is proposed to be done in Quarry-1 (insitu iron ore zone) by the DTH drills. The drilling details are as follows:


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Drill Parameter & requirement	Quantitative Aspects
Burden	2.5 m
Spacing	3.0 m
Sub-grade drilling (10%)	0.6 m
Depth of the hole	6 + 0.6 = 6.6 m
Diameter of the blast hole	100 mm
Drilling speed	12.5m / hr.
Working hours in a shift	8
Number of shifts per day	1
Annual working days	300
Availability	90%
Operating efficiency / Utilization	80%
Overall efficiency	90% x 80% = 72%
Meters to be drilled/ drill / annum	= 12.5 x 72% x 8 x 1 x 300 = 21,600m
Output / hole	= 2.5 x 3.0 x 6 = 45m ³
Volume of excavation excluding topsoil / annum (ref : 5 th year in Table-5.2)	= 311,800 m ³
Requirement of holes / annum	= 311,800 / 45 = 6,929 Nos.
Meterage of drilling required / annum	= 6,929 x 6.6 = 45,731 m
No. of drills required to be in operation	= 45,731 / 21,600 = 2 Nos.

Excavation and Loading: Run-off-mine ore will be excavated & loaded in the tipper by 2m³ capacity excavators. Number of excavators to be deployed in the mine is calculated as follows :

Excavator parameter & requirement	Quantitative Aspects
Bucket capacity proposed	= 2.0 m ³
Bucket fill factor	= 0.8
Percentage of swell	= 60%
Swell factor	= 100/(100+60) = 0.625
Availability	= 80%
Operating efficiency / Utilization	= 70%
Overall efficiency	= 80% x 70% = 56%

Proposed Khandbandh Iron Ore Mine (178.908 ha).

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Shovel cycle time	= 30 sec.
Swing factor	= 1
Volume to be handled / shovel / annum	= (2 x 0.8 x 0.625 x 56% x 3600 x 8 x 300)/30 x 1 = 161,280 m ³
Volume required to be handled / annum (excluding topsoil)	= 401,000 m ³
Number of shovels required	= 401,000/161,280 = 2.48, say 3 Nos.

TRANSPORTATION OF ORE, WASTE & MINERAL REJECTS : Average distance/lead between the quarries and crushing unit/dump/stack is assumed to be 1.75 km. However, excavator and tipper/ dumper matching calculation have been made as follows:

Truck / tipper parameter & requirement	Quantitative Aspects
Truck Capacity	= 20t
Bucket fill factor	= 0.8
Swell factor	= 0.625
Bucket capacity	= 2.0 m ³
Tonnage factor	= 3.5t/m ³
Tonnes per pass	= 2 x 0.8 x 0.625 x 3.5 = 3.5t
No. of passes	Tonnage rating of tipper / tonnes per pass = 20/3.5 = 5.7, say 6 passes

❖ Dumper / Tippers requirement

Loading time	6 x 30= 180 sec.
Lead	1.75 km
Load travel time	(3600 x 1.75) / 15 = 420 sec.
Dumping time	60sec.
Empty travel time	(3600 x 1.75) / 20 =315 sec.
Spotting time	60sec.
Tipper cycle time	= 180 + 420 + 60 + 315 + 60 = 1035 sec


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Number of rear dump trucks required /shovel	$= \text{Cycle time}/(\text{loading} + \text{spotting time})$ $= 1035/(180+60)$ $= 1035 / 240 = 4.3$
Number of excavators	= 3
Number tippers required in all total	$= 3 \times 4.3$ $= 12.9, \text{ say } 13 \text{ Nos.}$

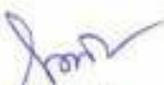
List of Machinery/Equipments : The mine under reference will be operated as Category-A mine. To achieve production at the rate of 1.123 Mt ROM iron ore / annum, earth moving machines are required to be deployed in the following manner :

Unit operation	Name	Dia / Capacity	Numbers
Drilling	IR drill	100mm	2
	Jack hammer	32mm	2
Excavation & loading	Excavator	2 m ³	3
	Loader	0.6m ³	1
		2.5m ³	3
Transporting	Tippers	20t	13
Sizing	Crushing & screening unit	500 tph	1
Environmental Protection	Water Tanker	10 kl	1
Miscellaneous	Jeep	---	3
	Ambulance	---	1

BLASTING

Blasting Parameters : There will be no blasting in Quarry-2 since it is in float ore zone and located near Khandbandh village. However, massive iron ore in Quarry-1 will be drilled and blasted for loosening and easy excavation.

The following parameters are recommended to achieve optimum results in terms of fragmentation, economy and least possible effect on the surrounding environment :


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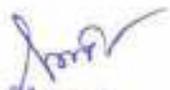
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Hole Diameter	= 100mm
Bench Height	= 6m
Sub-grade drilling	= 0.6m
Hole depth	= 6m + 0.6m = 6.6m
Burden	= 2.5m
Spacing	= 3.0m
Powder factor	= 6.5 t/kg (approx)
Yield/hole = Bench height x burden x spacing	= 6 x 2.5 x 3.0 = 45m ³ = 45 x 3.5 = 157.5 t
Charge per hole	= 157.5/6.5 = 24.2, says 24 Kg

Holes will be drilled in a single row or in two rows in a staggered pattern. The individual holes will be connected by a trunk detonating cord. The delay detonators of 25 to 50 millisecond will be used depending upon the strata condition and the location of buildings/structures such as office, crusher etc. Detonating fuse will be fired by at least 1.5m long safety fuse.

Type of Explosive to Be Used : Primary blasting will be done with the help of 83mm dia powergel explosives and ANFO (ammonium nitrate and fuel oil). About two-third of the hole length will be charged by the explosives while one-third will be stemmed by the drill cuttings. Because of massive iron ore, big boulders come out from the primary blasting will require secondary blasting. For the purpose, 32mm dia jack hammer drilled holes will be charged & blasted by 25mm dia & 130mm long powergel cartridges initiated by ordinary detonators and 1.5m long safety fuse.


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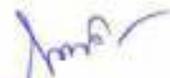
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Length of the hole	= 6.6m
Length of the explosive column (2/3 rd of the hole length)	= $6.6 \times 2/3 = 4.4\text{m}$
Loading density	= 1t/m^3
Dia of the cartridge	= 83mm
Volume of the explosive column	$= (\pi d^2/4) \times 4.4$ $= \{ \pi (0.083\text{m})^2/4 \} \times 4.4$ $= 0.0238\text{m}^3$
Explosives required / hole	$= 0.0238 \times 1000$ $= 23.8, \text{ say } 24 \text{ Kg}$
Quantity to be blasted /annum	= 873,040t iron ore (Q-1)
Quantity to be blasted /day	$= 873,040 / 300$ $= 2,910 \text{ t}$
Explosive required/day	$= 2,910 / 6.5$ $= 447.6, \text{ say } 448 \text{ Kg}$

Out of 448 kg explosive, one-fourth of explosives i.e. $448 / 4 = 112 \text{ kg}$ will be powergel and remaining will be ANFO. Therefore, magazine capacity will be $112 \times 12 = 1344 \text{ kg}$, say 1500 kg for storage of at least two weeks of 12 working days.

Storage and Transportation of Explosives: To prevent the pilferage & theft, a licensed magazine will be made available for storage of the under-mentioned kinds and quantities of explosives :

Commercial Name	Class	Division	Quantity
Nitrate Mixtures	Class-II	---	1500 Kg
Safety Fuse	Class-VI	Division-1	1000 coils
Detonating Fuse	-do-	Division-2	5,000 m
Detonators	-do-	Division-3	3,000 Nos.


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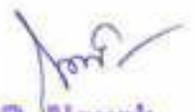
5.1.5 Describe briefly the layout of mine workings, pit road layout, the layout of faces and sites for disposal of overburden/waste along with ground preparation prior to disposal of waste, reject etc. A reference to the plans and sections may be given. UPL or ultimate size of the pit is to be shown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

Year wise development is detailed in Para-5.1.1. At the end of plan period, 19.360 hectares will be utilized for production of iron ore and status of the quarries will be as follows:

Name of the Quarry	Dimension			
	Length (m)	Breadth (m)	Area (m ²)	Area (ha)
Quarry-1	500	320	160,000	16.000
Quarry-2	400	84	33,600	3.360
Total	---	---	193,600	19.360

Keeping in view the expected weather conditions (rain fall), largest vehicle on site, speed of the vehicles and construction practices in the mine, haul road will be maintained (a) in the M.L area to suit the load capacity of the dumpers and (b) with good condition. Width of the haul road will be kept more than 3 times of the width of largest vehicles plying on the road. Gradient will be maintained up to a maximum of 1 : 16 for haul road and 1 : 10 for ramp up to 10m length at one stretch. Haul road to be developed above the level of surrounding area will be provided with parapet wall / embankment. Warning notices and road signs will be posted along the haul roads at appropriate places like crossings, curves etc. for guidance of truck or tipper drivers. Haul road will be properly maintained by way of adequate compaction and leveling. Water sprinkling will be done on the haul road for dust suppression, road safety as well as clean environment.

Waste disposal is given in Chapter-7.0. Ultimate pit limit is given in year wise development plan as well as sections.


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Geological sections are prepared based on boreholes data. Ore and waste zones are plotted separately in the sections. Quantity of these different materials is calculated separately.

Usable ore is prepared in different sizes. Sub-grade iron ore / mineral rejects are not usable at present due to its grade. Therefore, these ores are proposed to be stacked for use in future (ref : Plate-IV).

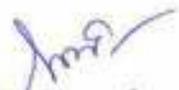
5.1.6 Conceptual Mine planning upto the end of lease period taking into consideration the present available reserves and resources describing the excavation, recovery of ROM, Disposal of waste, backfilling of voids, reclamation and rehabilitation showing on a plan with few relevant sections.

As abstracted, mineable resource of iron ore is of the order of 16,750,440 t as per the following table :

Reserve/ resource	Type	UNFC Code	Quantity (t)
Reserve	Probable	122	3,147,760
Resource	Reconnaissance	334	13,602,680
Total	---	---	16,750,440

During the plan period, 3,283,840 t (+45% Fe) iron ore will be extracted. Keeping in view the production target 1,122,800 t / annum, remaining resource will be exhausted over a period of $(16,750,440 - 3,283,840) / 1,122,800 = 11.99$, say 12 years. Hence, life of the mine will be 17 years which is the sum of available 5 years of plan period and the next 12 years, beyond the plan period.

However, life of the mine may change depending upon the outcomes of proposed core drilling.


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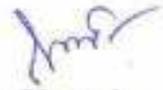
Conceptual exploration : Exploration proposal has been included to explore the entire applied M.L area at the end of plan period. Depending upon the outcomes of exploration, borehole proposal will be given further for undertaking exploration beyond the plan period at closer intervals.

Excavation and recovery of ROM : There will be development of eight (8) quarries in the applied M.L. area over 103.633 hectares at the end of the life of the mine.

Ultimate pit limit has been delineated covering the entire iron ore deposit up to 6m depth except safety zone as per the present status of exploration.

The ultimate extent of the quarries will be of the following order :

Name of quarry	Length (m)	Breadth (m)	Ultimate extent		Ultimate pit depth (m)
			In m ²	In ha.	
Quarry-1	986	691	681,326	68.132	6
Quarry-2	1400	109	152,600	15.260	6
Quarry-3	387	134	51,858	5.186	6
Quarry-4	605	140	84,700	8.470	6
Quarry-5	80	17	1,360	0.136	6
Quarry-6	270	104	28,080	2.808	6
Quarry-7	290	61	17,690	1.769	6
Quarry-8	360	52	18,720	1.872	6
Total	---	---	1,036,334	103.633	---


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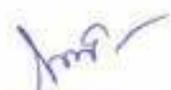
There is no proposal at present for enhancement of production of iron ore in conceptual period. Various type of materials to be excavated / achieved at the end of life of the mine is as follows :

IW / Waste	=	1,196,460m ³
Usable ore	=	4,187,610m ³
Sub-grade / Mineral rejects	=	598,230m ³
ROM Ore	=	4,187,610 + 598,230
	=	4,785,840 m ³
ROM : Waste ratio	=	1 : 0.25 (m ³ /m ³)

Disposal of waste and back-filling of voids : Conceptual generation of waste will be 1,196,460m³ (ref : Table-4.2). These wastes will be dumped at two places as Dump-1 and 2 over an area of 11.965 hectares at 10m average height in terraces of 7.5m each. Since quarries are located in hill slopes, there is no proposal for back-filling of voids / mined out area which will be rehabilitated by way of plantation.

Sub-grade generation and its beneficiation : Cut-off grade of captive plant / mine is 58% Fe. Therefore, iron ore containing +45%-58% Fe is considered to be sub-grade ore. Conceptual generation of sub-grade ore / mineral rejects will be 598,230m³. These sub-grade ores will be stacked over an area of 11.965 hectares at 5m average height in one terrace of 7.5m maximum height for use in future depending upon the beneficiation or technological up-gradation of the captive plant.

Manpower & equipment requirement : There is no proposal at present for further enhancement of plant capacity. On the basis of captive plant capacity, rate of iron ore production in the mine, manpower and equipment / machinery has been proposed in Para-10.2 and 5.1.4.


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Land Degradation / Utilization : An area of 161.674 hectares will be degraded/utilized conceptually for mining & allied activities. Item-wise break-up of the land use will be as follows :

Sl. No.	Type of land use	As at present (in ha)	As at the end of plan period (in ha)	As at the end of conceptual period (life of mine) (in ha)
1.	Area under excavation	1.109	18.345	103.633
2.	Storage for Topsoil	---	1.251	1.251
3.	Overburden dump	---	2.222	11.965
4.	Mineral storage	Sub-grade ore	---	11.965
		ROM ore, lumps & high grade fines	---	10.000
5.	Infrastructure (rest shed, office, quarters, hutting etc.)	---	1.500	2.000
6.	Roads	5.400	7.500	12.455
7.	Railways	---	---	---
8.	Tailing Pond	---	---	---
9.	Effluent Treatment Plant	---	---	---
10.	Mineral Separation Plant	---	1.250	3.500
11.	Township area	---	---	---
12.	Others (Weight bridge and truck parking area)	---	3.000	4.905
---	Sub-Total	6.509	42.540	161.674
13.	Green belt (safety zone, along lease boundary)	---	2.500	8.035
14.	Village road	0.530	0.530	0.530
15.	Safety zone on either side of village road	2.144	2.144	2.144
16.	Safety zone on either side of nala coarse	5.820	5.820	5.820
17.	Right of way of 33 KV Power line	0.705	0.705	0.705
18.	Remaining area	163.2	124.669	---
---	Sub-total	172.399	136.368	17.234
---	Total lease area	178.908	178.908	178.908

Reclamation and Rehabilitation : Ore body encountered in pits up to a depth of 6m from surface level has been considered for delineating the ultimate pit limit as per the present status of exploration. Since quarries are located in hill slopes, there is no proposal for back-filling of voids / mined out area which will be rehabilitated by way of plantation.

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Proposed Khandbandh Iron Ore Mine (178.908 ha).



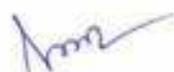
As far as post mining land use is concerned, area under excavation and overburden dump will be fully rehabilitated by way of plantation. Road will be left for use of the local people and as fire line. A total of 314,443 saplings such as Mango, Mahul, Neem, Mahaneem, Gambhari etc. will be planted cumulatively over an area of 125.777 hectares by the end of conceptual plan period :

Sl. No.	Type of plantation	Location	Area (in ha.)	No. of saplings
1	Plantation	Safety zone along boundary M.L	8.035	20,088
		Safety zone along village road	2.144	5,360
2	Rehabilitation	Mined out area	103.633	259,083
3	-do-	Waste dump	11.965	29,912
Total	---	---	125.777	314,443

Sub-grade stack, mineral separation plant, mineral stack & infrastructure area will be rehabilitated by way of plantation after cessation of mining as well as mineral processing and removal of these materials.

5.2 UNDERGROUND MINING

No underground mining operation is proposed in this lease area.


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TABLE-5.1 : TOPSOIL SCRAPPING SCHEDULE (QUARRY-1)

Year	Surface Area (m ²)	Thickness of Topsoil (m)	Volume of Topsoil (m ³)	Quantity (at 1.8 t/m ³)
1 st	7874	0.1	787	1417
2 nd	33512	0.1	3351	6032
3 rd	66735	0.1	6674	12012
4 th	107200	0.1	10720	19296
5 th	159850	0.1	15985	28773
Total	375,171	---	37,517	67,530

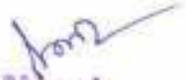
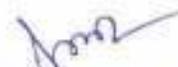

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TABLE-5.2 : PRODUCTION SCHEDULE OF IRON ORE (Quarry-1)

Year	Section Considered	Cross Sectional Area	Length of Influence	Volume of Ore Zone	Volume of Waste (20%)	Volume of Sub-grade ore (10%)	Volume of usable ore (at 70% recovery)
		(m ²)	(m)	(m ³)	(m ³)	(m ³)	(m ³)
1 st year	NN'	502	100	50,200	10,040	5,020	35,140
2 nd year	NN'	400	100	40000	8000	4000	28000
	OO'	768	100	76800	15360	7680	53760
	Sub-total	---	---	116,800	23,360	11,680	81,760
3 rd year	NN'	302	100	30200	6040	3020	21140
	OO'	296	100	29600	5920	2960	20720
	PP'	1238	100	123800	24760	12380	86660
	Sub-total	---	---	183,600	36,720	18,360	128,520
4 th year	MM'	1602	100	160200	32040	16020	112140
	NN'	302	100	30200	6040	3020	21140
	OO'	296	100	29600	5920	2960	20720
	PP'	298	100	29800	5960	2980	20860
	Sub-total	---	---	249,800	49,960	24,980	174,860
5 th year	MM'	316	100	31600	6320	3160	22120
	NN'	282	100	28200	5640	2820	19740
	OO'	280	100	28000	5600	2800	19600
	PP'	278	100	27800	5560	2780	19460
	QQ'	1962	100	196200	39240	19620	137340
	Sub-total	---	---	311,800	62,360	31,180	218,260
Total	---	---	---	912,200	182,440	91,220	638,540


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TABLE-5.3 : PRODUCTION SCHEDULE OF IRON ORE (Quarry-2)

Year	Section Considered	Cross Sectional Area	Length of Influence	Volume of Ore Zone	Volume of Waste (20%)	Volume of Sub-grade ore (10%)	Volume of usable ore (at 70% recovery)
		(m ²)	(m)	(m ³)	(m ³)	(m ³)	(m ³)
1 st year	SS'	142	100	14,200	2,840	1,420	9,940
2 nd year	SS'	88	100	8800	1760	880	6160
	TT'	140	100	14000	2800	1400	9800
	Sub-total	---	---	22,800	4,560	2,280	15,960
3 rd year	SS'	48	100	4800	960	480	3360
	TT'	104	100	10400	2080	1040	7280
	UU'	208	50	10400	2080	1040	7280
	Sub-total	---	---	25,600	5,120	2,560	17,920
4 th year	RR'	256	100	25600	5120	2560	17920
	SS'	64	100	6400	1280	640	4480
	TT'	120	100	12000	2400	1200	8400
	UU'	60	50	3000	600	300	2100
	Sub-total	---	---	47,000	9,400	4,700	32,900
5 th year	RR'	74	100	7400	1480	740	5180
	SS'	72	100	7200	1440	720	5040
	TT'	484	100	48400	9680	4840	33880
	UU'	524	50	26200	5240	2620	18340
	Sub-total	---	---	89,200	17,840	8,920	62,440
Total	---	---	---	198,800	39,760	19,880	139,160


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CHAPTER-6

6.0 MINE DRAINAGE

6.1 Minimum and maximum depth of water table based on observations from nearby wells and water bodies

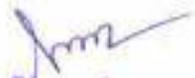
Likely depth of water table is 5m (at 545m above mean sea level) in rainy season and 8m (at 542m aMSL) in dry season. Ground level is at 550m aMSL.

6.2 Indicate maximum and minimum depth of Workings.

The deposit will be worked above 560m aMSL. There is no possibility of puncture of ground water table in plan period of 5 years and also up to the end of life of the mine.

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

Quarry will be developed on the slopes and open ended towards the periphery. Therefore, it will be of self-draining and no pumping is required. The natural drainage will be observed only in monsoon season since there is no chance of seepage of ground water. The floor of the quarry is proposed to be inclined towards the natural slope so that the direct precipitated water will be drained down the slope automatically. A catch/periphery/garland drain will be developed all around the quarry to receive surface run-off water and discharge to the 1st and 2nd order streams through settling ponds.


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- 6.4 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.

Regional and local drainage pattern : The natural drainage system is distinct and dendritic due to hilly topography. There is no perennial nala in the applied M.L area. Surface run-off water flows along the natural slopes, valleys and finally in to the seasonal nalas in northern side to meet Kundra/Suna Nala. The confluence point of this nala and Suna Nala is located at a linear distance of 4.5 Km North of the area. Buffer zone (5 km radius of M.L area) falls within the catchments of Suna Nala which is perennial in nature. Kundra/Suna Nala is the tributary of Baitarani River which controls the drainages system of the area and flows due north in the region and then east to meet the Bay of Bengal.

Annual rain fall , catchments area and likely quantity of rain water :

There is a wide variation of rainfall in the catchment area and around 10kms radius of buffer zone of this mine. The average rainfall is 1400mm out of which 92% occur in monsoon months. The average annual rainfall of this mine area is affected by steep hills, forest cover etc.

Likely quantity of rain water / annum is $178.908 \text{ hectares} \times 1400 \text{ mm} = 1,789,080\text{m}^2 \times 1.4\text{m} = 2,504,712\text{m}^3$. Keeping in view the evapo-transpiration and seepage into sub-surface at 40%, water flow within applied mining lease area will be $2,504,712 \times 60\% = 1,502,827\text{m}^3$ which will be drained.

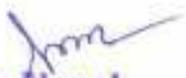

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Arrangement for arresting solid wash off: Main source of water pollution is the surface run-off water due to rain fall mostly in rainy season in haul road, dumps, stacks etc. Wash-offs flowing from the waste dump, stack etc. will be retained by the construction of the retaining wall around these dumps / stacks. Garland drain / catch drain will be developed around the dumps / stacks beyond the retaining wall to receive run-off water coming out of the retaining wall and settling tank will be made en-route to receive the run-off water from garland drain to settle the sediments and release clean water. The drain will be de-silted regularly and maintained properly siltation ponds. Further, water flowing through the natural water course check dammed across the nala course to arrest the silt contents if any.


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CHAPTER-7

7.0 STACKING OF MINERAL REJECT /SUB GRADE MATERIAL AND DISPOSAL OF WASTE

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

Lateritic soil, laterite and BHJ occurs in iron ore zone as inter-burden / waste. Iron ore containing less than 58% Fe which is not beneficiated and/or used at present for sponge/steel making is regarded as sub-grade ore. However, yearwise generation of these materials is anticipated to be as follows:

Year	OB/SB/IB (m ³)			Mineral reject (m ³)		
	Quarry-1	Quarry-2	Total	Quarry-1	Quarry-2	Total
I	10,040	2,840	12,880	5,020	1,420	6,440
II	23,360	4,560	27,920	11,680	2,280	13,960
III	36,720	5,120	41,840	18,360	2,560	20,920
IV	49,960	9,400	59,360	24,980	4,700	29,680
V	62,360	17,840	80,200	31,180	8,920	40,100
Total	182,440	39,760	222,200	91,220	19,880	111,100

Sub-grade ore / mineral rejects will be stacked in the applied M.L area and utilized in the captive plant in future. However, final presentation of the facts and figures as per the prescribed format is as follows :

Year	Top Soil (m ³)		OB / IB / waste (m ³)			Mineral Rejects (m ³)	
	Reuse/spreading	Storage	Backfilling	Storage	Disposal	Blending	Beneficiation
I	---	787	---	12,880	---	---	---
II	---	3351	---	27,920	---	---	---
III	---	6674	---	41,840	---	---	---
IV	---	10720	---	59,360	---	---	---
V	---	15985	---	80,200	---	---	---
Total	---	37,517	---	222,200	---	---	---



- 7.2 In case the waste material is to be dumped outside lease area, give justification as well as details thereof along with permissions/surface rights from the appropriate State authorities must. The proposed dumping ground within the lease area be proved and be outside the UPL.

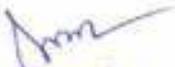
There is no proposal at present for dumping of waste outside the lease area.

Selection of dumping / stacking site mostly depends upon the factors like topography, drainage, land use, mineral inventory, pit configuration, mine waste characteristics, its volume of generation and economy in transportation. Keeping in view the above physical as well as techno-economic factors, waste will be dumped in north-western part of the lease area having sparse forest growth which is applicable barren (no ore bearing) due to the exposure of soil & alluvium and far away from the ultimate pit limit.

Proposed dumping / stacking site will be explored / drilled at 100m interval and brought into use after proving / confirming barren (no ore bearing) (ref : Plate-III).

- 7.3 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.

Manner of waste disposal : A total of 222,200m³ waste materials, as tabulated above, will be disposed over an area of 22,220m² or 2.222 hectares at 10m average height in two terraces of 7.5m height each. Slope of the terrace will be maintained equivalent with the angle of repose of the waste materials i.e. around 37⁰ 30' with the horizontal.


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Configuration and sequence of year wise build up of dumps :

Build up of dump from year to year will be as follows :

Year	Dump No.	Area to be used (m ²)	No. of terraces	Height (m)	Designed capacity (m ³)	Bottom RL (m)	Top RL (m)
1 st	Dump-1	1288	2	15	12,880	555	570
2 nd	-do-	2792	2	15	27,920	555	570
3 rd	-do-	4184	2	15	41,840	555	570
4 th	-do-	5936	2	15	59,360	555	570
5 th	-do-	8020	2	15	80,200	555	570
Total	---	22,220	---	---	222,200	---	---

Dump will be compacted and leveled to prevent the erosion of waste materials from rain and wind. Slope of the terrace will be maintained equivalent with the angle of repose of the waste materials i.e. around 37° 30' with the horizontal. Overall dump slope angle will be maintained at 28° with the horizontal. Floor of the terrace will be sloped inward to prevent the flow of water outside at weak zone. Water in each terrace will be allowed by making the garland drain at its toe and joined with each other to further join with nearby nala of natural drainage system.

Rate of yearly generation of sub-grade mineral and proposals for stacking for five years

Sub-grade ore may be defined as a part of ROM ore, which grades below the cut-off grade & above threshold limit and is not usable or beneficiable at present for captive use. The threshold limit of iron ore has been fixed up by the IBM recently as 45% Fe and cut-off grade of the mine is 58% Fe. Therefore, iron ore containing +45% Fe to -58% Fe has been regarded here as sub-grade ore and will be kept separately for future use.

A total of 111,100m³ sub-grade ore / mineral rejects will be stacked over an area of 22,220m² or 2.222 hectares at 5m average height in one terrace of 7.5m maximum height.


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Proposed Khandbandh Iron Ore Mine (178.908 ha).

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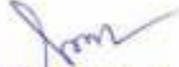
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Proposal for Protective Measures : Retaining wall will be constructed around the IB dump and fines stack to retain the wash-off materials. Boulders of waste materials will be utilized for construction of retaining wall. Sand and cement will be used for the binding of the boulders. Garland drain will be developed around waste dump beyond the retaining wall to receive run-off water coming out of the retaining wall and settling tank will be made en-route to receive the run-off water from garland drain to settle the sediments and release clean water. The year-wise details of the construction will be as follows :

Year	Name of Dump	Retaining wall (m)			Garland drain (m)		
		L	B	H	L	B	D
1 st	Dump	586	1.5	1	120	1	1
	Crushed fines	542	1.5	1	105	1	1
	Screened / sub-grade fines	256	1.5	1	---	---	---
2 nd	-do-	Maintenance			Maintenance		
3 rd	-do-	-do-			-do-		
4 th	-do-	-do-			-do-		
5 th	-do-	-do-			-do-		


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CHAPTER-8

8.0 USE OF MINERAL AND MINERAL REJECTS

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

Iron ore lumps (caliberated ore) obtained from the mine after processing of ROM ore will be dispatched to the Applicant's integrated steel plant in the name & style of M/s SMC Power Generation Limited located at Hirma, in district Jharsuguda, Odisha for sponge iron as well as steel making. Khandbandh iron ore deposit, because of its grade will be suitable to meet following specification for sponge iron & steel making in the applicants plant :

Parameters	Steel Making	Sponge Iron Making
Fe%	63% (min)	64% (min)
SiO ₂ %	2% (max)	5% (max)
Al ₂ O ₃ %	3% (max)	2% (max)
P%	0.05 (max)	0.03 (max)
S%	0.02 (max)	0.02 (max)
Size	+ 10 - 30 mm	+5 - 18 mm

There is no pelletization plant of Applicant at present. Fines cannot be used directly in the integrated steel plant. Therefore, fines generated during the plan period will be stacked for pelletization in next five years.

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

ROM ores will be crushed & screened and up-graded in the applied M.L area by the Applicant to cater the need of captive plant.


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8.3 Give detail requirements for other industries, captive consumption, export, associated usable use etc.

Since the deposit will be operated exclusively for captive use, the production target has been fixed at 1.123 Mt/annum as per the calculation given in Introduction Chapter which will be achieved in 5th year of the quinquennial planning period and onwards.

8.4 Indicate precise physical and chemical specification stipulated by buyers

Not applicable because of captive use of iron ore.

8.5 Give details of processes adopted to upgrade the ROM to suit the user requirements. The useable mineral recovered from ROM may not be directly used in any industry and may need intermediate process to suit the user industry in terms of physical and chemical compositions.

Dry processing such as crushing & screening will be adopted to upgrade ROM iron ore to suit the user requirements as per the flow sheet given in Para-9.2.

Sub-grade iron ore (+45%-58% Fe) / mineral rejects will be stacked for use in future depending upon the up-gradation / modernization of the technology in the captive plant.


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CHAPTER-9

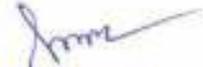
9.0 PROCESSING OF ROM IRON ORE AND MINERAL REJECTS

There is a proposal to establish a 500tph capacity crusher in the applied M.L area for breaking of run-off mine iron ore in to required sizes. During the preparation of sized ore, generation of fines is inevitable. However, the productivity of the crushing unit will be as follows :

Working Schedule	Annual working days	= 300
	Effective working hours in a day	= 8
Capacity	Hourly Capacity	= 500t
	Annual Capacity (Maximum)	= 500 x 8 x 300 = 1,200,000 t
Size range	Feed (r.o.m iron ore) size	= up to 500mm
	Product size desired (lumps)	= +5 - 18mm and +10-30mm
	Product size inevitable (fines)	= - 5mm
Percentage of generation	Lumps (CLO) expected	= 57%
	Fines	= 43%
	Run-off mine ore	= 1,122,800t
Annual production	Lumps (CLO)	= 1,122,800 x 57% = 639,996t
	Fines	= 1,122,000 x 43% = 482,804t

9.1 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.

Run-off mine ore of - 500 mm size will be fed in to a 100 t capacity hopper from where it will go to grizzly feeder. From the grizzly feeder, +100 to -500 mm size will be fed to the primary jaw crusher.


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ROM ore will be fed into a vibrating screen for separation of reject/sub-grade fines which is approximately 10% of the total ROM. + 5mm along with output of primary crusher (-150 mm) will be conveyed in to another vibrating screen. At this screen, + 60mm is fed into a secondary crusher where it will be crushed to - 60mm.

This -60mm size (both from secondary crusher as well as that directly obtained from screen) will go to a double deck vibrating screen. From this screen, - 60 + 18 mm size will be fed into a tertiary hydro cone crusher, the product of which (+10 - 30mm and + 5 - 18mm) will be re-cycled in to the triple deck vibrating screen. From this screen, -30 + 10mm (27% of ROM), -18 + 5 mm size (30% of ROM) and -5mm size (33% of ROM) will be stored separately and dispatched to the respective destination points. However, products to be obtained from the crusher are given in the table as follows :

Product	Size	Recovery	Quantity (t)
Sized ore (CLO)	- 18 + 5 mm	30%	336,840
Sized ore (CLO)	- 30 + 10 mm	27%	303,156
Fines	- 5 mm	33%	370,524
Sub-grade/reject fines	- 5 mm	10%	112,280
Total	---	100%	1,122,800

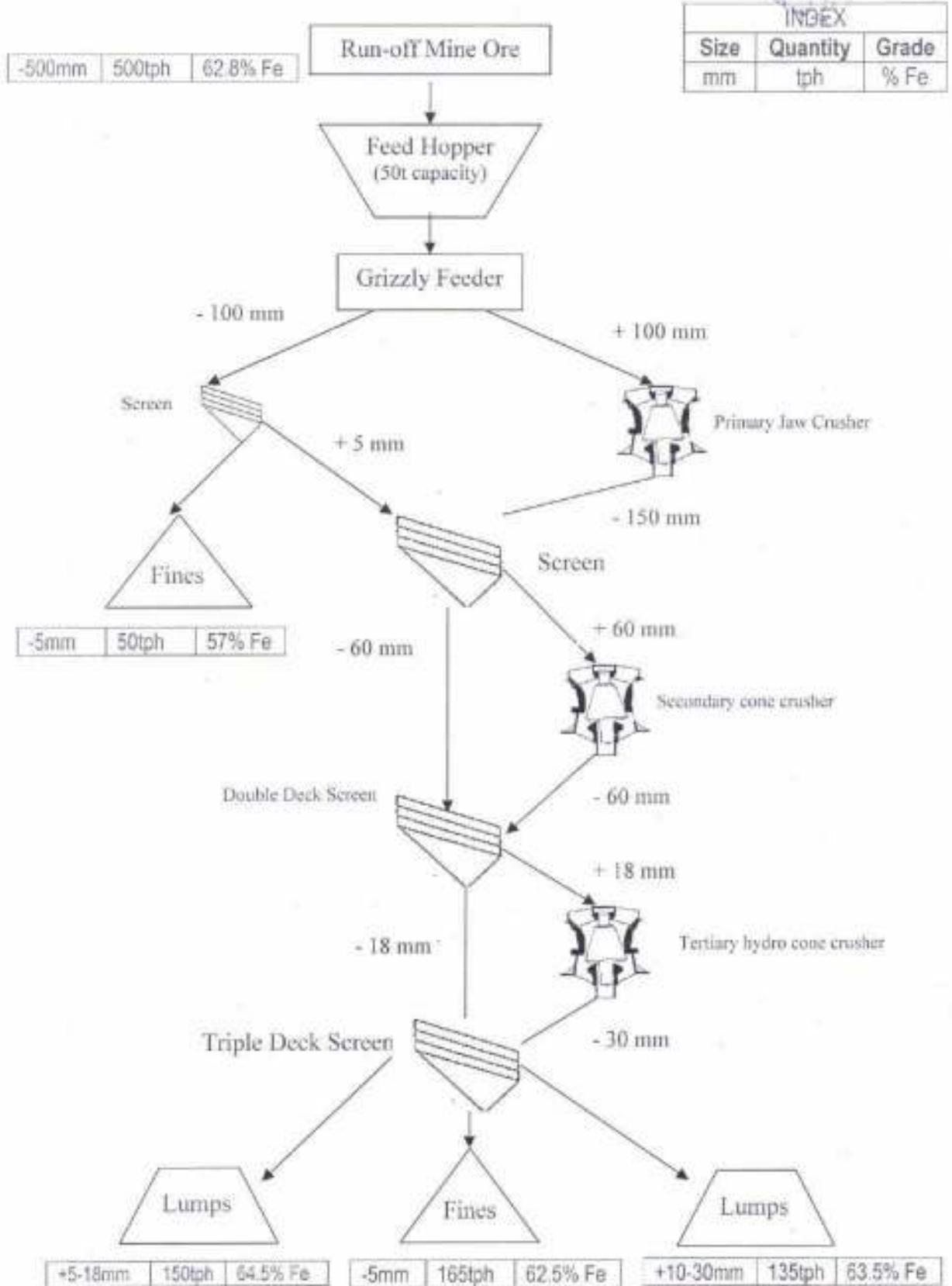
Dry processing will be carried out in the plant with water sprinkling arrangement for dust suppression.

9.2 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.

Run-off mine iron ore raised from the mine will be screened for separation of iron ores in to various sizes as per the following flow sheet:



Flow sheet of the crushing plant is designed to be as follows



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9.3 Explain the disposal method for tailings or reject from the processing plant.

Due to dry processing there will be generation of fines which will be stacked and used subsequently.

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

Not applicable due to dry processing.

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

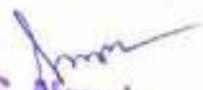
There will be no use of any chemicals due to dry processing i.e., crushing & screening. Only water will be sprinkled for dust suppression.

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

Not applicable

9.7 Indicate quantity (m³ / 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.

In a day, about 2,955, say 3000 liters / 3m³ of potable water will be provided to the Quarry staff of 197 persons for drinking purpose assuming 15 liters of clean and wholesome drinking water per day per man and 7,000 liters / 7m³ will be required at the mine site for bathing, washing & cooking. In addition to these, 50,000 liters / 50m³ of water will be utilized for non-domestic purpose which includes 45,000 liters / 45 m³ for water spraying for dust suppression /prevention and 5,000 liters / 5m³ for watering the plantation site for live and growth of the saplings. Hence, the peak demand of intake water may be tabulated as follows :


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(73)

Class of Use	Purpose	Peak demand (liters / day)	Source of water
Domestic	Drinking (197 nos. x 15 ltrs)	3,000	Bore well
	Bathing, washing, cooking etc. (for 45 persons @150 liters / man / day)	7,000	-do-
Non-Domestic	Water sprinkling for dust suppression	45,000	Karo nala
	Watering the plantation site	5,000	-do-
Total	---	60,000 liters	---


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CHAPTER-10

10.0 OTHERS (Describe briefly the following)

10.1 SITE SERVICES

❖ Existing Site Services :

Road & Railway: Applied lease area is accessible from Joda via Bichhakhundi through 13 km long all weather road and via jururhi through 17km long all weathered roads. The nearest railhead is Banspani at a distance of 14 Km, via Jururhi and at a distance of 17km via Bichhakhundi.

Market Facility : Local market places are Bichhakhundi (7 km) and Jururhi (8km). However, full-fledged market facilities are available at Joda (13 km), Barbil (27km) and Keonjhar (107km), the district Head Quarter.

Electricity : 11 KV and 33 KV power line passes through the applied M.L. area.

Water availability : Drinking water is available from the Tube well of village Khandbandh. Kundra/Suna nala water is used for non-domestic purpose.

Medical & Educational Facilities : Medical facilities are available from TATA STEEL hospital at Bichhakhundi (7km). Govt. hospital is located at Joda NAC area. Education upto 5th class is available at Khandbandh, High school level at Bichhakhundi and college level, at Joda.

Postal & Telephonic facilities : Postal and telephonic facilities are available at Bichhakundi, Jururhi, Banspani & Joda.


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Facilities Proposed: First-aid facilities equipped with sterilized dressing materials such as cotton wool, bandages, iodine and antiseptic solution etc will be provided for treatment of the workers before hospitalization, if any accident occurs in the mine.

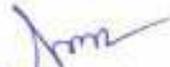
Rest shed will be constructed at the mine site to take food & water and rest during lunch time. A canteen will be provided to take tiffin & meals as per need of the mine people

During night, lighting arrangement will be made sufficiently as per the DGMS norms.

A temporary site office room will be constructed for day to day mine administration and management. Toilet will be made available in the M.L area for disposal of human excreta in a hygienic manner.

The statutory buildings such as rest shed, blasting shelter, first-aid centre, crèche, canteen etc will be well maintained. Wholesome drinking water, safety equipment and blasting sheds will be provided at the mine site as per need. For day to day mine operation, the following facilities are proposed to be provided in respect of various activities :

Type of Work	Facilities
Mine working	Repair & maintenance
Safety Measures	Provision of helmets, gloves, spades, spectacles etc.
Protection of Environment	Water sprinkling arrangement, facilities for plantation and construction of retaining wall, garland drain, coir matting etc.
Welfare	Provision of rest shed, blasting shed, first- aid facilities, wholesome drinking water & ambulance arrangement.


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10.2 Employment potential :

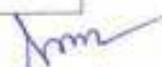
For day to day mine operation, administrative & supervisory personnel will be only 10 numbers as per the following table :

Sl No.	Post	Qualification	Nos.
1	Manager	First Class Mines Manager's Certificate of Competency	1
2	Mining Engineer	Degree in Mining Engineering with 10 years experience	1
3	Geologist	M. Sc. In Geology with 10 years experience	1
4	Mechanical Engineer	Diploma in Mechanical Engineering	1
5	Foremen	Foremen's Certificate of Competency	1
6	Mining Mate	Mate's Certificate of Competency	3
7	Blaster	Mate-cum-blaster's Certificate of Competency	1
8	Surveyor	Surveyor's Certificate of Competency	1
Total	---	---	10

Keeping in view the mining unit operations such as excavation, loading, breaking, sorting & sizing, OMS has been assumed to be 20 t only.

A total of 187 workers are to be employed in the mine for production & processing of 1,122,800 t r.o.m iron ore / annum which is calculated to be as follows :

Highest Yearly production of usable iron ore	= 1,122,800 t
Number of working days in the Year excluding rainy days, holiday's etc.	= 300
Daily production	= 1,122,800/300 = 3742.6, say 3,743 t
OMS	= 20 tones
Number of laborers required in work	= 3743/20 = 187 Nos.


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Percentage of the laborer employment in respect of the skill analysis tabulated as follows :

Type	Percentage	Numbers
Skilled	20%	37
Semi-Skilled	30%	56
Un-skilled	50%	94
Total	100%	187

Total = Management & supervisory (10) + Laborers (187) = 197


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CHAPTER-11

11.0 PROGRESSIVE MINE CLOSURE PLAN UNDER RULE 23 OF MCDR'1988

11.1 Environment Base line information: Attach a note on the status of baseline information with regard to the following :

11.1.1 Existing land use pattern indicating the area already degraded due to mining, roads, processing plant, workshop, township etc in a tabular form.

Applied lease area under reference over 178.908 hectares consisting of 77.708 hectares DLC forest, 66.887 hectares Baitarani R.F. and 31.412 hectares village forest and as on date, an area of 6.509 hectares forest land has already been utilized/degraded due to pitting, road, stacking etc. as per the following table :

Sl. No.	Type of land use	As at present (in ha)
1.	Area under excavation	1.109
2.	Storage for Topsoil	---
3.	Overburden dump	---
4.	Mineral storage	Sub-grade ore ROM ore, lumps & high grade fines
5.	Infrastructure (rest shed, office, quarters, hutting etc.)	---
6.	Roads	5.400
7.	Railways	---
8.	Tailing Pond	---
9.	Effluent Treatment Plant	---
10.	Mineral Separation Plant	---
11.	Township area	---
12.	Others (Weight bridge and truck parking area)	---
Total	---	6.509

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There is no national park/wild life sanctuary/biosphere reserve/ tiger reserve/ elephant reserve in the core (applied M.L area) and buffer zone (5 km radius of the applied M.L area). A part of Baitarani R.F falls within core zone. In addition to these, Sidhamatha R.F (1.5 km) is located in the buffer zone.

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

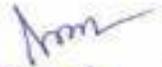
The natural drainage system is distinct and dendritic due to hilly topography. There is no perennial nala in the applied M.L. area. Surface run-off water flows along the natural slopes, valleys and finally in to the seasonal nalas in northern side to meet Kundra/Suna Nala. The confluence point of this nala and Suna Nala is located at a linear distance of 4.5 Km North of the area. Buffer zone (5 km radius of M.L area) falls within the catchments of Suna Nala which is perennial in nature. Kundra/Suna Nala is the tributary of Baitarani River which controls the drainages system of the area and flows due north in the region and then east to meet the Bay of Bengal.

Kundra Nala is the only source of water in the region for domestic as well as non-domestic purposes.

Water table is at 545m above mean sea level at a depth of 5m from ground level (at 550m aMSL) in rainy season and at 542m aMSL at a depth of 8m in dry season.

Source of drinking water is tube-wells of village Khandbandh and Suna nala water is mostly used for non-domestic purpose. Due to the absence of township or industry nearby, water pollution is negligible.

Quality of air : There is no industry within 5 km. radius of the applied M.L area. Therefore, air pollution in the area is negligible.


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Ambient Noise Level : The source of the noise in the core (M.L. area) and buffer (5km radius) zone is due to the movement of vehicles and the noise level is felt to be below 75 dB (A).

Flora : Lease area is located in Baitarani Reserved Forest, village forest as well as DLC forest. A part of the lease area over 9.820 hectares (ref. Para-11.1.1) is degraded due to the development of pits, ore stacking site and haul road. Scanty to dense growth of species is found in northern side. Southern and north-western part of the area does not have the luxuriant forest growth. Density of forest is appeared to be 0.1 to 0.3.

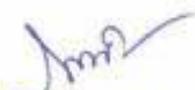
Climatic Condition : Applied M.L. area is located in tropical region where climate is characterized by very hot summers and cool winters. The climate in the area is generally cold in water between November and February and hot is summer between March and June. The monsoon sets in late June and continues upto the end of August.

Temperature shows the variation between 4⁰ C to 47.5⁰ C. Average annual rainfall is 1400mm. The south-west monsoon lasts from mid June to mid September and the area receives more than 80% of the annual rainfall during the period.

Predominant wind direction is South-West. Area remains calm for nearly 50% of the year.

11.1.3 Human settlements

There is no human settlement within mining lease area. Population distribution pattern, literacy level and occupational structure of the area have been given in Table-11.1, 11.2 and 11.3. To assess the socio-economic condition of the region, seven (7) villages have been selected within 5 km radius of the M.L area. From the data, following details have been summarized :


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❖ Population Distribution pattern (ref. Table-11.1)

Male to Female ratio is 1000 : 952. Area around the mine is dominated by the scheduled tribes. However, the distribution pattern is as follows:

- No. of villages studied = 7
- Total population (as per Census of India, 2011) = 6,937
- Male = 3,553 (51%)
- Female = 3,384 (49%)
- SC (Male + Female) = 1,068 (15%)
- ST (Male + Female) = 3,897 (56%)

TABLE-11.1 : POPULATION DISTRIBUTION PATTERN

SL. NO.	NAME OF THE VILLAGE	POPULATION			SC	ST
		MALE	FEMALE	TOTAL		
1	Chormalda	297	268	565	40	457
2	Jalhari	2077	1909	3986	1000	2048
3	Khandbandha	68	76	144	---	133
4	Katesahi	261	263	524	25	390
5	Kudapi	144	167	311	---	109
6	Palasa	276	284	560	3	557
7	Sunaposi	430	417	847	---	203
---	TOTAL	3,553	3,384	6,937	1,068	3,897

(Source : Census of India, 2011)

❖ Literacy Level (ref. Table-11.2)

It can be observed from the Table-11.2 that, the overall literacy level is 50%. Highest & lowest level of literacy is observed at village Palasa (61%) and village Katesahi (27%) respectively.


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TABLE-11.2 : LITERACY LEVEL

SL. NO.	NAME OF THE VILLAGE	TOTAL POPULATION	LITERACY			
			MALE	FEMALE	TOTAL	(%)
1	Chormalda	565	178	102	280	50
2	Jalhari	3986	1208	723	1931	48
3	Khandbandha	144	42	22	64	44
4	Katesahi	524	95	45	140	27
5	Kudapi	311	98	82	180	58
6	Palasa	560	217	127	344	61
7	Sunaposi	847	299	200	499	59
---	Total	6,937	2,137	1,301	3,438	50

(Source: Census of India, 2011)

❖ Status of Employment

People of the buffer zone are mostly engaged in mining and forest produce. Village site with their respective population is earmarked in key plan (ref : Plate-V). Sidhamath & Baitarani R.F dominates the surrounding area making the population sparse except the eastern side where the area is active & populated due to iron ore mining.

- Main workers = 2,289 (33%)
- Marginal workers = 701 (10%)
- Total workers = 2,990 (43%)
- Non workers = 3,947 (57%)

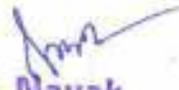

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TABLE-11.3: OCCUPATIONAL STRUCTURE

SL. NO.	NAME OF THE VILLAGE	TOTAL POPULATION	WORKING POPULATION			NON-WORKERS
			Main workers	Marginal workers	Total Workers	
1	Chormalda	565	171	12	183	382
2	Jalhari	3986	1460	162	1622	2364
3	Khandbandha	144	59	15	74	70
4	Katesahi	524	127	18	145	379
5	Kudapi	311	35	118	153	158
6	Palasa	560	144	195	339	221
7	Sunaposi	847	293	181	474	373
---	Total	6,937	2289	701	2990	3947

(Source: Census of India, 2011)

11.1.4 Public buildings, places of worship and monuments

The lease area (Core Zone) and the area within 5km radius of the M.L area (Buffer Zone) do not have the places of archeological, historical, cultural, monumental and aesthetic importance.

11.1.5 Indicate any sanctuary is located in the vicinity of leasehold

There is no national park/wild life sanctuary/biosphere reserve/ tiger reserve/ elephant reserve in the core (applied M.L area) and buffer zone (5 km radius of the applied M.L area).

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

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

Impact : An area of 42.540 hectares will be degraded/utilized at the end of plan period which is as follows :

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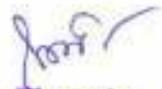
Sl. No.	Type of land use	As at present (in ha)	As at the end of plan period (in ha)
1.	Area under excavation	1.109	18.345
2.	Storage for Topsoil	---	1.251
3.	Overburden dump	---	2.222
4.	Mineral storage	Sub-grade ore	2.222
		ROM ore, lumps & high grade fines	5.250
5.	Infrastructure (rest shed, office, quarters, hutting etc.)	---	1.500
6.	Roads	5.400	7.500
7.	Railways	---	---
8.	Tailing Pond	---	---
9.	Effluent Treatment Plant	---	---
10.	Mineral Separation Plant	---	1.250
11.	Township area	---	---
12.	Others (Weight bridge and truck parking area)	---	3.000
Total	---	6.509	42.540

Mitigation measures : Natural growth of the trees / plants will be protected and plantation will be undertaken in 7.5m wide no working zone / safety zone along the M.L boundary inside the applied M.L area for (a) hiding the mining activities from the surrounding adjacent areas and (b) maintaining the aesthetic beauty to surrounding as before.

Reclamation and rehabilitation of the mined out area will be undertaken con-currently.

11.2.2 Air quality

Impact : As far as air pollution is concerned, fugitive dust (SPM) pollution is predominant over the others such as NO_x, SO₂ etc. Method of mining will be mechanized adopting deep hole blasting and deploying HEMM like blast hole drill, shovel, rear dump truck etc. Hence, there will be generation of dust and gases during excavation, loading and movement of trucks. Level of SPM (Suspended Particulate Matter) is likely to increase due to various mining activities such as dozing, drilling, excavation and hauling.


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Fugitive dusts will be localized and there is no chance of transport of this pollutant in to the nearby villages because of surrounding forest growth. NO_x emissions from trucks (during transportation) will be dispersed over a wide R.F. area and diluted without causing any harm to nearby villages.

Mitigation measures : Air & noise level will be monitored as per CPCB norms throughout the life of the mine. The parameters like RPM, SPM, SO₂, NO_x and CO are proposed to be quantified in the air samples taken from core zone as well as buffer zone. Periodical monitoring is subjected to 8 hours per day per season (two days per week for one month) and four seasons per year throughout the life of the mine.

- Water sprinkling will be done at regular intervals on the dust prone areas such as haul roads, crusher site and other possible dust generation areas to suppress emission and distribution of dust particles.
- Plantation will be undertaken along the safety zone around the mine to arrest the air borne dust from further spreading.
- Diesel machines will be subjected to proper maintenance to decrease the emission level of NO_x and SO_x.
- Wet-drilling techniques / dust-collectors will be deployed to prevent generation of dust during drilling operations.
- Suitable blast design & delay detonators will be used to avoid excess generation of dust during blasting operations.
- Sits will be provided to the operators in the closed cabin of the HEMM to have the dust free environment.
- Dust masks will be provided to protect the workmen who are exposed to prolonged dust.


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11.2.3 Water quality

Impact on Surface Water : There is no perennial nala in the lease area. The surface run-off water during rain follows the seasonal nala and hill slope of natural drainage system. The nearby perennial Kundra nala will be subjected to some degree of impact due to mining and waste dumping in higher contours. Storm water during heavy rain may increase the silt content causing the choking of nala course for which suitable measures has been suggested below.

Impact on Ground Water Quality : The downward movement of the toxic substances from the stack, dump and exposed quarry faces during seepage and percolation of ground water normally affects the ground water quality adversely in mining area. The water table in the area is comparatively at a greater depth (5m to 8m below ground level) which will not be touched during the plan period. Therefore, the chances of ground water pollution will be nil.

Mitigation measures : It is a hilly deposit. Therefore, measures proposed to arrest the wash-offs and prevent the possible siltation of surrounding area due to mining activity will be as follows :

- Samples collected from the nearby surface water sources and tube wells will be analyzed for their pollutant levels. Frequency of monitoring will be restricted to summer, monsoon, post monsoon and winter.
- Rain water accumulated in the quarries will not be allowed to flow down the valley.
- Surface run-off water will be canalized through the seasonal water course to accumulate at the lowermost level, percolate down through the strata and enrich the ground water table.
- Check dams will be constructed across the seasonal nalas to control wash-offs as well as soil erosion.



- Retaining wall, garland drain and settling tanks will be constructed around the waste dump to arrest the wash-off materials to settle the sediments and release clean water.

11.2.4 Noise levels

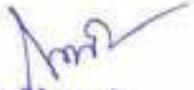
Impact : Noise level is expected to increase marginally due to drilling, blasting, excavation, ore processing and transportation. However, the increase in noise levels will be confined to the day time only because of one shift working. Work zone noise levels & exposure to the operators will be less than 90dB(A) as they will be sitting either in closed cabins or will wear earplugs.

Mitigation measures : The maximum noise level prescribed by Director General of Mine Safety (DGMS) for an 8 hours exposure is 90dB (A). Therefore, following control measures are suggested to keep the noise level within permissible limit :

- ☞ HEMM's will be maintained and lubricated properly.
- ☞ Operators cabins of the various installations, equipment and vehicles will be built sound proof.
- ☞ Instantaneous noise of blasting will be minimized by the implementation of suitable blast design and use of proper delay interval.
- ☞ Men & animals will be evacuated to a safe distance (beyond the blasting danger zone) for safety from noise and fly rocks.

11.2.5 Vibration levels (due to blasting)

Impact : DTH drills of 100mm dia will be used for blast hole drilling and blasting. There is no human habitation within core zone. Therefore, impact of vibration due to blasting will be negligible.


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Qualified Person



Mitigation measures : Delay detonators will be used to split a large vibration package in to a number of small vibration levels. Vibration will also be minimized by changing the broad blasting parameters on trial & error basis. Peak particle velocity (PPV) shall be monitored necessarily.

11.2.6 Water regime

Peak water requirement is estimated to be 60m³ / day for domestic as well as non-domestic purpose. The details are given in Para-9.7. Due to such quantity of water consumption, the impact on water regime will be negligible.

11.2.7 Acid mine drainage

Since iron ore and associated rocks like laterite and BHJ which will be handled in plan period, generation of acidic substance is not expected to cause acid mine drainage.

11.2.8 Surface subsidence

Opencast mining is proposed in the applied M.L area. Hence, question regarding surface subsidence does not arise.

11.2.9 Socio-economics

It is a fact that, this iron ore deposit is located in backward areas where the general living condition of the people is below the poverty line. Agriculture has not been developed in the region to the extent it should have been. Therefore, mining operation in this area will have a positive impact on the living condition of the local inhabitants.

As proposed in Chapter-10.2, there will be direct engagement of 195 persons for mining activity. Indirect engagement may be two to three times. Purchase facilities, general awareness etc. will also be improved due to improvement in socio-economic condition of the local people by direct and indirect engagement.



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M/s SMC Power



11.2.10 Historical monuments etc.

There will be no impact on historical monuments as they are not found located within 5 km radius of the applied M.L. area.

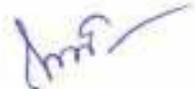
11.3 Progressive reclamation Plan (To mitigate the impacts and ameliorate the condition, describe year wise steps proposed for phased restoration, reclamation of lands already/to be degraded in respect of following items separately for 5 years period) :

There is a proposal to plant native saplings @2500 plants/hectare along the 7.5m wide safety zone along lease boundary over an area of 5 hectares in consultation with the local DFO/agricultural department. The saplings chosen / proposed for plantation is Mango, Mahul, Kendu, Chakunda, Neem, Mahaneem, Gambhari and other available local species. The details of the plantation proposal have been given in Table-11.4.

TABLE – 11.4 : PLANTATION SCHEDULE

Year	Location	Area Proposed (m ²)	Spacing (m)	No. of Saplings required	Name of Saplings
1 st	Safety zone along village road side	10000	2	2500	Mango, Mahul, Kendu, Neem, Mahaneem, Gambhari etc.
2 nd	Safety zone along M.L boundary	10000	2	2500	-do-
3 rd	-do-	10000	2	2500	-do-
4 th	-do-	10000	2	2500	-do-
5 th	-do-	10000	2	2500	-do-
Total	---	50,000	---	12,500	---

Monitoring & Maintenance of the plantation site will be undertaken in such way that there will be at least 80% survival rate through casual replacement, watering, manuring & soil conditioning, weeding and watch & ward from fire & grazing.


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11.3.1 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".

The land to be degraded by way of mining/excavation conceptually and reclamation to be done against the land degradation are as follows:

Land Degradation/ Rehabilitation	As at the end of plan period (ha)	As at the end of conceptual period (ha)
Land under mining / excavation	18.345	103.633
Reclamation & rehabilitation	---	103.633

Reclamation / rehabilitation is not possible in plan period which will be undertaken beyond the plan period if the progressive mine closure plan is prepared and implemented scientifically with due systematic exploration, exploitation and exhaust of iron ore.

11.3.2 Topsoil Management: The topsoil available at the site and its utilization may be described.

There is no top soil cover in the mineable area of proposed Quarry-2 which is mostly covered with floats/bouldery iron ore. Thin layer of topsoil is seen in the mineable area of proposed Quarry-1 which will be scrapped off as per Table-5.1 and stored & used for plantation. Likely generation of topsoil in plan period is 37,517m³ which will be stacked over an area of 12,506m² at 3m average height.

11.3.3 Tailings Dam Management: The steps to be taken for protection and stability of tailing dam, stabilization of tailing material and its utilization, periodic de-silting measures to prevent water pollution from tailings etc, arrangement for surplus water overflow along with detail design, structural stability studies, the embankment seepage loss into the receiving environment and ground water contaminant if any may be described.

There is no proposal for commissioning of beneficiation / washing plant in the lease area. Therefore, slimes / tailings are not expected & construction / management of tailing dam are not necessitated.



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M/s SMC Power Generation Ltd
Applicant



11.3.4 Acid mine drainage, if any and its mitigating measures.

Acid mine drainage is not expected (ref : Para-11.2.7) and mitigating measures is not necessitated.

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

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

11.3.6 Summary of year wise proposal *(The information on protective measures for reclamation and rehabilitation works year wise may be provided as per the following table)*

Mining operation will be commenced once this document is approved and other statutory clearances are obtained. During this 5 yearly plan period, reclamation and rehabilitation of mined out area / waste dump is not possible. However, protective measures and rehabilitation of safety zone will be as follows :

Items	Details	1 st	2 nd	3 rd	4 th	5 th
Dump management	Area to be afforested (ha)	---	---	---	---	---
	No of saplings to be planted	---	---	---	---	---
	Cumulative no of plants	---	---	---	---	---
	Cost including watch and care during the year (Rs.)	---	---	---	---	---
Management of worked out benches	Area available for rehabilitation (ha)	---	---	---	---	---
	Afforestation done (ha)	---	---	---	---	---
	No of saplings to be planted in the year	---	---	---	---	---
	Cumulative no of plants	---	---	---	---	---
	Any other method of rehabilitation (specify)	---	---	---	---	---
	Cost including watch and care during the year	---	---	---	---	---

 S.C. Nayak, Qualified Person M/s MINESKETCH Consultants (P) Ltd	 M/s SMC Power Generation Ltd Applicant
---	---

Items	Details	1 st	2 nd	3 rd	4 th	5 th
Reclamation and rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /slope wise (ha)	---	---	---	---	---
	Void filled by waste / tailings (ha)	---	---	---	---	---
	backfilled area to be afforested	---	---	---	---	---
	Rehabilitation by making water reservoir	---	---	---	---	---
	Any other means (specify)	---	---	---	---	---
Rehabilitation of waste land within lease	Area available (ha)	10.179	9.179	8.179	7.179	6.179
	Area to be rehabilitated (ha)	1.0	1.0	1.0	1.0	1.0
	Method of rehabilitation	Plantation	Plantation	Plantation	Plantation	Plantation
Others (specify)	Retaining wall (Dump)	586m x 1.5m x 1m	Maintenance	Maintenance	Maintenance	Maintenance
	Garland drain (Dump)	120m x 1m x 1m	Maintenance	Maintenance	Maintenance	Maintenance
	Retaining wall (crushed fines)	542m x 1.5m x 1m	Maintenance	Maintenance	Maintenance	Maintenance
	Retaining wall (Screened / Sub-grade fines)	256m x 1.5m x 1m	Maintenance	Maintenance	Maintenance	Maintenance
	Garland drain (Dump / Sub-grade fines)	105m x 1m x 1m	Maintenance	Maintenance	Maintenance	Maintenance
	Settling tanks (2 nos.)	20m x 10m x 3m	Maintenance	Maintenance	Maintenance	Maintenance

11.4 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.

As far as the nature of deposit & method of mining is concerned, there is no possibility of land slides, subsidence and tailing dam failure. Flood is not expected since Highest Flood Level (H.F.L) is far away from the applied M.L area. Fire extinguisher will be kept in the office premises in consultation with fire department to prevent the office from fire. Map of seismic zone in India indicates that Odisha falls under seismic zone-I, II & III. In Odsha, minor earth quakes have been felt many often but none was severe. Applicant is capable to handle the such eventualities and may require assistance from the nearest state fire department located at Joda for rescue, if any high risk accident occurs in the area.



Mining and allied activities in iron mines are associated with several potential hazards both to men and animals. Safe and healthy working environment is necessarily required in the mine for the workers. Risk analysis and safety management are necessarily required for the mine for control of accidents and prevention of disasters. Risk analysis involves the identification of possible accidents / hazards which may happen in the mine during mining operation for undertaking risk / safety management thereafter. Safety management system creates mechanisms of behavior and decision making for prevention of dangerous events and accidents.

There are various activities which can cause risk / disasters in this mine are development of benches, excavation / overburden handling, machinery operation, transportation, breaking, hammering etc. However, identification of risk and safety management practices are described as follows :

During benching, slope failure may occur in the mine causing accident. Unknowingly, men / animals may fall from the high wall side of the quarry. No mining will be carried out within 7.5m wide safety zone all along the lease boundary. At any time, width of the bench will not be less than the height for preventing slope failure. To avoid risk factors, high wall side of the working face will be fenced. There will be no overhang or undercut in benches. Waste will be dumped in a designated area beyond the ultimate pit limit and away from the road. Retaining wall will be constructed around the dump to retain the wash-offs as well as boulders.

Transportation may cause accident on the road causing loss or injury to men and animals due to human error such as (a) improper over taking, (b) high speed, (c) poor road conditions and (d) unfit vehicles having defectiveness of tires, brakes, lights etc. Width and gradient of the road will be properly maintained with the provision of road divider, speed breaker, traffic signs, traffic instructions to prevent the road accidents. Alcoholic drinks will be prohibited for the operators while operating the machines or driving the vehicles. Vehicles / machines will be subjected to vigorous maintenance as when required.



During hammering, broken stone pieces may pierce in to the body. Safety equipments like ear muffs / plugs, goggles, helmets, safety shoes, leather hand globes, safety belt etc. will be provided to the workers adequately to save their ear, eye, head and other parts of the body while working.

In addition to this, mining operation will be undertaken by the qualified and experienced persons as per MMR, 1961. Safety training will be provided to the employees / workers to identify and minimize the risk. Safety consciousness will be inculcated and practiced to prevent accidents during various mining operations. Vocational training will be provided to the workers by the trained executive to work safely in the mine during mining and dressing of the stone blocks. Plan & sections will be scrutinized by all the senior executives to identify the potentially dangerous situations.

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

Lease area is planned to operate for iron ore continuously over a period of 17 years. However, there may be temporary discontinuance during the course of mining due to unforeseen causes such as:

- ◆ Court order
- ◆ Statutory Requirements
- ◆ Accidents in the Mine
- ◆ Natural Calamities
- ◆ Local issues
- ◆ Any other unforeseen circumstances

Therefore, an emergence plan is necessary to re-open the mine which will include:

- ☞ Intimation to local mine and legal administrative authorities concerned (IBM, DGMS, Directorate of Mines, Circle Mining Office etc.) regarding temporary discontinuance.

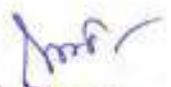


- ☞ Explanation to the local community regarding the cause of temporary discontinuance and possibility of reopening of mine in future.
- ☞ Listing and proper storing of the Machines, Materials, Assets and Documents.
- ☞ Care and maintenance of machinery as per the machine operating manuals.
- ☞ Employment and tightening of the security for proper watch and ward to keep the machine and materials in safe and secure.
- ☞ Repair and maintenance of haul road.
- ☞ Regular monitoring of Air, Water, Noise etc. in the permitted area.
- ☞ Monitoring of status of mining operation in respect of bench height, width, individual bench slope angle, overhang, undercut, or any other parameters whose levels either in form of higher side or lower side is dangerous for further mine working.
- ☞ Preparation of plan and sections of discontinued mining operation.
- ☞ Projection of benches in plan and sections which is safe for further working.
- ☞ Formation of safe benches as per plan and sections.
- ☞ Intimation to the concerned authorities for reopening once the mine is risk free.

11.6 Financial Assurance:

The financial assurance can be submitted in any encashable form preferably a Bank Guarantee from a Scheduled Bank as stated in Rule 23F(2) of Mineral Conservation and Development Rules, 1988 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.

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


S.C. Nayak
Qualified Person



Sl. No.	Type of land use	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)	
1.	Area under excavation	1.109	17.236	18.345	---	18.345	
2.	Storage for Topsoil	---	1.251	1.251	---	1.251	
3.	Overburden dump	---	2.222	2.222	---	2.222	
4.	Mineral storage	Sub-grade ore	---	2.222	2.222	---	2.222
		ROM ore, lumps & high grade fines	---	5.250	5.250	---	5.250
5.	Infrastructure (rest shed, office, quarters, hutting etc.)	---	1.500	1.500	---	1.500	
6.	Roads	5.400	2.100	7.500	---	7.500	
7.	Railways	---	---	---	---	---	
8.	Tailing Pond	---	---	---	---	---	
9.	Effluent Treatment Plant	---	---	---	---	---	
10.	Mineral Separation Plant	---	1.250	1.250	---	1.250	
11.	Township area	---	---	---	---	---	
12.	Others (Weigh bridge and truck parking area)	---	3.000	3.000	---	3.000	
Total	---	6.509 (A)	36.031 (B)	42.540 [C = (A+B)]	--- (D)	42.540 [E = (C-D)]	

"---" is mentioned where the land is not used in the above categories.

Since it is a Category-A Mine, financial assurance is Rs.25,000/- per hectare or Rs.2,00,000/- which is in higher side under rule 23F(1) of MCDR, 1988. Therefore, financial assurance here for the scheme period is Rs.2,00,000/- instead of $42.540 \times \text{Rs.}25,000 = \text{Rs.}10,63,500/-$ (Rupees ten lakh sixty three thousand five hundred) only as per the calculation.

The above mentioned actions have been taken to be stated clearly in the mine closure plan. A certificate duly signed by the lessee to the effect that the mine closure plan complies all statutory rules, regulations, orders made by the Central or State Government, statutory organizations, court etc. have been taken into consideration and wherever any specific permission is required, the lessee will approach the concerned authorities. The lessee may also give an undertaking to the effect that all the measures proposed in this closure plan will be implemented in a time bound manner as proposed.

Proposed Khandbandh Iron Ore Mine (178.908 ha).

S.C. Nayak
Qualified Person



भारत सरकार
खान मंत्रालय
भारतीय खान ब्यूरो
क्षेत्रीय खान नियंत्रक का कार्यालय

REGD. PARCEL
E- mail: ro.bhubaneswar@ibm.gov.in

No. MPM/FM/04-ORI/BHU/2016-17 // 370

Plot No. 149, Pokhariput
Bhubaneswar – 751 020
Date: 16.08.2016

To

✓ Shri Mool Chand Agrawal, Nominated Owner,
M/s SMC Power Generation Ltd,
E-13/29, 2nd Floor, Harsha Bhawan,
New Delhi-110001

Sub: Approval of Modification of approved Mining Plan of Khandbandh Iron Ore Mine along with Progressive Mine Closure Plan (PMCP), over an area of 178.908 ha in Keonjhar district of Odisha State, submitted by M/s SMC Power Generation Ltd under Rule 17 of Mineral Concession Rules, 2016.

Ref: - i) Your letter No. Nil dated 21.06.2016.
ii) This office letter of even no. dated 30.06.2016.
iii) This office letter of even no. dated 12.07.2016 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.
iv) This office letter of even no. dated 26.07.2016.
v) Your Qualified Person letter No. MSC/MMP/62 dated 11.08.2016.

Sir,

In exercise of the power delegated to me under Rule 17 (3) of Mineral Concession Rules, 2016 vide Gazette Notification No. S.O. 1857(E) dated 18.05.2016, I hereby **Approve** the Modification to Approved Mining Plan including Progressive Mine Closure Plan of Khandbandh Iron Ore Mine over an area of 178.908 ha of M/s SMC Power Generation Ltd in Keonjhar district of Odisha State submitted under Rule 17 of Mineral Concession Rules, 2016. This approval is subject to the following conditions:

- I. The Modification to Approved Mining Plan is approved without prejudice to any other law applicable to the mine area 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.
- II. The proposals shown on the plates and/or given in the document is based on the lease map /sketch submitted by the applicant/ lessee and is applicable from the date of approval.
- III. It is clarified that the approval of aforesaid Modification to Approved Mining Plan does not in any way imply the approval of the Government in terms of any other provision of Mines & Minerals (Development & Regulation) Act, 1957, or the Mineral Concession Rules, 2016 and any other laws including Forest (Conservation)

- Act, 1980, Environment (Protection) Act, 1986 or the rules made there under, Mines Act, 1952 and Rule & Regulations made there under.
- IV. 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.
- V. 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.
- VI. If this approval conflicts with any other law or court order/ Direction under any statute, it shall be revoked immediately.
- VII. Financial Assurance for an amount of Rs. 10,63,500/- to be submitted before execution of the mining lease deed.

Encl: - One copy of approved
Modification to
Approved Mining Plan

भवदीय / yours faithfully,

(M BISWAS)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

Copy for kind information to:-

1. Shri S.C. Nayak, M/s MINESKETCH Consultants (P) Ltd, A/ 185, Saheed Nagar, Bhubaneswar - 751 007.
2. The Director of Mines, Directorate of Mines, Government of Odisha, Heads of the Department Building, New Capital, Bhubaneswar- 751001, Odisha along with one copy of Modification to Approved Mining Plan by **REGISTERED PARCEL**. It is requested to advise the applicant/ lessee to submit the financial assurance to the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar, to comply with the provisions of Rule 23 F (3) of Mineral Conservation & Development Rules 1988 before executing the mining lease deed. The lease deed shall be executed only after receiving a confirmation letter from the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar.

(M BISWAS)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines



M/s SMC POWER GENERATION LIMITED
APPLICANT

Village : Hirma, Dist : Jharsuguda, Odisha-768202
 Tel : (06645) 227089 / 93, Fax : (06645) 227073 / 274314,
 E-mail : site@smcpower.co.in

MODIFICATION OF MINING PLAN
 (Under Rule 17(3) of MCR, 2016)

AND

PROGRESSIVE MINE CLOSURE PLAN
 (Under Rule 23B(2) of MCDR, 1988)

OF

Proposed KHANDBANDH IRON ORE MINE

Over an area of 178.908 hectares in village Khandbandh, Jalhari and
 Baitarani R.F, district Keonjhar, Odisha.

Mine Category	Date of Execution	Period as per letter of intent	Forest Land	Non-Forest Land	Total
A (FM)	To be executed	25 years	176.007 ha	2.901 ha	178.908 ha

Lease period shall be deemed to have been extended for a period of 50 years
 in view of section 8A(6) of MM (D & R) Act, 2015 (as amended).

Prepared by

S.C. Nayak,
 Qualified Person

M/s MINESKETCH Consultants (P) Ltd.,
 A/185, Saheed Nagar, Bhubaneswar-751007
 Phone : 0674-2548607, Tele / Fax : 0674-2549508
 E-mail : minesketch2005@gmail.com

PREPARED FOR A PERIOD OF FIVE (5) YEARS



S.C. Nayak, Qualified Person
M/s MINESKETCH Consultants (P) Ltd

M/s SMC Power Generation Ltd



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S.C. Nayak, Qualified Person
M/s MINESKETCH Consultants (P) Ltd

M/s SMC Power Generation Ltd
Applicant



ANNEXURE NO.	TITLE	PAGE
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S.C. Nayak
Qualified Person

Proposed Khandbandh Iron Ore Mine (178.908 ha).



ANNEXURE

M/s SMC POWER GENERATION LIMITED

APPLICANT

Village : Hirma, Dist : Jharsuguda, Odisha-768202
Tel : (06645) 227089 / 93, Fax : (06645) 227073 / 274314,
E-mail : site@smcpower.co.in

FEASIBILITY REPORT

OF

Proposed **KHANDBANDH IRON ORE MINE**

Over an area of 178.908 hectares in village Khandbandh, Jalhari and Baitarani R.F, district Keonjhar, Odisha.

Prepared by

S.C. Nayak,

Qualified Person

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FEASIBILITY STUDY REPORT

Mineral resources estimated under various categories have been codified under Economic, Feasibility and Geological axis as per the United Nations Framework Classification of mineral resources. This feasibility Report is prepared as per the Circular No 3/2010 dated 14.07.2010 for complying the codification of feasibility axis incorporated in this Modification of Mining Plan (hereinafter referred to as MMP).

Mineable resource, grade and rate of production projected in MMP have formed the basis for preparation of this feasibility study report.

1.0 GEOLOGY :

1.1 Geology of area and project

Geological mapping over the area from the surface as well as pit exposures have helped to understand the geology to a considerable extent. The local geology interpreted from the above has been arranged as follows:

- ❖ Soil & alluvium
- ❖ Laterite
- ❖ BHJ with Iron Ore
- ❖ Iron Ore

1.2 Detailed exploration

Exploration drilling has not been conducted in the applied M.L area so far. Old pits located in the applied M.L area are detailed in Para-4.5.1 and shown in the geological plan and sections.


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Ore Reserve Estimation : Resource / reserve & grade of iron ore in the applied M.L area as per United Nations Framework Classification are coded as Follows :

Reserve/ resources	Type	UNFC Code	Iron Ore as on 27.05.2016 (Mt)	Average grade	Threshold value
Reserves	Proved	111	---	---	---
	Probable	121	---	---	---
		122	3.148 (mineable)	62.8% Fe	+45% Fe
Sub-Total (a)	---	---	3.148	---	---
Remaining resources	Feasibility	211	---	---	---
	Pre-feasibility	221	---	---	---
		222	0.073 (blockable)	---	---
	Measured	331	---	---	---
	Indicated	332	---	---	---
	Inferred	333	---	---	---
	Reconnaissance	334	13.603 (mineable)	---	+45% Fe
1.718 (blockable)			---	---	
Sub-Total (b)	---	---	15.394	---	---
Total (a + b)	---	---	18.542	---	---

1.3 Closed spaced drilling

Exploration drilling has not been conducted in the applied M.L area so far. Proposal has been included in the document for completion of exploration drilling of entire applied M.L area within the 5 yearly plan period.

1.4 Ore body modeling

Cross sectional area method has been adopted for calculation of ore resources under various categories. Cross sectional area obtained from the sections are multiplied with length of influence of each section, recovery factor and bulk density for obtaining iron ore resources in metric tons. On the basis of feasibility-cum-mining report in consideration with modifying factors such as UPL and safety zone along M.L boundary inside the lease area as well as on either side of village road, mineable and non-mineable part of ore resources have been established.


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Proposed Khandbandh Iron Ore Mine (178.908 ha).



1.5 Bulk samples for beneficiation

Cut-off grade of mine for iron ore is +58% Fe & threshold value of iron ore is 45% Fe. Iron ore of +58% Fe is usable and iron ore of +45-58% Fe is considered as sub-grade ore / mineral rejects. These sub-grade ore / mineral rejects will be initially stacked and subsequently used as per demand.

1.6 Geotechnical and ground water & surface waters studies.

1.6.1 Geotechnical Study:

Old pits have been located in the applied M.L area up to 6m depth from surface level. Various rock types such as laterite, Iron Ore and BHJ has been encountered in the pits.

1.6.2 Ground water Study:

As far as ground water study is concerned, likely depth of water table is 5m (at 545m above mean sea level) in rainy season and 8m (at 542m aMSL) in dry season. Ground level is at 550m aMSL. This water table is likely based on the study of nearby sub-surface water sources.

1.6.3 Surface water study:

There is no surface water body in the applied M.L area.

2.0 MINING :

2.1 Mining Plan

On account of exposures of iron ore and its limited depth of occurrence, opencast method of mining will be adopted with the deployment of DTH drills, associated compressors, tippers, excavators and other auxiliary equipments for development, production, processing, protection of environment and safety to achieve the rated production of 1.123 Mt iron ore from 5th year onwards.


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Loosening of the hard rock mass will be effected through primary as well as secondary blasting. Primary blasting will be done by charging of 100mm dia blast holes drilled either in single or multi rows on staggered pattern. Secondary blasting will be done to blast the big boulders with the help of 32mm dia jack-hammer drills. 2m³ capacity excavators will be used for excavation & loading of the blasted r.o.m ore in to the 20t capacity tippers which will unload it into the hopper of the 500tph capacity crusher unit.

Sized ore obtained from the crusher unit will be transported to the applicants integrated steel plant in the name & style of M/s SMC Power Generation Ltd located at Hirma, district Jharsuguda, Odisha.

Quarry-1 will be approached from western side by widening & developing the existing roads. Quarry-2, as proposed, will be approached from an all weathered road from eastern side. Net work of haul roads has been proposed to develop at 1:20 gradient or less by cut & fill of the upper uneven surface to connect the other locations planned for r.o.m / lumps / fines stacking, waste dumping, crushing operation etc.

It has been planned to dump waste materials and stack sub-grade ore lumps / fines externally (beyond the ultimate pit limit) on the barren zone of soil exposure.

As per the present status of exploration, excavation will be up to a depth of only 6m from surface level by developing only one bench. Height of the bench will be kept at 6m and bench slope angle will be kept nearly vertical (85⁰) with the horizontal.

Keeping in view the non-availability of time series data, tentative tonnage of ore production Quarry wise has been arrived considering the approximate bulk density @3.5 t/m³ as given below :


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Year	Name of Quarry	IB/Waste (m ³)	Iron Ore (t)		
			ROM	Usable Ore	Mineral reject
1 st	Quarry-1	10,040	140560	122990	17570
2 nd	-do-	23,360	327040	286160	40880
3 rd	-do-	36,720	514080	449820	64260
4 th	-do-	49,960	699440	612010	87430
5 th	-do-	62,360	873040	763910	109130
---	Sub-total	182,440	2,554,160	2,234,890	319,270
1 st	Quarry-2	2,840	39760	34790	4970
2 nd	-do-	4,560	92960	55860	7980
3 rd	-do-	5,120	146160	62720	8960
4 th	-do-	9,400	201040	115150	16450
5 th	-do-	17,840	249760	218540	31220
---	Sub-total	39,760	729,680	487,060	69,580
Total	---	222,200	3,283,840	2,721,950	388,850

ROM to waste ratio = $3,283,840 \text{ t} / 222,200 \text{ m}^3 = 1 : 0.07 \text{ (t/m}^3\text{)}$.

Alternatively to the above table, tentative tonnage of ore production year wise has been arrived as below :

Year	Name of Quarry	IB/Waste (m ³)	Iron Ore (t)		
			ROM	Usable Ore	Mineral reject
1 st	Quarry-1	10,040	140,560	122,990	17,570
	Quarry-2	2,840	39,760	34,790	4,970
	Sub-total	12,880	180,320	157,780	22,540
2 nd	Quarry-1	23,360	327,040	286,160	40,880
	Quarry-2	4,560	92,960	55,860	7,980
	Sub-total	27,920	420,000	342,020	48,860
3 rd	Quarry-1	36,720	514,080	449,820	64,260
	Quarry-2	5,120	146,160	62,720	8,960
	Sub-total	41,840	660,240	512,540	73,220
4 th	Quarry-1	49,960	699,440	612,010	87,430
	Quarry-2	9,400	201,040	115,150	16,450
	Sub-total	59,360	900,480	727,160	103,880

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Year	Name of Quarry	IB/Waste (m ³)	Iron Ore (t)		
			ROM	Usable Ore	Mineral reject
5 th	Quarry-1	62,360	873,040	763,910	109,130
	Quarry-2	17,840	249,760	218,540	31,220
	Sub-total	80,200	1,122,800	982,450	140,350
Total	---	222,200	3,283,840	2,721,950	388,850

2.2 Mine recoveries and efficiencies,

Based on the available information from the pits already developed in the applied M.L area, recovery of ore & waste in the mine is assumed to be as follows :

Sl. No.	Type of Production	Fe Content	Percentage	
1	Usable Ore	+58%	70%	80%
2	Sub-grade ore / mineral reject	+45%-58%	10%	
3	IB / Waste	-45%	20%	
Total	---	---	100%	

2.3 Equipment selection

The mine under reference will be operated as Category-A mine. To achieve production at the rate of 1.123 Mt ROM iron ore / annum, earth moving machines are required to be deployed in the following manner :

Unit operation	Name	Dia / Capacity	Numbers
Drilling	IR drill	100mm	2
	Jack hammer	32mm	2
Excavation & loading	Excavator	2 m ³	3
	Loader	0.6m ³	1
		2.5m ³	3
Transporting	Tippers	20t	13
Sizing	Crushing & screening unit	500 tph	1
Environmental Protection	Water Tanker	10 kl	1
Miscellaneous	Jeep	---	3
	Ambulance	---	1


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2.4 Manpower requirement.

Keeping in view the mining unit operations such as excavation, loading, breaking, sorting & sizing, OMS has been assumed to be 20 t only.

A total of 187 workers are to be employed in the mine for production & processing of 1,122,800 t usable iron ore / annum which is calculated to be as follows :

Highest Yearly production of usable iron ore	= 1,122,800 t
Number of working days in the Year excluding rainy days, holiday's etc.	= 300
Daily production	= 1,122,800/300 = 3742.6, say 3,743 t
OMS	= 20 tones
Number of laborers required in work	= 3743/20 = 187 Nos.

Management & Supervisory Personnel's : For day to day mine operation, administrative & supervisory personnel will be only 10 numbers as per the following table :

Sl No.	Post	Qualification	Nos.
1	Manager	First Class Mines Manager's Certificate of Competency	1
2	Mining Engineer	Degree in Mining Engineering with 10 years experience	1
3	Geologist	M. Sc. In Geology with 10 years experience	1
4	Mechanical Engineer	Diploma in Mechanical Engineering	1
5	Foremen	Foremen's Certificate of Competency	1
6	Mining Mate	Mate's Certificate of Competency	3
7	Blaster	Mate-cum-blaster's Certificate of Competency	1
8	Surveyor	Surveyor's Certificate of Competency	1
Total	---	---	10



Percentage of the laborer employment in respect of the skill may be tabulated as follows :

Type	Percentage	Numbers
Skilled	20%	37
Semi-Skilled	30%	56
Un-skilled	50%	94
Total	100%	187

Total = Management & supervisory (10) + Laborers (187) = 197.

3.0 ENVIRONMENT:

3.1 EIA studies and EMP including socio-economic impact,

EIA studies and EMP including socio-economic impact will be presented before the Environmental Appraisal Committee for environmental clearance for production of ROM iron ore @1.123 Mt / annum. Progressive Closure Plan having environmental aspects as per IBM guidelines has been described (ref : Chapter-11 of MMP).

Strategy for the sustainable development will be (a) conservation of minerals, (b) scientific development of the mine, (c) safety measures (d) health care of the workers, (e) protection of environment and (f) peripheral development.

Conservation of Minerals : : Iron ore will be chemically analyzed frequently to classify and blend the ores to cater the need of the captive plant located at Jharsuguda district, Odisha.


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Scientific Development of the Mine : Mining activities will generate waste of 20% w.r.t. total excavation. Since the proposed mine is located on the hill slope up to 6m depth from surface level as per the present status of exploration, the entire mined out area and waste dumps will be rehabilitated by way of plantation.

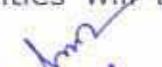
To avoid risk factors, high wall side of the working face will be fenced. Height of the bench will be kept at 6m and bench slope angle will be kept nearly vertical (85°) with the horizontal. There will be no overhang or undercut in benches.

Safety Measures: Ear plugs, spectacles, helmets, safety shoes, globes, pads etc. will be provided to the workers to save their ear, eye, head and other parts of the body while working. Rest shed will be provided to take rest in launch period. Vocational training will be provided to the workers by trained executive to work safely in the mine.

Health Care of the Workers: First-aid as well as medical facilities will be made available in the mine to take health care of the workers.

Protection of Environment : 7.5m wide area along the lease boundary and 10m wide area on either side of village road inside the lease area will be left as safety zone. During mining, progressive mine closure plan will be implemented in a time bound manner. Finally, the land will be surrendered to the State Govt. once it is fully reclaimed as per the Final Mine Closure Plan after the cessation of mining and mineral processing.

Peripheral Development: The inhabitants of the nearby area are mostly poor tribal people which will be mostly benefited by the regular incomes through direct as well as indirect engagement. In addition to these, educational, medical, transport and communicational facilities will be improved.


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Others : A chartered accountant will look after the cash flow statement on regular basis. Adequate facilities will be provided to him for taxation. Specific changes in taxation process declared by the Govt. will be strictly followed. Overall profit will provide the base for sustainable development of the mine through peripheral socio-economic improvement program, periodical monitoring of environmental domains, water sprinkling for dust suppression, reclamation & rehabilitation of degraded areas, plantation of virgin / barren area and provisions for safety of workers & occupational health services and disaster management.

3.2 Rehabilitation of project affected persons

The project does not involve any displacement of the local people. Hence, there is no necessity of rehabilitation of the project affected people. Most of the local people will be engaged in the mining and allied activities.

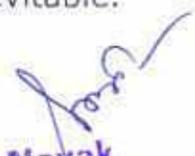
3.3 Waste disposal/reclamation, detailed land use data.

Waste will be disposed on the external dump. The deposit is located in hilly terrain. The entire mined out area up to only 6m depth and waste dump will be rehabilitated by way of plantation.

4.0 PROCESSING :

4.1 Pilot scale/industrial scale investigation data

There is a proposal to establish a 500tph capacity crusher in the applied M.L area for breaking of run-off mine iron ore in to required sizes. During the preparation of sized ore, generation of fines is inevitable.


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Run-off mine ore of -500 mm size will be fed in to a 100 t capacity hopper from where it will go to grizzly feeder. From the grizzly feeder, +100 to -500 mm size will be fed to the primary jaw crusher.

ROM ore will be fed into a vibrating screen for separation of -5 mm reject/sub-grade fines which is approximately 11% of the total ROM. + 5mm along with output of primary crusher (-150 mm) will be conveyed in to another vibrating screen. At this screen, + 60mm is fed into a secondary crusher where it will be crushed to - 60mm.

This -60mm size (both from secondary crusher as well as that directly obtained from screen) will go to a double deck vibrating screen. From this screen, -60 + 18 mm size will be fed into a tertiary hydro cone crusher, the product of which (+10 - 30mm and + 5 - 18mm) will be re-cycled in to the triple deck vibrating screen. From this screen, -30 + 10mm (27% of ROM), -18 + 5 mm size (30% of ROM) and -5mm size (32% of ROM) will be stored separately and dispatched to the respective destination points. However, products to be obtained from the crusher are given in the table as follows :

Product	Size	Recovery	Quantity (t)
Sized ore (CLO)	- 18 + 5 mm	30%	336,840
Sized ore (CLO)	- 30 + 10 mm	27%	303,156
Fines	- 5 mm	33%	370,524
Sub-grade/reject fines	- 5 mm	10%	112,280
Total	---	100%	1,122,800

Dry processing will be carried out in the plant with water sprinkling arrangement for dust suppression.


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4.2 List of equipments

A 500tph crusher with associated screens and belt conveyors will be used for breaking and sizing of iron ore.

4.3 Manpower and environmental considerations like waste disposal of tailings etc.

The predominantly generated waste materials from the mine are laterite and BHJ. These are not toxic in nature. Waste generation from the plan period will be dumped externally beyond the ultimate pit limit. Dead slopes of the waste dump will be rehabilitated / planted concurrently.

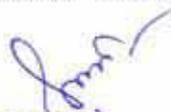
Mineral reject / sub-grade ore generated from the mine will be stacked separately with protective measures. There will be no generation of tailings due to absence of beneficiation / wet processing. Retaining wall, garland drain and settling tank will be constructed around the waste dump and sub-grade ore stack to retain the wash-off materials and release clean water.

5.0 INFRASTRUCTURE AND SERVICES, CONSTRUCTION ACTIVITIES :

Existing infrastructure :

Road & Railway: Applied lease area is accessible from Joda via Bichhakhundi through 13 km long all weather road and via jururhi through 17km long all weathered roads. The nearest railhead is Banspani at a distance of 14 Km, via Jururhi and at a distance of 17km via Bichhakhundi.

Market Facility : Local market places are Bichhakhundi (7 km) and Jururhi (8km). However, full-fledged market facilities are available at Joda (13 km), Barbil (27km) and Keonjhar (107km), the district Head Quarter.


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Electricity : 11 KV and 33 KV power line passes through the applied M.L. area.

Water availability : Drinking water is available from the Tubewell of village Khandbandh. Kundra/Suna nala water is used for non-domestic purpose.

Medical & Educational Facilities : Medical facilities are available from TATA STEEL hospital at Bichhakhundi (7km). Govt. hospital is located at Joda NAC area. Education upto 5th class is available at Khandbandh, High school level at Bichhakhundi and college level, at Joda.

Postal & Telephonic facilities : Postal and telephonic facilities are available at Bichhakhundi, Jururhi, Banspani & Joda.

Facilities Proposed: The statutory buildings such as rest shed, first-aid centre etc will be well maintained. Wholesome drinking water will be provided as per need and kept in earthen pots under the shed for keeping the water cool and clean. Safety equipment and blasting sheds will be provided to the workers as per need. For day to day mine operation, facilities to be provided for various activities are as follows :

Type of Work	Facilities
Mine working	Repair, maintenance & purchase of machineries/vehicles/equipments/accessories.
Safety Measures	Provision of helmets, gloves, spades, spectacles.
Protection of Environment	Water sprinkling, plantation and construction of retaining wall etc.
Welfare	Provision of rest shed, blasting shed, first aid facilities, wholesome drinking water & ambulance arrangement.


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Medical examination of workers shall be carried out periodically, records shall be maintained properly and treatment shall be done accordingly.

Temporary housing facilities will be provided to the laborers within the site with all necessary facilities such as fuel for cooking, mobile toilets, wholesome drinking water, medical/health care etc.

Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure of dust and take corrective measures.

6.0 COSTING :

6.1 Detailed break-up of capital cost

Capital cost of the project is estimated to be Rs.79,62,50,004, say Rs.80/- crores which includes processing / scrutiny fees, consent to establish / operate fees etc., Net Present Value (NPV) of forest land, compensatory afforestation cost, cost of protection & regeneration of trees in safety zone, site specification as well as Regional Wild Life Management fee, cost of machinery & vehicles, cost of road development etc. Capital cost already invested and to be invested since the issue of letter of intent dated 16.07.2010 (ref : Annexure-10) is presented as follows :

Sl. No	Type	Cost in Rupees		
		Already invested (A)	To be invested (B)	Total (A + B)
1	Processing fee for mining plan approval	53,000	---	53000
2	Fee for consent to establish (air & water)	---	90,000	90000
3	Fee for consent to operate (air & water) for one year	---	75,000	75000
4	Survey of boundary pillars including labor charge for bush cutting, carrying / shifting of instruments etc.	3,02,670	---	302670
5	Pillaring including coloring and writing of pillar number, latitude, longitude etc.	1,06,400 (@Rs.2800 / pillar) for 38 pillars	1,56,000 (@Rs.3000 / pillar) for 52 pillars	262400



Sl. No	Type	Cost in Rupees		
		Already invested (A)	To be invested (B)	Total (A + B)
6	DGPS Survey of boundary pillars and preparation of DGPS / Satellite map including conveyance, lodging, fooding etc.,	5,00,000	---	500000
7	Chemical analysis of iron ore samples (including previous analysis)	27500	---	27500
8	NPV of entire forest land @Rs.8,00,000 / ha for 176.007 ha	---	14,08,05,600	140805600
9	Regional Wild Life Management cost (assuming @Rs.25,000/ ha) for 176.007 ha	---	44,00,175	4400175
10	Site Specific Wild Life Management cost (assuming @Rs.50,000/ ha) for 176.007 ha)	---	88,00,350	8800350
11	Compensatory afforestation cost, land arrangement, DGPS survey / fencing etc. (assuming @Rs.75,000/ ha) for 176.007 ha)	---	1,32,00,525	13200525
12	Protection and regeneration of flora / trees in safety zone @Rs.50,000/ ha) for 8.035 ha)	---	4,01,750	401750
13	Plant, machinery & vehicles	---	48,00,00,000	480000000
14	Infrastructure (Buildings, Staff Quarters, furniture, Water Supply, Power Supply etc.)	---	75,00,000	7500000
15	Road Development (@Rs.2,00,000 / km for 7.5 km)	---	15,00,000	1500000
16	Consultancy & Research	11,50,000	---	1150000
17	Reclamation & rehabilitation cost, closure cost etc. (at least @Rs.25,000 / ha) for 178.905	---	44,72,700	4472700
19	Sub-total	21,39,570	66,14,02,100	66,35,41,670
20	Contingencies (15% of Sl. No.19 assumed)	---	---	9,95,31,251
21	Working capital (5% of Sl. No.19 assumed)	---	---	3,31,77,083
---	Total	---	---	79,62,50,004

6.2 Operating cost

Operating (production, transportation and processing) cost is assumed to be Rs.650/tonne. Taxes and Royalties to be paid / ton is as follows :


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Particulars	Amount (Rs.)
Royalty (@15% of sale value of Rs.1800 / t)	270.00
Sale Tax (@4% of sale value of Rs.1800 / t)	72.00
District Mineral Fund (@30% of Royalty of iron ore)	81.00
National Mineral Exploration Fund (@2% of royalty of iron ore)	5.40
Depreciation of machinery (assuming depreciation of the capital cost in 10 years)	44.50
Total	472.90, say 473.00

Operating cost including royalties and taxes = Rs.650 + Rs.473
=Rs.1123/-.

6.3 Details of working capital.

Working capital is required to meet the cost of production, overhead and the statutory liabilities.

7.0 MARKETING :

7.1 Overview:

Iron ore of this proposed Khandbandh mine will be suitable for sponge iron and steel making in Applicant's own integrated steel plant located at Hirma.

7.2 Specific market aspects.

Iron ore produced from the mine after breaking and sizing will be dispatched to the captive unit of the Applicant who purchases iron ore presently. Market value of iron ore to be produced is Rs.1800/tonne.



8.0 ECONOMIC VIABILITY :

8.1 Cash flow forecast

Since the average market value of iron ore is Rs.1800/tonne, the profit before tax is calculated to be $(1800-1123) = \text{Rs.}677/-$ and the net profit is calculated to be $\text{Rs.}677 - \{(677 \times 33.99\% \text{ (income tax)}\} = \text{Rs.}677 - 230.10 = \text{Rs.}446.80$, say Rs.447 / tonne. Hence, the deposit / mine is viable / feasible for economical operation.

8.2 Inflation effects

The cost of production includes two major costs - cost of diesel and labour. Any change in the cost of these components would affect the cost of production and the business. However, the effect of these would not be substantial.

8.3 Sensitivity studies

This profit is subjected to the present market value of ores, cost of machines and the achievement of the planned production. Correct assessment can be made after detailed studies and reviewing the scope of each activity with respect to each area/block in particular. Escalations and increase in tax structure will also have impact. As such, there may be certain variations. Further, instead of direct purchases, many types of equipment can also be hired and managed from other sources. Even certain activities considered within the project can be totally from out sources.


S.C. Nayak
Qualified Person

 <p>S.C. Nayak, Qualified Person M/s MINESKETCH Consultants (P) Ltd</p>	<p>M/s SMC Power Generation Ltd Applicant</p>
--	---

(18)

9.0 OTHER FACTORS (Statutory provisions relating to) :

9.1 Labour

The region around the applied M.L area is dominated by the poor population. Most of them will be engaged in the mining and allied activities. Issues related to the development work are road, health, sanitation, education, drinking water and cultural activities that will be taken care as per the norms of the Govt.

9.2 Land

Applied M.L area constitutes 43% DLC forest, 37% Baitarani Reserved Forest, 18% village forest and 2% non-forest land approximately. As far as statutory provision is concerned, forest clearance and surface right of the forest land will be obtained before mining operation.

9.3 Mining

Mining will be carried out in accordance with approved Mining Plan/ MMP prepared under MCR, 2016, MCDR, 1988 & Mines Act, 1952 and Progressive Mine Closure Plan will be implemented properly.

9.4 Taxation etc.

Escalations and increase in tax structure will also have impact on cash flow forecast of the mine.

A chartered accountant will look after the cash flow statement on regular basis. Adequate facilities will be provided to him for taxation. Specific changes in taxation process declared by the Govt. will be strictly followed. Overall profit will provide the base for sustainable development of the mine.


S.C. Nayak
Qualified Person

UUU 3539

The Institution of Engineers (India)



This is to certify that

Subash Chandan Nayak, 2150609

passed Sections A and B of the Institution Examinations
in the *Mining* Engineering Branch
in *Winter 1987* and *Winter 1989* respectively

S.C. Nayak
Qualified Person

Calcutta
Dated 12 MAR 1991

S. S. Chatterjee
Member of Council

Secretary & Director General

भारत सरकार
GOVERNMENT OF INDIA
श्रम और पुनर्वास मंत्रालय
MINISTRY OF LABOUR AND REHABILITATION
खान सुरक्षा महानिदेशालय
DIRECTORATE GENERAL OF MINES SAFETY

* कोयला खान विनियमावली, 1957/धातु उत्पादक खान विनियमावली 1961* के अधीन प्रबंधक/सर्वेक्षक/फोरमैन/ओवरमैन/सरदार/मेट/सौटफायरर/ब्लास्टर के समर्थता प्रमाण-पत्र की परीक्षा के लिये उम्मीदवार को प्रबंधक द्वारा दिये जाने वाले व्यवहारिक अनुभव का प्रमाण-पत्र।
Certificate of practical experience granted by the Manager to a candidate for a Manager's/Surveyor's/Foreman's/Overman's/Sirdar's/Mate's/Shotfirer's/Blaster's Certificate of Competency Examination under the *Coal Mines Regulations, 1957 Metalliferous Mines Regulation, 1961*

मैं _____ जो कि _____ की _____ ()
खान का प्रबंधक हूँ यहाँ प्रमाणित करता हूँ कि श्री _____ (जिसके हस्ताक्षर संलग्न हैं) _____
ने _____ से _____ तक उपरोक्त खान पर काम किया है और * अब भी कर रहा है। ऊपर कही गई अपनी काम
की अवधि के दौरान उसने पृष्ठ के दूसरी ओर दिए अनुसार व्यवहारिक अनुभव प्राप्त किया है। उसके नाम से संबंधित कर्तव्यों के कारण उसे
समाप्त खान पर उपस्थित रहना पड़ता रहा है, और उसके द्वारा उनका पालन प्रभावी ढंग से किया गया है।

I, SRI SUDARSAN SAHU being the Manager of Putulipani Iron Mine (Iron Ore)
Mine belonging to Gandhamardhan Spong Industries hereby certify that Shri. Subash Chandra Nayak
son of Shri. Holi Bandhu Nayak (whose signature is appended), worked in the above
Mine from 08.12.1992 to 16.05.2002 and is still working. During his term of work
aforesaid, he has obtained practical experience as detailed overleaf. The duties connected with his work have involved his continuous
attendance at the mine and have been efficiently performed by him.

मेरा विश्वास है कि वह अच्छे चरित्र का आदमी है और समर्थता प्रमाण-पत्र की परीक्षा लिए जाने के लिए उचित और योग्य व्यक्ति है।
I believe him to be of good character and a fit and proper person to be examined for Certificate of Competency.

(तारीख सहित हस्ताक्षर और सरकारी मोह)
(Signature with date and Official Seal)

Sub
16/5/2002
Manager
Putulipani Iron Ore Mine

प्रबंधक SUDARSAN SAHU
Manager
डाकघर Keonjhar garch
P.O.
जिला Keonjhar
District
राज्य Orissa
State

Subash
16.05.2002
(Subash Chandra Nayak)
(उम्मीदवार के हस्ताक्षर)
(Signature of Candidate)

नोट: / Note:

*यदि लागू न हो तो काट दें।
*Delete, if not applicable.

†(धनिज का नाम दें)
†(State name of Mineral) Iron Ore

Sub
S.C. Nayak
Qualified Person

क्रम सं० Serial No.	व्यवहारिक अनुभव का धोरा (क) Particular of Practical experience (a)	अनुभव का स्थान (ख) Place of experience (b)	व्यवहारिक अनुभव की अवधि (ग) Period of practical experience (c)		कुल अनुभव Total experience		
			से From	तक To	वर्ष Year	मास Months	दिन Days
1	Working as VTL Mining Engineer for (1) Mine development & Production (2) Quality Control & (3) Planning & design	open-cast Iron ore mines (Puttelipani Iron mine)	08-12-92	16-05-2002	09	05	08
कुल योग Grand Total							

उपरोक्त अवधि के दौरान औसत मासिक उत्पाद (घ) / औसत दैनिक नियुक्तियां (ङ) नीचे दी गई हैं :
AVERAGE MONTHLY OUTPUT (d) AVERAGE DAILY EMPLOYMENT (e) DURING THE ABOVE PERIOD IS GIVEN BELOW :

भूमिगत खनन कार्यों में In below-ground working	ओपेन कास्ट खनन कार्यों में In open-cast working	सब मिलाकर In all
NIL	164	164

(Seebash Chandra Nayak)

(उम्मीदवार के हस्ताक्षर)
(Signature of Candidate)

(तारीख सहित प्रबंधक के हस्ताक्षर और सरकारी सील)
(Signature of Manager with date and Official Seal)

खान का नाम

Name of Mines

Manager
Puttelipani Iron Ore Mines

अनुदेश :-

Instructions :-

- कर्तव्यों की स्पष्ट रूप से बताएं।
(a) State clearly the nature of duties.
- बताएं कि भूपृष्ठ पर हैं, ओपेन-कास्ट कार्यों में हैं या भूमिगत।
(b) State whether on-surface, in open-cast working or below-ground.
- आवेदक ने किन्हीं खनन संक्रियाओं या सर्वेक्षक संक्रियाओं जैसी भी स्थिति हो, जितने समय काम किया हो, उसे स्पष्ट रूप से बताएं। यदि निश्चित ऐसी ही की आवेदक की खान पर लगातार उपस्थित न रहना पड़ता हो तो यह बताया जाए कि, भूमि के ऊपर या भूमि के नीचे, उसे कितने सप्ताह और सप्ताह में कितने दिन खान में नियुक्त किया गया और कितने दिनों के लिए।
(c) State specially the period spent by the applicant in different mining operations, or surveying operations as the case may be, if the employment has not been such as to involve continuous attendance of the applicant at the mine, it must be stated how many weeks and how many days a week he was employed at the mine, whether underground or above ground and in what capacity.
- यदि खान धातु उत्पादक खान हो तो काट दें।
(d) Delete, if the mine is a Metalliferous Mine.
- यदि खान कोयला खान हो तो काट दें।
(e) Delete, if the mine is a Coal mine.

नोट/Note:

अनुभव या प्रशिक्षण का कोई भी ऐसा प्रमाण-पत्र जो संबंधित खान प्रबंधक की सरकारी सील के अधीन जारी न किया गया हो, अस्वीकार कर दिया जाएगा।

Any certificate of experience or training, which is not issued under the Official Seal of the concerned Mine Manager, would be rejected.

पंजीकरण सं. M.C.I.P. (F.O.S. U.M.), Ser. - SG-11 D.G.M.S/94-11, 8-94-10,000.

S.C. Nayak
Qualified Person



CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON TO PREPARE MINING PLANS

(Under Rule 22C of Mineral Concession Rules, 1960)

Shri Subhas Chandra Nayak resident
of Sasubhausuni, P.O. Nuagaon Ichhapur Dist-Bhadrak, Orissa son
of Shri H. B. Nayak having given satisfactory
evidence of his qualifications and experience is hereby granted recognition
under Rule 22C of the Mineral Concession Rules, 1960 as a Qualified
Person to prepare Mining Plans.

This registration number is RQP/CAL/211/95/A

This recognition is valid for a period of two years
ending 1st Feb. 1997

17 FEB 1994

Place: Calcutta

Date: 2.2.95

Regional Controller of Mines
Indian Bureau of Mines

S.C. Nayak
Qualified Person.

नवीनीकृत दिनांक तक
Renewed upto
01.02.2001

20/2/99
Regional Controller of Mines
Indian Bureau of Mines
Calcutta.

नवीनीकृत दिनांक तक
Renewed upto
01.02.2011

15/2/201

क्षेत्रीय खान नियंत्रक
Regional Controller of Mines
भारतीय खान ब्यूरो
Indian Bureau of Mines
कलकत्ता
Calcutta

नवीनीकृत दिनांक तक
Renewed upto
01.02.2021

15/2/11

क्षेत्रीय खान नियंत्रक
REGIONAL CONTROLLER OF MINES
भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
भुवनेश्वर/BHUBANESWAR

नवीनीकृत दिनांक तक
Renewed upto

क्षेत्रीय खान नियंत्रक
REGIONAL CONTROLLER OF MINES
भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
भुवनेश्वर/BHUBANESWAR

(23)

ANNEXURE - 3

MEMORANDUM
AND
ARTICLES OF ASSOCIATION
OF
S M C POWER GENERATION LIMITED


S.C. Nayak
Qualified Person

(24)



COMPANY NO. 55-108467



सत्यमेव जयते

Certificate for Commencement of Business

व्यापार प्रारम्भ करने का प्रमाण पत्र
Pursuant to section 149 (3) of the Companies Act, 1956
कम्पनी अधिनियम 1956 की धारा 149 (3) के अनुसरण में

I hereby certify that the **S M C POWER GENERATION LIMITED**

मैं एतद् द्वारा प्रमाणित करता हूँ कि एस एम सी पावर जनरेशन लिमिटेड

which was incorporated under the Companies Act, 1956 on

जो कि कम्पनी अधिनियम, 1956 के अन्तर्गत पंजीकृत की गई थी दिनांक 18 कार्तिक 1922

the...NINETH.....day of NOVEMBER 2000

and which has filed duly verified declaration in the

और जिस वे कि यथावत् निर्धारित प्रपत्र में सत्यापित घोषणा पत्र प्रस्तुत

prescribed form that the conditions of section

कर दिया है कि उस ने धारा 149 (2) (क) से (ग)

149 (2) (a) to (c) of the said Act, have been complied with is entitled

को सभी शर्तों का अनुपालन कर दिया है, अतः व्यापार आरम्भ करने का

to commence business

अधिकारी है।

Given under my hand at NEW DELHI

मेरे हस्ताक्षर से आज दिनांक 29 अक्टूबर, 1922

this TWENTIETH day of DECEMBER

Two Thousand

को जारी किया गया।



Sd/-

(टी पी शर्मा)

उप कम्पनी रजिस्ट्रार

Dy. Registrar of Companies

रा. रा. क्षेत्र दिल्ली एवं हरियाणा

N.C.T. OF DELHI & HARYANA

S.C. Nayak
Qualified Person

(25)



सत्यमेव जयते

प्राच्य एक

Form 1

निगमन का प्रमाण पत्र

Certificate of Incorporation

नं० U40200DL2000PLC108467 हक 1922

No. U40200DL2000PLC108467 of 2000 - 2001

मैं एतद् द्वारा प्रमाणित करता हूँ कि आज एस एम सी पावर जनरेशन लिमिटेड ।

कम्पनी अधिनियम 1956 (1956 का 1) के अधीन निगमित की गई है और यह कम्पनी परिस्मित है।

I hereby certify that **S M C POWER GENERATION LIMITED**

is this day incorporated under the Companies Act, 1956 (No. 1 of 1956) and that the Company is Limited.

मेरे हस्ताक्षर से आज ता०..... 18 कार्तिक, 1922.....को दिया गया ।

Given under my hand at NEW DELHI this NINTH

day of NOVEMBER TWO THOUSAND



Sd/-

(डी. के. गुप्ता)

उप. कम्पनी रजिस्ट्रार

Dy. Registrar of Companies

रा. रा. क्षेत्र दिल्ली एवं हरियाणा

N.C.T. OF DELHI & HARYANA


S.C. Nayak
Qualified Person

(26)



(THE COMPANIES ACT, 1956)

—
(COMPANY LIMITED BY SHARES)

—
MEMORANDUM OF ASSOCIATION
OF

S M C POWER GENERATION LIMITED

- I. The Name of the Company is **S M C POWER GENERATION LIMITED**
- II. The Registered office of the Company will be situated in the **National Capital Territory of Delhi.**
- III. The objects for which the Company is established are :-
(A) **THE MAIN OBJECTS TO BE PURSUED BY THE COMPANY ON ITS INCORPORATION ARE :**
 1. To carry on in India or elsewhere the business to generate, produce, improve, buy, sell, resell, acquire, use, transmit, accumulate, employ, distribute, develop, handle, protect, supply and to act as agent, broker, representative, consultant, collaborator, or otherwise to deal in electric power in all its branches of such place or places as may be permitted by appropriate authorities by establishments of thermal power plants, liquid fuel based power plants, hydro power plants, atomic power plants, wind power plants, solar power plants and other power plants based on any source of energy.
 2. To construct, laydown, establish, promote, erect, build, install, commission carry out and run all necessary power substations, work shops, repair shops, wires, cables, transmission lines, accumulators, street lights for the purpose of conservation, distribution and supply of electricity of participating Industries, state electricity boards and other boards for Industrial, commercial, domestic, public and other purposes and also to provide regular servicing for repairing and maintenance of all distribution and supply lines.
 3. To acquire connections, facilities from licenses from electricity boards, Governments, semi Governments or local authorities for generation, distribution, production, transmission or use of electric power.
 4. To set up steel furnaces and continuous casting and rolling mill plant for producing for steel and alloy ingots, steel and alloy steel billets, and all kinds and sizes of re-rolled sections, i.e flats, angles, rounds, containers, squares, hexagons, octagons, rails, joints, channels, steel strips, agricultural implements, machinery, sheets, plates, deformed bars, plain and cold twisted bars, shaftings and steel structures steel pipes, tubes & sponge iron.
 5. To carry on all or any of the business of manufacturers, processors, importers, exporters, of and dealers in sponge iron, all kinds of ferrous and non-ferrous metals meant for any industrial or Non industrial use whatsoever and to carry on the business in cold or hot rolling re-rolling, slitting, edge-milling, sheeting, stamping, pressing, extruding, forging, drawing, flattening, straightening, heat treatment of all kinds of steel and other metals or any other kind of strips, sheets, foils, tapes, wires, rods, plates and any other sections, shapes or forms.


S.C. Nayak
Qualified Person

.. . .



6. To carry on business of all or any kind of iron and steel, founders, steel melters, steel makers, steel shapers and manufacturers, mechanical engineers and fabricators, contractors tool makers, brass founders, metal workers, manufacturers of steel, metal and malleable grey, casting including ferrous, non ferrous, special and alloy steel, spring steel, forging quality steel manufacturers, processors of all types of forged components and accessories alloys, nuts, bolts, steel rounds, nails tools, all types of hard-ware items, plate makers, wire drawers, tube manufacturers, galvanisers, japaners, re-rollers, annealers, enamellers, process, repair, convert, let on hire, otherwise deal in such products raw materials, stores, packing materials by products and allied commodities machineries, rolling stock implements, tools, tensils, ground tools materials and conveniences of all kinds and generally to carry on the said business in all or any of its branches.
 7. To carry on in India and elsewhere the trades or businesses of iron masters, steel makers, steel converters, manufacturers of ferro-manganese, colliery proprietors, coke manufacturers, miners, smelters, engineers, tin plate makers and iron founders, in all their respective branches and carry on any business, transaction or operation commonly undertaken or carried on by explorers, prospectors or concessionaires and to search for, win, work, get, calcine, reduce, amalgamate, dress, refine and prepare for the market any quartz and ore and mineral substances, and to buy, sell, manufacture a deal in minerals and mineral products, plant and machinery and other things capable of being used in connection with mining or metallurgical operations.
- (B) OBJECTS INCIDENTAL OR ANCILLARY TO THE ATTAINMENT OF THE MAIN OBJECTS:
1. To purchase, hire, rent, lease, on contract or acquire in exchange or in amalgamations, licences or otherwise solely or jointly with others all such equipment, structures, cranes, vehicles and such other related equipments, required for the purpose of the main business of the Company.
 2. To negotiate/or enter into agreements and contracts with individuals, companies, corporations, and other such organisations, in India, or abroad for obtaining or providing technical, financial or any other such assistance, for carrying out all or any of the objects of the company and also for the purpose of activating, research and development of manufacturing projects on the basis of know-how and/or financial participation and for technical collaboration and to acquire or provide necessary formulae and patent rights for furthering the main objects of the Company.
 3. Subject to Sections 58A, 292 and 293 of the Act and the Regulations made thereunder and the direction issued by Reserve Bank of India, to receive money, securities, valuables of all kind on deposit or safe custody (not amounting to the business of Banking as defined under the Banking Regulation Act, 1949) and to borrow or raise money in such manner as the Company shall think fit and in particular by issue of debenture or debenture stock (perpetual or otherwise) and to secure the repayment of any money borrowed or raised on owing by mortgage, charge or lien upon all or any of the Company's property (both present and future) including its uncalled capital and guarantee and performance by the Company or any other such person or body corporate of and any obligation undertaken by the Company or any other such person or company, as the case may be.
 4. To subsidise, assist and guarantee the payment of money or the performance of any contract, engagement or obligation by any person or companies and in particular customers of the Company or any person or companies with whom the company may have or intended to have business relations.
 5. To adopt such means of making known the business of the Company as may seem expedient.
 6. To acquire by purchase, subscription or otherwise and to receive, hold, own, guarantee, assign, exchange, transfer, mortgage, pledge or otherwise dispose of or deal in and with any of the shares of the capital stock or any voting trust certificate in respect of the shares of the capital stock, script, warrants, right, bonds


S.C. Nayak
 Qualified Person

(28)



debentures, notes, trusts, receipts and such other securities, obligations, choose in action and evidences of indebtedness of interest issued or created by any corporation, companies, syndicates, associations, firms, trusts of persons, public or private or by the Government or by any state territory, province, Municipality, or by any Governmental agency and as owner thereof to possess and exercise all the rights, powers and privilege of ownership and the right to execute consent and vote thereon and to do any or all acts and things necessary or advisable for the preservation, protection, improvement or enhancement in value thereof.

To enter into partnership or into any arrangement for sharing profits or losses or any union of interest, joint ventures, reciprocal concessions or co-operation with any persons or persons or company or companies, carrying on or engaged in or about to carry on or engage in any business or transaction which the company is authorised to carry on.

To acquire and take over either the whole or part of business, goodwill, trade marks, patents and property, assets and liabilities of any person or persons, firm or corporation carrying on any business which the company is authorised to carry on.

To establish branches and agencies of the Company in India and elsewhere and to discontinue the same whenever necessary.

To pay for any property or rights acquired by the Company either in cash or by the issue of fully or partly paid shares or by the issue of the securities or partly in one mode or partly in another, on such terms as may be determined.

To open Bank accounts with any Bank and to pay into, draw money from such accounts.

To pay out of funds of the Company all costs, charges and expenses which the Company may lawfully pay for the promotion of any project of any nature and payment of technical fees or with respect to the promotion, formation, establishment and registration of any Company and/or the issue of its capital or which the Company shall consider to be preliminary, including therein the cost of printing and stationery, brokers fees and lawyers or any other experts fees and expenses attendant upon the formation of agencies branches and local boards.

To procure the registration of the Company in or under the law of any foreign country.

Subject to the provisions of section 391 to 394 and 394A of the Companies Act 1956 to amalgamate or merge or to enter into partnership or into any arrangement for


S.C. Nayak
Qualified Person

sharing profits, union of interests, co-operation, joint venture or reciprocal concession with any person or persons, partnership firm/firms, or company or companies carrying on or engaged in any business or transaction which the company is authorised to carry on or engaged in

15. To obtain any information as to any invention which may seem capable of being used for any of the purposes of the Company or the acquisition of which may seem calculated directly or indirectly to benefit the Company or may appear likely to be advantageous or useful to the Company and to use, exercise, develop or grant licences privileges in respect or otherwise turn to account the property rights or information so acquired and to assist, encourage and spend money in making experiments of all inventions, Patents and rights which the Company may acquire or purpose to acquire 2
16. To adopt such means of making known the business of the Company as may seem expedient and in particular by advertising in the press, by circulars, by purchase and exhibition of works of art or interest, by publication of books and periodicals and by granting prizes, rewards and donations. 2
17. To draw, make, accept, endorse, discount, execute and issue promissory notes, bills of exchange, bills of lading, warrants, debentures and such other negotiable or transferable instruments of all types.
18. To remunerate any person or company for services rendered or to be rendered in acting as trustees for debentures, debenture stock holders or placing or assisting to place or guarantee the placing of any of the shares in the Company's capital or debentures, debenture stock or other securities of the Company, or in or about the formation or promotion of the Company or to conduct of its main business or for guaranteeing payment of such debentures or such other debenture Stock and interest Subject to the provisions of Section 314 of the Act
19. To appoint attorneys and agents whether on commission or otherwise and constitute agencies and sub-agencies of the Company in India or elsewhere.
20. To distribute any of the property of the Company in species or otherwise among the members in the event of winding up, subject to the provisions of Section 100 to 105 of the Companies Act, 1956. 2
21. To enter into any arrangements with any Government or any authority, Supreme Municipal, Local or otherwise that seem beneficial to any of the company's objects and to apply for, promote and obtain any act of Parliament privilege, concession, licences, or authorisation of the Government or any other such authority whether local or otherwise for enabling the company to carry on its objects into effect 2


S.C. Nayak
 Qualified Person

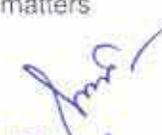
(30)



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for extending any of the powers of the Company and to carry out, exercise and comply with any such act, privilege, concession, licence or authorisation.

22. To lease, let on hire, mortgage, pledge, hypothecate, dispose off the whole or any part or parts of the undertaking of the Company or any land other movable property, rights or assets of any kind of the Company or any share or interest therein respectively, in such manner and for such consideration as the company may deem fit and particular for shares, debentures or securities of any other such body corporate having objects altogether or in part similar to those of the Company.
23. To establish and maintain or procure the establishment and maintenance of any provident fund or any contributory or non-contributory pension or superannuation fund and to give or procure the giving of donations, gratuities, pensions, allowances emoluments, bonuses, profit sharing bonus, benefits or any other payment to persons who are or were at any time in the employment or service of the Company, its predecessors in business or of any Company, which is a subsidiary of the Company or is allied to or associated with the Company or with any such subsidiary, or who are or were at any time or Officers of the company or any of such other Company as aforesaid and the wives, widows, families, dependents or connection of any such person and to provide for the welfare of all or any of the aforesaid persons, from time to time, by subscribing, subsidizing or contributing to any of institution, association, funds, clubs, trusts, profit sharing or other schemes and by building, contributing to the building or dwelling house or quarters and by providing, subscribing or contributing towards recreation, hospitals and dispensaries, medical and other attendance and to make payment to or towards the insurance as aforesaid either alone or in conjunction with any such other company as aforesaid.
24. To undertake, carry out, promote and sponsor any programme for promoting the social and economic welfare of the employees of the company and to incur any expenditure on any programme for welfare of the employees and their development and in order to implement any such programme or scheme of transfer without consideration or at such fair/concessional value any assets of the company to the welfare body formed for the implementation of welfare programmes for the employees of the Company as the directors may deem fit.
25. To acquire from any person, firm or body corporate whether in India or elsewhere technical information, know-how, and operating data, plans layouts and blue prints useful for the design, erection and operation of plant required for any of the business of the Company and to acquire or grant any licence and other rights and benefits in the foregoing matters and things.


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- 25 To enter into collaboration agreement, to acquire technical know-how and/or any financial assistance and/or to acquire any plant or machinery and/or to manufacture and/or fabricate and/or produce and/or assemble any plant and/or machinery and/or equipment under any such collaboration agreement
- 27 To train or pay for training in India or abroad of any of the Company's employees or any candidate in the interest of or for furtherance of the Company's main objects.
- 28 To advance money to such persons or companies and on such basis as may seem expedient and in particular to customers and other having dealings with the Company and to guarantee the performance of any contract or obligation and the payment of money of or any such persons or companies and to give guarantee and indemnities.
- 29 Subject to the provisions of Sec. 77 of the Companies Act 1956 to invest other than investment in Company's own shares; the surplus funds of the Company, from time to time, in Government securities or in other securities as may from time to time, be determined by the directors and from time to time, to sell or vary all such investments and to execute all assignments, transfers, receipts and documents that may be necessary in that behalf for pursuing main objects.
- 30 To take or concur in taking all such steps and proceedings as may seem best calculated to uphold and support the credit of the company and to obtain and justify public confidence and to avert or minimise financial disturbances which might affect the Company.
- 31 To confer upon any encumbrances or trustees for any encumbrances of uncalled capital, such powers of making and enforcing calls and voting the transfer of shares not fully paid up as may be thought fit.
- 32 To issue or guarantee the issue of or the payment of interest on the shares, debentures, debenture stock or other security or obligations of any company or association and to pay or provide for brokerage, commission and underwriting in respect of any such issue.
- 33 To purchase, take on lease or licence or in exchange, hire or otherwise, any real and/or personal property and any rights or privileges and advantages of any kind whatsoever necessary or convenient for the business of the Company or may enhance the value of any other property of the Company and in particular, the land (freehold, leasehold or other tenure) tenements, buildings, basements, machinery, plant and stock-in-trade and on any such lands to erect buildings, sheds, godowns, or such other structures for the business of the Company and also for the residence and amenity of

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the employees, staff and other workmen and erect and instal machinery and plant and other equipments which may be deemed necessary or convenient or profitable for the purpose of the Company's and either to retain any property to be acquired for the purpose of the Company business or to resell, mortgage, let on lease or otherwise deal with and to turn the same account as may seem expedient.

34 To create any subscription fund, sinking fund, insurance fund or any other special funds whether for repairing, improving, extending, or maintaining any of the property of the Company or for any other purpose conducive to the interest of the Company, or the staff or labour or for any development fund.

35 To purchase or otherwise acquire and undertake the whole or any part of the business property, rights and liabilities of any person firm or company, carrying on or proposing to carry on any business which this company is authorised to carry on or possessed of property or rights suitable for any of the objects of the Company, or which can be carried on in conjunction therewith or which is capable of being conducted so as directly or indirectly to benefit the company and to purchase acquire sell and deal in property, shares, stocks or debenture stock of any such person, firm or company and to conduct, make or to carry into affect any arrangements in regard to the winding up of the business of any such person, firm, or company.

36 Subject to Section 293A of the Act, to make donations, to any persons or institutions in such form of cash or any other assets as may be thought directly or indirectly conducive to any of the Company's objects or otherwise expedient and in particular to remunerate any person or corporation introducing business to this Company and also to subscribe, contribute or otherwise assist or grant money for charitable, scientific, religious or benevolent, national, public or such other institutional objects or for any exhibit or for any public, general or other objects.

37 To give to any director, officers, servants, or employees of the Company any share or interest in the profits of the Company's business by way of commission or otherwise or any branches thereof and whether carried on by own means or through the agency of any subsidiary company or not, and for that purpose to enter into any arrangements which the Company may seem expedient

38 To refer or agree to refer any claim, demand, dispute or any other question, by or against the Company, or in which the Company is interested or concerned and whether between the Company and the member or members or his or their representatives, or between the Company and the third parties, to arbitration in India, or at any place outside India and to observe and perform and to carry out or enforce the awards


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39. Subject to the provisions of the Companies Act, 1956, to vest any real or personal property rights or interest acquired by or belonging to the Company in any person or company on behalf of or for the benefit of the company and with or without any declaration in favour of the company.
40. To enter into any arrangement with any such subsidiary company for taking the profits and bearing the losses of any business or branch so carried on, or for financing any such subsidiary or guaranteeing its liabilities or to make any other arrangements which may seem desirable with reference to any other business or branch so carried on with power at any time to close any such business or branch either temporarily or permanently and to appoint Directors or Managers of any such subsidiary company. (C 1
41. To do all or any of the above things either as principals, agents, brokers, trustees, contractors or otherwise and either by or through agents, brokers, sub-contractors, trustees or otherwise and either alone or in conjunction with others and to do all such things as may be incidental or conducive to the attainment of the main objects.
42. To do all event and every things necessary, suitable or proper for the accomplishment of any of the main business or the attainment of any of the main objects of the Company.
43. To import, exchange, buy, wholesale or retail all such goods, articles and things as may be necessary or expedient for the conduct of the company's main business. 2


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(C) THE OTHER OBJECTS ARE :

1. To acquire and hold shares, stocks, debenture, debenture stocks, bonds, obligations and securities issued or guaranteed by any company constituted or carrying on business in India or elsewhere or by any government, sovereign ruler, commissioners, public body or authority, supreme, municipal, local or otherwise, whether at home or abroad and to acquire these by original subscription, tender, purchase, exchange, or otherwise and to subscribe for the same, either conditionally or otherwise and to guarantee for subscription thereof and exercise and enforce all rights and powers conferred by or incidental to the ownership thereof.
2. To carry on the business of financing industrial enterprises and to make loans give guarantees and provide securities to any other company or other persons whether promoted and/or managed by this company or not. To acquire or takeover with without consideration and/or carry on the business of shares and transfer agents and as financial advisors and management consultants by themselves or in partnership with other companies or other persons and generally to carry on business as financiers and for that purpose to give loans, with or without security and on such terms and conditions as the company may in its absolute discretion deem fit, to any person or persons to enable them to purchase either by themselves or jointly with any other person or persons, all kinds of machinery automobiles and their parts, accessories, components, stores and spares.
3. To constitute any trusts with view to the issue of preferred and deferred or any other such special stocks, or securities based or representing any shares, stocks or other assets specifically appropriated for the purpose of any such trust and to settle and regulate and if thought fit, to undertake and execute any such trusts and to issue, dispose off or hold any such preferred, deferred or other special stocks or securities. To transact on all kinds of agency business and in particular in relation to the investment of money, the purchase and sale of business property or under-takings. To contract with leaseholders, borrowers, lenders, annuitants and other for the establishment accumulation, provisions and payment, sinking funds, redemption funds, depreciation funds, renewal funds, endowment funds and any other special funds and that either in consideration of a lump sum of an annual premium or otherwise and generally on such terms and conditions as may be deemed fit.
4. Subject to the approval of RBI under RBI Act, 1934 and as amended by RBI (Amendment) Act 1997 to establish carry on and undertake the business of finance, and trading, hire purchase, leasing, chartering, renting and to finance lease operations of all kinds, purchasing, selling, hiring or letting on hire all kinds of plant, machinery


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such as Pollution control equipments and systems, cooling towers, chimneys, silos, automobile wheels, rims, Alternative energy systems, Electronics and Electronic equipments, Pharmaceuticals and Medical equipments diagnostic equipments, instrumentation equipments, control valves, all types of on shore and off shore services for Oil and Gas Industry or otherwise, ships, scaffolding equipments, corrosion protection, insulation and anti fouling activities equipments used for manufacture of all kinds of Laminates, DG set, Motor cars and buses, Computers data processing equipments and components. Subject to the approval R.B.I. under R.B.I. Act, 1934 as amended by R.B.I. (Amendment) Act, 1997.

5. To establish, carry on and undertake the business of finance, and trading, hire purchase, leasing, chartering, renting, repairing and to finance lease operations of all kinds of land and buildings, factory sheds, godown, storage houses, shops display centres and other similar properties, subject to the approval of RBI under RBI Act, 1934 as amended by RBI (Amendment) Act, 1997.
6. To finance to assist in financing the sale, export and import of goods, articles or commodities of all and every kind or description by way of hire purchase or deferred payments or similar transactions. Subject to the approval of RBI under Act, 1934 as amended by RBI (Amendment) Act, 1997.
7. (a) To manufacture, assemble, market, fabricate, lease, supply, distribute, buy, sell, import, export, design, manipulate, exchange, alter, improve prepare, instal, maintain, repair, or otherwise deal in any or all types of electronic equipment such as electronic typewriters, printers, word processors, mini and microcomputers, computer peripherals, micro processor based equipment floppy disketts, CDs, Modems, winchester hard disc drives, terminals, monitors, daisy wheel printers, black and white and colour televisions, photocopy and photographic equipment, telephones and telecommunication equipment, teleprinters, private automatic branch exchange, electronic and electrical gadgets, video recorders, video games, electronic calculators, radar equipment, electronic accounting and business machines, electronic control instruments, electronic cash registers and cheque writing machines, intercom equipment, electronic sound and amplifier systems, projection electronic hobby kits, electronic hardware, electronic clocks equipment T.V. signal boosters, electronic X-ray and other medical equipment, electronic synthesizers, electronic sirens, radio telephones, electronic navigational aids, electronic alarm systems, electronic traffic control systems, electronic laboratory equipment, electronic weighting machines, black and white and colour TV deflection components, fly back transformers video projection equipment, electronic toys and games and screens of all kinds.
- (b) To manufacture, assemble, market, fabricate, lease, supply, distribute buy, sell export, import, design, manipulate, exchange, alter, improve, prepare


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install, maintain, repair or otherwise deal in any or all types of printed circuit boards, switches, semi conductors, transistors, integrated circuits, memory chips, diodes, connectors, resistors, rectifiers, capacitors, digital meters, transformers, generators, control panels, valves, thyristors timbers plugs and sockets, leak detectors, button cell battery charges of all kinds.

- 8
- (a) To purchase, sell, develop, take in, exchange or on lease hire or otherwise acquire, whether for investment or sale or working the same any real or personal estate including lands, mines, factory, buildings, mills, houses, cottages, shops, depots, warehouses, machinery, plant, stock, stock-in-trade mineral rights, concessions, privileges, licences, easement or interest in or with respect to any property whatsoever for the purpose of the Company in consideration for a gross sum or rent or partly in one way and partly in other or for any other such consideration of all types.
- (b) To carry on business as proprietors of flats and buildings and to let on lease or otherwise apartments therein and to provide for the conveniences commonly provided in flats, suites and residential and business quarters.

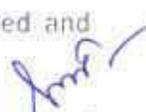
9 To establish and carry on the business of construction, Contractors, Jobbers, erectors, suppliers, engineers for undertaking any construction work relating to any building, flats dams roads and to carrying on contracts and jobs in connection with corrosion protection, insulation and anti-fouling activities and to provide all types of goods, systems and services for anti corrosion and insulation engineering and anti-fouling activities.

10 To carry on the business of manufacturers, importers exporters and dealers in all types of anti corrosion and insulation materials, chemicals, equipment and components used for application in anti-corrosive, insulation and anti-fouling appliances methods and processes.

11 To breed, rear and purchase live-stock of all kinds, to farm and buy animal produce of all kinds, to prepare, manufacture and render marketable any such produce and to sell, dispose of and deal in the same either in the manufactured or in raw state.

12 To undertake the manufacture of production of calcined petroleum coke and calcined anthracite coal and the sale thereof.

13 To carry on the business of manufacturers, importers and exporters of and dealer in ferrous and non-ferrous Casting of all kinds and in particular steel, chilled and


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maileable castings, special alloy castings, gun metal, copper, brass and aluminium castings and foundry work of all kinds.

14. To carry on the business of Contractors of Buildings, constructional Engineers and Architects.
15. To carry on the trade or business of iron masters, steel makers, steel converters, proprietors coke manufacturers, miners smelters, engineers tin plate makers and founders in all their respective branches.
16. To search, prospect, win, work, get, raise, quarry, smelt, refine dress, manufacture, manipulate, convert, make mercantable sell, buy, import, export or otherwise deal in all kinds of metal metalliferous, ores, and of other minerals and substances and to manufacture sell, import buy, import, export and otherwise deal in any such articles and commodities.
17. To carry on the business of running motor lorries motor taxis, motor mini buses and conveyances of all kinds and on such lines and routes as the company may think fit to transport passengers and goods and to do to the business of common carriers.
18. To carry on the business of hotel, restaurant, cafe, tavern refreshment room and boarding and lodging house keepers beer house keepers licenses victuallers wine beer and spirit merchants, aerated mineral and artificial water and other drinks purveyors, cafe and public amusements generally dealers in ivory novelty and goods and as general managers garage proprietors livestock stable keepers job masters farmers dairy men importers and brokers of food, live and dead stock and foreign produce of all descriptions hairdressers perfumers, Chemicals, proprietors of clubs bath, dressing rooms launders rendering and newspapers room, libraries grounds and places of amusements recreation and entertainment and instructions of all kinds tobacco and cigar merchants.
19. To produce steel bricks and bails from steel scrap and cast iron scrap.
20. To carry on the business of travel agents, Bank Mukadmas for railways shipping airways and road transport corporations, companies or bodies and carriers by land and air, barge property and freight contractor forwarding agents, clearing agents, steamship chandlers, caterers in railways, airlines and steamship companies, underwriters insurers of ships, crafts, goods and other property theatrical and opera box office promoters cinema exhibitors producers and distributors and merchants, refrigerating stores and as proprietors conducting safe deposits vaults general agents, ice merchants and to carry on the business or running night clubs, swimming pools, playing of launch boats bakery and confectionary.

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1 To carry on business as bakers and manufacturers of and dealers in bread flour, rava, maida, biscuits and farinaceous compound and materials of every description.

2 To carry on business of manufacturers of and dealers in sugar, gur, khandsari, sugar-chocolates, toffees and such other allied products thereof

3 To carry on business as breweries distillers and manufacturers of, and merchants and dealers in vinegar, acetic acid, glucose, wines, spirits beers, Porter malt, shops, malt, shops, grain meal, yeast, aerated, water, carbonic acid gas mustard pickles, cocoa, coffee and saudes condiments of all kinds.

4 To carry on the business of stationers, printers, lithographers, stereotype, electro-typers, photographic, printers, photolithographers engravers, dysinquers, envelop manufacturers, machine rulers, numeral printers, paper bag and account book makers, box makers, type founders, photographers manufacturers of and dealers playing, visiting railways, festive, complimentary and fancy cards and aleatines, dealers in parchm dealers in stamps agents for the payment of a stamp and such other duties advertising agents designers, draftsman booksellers and publishers.

5 To carry on the business as manufacturers and dealers in boots, shoes, clogs, all kind of footwear and leather and plastic goods lasts, boots, trees, laces bukles, leggings boot-polishes, accessories and fittings.

6 To carry on the business of tobacco consists in all its branches and to sell, make up and manufacture tobacco cigars, snuff and such other articles usually sold by tobacconists

7 To carry on the business as watch and clock repair electroplaters, dressing bags makers importers and exporters of and buy sell and deal in watches, clocks cutlery shopping bags and bronzes.

8 To carry on business of manufacturers and dalers of radios, televisions sets, teleprinters, telecommunication and electronic equipments telephone equipments, radars, computers business machines and their components, valves transistors, condensors and coils.

9 To carry on business of manufacturers or dealers in typewriters, calculating machines computers cleaners, sewing and printing machines, air-conditioning equipment, air-conditioners, refrigerators, coolers, ice-cream manufacturing machinery and to maintain air-conditioned godowns for storage of goods


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- 30 To carry on-business of a system and general laundry, and to wash, clean, purify, scour bleach, wring, dry iron, colour dye, disinfect, renovate and prepare for use all articles of wearing apparel, household, domestic and other cotton silk, and woollen fabrics repair, let on hire alter, improve treat and deal in all apparatus, machines materials and articles of all kinds. 39
31. To acquire or set up and run hospitals, clinics, nursing homes, maternity and family planning units or pathological laboratories and optician shops.
32. To carry on the business of cold storage of fruits, vegetables seeds, fish meat agricultural products, milk and dairy products and such other perishable items of all types. 40
33. To carry on the business of production, distribution or exhibition of films and motion pictures, including the running of theatres, cinemas, studios and cinematographic shows and exhibitions. 41
34. To carry on the business of builders and contractors, architects, decorators, merchants and dealers in stone bricks, sand, lime bricks, cement, timber, hardware and other building materials and acting as house agents 42
35. To establish and work cement manufacturers and to carry on the business of cement manufacturers, lime burners and ceramics including sanitary fitting and china ware. 43
36. To carry on the business of manufacturers or dealer of tractors, automobiles, earth-moving equipments, internal combustion engines, boilers locomotives and compressors.
37. To manufacture and or deal in automobile parts, spare parts and components of machineries and to act as agents for manufacturers of various parts and components.
38. To cultivate, grow, produce, or deal in any agriculture, vegetable or fruit products, processed food and extruded snacks and to carry on all or any of the business of armers, dairyman, milk contractors, dairy farmers, millers surveyors and vendors of milk and milk products condensed milk and powdered milk, cream, cheese, butter, poultry, furits, vegetables, cash crops and provisions of all kinds, growers of and dealer in corn, hay, and straw, seedsmen, and nursery men and to buy, sell, manufacture, and trade in any goods usually traded in any of the above business or any other business inclusive of staple food and medicinal preparations from milk, vegetable and animal products or any substitute for any of them Associated with the farming interests. 44
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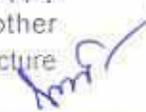

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- 30 To cultivate Tea, coffee, cinchona, rubber and other produce and to carry on the business of planters in all its branches, to carry on and do the business of cultivators winers and buyers of every kind of vegetable, mineral or other products of the soil, to prepare manufacture and render marketable and such products, and to sell, dispose off and deal in any such produce, either in its prepared, manufactured or raw state, and either by wholesale or retail.
- 40 To carry on the business of manufacture and sale of patent medicines and preparations and to carry on the business of manufacturers buyers, and sellers of and dealers in all kinds of medicines and medical preparations and drugs.
- 41 To carry on business of manufacturers or dealers in soaps, cosmetics, perfumes and toilet requisites.
- 42 To carry on the business of manufacturers of or dealers of pulp and paper of all kinds, and articles made from paper or pulp and materials used in the manufacturers or treatment of paper, including cardboard, mill boards and wall and coiling papers and packaging cartons and newsprints and photographic raw films.
- 43 To manufacture and deal in all chemical products and their intermediates dyes, drugs medicines and pharmaceuticals petroleum and its products, and derivatives, paints, products and derivatives paints, and varnishes, explosives and ammunitions, vegetable oil, their products and derivatives, all types of heavy chemicals such as sulphuric and other acids, caustic soda ash, all types of textile chemicals and sizing and finishing materials photographic chemicals, clay and boards, including straw boards glycerin and allied products, industrial and pharmaceutical organic and inorganic chemical fertilizers, pesticides, manures tingcides and allied products, fats, wares and their products, hides skins and leather.
- 44 To carry on the business of purchase and sale of petroleum and petroleum products, to act as dealers and distributors for petroleum companies.
- 45 To carry on the business of manufacturers and dealers in all types of rubber, leather, celluloid, bakelite, plastic and all other chemicals, rubber and plastic goods, particularly industrial rolls, rollers, sheets beltings and consumer goods such as tyres, tubes and such other allied products as chappals, shoes medicals and surgical goods.
- 46 To carry on business of electrical engineers, electricians, contractors, manufacturers, constructors, suppliers of and dealers in electric and other appliances electric motors, fans, lamp, furnaces, household appliances, batteries cables, wire lines, drycell accumulators, lamps and works and torate, accumulate, distribute generate and supply electricity for the purpose of light, heat, automotive power, and for all other such purpose for which electrical energy can be employed, and to manufacture


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and deal in all apparatus and thing connected with the generation, distribution, supply, accumulations, and employment of electricity including the terms electricity all power that may be directly or indirectly derived therefrom or may be incidentally hereafter discovered in dealing with electricity

47. To carry on the business of manufacturing, assembling, buying, selling, reselling, exchanging, altering, importing, exporting hiring, letting on hire, distributing or dealing in ships, boats, barges, launches, submarines, and other underwater vessels, aeroplanes, airships sea planes flying boats, hydroplanes and aircrafts and aerial conveyances of every description and all kind of transport or conveyance of passengers, merchandise or goods of every description whether propelled or assisted by means of petrol, spirit, electricity, steam, oil, vapour, gas, petroleum, mechanical, animal or any other such motive power all component parts, accessories equipments and apparatus for use in connection therewith.
48. To carry on the trade or business of manufacturing, assembling, buying selling, reselling, exchanging, altering, importing, exporting, letting on hire, or distributing or dealing in railway carriages, wagons, carts, vehicles, rolling stocks and conveyance of all kind whether for railway tram ways road, field, such other traffic or purpose and also for railway and such other applications thereof.
49. To carry on the business of machinists, makers of machinery, mechanical engineers from founders, brass foundries iron and steel convertors, makers, blast furnace proprietors, repaires boiler makers smiths, sand blast proprietors, consulting engineers japanners and annulators.
50. To carry on the business of manufacturers of dealers in wood products plywood matches and wooden or metal furniture.
51. To carry on the business of dealers in arms and ammunitions if permitted by law.
52. To carry on the business of manufacturers of and dealers in glass products, such as steel and plate glass, optical glass, glass wool and laboratory ware of all types.
53. To carry on the business of manufacturers of or dealers in textiles, such as man made fibres, cotton, silk, jute, woolien and synthetics.
54. To carry on the business of manufacturers of or dealers in industrial machinery of all types, including bearing, speed reduction units, pumps, machine tools and agricultural machinery and earth moving machinery including road rollers, bull-loaders, shovels and dozers, dumpers drag lines and light engineering goods such as cycles and sewing machines and their components.

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- 55. To carry on the business as manufacturers, dealers, stockists, importers and exporters of engineering drawing sets, hardware steel rules, measuring, tapes cutting tools, hand tools, precision measuring tools, machine tools, Garage tools, hardware tools, instruments apparatus and other machinery, plant equipment articles, appliances their component parts and accessories.
- 56. To carry on the business as manufacturers, dealers, stockists, exporters and importers of bolts, nuts, nails, rivets, hinges, hools an all other hardware items of all types and descriptions.
- 57. To carry on busiess as manufacturers, dealers, stockists, exporters and importers of forging, casting, stamping of all metals, machinery parts, moulds, press tools, jigs, fixtures, injections and compressions moulding and steel products of all kinds.
- 58. To carry on business as manufacturers, stockists, importers, exorters, repairs and dealers in dynamos, motors, armatures, magnets, batteries conductors insulators, transformers, converters, switch boards, cookers, engines, guns presses, insulating materials, and electric plant appliances and suppliers of every description.
- 59. To carry on the business as manufacturers, dealers, stockists, importers and exporters, of buckets, bath tanks, trunks, metal furniture, safes, chinmeys and pipes.
- 60. To carry on the business as manufacturers, dealers, stockists, importers and exporters of wearable and unwearable fabrics, high density polythelene and poly propylene woven, sacks and tarpaulins of various qualities and types.
- 61. To carry on the business as manufacturers, dealers, stockists, importers and exporters suppliers and commission agents and to carry on the business or wholesale and retail in all kinds of merchandise such as textile yarn, steel, spices, rice, wheat dry fruits chemicals, dyes and grains.
- 62. To carry on the business of timber and timber merchants, timber yard and saw mill proprietors and to buy, sell, preapre for market, import, export, and deal in timber and wood of all kind and to manufacture and deal in articles of all kinds in the manufacture of which timber or wood is used to carry on the busines of logging and timbering purchasing, acquiring and leasing timber berths.
- 63. To carry on the business as manufacturers of and dealers in plywood, hardwood blocks, for flooring and other purposes, boxes, windows, doors, wood pulp, wood wool, masts, spares, dorricks, sleepers, tool handles, panelling, wood work furniture and articles of all description wholly or partly made from wood bricks cement or stone

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64. To carry on the business as manufacturers of or dealers in or stockists, importers and exporters of packing materials, cartons, containers, boxes and case made of paper, boards wood glass, plastic, pulp, cellulose films, polythelene rubber metals, metal foils, gelatine, tin flexible treated laminated or other materials.
65. To carry on the business as manufacturers of or dealers as stockists, importers and exporters of bottles, jars, fibre, boxes, corrugated containers, aluminium foils of al types, wooden drums packing cases, rods, wires, ropes, stripes, conductors, equipment required for generation, distribution and transmission of electric energy cables, motors, fans, furnances, batteries and accumulators.
66. To act as trustees, executors, administrators, attorneys, nominees and agents and to under take and execute trusts of all kinds and (subject to compliance with any statutory condition) to exercise all the power of custodian trustees and trust corporations.
67. To procure or develop and supply and patents inventions, models, designs, scientific or industrial formulas or processed.
68. To procure or develop and supply technical know-how for the manufacture or processing of goods, materials or in the installation or erection of machinery or plant for such manufacture or processing or in the working of mines, oil wells or other sources of minerals deposits, or in search for or discovery or testing of minerals deposits, or in search for on in carrying out any operations relating to agriculture, animal husbandary, dairy, or poultry farming, forestry or fishing or finishing or rendering services in connection with the provision of such technical know how.
69. To carry on the profession of consultants, on management, employment, engineering, industrial, and technical matters to industry and business and to act as employment agents.
70. To carry on the business of printing and publishing book, magazines, journals and newspapers and to act as agents in connection therwith.
71. To undertake or arrange for the writing and publication, books, magazines, journals or pamphlets on subject relating to trade, commerce, industry, agriculture banking, insurance, investment, taxation, finance, economics, law and other subjects.
72. To acquire or set up and run schools, colleges, training and professional institution and music and dance centres.


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3. To undertake or promote research in economic, fiscal, commercial, financial, technical and scientific problems
4. To carry on the business of manufacturers of and dealers in all kinds of packaging, packing requisites and cartons made of cardboard, straw board, wood, glass or any other materials, metal, glass, or plastic containers as also containers of any other material.
5. To carry on the business of transport, cartages and haulage contractors garage proprietors, owners and characters of road vehicles, air-crafts, ships tugs, barges and boats of every description, lighterman, carriers of goods and passengers by road, rail water, or air, cartmen, cartage contractors, slevedors, cargo superintendents, packers haulors, warehouse-men, storekeeper and job masters.
6. To carry on business as manufacturers of petrochemicals and its by-products and corresponding products.
7. To carry on the business of cotton spinners and doubler flax, hemp and jute spinners liner and cloth manufacturers flux, hemp, jute and wood merchants, wood combers, worsted spinners, yarn merchants, worsted stuff manufacturers, bleaches and dyers and makers of vinyl, bleaching and dyeing materials.
8. To carry on the business of manufacturers of and dealers in flour, rava, maida biscuits, bread, chocolates and other sweets of every description, oils of all kinds and to buy, sell, manipulate or deal with wholesale and retail grains, seeds, pulses and commodities
9. To undertake and transact all kinds of agency business and to carry on and promote any business commercial or otherwise under sound principles to set or as distributors agents, contract main representation and indenting agents on commission on and or allowances as may be deemed fit
10. To run service station for the repairs and servicing of automobiles and to manufacture, deal in fuel oils and greases
11. To carry on the business or businesses, of manufacturers, importers and exporters of and dealers in forgings, press, structural and rolling works of all kinds and in particulars steell rollings, rods, bars, wire, sheets and all kinds of ferrous and non-ferrous rolling works.

S.C. Nayak
Qualified Person

(MS)

- 82. To advance, deposit or lend/money, securities and properties to or with any Company, body, corporate, firms, person or association with or without security and on such terms as may be determined, from time to time, However the Company shall not carry on the business of Banking as defined under the Banking Regulation Act, 1949.
- 83. To carry on the business as Managers to issues, management stock, Government securities, consultants underwriters and brokers of stock, shares, debenture, Bonds and Units of Trust of India.
- 84. To carry on the business of manufacturers, importers, exporters, buyers and sellers of all types of raw material required for manufacturing of picture tubes of all types for television sets monitors and all such components used therein.
- IV. The Liability of the members is Limited.
- V. The Authorised Share Capital of the Company is Rs. 36,00,00,000/- (Rupees Thirty Six Crores) divided into 3,60,00,000 (Three Crores Sixty Lacs) Equity Shares of Rs.10/- (Rupees Ten) each.

We,
being for
respect
respect

Sl. No.	N
1.	S S/ N N (E)
2.	M S N N (E)
3.	S S N N (E)
4.	M V N N (E)
5.	S V N N (E)
6.	
7.	

APR 1980

S.C. Nayak
S.C. Nayak
Qualified Person

Date
Place



We, the several persons whose names and addresses are subscribed hereto are desirous of being formed into a company in pursuance of THIS MEMORANDUM OF ASSOCIATION and we respectively agree to take the number of shares in the capital of the company set opposite our respective names :

Sl. No.	Name, addresses, description and occupation of each subscriber	No. of equity shares taken by each subscribers	Signature of Subscriber	Signature of witness with address, description and occupation
1.	Subhash Chand Aggarwal S/o Sewa Ram N-223, Greater Kailash New Delhi (Business)	100 (One hundred)	Sd/-	I witness the signatures of all the subscribers who have signed in my presence Sd/- (NITIN GUPTA) S/o Sh. N. K. Gupta Chartered Accountant Membership No. 96295 Flat No. 209, 7/28 Ansari Road Darya Gari, New Delhi-110002
2.	Mool Chand Aggarwal S/o Shri Sewa Ram N-223, Greater Kailash-I New Delhi (Business)	100 (One hundred)	Sd/-	
3.	Sandeep Aggarwal S/o Sh. Subhash Chand Aggarwal N-223, Greater Kailash-I New Delhi (Business)	100 (One hundred)	Sd/-	
4.	Mithlesh Aggarwal W/o Mool Chand Aggarwal N-223, Greater Kailash-I New Delhi (House Wife)	100 (One hundred)	Sd/-	
5.	Shweta Aggarwal W/o Sandeep Aggarwal N-223, Greater Kailash-I New Delhi-110048 (Business)	100 (One hundred)	Sd/-	
6.	Amit Aggarwal S/o Mool Chand Aggarwal N-223, Greater Kailash-I New Delhi-110048 (Business)	100 (One hundred)	Sd/-	
7.	Anurag Aggarwal S/o Mool Chand Aggarwal N-223, Greater Kailash I New Delhi-110048 (Business)	100 (One hundred)	Sd/-	
	Total	700 (Seven Hundred)		

Dated : 1st November, 2000
Place : NEW DELHI


S.C. Nayak
Qualified Person



(THE COMPANIES ACT, 1956)
 -o-
 (COMPANY LIMITED BY SHARES)
 -o-
 ARTICLES OF ASSOCIATION
 OF

S M C POWER GENERATION LIMITED

In these Regulations unless the context otherwise require :

- (a) "The Company" or "this company" mean **S M C POWER GENERATION LIMITED**
- (b) "the Act" means the "Companies Act, 1956" and every statutory modification or re-enactment thereof and references to Sections of the Act shall be deemed to mean and include references to sections enacted in modification or replacement thereof.
- (c) "these Regulations" means these Articles of Association as originally framed or as altered, from time to time.
- (d) "the office" means the Registered office for the time being of the Company.
- (e) "the Seal" means the common seal of the Company.
- (f) Words importing the singular shall include the plural and vice versa, words importing the masculine gender shall include the feminine gender and words importing persons shall include bodies corporate and all other persons recognised by law as such.
- (g) "month" and "year" means a calendar month and calendar year respectively.
- (h) Expressions referring to writing shall be construed as including references to printing, lithography, photography and other modes of representing or reproducing words in a visible form.
- (i) Unless the context otherwise requires, the words or expressions contained in these regulations shall bear the same meaning as in the Act or any statutory modifications shall bear the same meaning as in the Act or any statutory modifications thereof, in force at the date at which these regulations become binding on the Company.

2. The Regulations contained in Table A in Schedule 1 to the Companies Act 1956 shall not apply to the Company and the Regulations herein contained shall be the regulations for the management of the Company and for the observance of its members and their representative. They shall be binding on the Company and its members as if they are the terms of an agreement between them.

S.C. Nayak
S.C. Nayak
Qualified Person

REGISTRAR OF COMPANIES, BANGALORE
[Signature]

SHARE CAPITAL

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3. The Authorized Share Capital of the company shall be such amounts and be divided into such shares as may, from time to time, be provided in Clause V of the Memorandum of Association with power to increase or reduce the capital in accordance with the Company's regulations and legislative provisions for the time being in force on that behalf with the powers to divide the share capital. Whether original or increased or decreased into several classes and attach there to respectively such ordinary, preferential or special rights and conditions in such a manner as may for the time being be provided by the Regulations of the Company and allowed by law. The minimum paid up capital of the Company shall be Rs. 5,00,000/- (Rupees Five Lacs). (2)
4. Subject to the provisions of these Articles and of the Act, the shares shall be under the control of the Board of Directors, who may allot or otherwise dispose of the same to such persons, on such terms and conditions and at such time as they think fit and with full power to give any persons the option to call of or be allotted shares of the Company of any class, either at a premium or at par or at a discount and for such time and for such consideration as the Board of Directors think fit (subject to the provisions of Section 78 and 79 of the Act), provided that option or right to call of shares shall not be given to any person except with the sanction of the Company in General Meeting. The Board shall cause to be made the returns as the allotment provided for in Section 75 of the Act. (3) (4) (Subject holder in any of pa rights holde (1)
5. Any application signed by or on behalf of an applicant for shares in the Company, followed by an allotment of any shares, therein, shall be an acceptance of shares within the meaning of these Articles; and every person who thus or otherwise accepts any shares and whose name is on the register shall, for the purposes of the Articles, be a member. (1)
6. (1) If at any time the share capital is divided into different classes of shares, the rights attached to any class (unless otherwise provided by the terms of issue of the shares of that class) may, subject to the provisions of Sections 106 and 107 of the Act and whether or not the Company is being wound up be varied with the consent in writing of the holders of three fourths of the issued shares of that class or with a sanction of a resolution passed at a separate meeting of the holders of the shares of that class.
- (2) Subject to the provisions of Section 170 (2) (a) and (b) of the Act, to every such separate meeting, the provisions of these regulations relating to meetings shall mutatis mutandis apply, but so that the necessary quorum shall be five persons at least holding or representing by proxy or one-third of the issued shares of the class in question.
7. The rights conferred upon the holders of the shares of any class issued with preferred or other rights shall not unless otherwise provided by the terms of issue of the shares of that class be deemed to be varied by the creation or issue of further shares ranking pari passu therewith.
8. (1) The Company may exercise the powers of paying commissions offered by Section 76 of the Act, provided that the rate percent or the amount of the commission paid or agreed to be paid shall be disclosed in the manner required by the Section. (The agre (i) (ii)


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- (2) The rate of commission shall not exceed the rate of 5% (five percent) of the price at which the shares in respect whereof the same is paid are issued or an amount equal to 5% (five percent) of such price, as the case may be and in the case of debentures 2-1/2% (two and a half percent) of the price at which the debentures in respect whereof the same is paid are issued or an amount equal to 2-1/2% (two and a half percent) of such price, as the case may be.
- (3) The commission may be satisfied by payment in cash or by allotment of fully or partly paid shares or partly in one way and partly in the other.
- (4) The Company may also, on any issue of shares, pay such brokerage as may be lawful.

Subject to section 187-C of the Act, no person shall be recognised by the Company as holding any share upon any trust and the Company shall not be bound by or be compelled in any way to recognise (even when having notice thereof) any equitable, contingent future or partial interest in any share or any interest in any fractional part of a share or any other rights in respect of any share except an absolute right to the entirety thereof in the registered holder.

- (1) Every person whose name is entered as a member in the register of members shall be entitled to receive within two months after allotment (or within such other period as the conditions of issue shall provide) or within one month after the application for the registration of transfer is received by the Company.
- (a) one certificate for all his shares without payment, or
- (b) several certificate, each for one or more of his shares, provided that any subdivision, consolidation or splitting of certificates required in marketable lots shall be done by the Company free of any charges.
- (2) Every certificate shall be under the seal and shall specify the shares to which it relates and the amount paid up thereon.
- (3) In respect of any share or shares held jointly by several persons, the Company shall not be bound to issue more than one certificate, and delivery of a certificate for a share to one of several joint holders shall be sufficient delivery to all such holders.

The Company agrees, that it will not charge any fees exceeding those which may be agreed upon with the Stock Exchange.

- (i) for issue of new certificate in replacement of those that are torn, out defaced lost or destroyed:-
- (ii) for sub-division and consolidation of shares and debenture certificates and for sub-division of Letters of Allotment and Split, Consolidation, Renewal and Pucca Transfer Receipts into denominations other than those fixed for the market units of trading".

S.C. Nayak
Qualified Person

12. The Company may issue such fractional certificates as the Board may approve in respect of any of the shares of the Company on such terms as the Board thinks fit as to the period within the fractional certificates are to be converted into share certificates.
13. If any share stands in the names of two or more persons, the person first named in the register of members shall as regards receipts of dividends, the service of notices and subject to the provisions of these Articles, all or any other matter connected with the Company except the issue of share certificates, voting at meeting and the transfer of the share, be deemed the sole holder thereof.

LIEN

14. (1) The Company shall have a first and paramount lien upon every share (not being fully paid up share) for all money (whether presently payable or not) called or payable at a fixed time in respect of that share. Unless otherwise agreed the registration of a transfer of a share shall operate as a waiver of the Company's lien if any, on such shares. The Directors may at any time declare any shares to be wholly or in part to be exempt from the provisions of this article.
- (2) The Company's lien, if any, on a share shall extend to all dividends payable thereon subject to section 205 A of the Act.
15. The company may sell, in such manner as the Board thinks fit, any share on which the Company has a lien provided that no sale shall be made:
- (a) unless a sum in respect of which the lien exists is presently payable; or until the expiration of thirty days after a notice in writing demanding payment of such part of the amount in respect of which the lien exists as is presently payable, have been given to the registered holder for the time being of the share of the person entitled thereto by reason of his death or insolvency and stating that amount so demanded; if not paid within the period specified at the Registered office of the Company the said shares shall be sold.
16. (1) To give effect to any such sale, the Board may authorise some person to transfer the shares sold to the purchaser thereof.
- (2) The purchaser shall be registered as the shareholder of the shares comprised in any such transfer.
- (3) The purchaser shall not be bound to see to the application of the purchase money, nor shall his title to the share be affected by any irregularity or invalidity in the proceedings in reference to the sale.
17. (1) The proceeds of the sale shall be received by the Company and applied in payment of the whole or a part of the amount in respect of which the lien exist as is presently payable.


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- (2) The residue, if any, shall, subject to a like lien for sums not presently payable as existed upon the shares as the date of sale, be paid to the person entitled to the shares at the date of the sale.

CALLS ON SHARES

- (1) The Board of Directors may, from time to time, make calls upon the members in respect of money unpaid on their shares (whether on account of the nominal value of the shares or by way of premium) and not by the conditions of allotment thereof made payable at fixed times.
- (2) Each member shall, subject to receiving at least thirty days notice specifying the time or times and place of payment of the call money pay to the Company at the time or times and place so specified, the amount called on his shares.
- (3) A call may be revoked or postponed at the discretion of the Board.

A call shall be deemed to have been made at the time when the resolution of the Board authorising the call was passed. Call money may be required to be paid by instalments.

The joint holders of a share shall be jointly and severally liable to pay all call in respect thereof.

- (1) If a sum called in respect of a share is not paid before or on the day appointed for payment thereof, the person from whom the sum is due shall pay interest thereon from the day appointed for payment thereof to the time of actual payment at such rate of interest as the Board may determine.
- (2) The Board shall be at liberty to waive payment of any such interest wholly or in part.
- (1) Any sum which by the terms of issue of a share become payable on allotment or at any fixed date, whether on account of the nominal value of the share or by way of premium, shall for purposes of these regulations, be deemed to be a call duty made and payable on the date on which by the terms of issue such sum becomes payable.
- (2) In case of non-payment of such sum, relevant provisions of these regulations as to payment of interest and expenses, forfeiture or otherwise shall apply as if such sum had become payable by virtue of a call duty made and notified.

Subject to the provisions of Section 92 and 292 of the Act, the Board -

- (a) may, if it thinks fit, receive from any member willing to advance all or any part of the money uncalled and unpaid upon any shares held by him; and
- (b) if it thinks fit, may pay interest upon all or any of the moneys advanced on uncalled and unpaid shares (until the same would but for such advance become presently payable) at such rate not exceeding, unless the Company in general


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- Board shall otherwise direct, 9% (nine percent) per annum as may be agreed upon between the Board and the member paying the sums or advances. Money so paid in advance shall not confer a right to dividend or to participate in profits.
24. On the trial or hearing of any suit or proceedings brought by the Company against a member or his representative to recover any debt or money claimed to be due to the Company in respect of his share, it shall be sufficient to prove that the name of the defendant is or was, when the claim arose, on the Register of members of the Company as a holder or one of the holders of the number of shares in respect of which such claim is made and that the amount claimed is not entered as paid in the books of the Company and it shall not be necessary to prove the appointment of the Directors who resolved to make any call or that a quorum of Directors was present at Board Meeting at which any call was resolved to be made, nor that the meeting at which any call was resolved to be made was duly convened or constituted nor any other matter, but the proof of the matters aforesaid shall be conclusive evidence of the debt.
25. Neither the receipt by the Company of a portion of any money which shall, from time to time, be due from any member to the Company in respect of his shares, either by way of principal or interest, nor any indulgence granted by the Company in respect of the payment of any such money, shall, preclude the Company from thereafter proceeding to enforce the forfeiture of such shares as hereinafter provided.

TRANSFER AND TRANSMISSION OF SHARES

26. The Company shall keep a "Register of Transfer" and therein shall fairly and distinctly set out particulars of every transfer of transmission of any share.
27. (1) The instrument of transfer of any share in the Company shall be executed by or on behalf of both the transferor and the transferee.
- (2) The transferor shall be deemed to remain a holder of the share until the name of the transferee is entered in the register of members in respect thereof.
28. The instrument of transfer shall be in writing and all the provisions of Section 108 of the Companies Act 1956 and of any modification thereof for the time being shall be complied with in respect of all transfers of shares and registration thereof.
29. Unless the Director decide otherwise, when an instrument of transfer is tendered by the transferee, before registering any such transfer, the Directors shall give notice by registered acknowledgement due post to the registered holder that such transfer has been lodged and that unless objection is taken the transfer will be registered. If the registered holder fails to lodge an objection in writing at the office within ten days from the date of posting of such notice to him, he shall be deemed to have admitted the validity of the transfer. Where no notice is received by the registered holder, the Directors shall be deemed to have decided not to give notice and in any event the non-receipt by the registered holder of any notice shall not entitle him to make any claim of any kind against the Company or the Directors in respect of such non-receipt.


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TRANSFER OF SHARES

The Board of Directors may, subject to the right of appeal conferred by Section 111 of the Companies Act, 1956, decline to register:

- (a) the transfer of a share not being a fully paid up share, to a person of whom they do not approve, or
- (b) any transfer of the share on which the Company has a lien, provided that the registration of transfer shall not be refused on the ground of transferor being either alone or jointly with any person or persons indebted to the Company on any account except a lien.

The Board may also decline to recognise any instrument of transfer unless

- (a) the instrument of transfer is accompanied by the certificate of the shares to which it relates, and such other evidence as the Board may reasonably require to show the right of the transferor to make the transfer; and
- (b) the instrument is in respect of only one class of shares

All instruments of transfer which shall be registered shall be retained by the Company, but may be destroyed upon the expiration of such period as the Board may from time to time determine. Any instrument of transfer which the Board declines to register shall (except in any case of fraud) be returned to the person depositing the same.

- (a) the registration of transfers may be suspended at such times and for such period as the Board may, from time to time, determine
 provide that such registration shall not be suspended for more than forty-five days in the aggregate in any year or for more than thirty days at any one time
- (b) There shall be no charge for:
 - (a) registration of shares or debentures,
 - (b) sub-division and/or consolidation of shares and debentures certificates and sub-division of Letters of Allotment and split consolidation, renewal and pucca transfer receipts into denominations corresponding to the market unit of trading,
- (c) sub-division of renounceable Letters of Right.
- (d) issue of new certificates in replacement of those which are decrepit or worn out or where the cages on the reverse for recording transfers have been fully utilised;
- (e) registration of any Powers of Attorney, Letter of Administration and similar other documents.

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TRANSMISSION OF SHARES

- 34 (1) On the death of a member, the survivor or survivors where the member was a joint holder and his legal representative where he was a sole holder shall be the only person recognised by the Company as having any title to his interest in the shares.
- (2) Nothing in Clause (1) shall release the estate of a deceased joint holder from any liability in respect of any share which had been jointly held by him with other persons.
- 35 (1) Any person becoming entitled to a share in consequence of the death or insolvency of a member may, upon such evidence being produced as may from time to time properly be required by the Board and subject as hereinafter provided elect, either
 - (a) to be registered himself as holder of the share, or
 - (b) to make such transfer of the shares as the deceased or insolvent member could have made.
- (2) The Board shall, in either case, have the same right to decline or suspend registration as it would have had, if the deceased or insolvent member had himself transferred the share before his death or insolvency.
- 36 (1) If the person so becoming entitled, shall elect to be registered as holder of the share himself, he shall deliver or send to the Company a notice in writing signed by him stating that he so elects.
- (2) If the person aforesaid shall elect to transfer the share, he shall testify his election by executing a transfer of the share.
- (3) All the limitations, restrictions and provisions of these regulations relating to the right to transfer and the registration of transfers of shares shall be applicable to any such notice or transfer as aforesaid as if the death or insolvency of the member had not occurred and the notice of transfer were a transfer signed by that member.
- 37 On the transfer of the share being registered in his name a person becoming entitled to a share by reason of the death or insolvency of the holder shall be entitled to the same dividends and other advantages to which he would be entitled if he was the registered holder of the share and that he shall not, before being registered as a member in respect of the share be entitled in respect of it to exercise any right conferred by membership in relation to meetings of the Company.

Provided that the Board may, at any time, give notice requiring any such person to elect either to be registered himself or to transfer the share and if the notice is not complied with within 90 (ninety) days, the Board may thereafter withhold payment.


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of all dividends, bonus or other moneys payable in respect of the share, until the requirements of the notice have been complied with.

Where the Company has knowledge through any of its principal officers within the meaning of Section 2 of the Estate Duty Act, 1953 of the death of any member or of a debenture holder in the Company, it shall furnish to the Controller within the meaning of such section, the prescribed particulars in accordance with that Act and the rules made thereunder and it shall not be lawful for the Company to register the transfer or any shares or debentures standing in the name of the deceased, unless the transferor has acquired such shares for valuable consideration or a certificate from the Controller is produced before the Company to the effect that the Estate Duty in respect of such shares and debentures has been paid or will be paid or that none is due, as the case may be.

The Company shall incur liability whatever in consequence of its registering or giving effect, to any transfer of share made or purporting to be made by any apparent legal owner thereof (as shown or appearing in the register of members) to the prejudice of persons having or claiming any equitable right, title or interest in or in the said shares, notwithstanding that the Company may have had notice of such equitable rights, title or interest or notice prohibiting registration of such transfer and may have entered such notice or referred thereto, in any book of the Company and the Company shall not be bound or required to regard or attend or give effect to any notice which may be given to it of any equitable rights, title or interest or be under any liability for refusing or neglecting so to do, though it may have been entered or referred to in some book of the Company but the Company though not bound so to do, shall be at liberty to regard and attend to any such notice and give effect thereto if the Board shall so think fit.

FORFEITURE OF SHARES

If a member fails to pay any call or instalment of a call, on the day appointed for payment thereof, the Board may, at any time thereafter during such time as any part of the call or instalment remains unpaid, serve a notice on him requiring payment of so much of the call or instalment as is unpaid together with any interest which may have accrued and all expenses that may have been incurred by the Company by reason of such non-payment.

The notice aforesaid shall.

- (a) name of further day (not earlier than the expiry of 30 (thirty) days from the date of service of notice) on or before which the payment required by the notice is to be made; and
- (b) state that, in the event of non-payment on or before the day so named, the shares in respect of which the call was made, will be liable to be forfeited.

If the requirements of any such notice as aforesaid are not complied with, any share in respect of which the notice has been given may, at any time, thereafter, before the payment required by the notice has been made, be forfeited by a resolution of the Board to that effect. Such forfeiture shall include all dividends declared in respect of

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the forfeited shares and not actually paid before the date of forfeiture, which shall be the date on which the resolution of the Board is passed forfeiting the shares.

- 43. (1) A forfeited share may be sold or otherwise disposed of on such terms and in such manner as the Board thinks fit.
- (2) At any time before a sale or disposal, as aforesaid, the Board may annul the forfeiture on such terms as it thinks fit.
- 44. (1) A person whose shares have been forfeited shall cease to be a member in respect of the forfeited shares, but shall, notwithstanding the forfeiture, remain liable to pay to the Company all moneys which, at date of forfeiture, were presently payable by him to the Company in respect of the shares together with interest thereon from the time of forfeiture until payment at the rate of 9% (nine percent) per annum.
- (2) The Liability of such person shall cease if and when the Company shall have received payments in full of all such money in respect of the shares.
- 45. (1) A duly verified declaration in writing that the declarant is a director or the secretary of the Company and that a share in the company has been duly forfeited on a date stated in the declaration, shall be conclusive evidence of the facts therein stated against all persons claiming to be entitled to the share.
- (2) The Company may receive the consideration, if any, given for the share on any sale or disposal thereof and may execute a transfer of the share in favour of the person to whom the share is sold or disposed off.
- (3) The transfer shall thereupon be registered as the holder of the share.
- (4) The transferee shall not be bound to see to the application of the purchase money, if any, nor shall his title to the share be affected by any irregularity or invalidity in the proceedings in reference to the forfeiture, sale or disposal of the share.
- 46. The provisions of these regulations as to forfeiture shall apply, in the case of non-payment of any sum which, by the terms of issue of a share, becomes payable at a fixed time, whether on account of the nominal value of the share or by way of premium, as if the sum had been payable by virtue of a call duly made and notified.
- 47. The forfeiture of a share shall involve the extinction of all interest in and also of all claims and demands against the Company in respect of the share, and all other rights incident thereto except only such of those rights as by these Articles are expressly saved.
- 48. Upon any sale, after forfeiture or for enforcing a lien in purported exercise of powers hereinbefore given, the Board may appoint some person to execute an instrument of transfer of the shares sold and cause the purchaser's name to be entered in the Register in respect of the shares sold and the purchaser shall not be bound to see to the regularity of the proceedings or to the application of the purchase money, and after his name has been entered in the Register in respect of such shares the validity, of the sale shall not be impeached by any person and the remedy of


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person aggrieved by the sale shall be in damaged only and against the Company exclusively

Upon any sale, re-allotment or other disposal under the provisions of these Articles relating to lien or to forfeiture, the certificate or certificates originally issued in respect of the relative shares shall (unless the same shall on demand by the Company have been previously surrendered to it by the defaulting member) stand cancelled and become null and void and of no effect. When any shares, under the powers in that behalf herein contained are sold by the Board and the certificate in respect thereof has not been delivered up to the Company by the former holder of such shares, the Board may issue a new certificate for such shares distinguishing it in such manner as it may think fit, from the certificate not so delivered.

The Directors may subject to the provisions of the Act, accept from any member on such terms and conditions as shall be agreed, a surrender of his shares or stock or any part thereof.

CONVERSION OF SHARES INTO STOCK

The Company may, by an ordinary resolution:

- (a) convert any paid-up shares into stock, and
- (b) reconvert any stock into paid-up shares of any denomination authorised by these regulations.

The holders of stock may transfer the same or any part thereof in the same manner as, and subject to the same regulations under which, the shares from which the stock arose might before the conversion have been transferred or as near thereto as circumstances admit:

provided the Board may, from time to time, fix the minimum amount of Stock transferable, so however, that such minimum shall not exceed the nominal amount of the shares from which the stock arose.

The holders of stock shall, according to the amount of stock held by them, have the same rights, privileges and advantages as regard dividends voting and meeting of the Company, and other matters, as if they held the shares from which the stock arose; but no such privilege or advantage (except participation in the dividends and profits of the Company and in the assets on winding up) shall be conferred by an amount of stock which would not, if existing in shares, have conferred that privilege or advantage.

Such of the regulations of the Company (other than those relating to share warrants), as are applicable to paid-up shares shall apply to stock and the words "share" and "shareholders" in those regulations shall include "stock" and "stockholder" respectively.

SHARE WARRANTS

The Company may issue share warrant, subject to and in accordance with, the provisions of Sections 114 and 115 of the Act and accordingly the Board may in its discretion with respect of any share which is fully paid up, on application in writing signed by the person registered as holder of the share and authenticated by such

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evidence (if any) as the Board may, from time to time, require as to the identity of the person signing the application and on receiving the certificate (if any) of the share, and the amount of the stamp duty on the warrant and such fee as the Board may, from time to time require, issue a share warrant

- 56. (1) The bearer of a share warrant may at any time deposit the warrant at the office of the Company and so long as the warrant remains so deposited, the depositor shall have the same right of signing a requisition for calling a meeting of the Company and attending and voting and exercising the other privileges of a member at any meeting held after the expiry of two clear days from the time of deposit, as if his name were inserted in the register of members as the holder of the shares included in the deposited warrant.
- (2) Not more than one person shall be recognised as depositor of the share warrant
- (3) The company shall, on two days written notice, return the deposited share warrant to the depositor
- 57. (1) Subject as herein otherwise expressly provided, no person shall, as bearer of a share warrant, sign a requisition for calling meeting of the Company or attend or vote or exercise any other privilege of a member at a meeting of the Company or be entitled to receive any notice from the Company.
- (2) The bearer of a share warrant shall be entitled in all other respect to the same privileges and advantages as if he was named in the register of member as the holder of the shares included in the warrant and he shall be deemed to be a member of the Company in respect thereof.
- 58. The Board may, from time to time, make rules as to the terms on which (if it shall think fit) a new share warrant or coupon may be issued by way of renewal in case of defacement, loss or destruction of the original

ALTERATION OF CAPITAL

- 59. The Company may, from time to time, by ordinary resolution increase its share capital by such sum, to be divided into shares of such amount, as the resolution shall specify.
- 60. The Company may, by ordinary resolution in general meeting:
 - (a) consolidate and divide all or any of its capital into shares of larger amounts than its existing shares,
 - (b) sub-divide its shares or any of them, into shares of similar amounts than is fixed in the Memorandum of Association, so however, that in the sub-division the proportion between the amount paid and the amount, if any, unpaid on each reduced share shall be the same as it was in the case of the share from which the reduced share is derived.
 - (c) cancel any share which, at the date of the passing of the resolution in that behalf made, have not been taken or agreed to be taken by any person and diminish the amount of its share capital by the amount of the shares so cancelled.


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The Company may, from time to time, by special resolution and on compliance with the provisions of Section 100 to 105 of the Act, reduce its share capital and any capital reserve and or share premium account.

The Company shall have power to establish Branch Offices, subject to the provisions of Section 8 of the Act or any statutory modifications thereof.

The Company shall have power to pay interest out of its capital on so much of shares which were issued for the purpose of raising money to defray the expenses of the construction of any work or building or the provisions of any plant for the Company in accordance with the provisions of Sections 208 of the Act.

The Company, if authorised by a special resolution passed at General Meeting may amalgamate or cause itself to be amalgamated with any other person, firm or body corporate, subject however to the provisions of Section 391 to 394 of the Act.

GENERAL MEETING

All General Meetings other than the Annual General Meetings of the Company shall be called Extra-ordinary General Meetings.

- (1) The Board, may, whenever it thinks fit may call in Extraordinary General Meeting.
- (2) If at any time there are not within India Directors capable of acting who are sufficient in number to form a quorum, any Director or any two members of the Company may call an extraordinary general meeting in the same manners, as nearly as possible, to that in which such a meeting may be called by the Board.

CONDUCT OF GENERAL MEETINGS

No general meeting, annual or extraordinary, shall be competent to enter upon, discuss or transact any business which has not been stated in the notice by which it was convened or called.

- (1) No business shall be transacted to any general meeting, unless quorum or members is present at the time when the meeting proceeds to business.
- (2) Save as otherwise provided in Section 174 of the Act, a minimum of five members present in person shall be the quorum. A body corporate, being a member, shall be deemed to be personally present if it is represented in accordance with Section 187 of the Act.

CONDUCT OF MEETINGS

The Chairman, if any, of the Board shall preside as Chairman at every general meeting of the Company.

If there is no such Chairman or if he is not present within fifteen minutes of the time appointed for holding the meeting or is unwilling to act as Chairman of the meeting, the Directors present shall elect one of their members to be the Chairman of the meeting.


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71. If at any meeting no Director is willing to act as Chairman or if no Director is present within 15 (fifteen) minutes of the appointed for holding meeting, the members present shall choose one of their members to be the Chairman of the meeting.
72. No business shall be discussed at any general meeting except the election of a chairman whilst the chair is vacant.
73. (1) The chairman may with the consent of any meeting at which a quorum is present and shall, if so directed by the meeting, adjourn the meeting, from time to time and place to place.
- (2) No business shall be transacted at any adjourned meeting, other than the business left unfinished at the meeting from which the adjournment took place.
- (3) When a meeting is adjourned for thirty days or more, fresh notice of the adjourned meeting shall be given as in the case of an original meeting.
- (4) Save as aforesaid, it shall not be necessary to give any notice of any adjournment of the business to be transacted at an adjourned meeting.
74. In the case of an equality of votes, whether on a show of hands or on a poll, the chairman of the meeting at which the show of hands takes place or at which the poll is demanded shall be entitled to a second or casting vote.
75. Any business other than that upon which a poll has been demanded, may be proceeded with, pending the taking of the poll.

VOTES OF MEMBERS

76. Subject to any rights or restrictions for the time being attached to any class or classes of shares.
- (i) on a show of hands, every member present in person shall have one vote and
- (ii) on a poll, the voting rights of members shall be as laid down in Section 87 of the Act.
77. In the case of joint holders, the vote of the senior who tenders a vote whether in person or by proxy, shall be accepted to the exclusion of the votes of the other joint holders. For this purpose, seniority shall be determined by the order in which the names of joint holders stand in the Register of members.
78. A member of unsound mind or in respect of whom an order has been made by any Court having jurisdiction in lunacy, may vote, whether on a show of hands or on a poll by his committee or other legal guardian, and any such committee or guardian may on a poll, vote by proxy, provided that such evidence as the Board may require of the authority of the person claiming to vote shall have been deposited at the office not less than 24 hours before the time of holding the meeting or adjourned meeting at which such person claims to vote on poll.


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No member shall be entitled to vote at any general meeting unless all calls, and other sums presently payable by him in respect of shares in the Company or in respect of shares on which the Company has exercised any right of lien, have been paid.

- (1) No objection shall be raised to the qualification of any voter, except at the meeting or adjourned meeting at which the vote objected to is given or tendered and every vote not disallowed at such meeting shall be valid for all purposes.
- (2) Any such objection made in due time shall be referred to the Chairman of the meeting, whose decision thereon shall be final and conclusive.

The instrument appointing a proxy and the power of attorney or other authority, if any under which it is signed or a notarially certified copy of that power or authority shall be deposited at the registered office of the Company, not less than 48 hours before the time for holding the meeting or adjourned meeting at which the person named in the instrument proposes to vote, or in the case of a poll, not less than 24 hours before the time appointed for the taking of the poll; and in default the instrument of proxy shall not be treated valid.

An instrument appointing a proxy shall be in either of the forms in Schedule IX to the Act or in a form as near thereto as circumstances admit.

A vote given in accordance with the terms of an instrument of proxy shall be valid notwithstanding the previous death or insanity of the principal or the revocation of the proxy or the authority under which the proxy are executed or the promoter of the shares in respect of which the proxy is given, if no intimation in writing of such death, insanity, revocation or transfer shall have been received by the Company at its office before commencement of the meeting or adjourned meeting at which the proxy is used.

BOARD OF DIRECTORS

The number of Directors of the Company shall not be less than three and not more than twelve.

The following shall be the first Directors of the Company:

1. Shri Mool Chand Aggarwal
2. Shri Sandeep Aggarwal
3. Shri Anurag Aggarwal

At every Annual General Meeting of the Company one-third of such of the Directors for the time being as are liable to retire by rotation in accordance with the provisions of Section 255 of the Act or if their number is not three or multiple of three, then the number nearest to one third shall retire from office in accordance with the provisions of Section 256 of the Act.

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87. (i) Subject to the provisions of Section 309, 310 and 314 of the Act, the Directors shall be paid such further remuneration, whether in the form of monthly payment or by a percentage of profit or otherwise, as the Company in General meeting may, from time to time, determine and such further remuneration shall be divided among the Directors in such proportion and in such manner as the Board may, from time to time, determine and in default of such determination shall be divided among the Directors equally of is so deterrmind paid on a monthly basis.
- (ii) The remuneration of the Directors shall, in so far as it consist of a monthly payment, be deemd to accrue from day to day.
- (iii) Subject to the provisions of Sections 198, 269 read with schedule XIII, 309, 310 and 314 of the Act, if any Director be called upon to perform any extra services or make special exertions or efforts (which expression shall include work done by a Director as a member of any committee formed by the Directors) the Board may pay such Director special remuneration for such extra services or special exertions or efforts either by way of a fixed sum or by percentage of profit otherwise and may allow such Directros at the cost and expense of the Company such facilities or amenities (such as rent free house, free medical aid and free conveyance) as the Board may determine from time to time.
- (iv) In addition to the remuneration payable to them in pursuance of the Act, the Directors may be paid in accordance with Company's rules to be made by the Board all travelling, hotel and other expenses properly incurred by them:
- (a) in attending an returning from meetings or adjourned meeting of the Board of Directors or any committee thereof; or
- (b) in connection with the business of the Company.
88. The Directors shall not be required to hold any qualification shares in the Company.
89. The Board of Directors shall have power to appoint additional Directors in accordance with the provisions of Sections 260 of Act.
90. If it is provided by any trust deed securing or otherwise in connection with any issue of debentures of the Company that any person or persons shall have power to nominate, a Director of the comopany then in the case of any and every such issue of debentures, the persons having such power may exercise such power, from time to time and appoint a Director accordingly. Any Director so appointed is herein feferred to as a debenture Director. A Debenture Director may be removed from office at any time by the person or persons in whom for the time being is vested the power under which he was appinted and another Director may be appointed in his place. A Debenture Director shall not be liable to retire by rotation, but he, shall be counted in determining the number of retiring Directors.


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In the course of its business and for its benefit the Company shall, subject to the provisions of the Act be entitled to agree with any person, firm, corporation, government, financing institution or other authority that he or it shall have the right to appoint his or its nominee on the Board of Directors of the Company upon such terms and conditions as the Directors may deem fit. Such nominees and their successors in office appointed under this Article shall be called Special Directors. Special Directors shall be entitled to hold office until requested to retire by the government, authority, person, firm, institution or corporation who may have appointed them and will not be bound to retire by rotation. As and whenever a Special Director vacates office whether upon request as aforesaid or by death, resignation or otherwise the government, authority, person, firm, institution or corporation how appointed such Special Director may if the agreement so provide, appoint another Director in his place. But he shall be counted in determining the number of retiring Directors.

Subject to the provisions of Section 313 of the Act, the Board of Directors shall have power to appoint an alternate Director to act for a Director during his absence for a period of not less than three months from the State in which meetings of the Board are ordinarily held.

A Director may be or become a director of any company promoted by the company or in which it may be interested as a vendor, shareholder or otherwise and no such Director shall be accountable for any benefits received as director or shareholder of such company. Such Director, before receiving or enjoying such benefits in cases in which the provisions of Section 314 of the Act are attracted will ensure that the same have been complied with.

Every nomination, appointment or removal of a Special Director shall be in writing and accordance with the rules and regulations of the government, corporation or any other institution. A Special Director shall be entitled to the same rights and privileges and be subject to same obligations as any other Director of the Company.

The office of a Director shall become vacant:

- (i) on the happening of any of the events provided for in Section 283 of the Act;
- (ii) on contravention of the provisions of Section 314 of the Act, or any statutory modifications thereof;
- (iii) If a person is a Director of more than twenty Companies at a time;
- (iv) In the case of alternate Director on return of the original Director of the State, in terms of Section 313 of the Act; or
- (v) on resignation of his office by notice in writing and is accepted by the Board.

Every Director present at any meeting of the Board or a committee thereof shall sign his name in a book to be kept for that purpose, to show his attendance thereat

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POWERS OF BOARD OF DIRECTORS

97. The Board of directors may pay all expenses incurred in the formation, promotion and registration of the Company.
98. The Company may exercise the powers conferred by Section 50 of the Act, with regard to having an official seal for used abroad and such powers shall be vested in the Board.
99. The Company may exercise the powers conferred on it by Section 157 and 158 of the Act with regard to the keeping of a foreign register, and the Board may (subject to the provisions of those Section) make and vary such regulations as it may think fit with respect to the keeping of any such register.
100. The Directors may enter into contracts or arrangements on behalf of the Company subject to the necessary disclosures required by the Act being made wherever any Director in any way, whether directly or indirectly concerned or interested in the contract or arrangement.

BORROWING POWER

101. Subject to the provisions of Sections 58A, 292 and 293 of the Act, and the Regulations thereunder and Direction issued by the RBI the Directors may exercise all the powers of the Company to borrow money and to mortgage or charge its undertaking, property (both present and future) and uncalled capital, or any part thereof and to issue debentures, debenture stock and other securities whether outright or as security for any debt, liability or obligation of the Company or of any third party.
102. The payment or repayment of moneys borrowed as aforesaid may be secured in any manner and upon such terms and conditions in all respects as the Board may think fit, in particular by a resolution passed at a meeting of the Board (and not by circulation) in connection with the issue of debenture or debenture stock of the Company, charged upon all or any of the property of the Company (both present and future), including its uncalled capital for the time being.
103. Any debentures, debenture stock or other securities may be issued at a discount, premium or otherwise, may be made assignable free from any equities between the Company and the person to whom the same may be issued and may be issued on the condition that they shall be convertible into shares of any authorised denomination, and with privileges and conditions as to redemption, surrender, drawings, allotment of shares, attending (but not voting) at general meetings, appointment of Directors and otherwise, provided that debentures with the right to allotment of or conversion into shares shall not be issued except with the sanction of the Company in General meeting.
104. All cheques, promissory notes, drafts, hundies, bills of exchange and other negotiable instruments and all receipts for moneys paid to the Company, shall be signed, drawn, accepted, endorsed or otherwise executed, as the case may be, by the Directors.


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person and in such manner as the Board may, from time to time, by resolution determine.

PROCEEDINGS OF THE BOARD

Subject to Section 287 of the Act, the quorum for a meeting of the Board of Directors shall be one third of its total strength (any fraction contained in that one third being rounded off as one) or two Directors, whichever is higher, provided that where at any time the number of interested Directors exceeds or is equal to two thirds of the total strength, the number of the remaining Directors, that is to say, the number of Directors, who are not interested, present at the meeting, being not less than two, shall be the quorum during such time.

If a meeting of the Board could not be held for want of quorum, whatever number of Directors not being less than two, shall be present at the adjourned meeting, notice where of shall be given to all the Directors, shall form a quorum.

(1) Save as otherwise expressly provided in the Act, questions arising at any meeting of the Board shall be decided by a majority of vote.

(2) In case of an equality of votes, the Chairman of the meeting shall have a second or casting vote.

The continuing Directors may act notwithstanding any vacancy in the Board, but if and so long as their number is reduced below the quorum fixed by the Act for a meeting of the Board, the continuing Directors or Director may act for the purpose of increasing the number of Directors to that fixed for the quorum or for summoning a General meeting of the Company, but for no other purpose.

(1) Save as provided in Article 93, the Board may elect one of its members as Chairman of its meetings and determine the period for which he is to hold office as such.

(2) If no such Chairman is elected or if at any meeting the Chairman is not present within fifteen minutes after the time appointed for holding the meeting, the Directors present may choose one of their members to be Chairman of the meeting.

Subject to the restrictions contained in Section 292 and 293 of the Act, the Board may delegate any of its powers to committees of the Board consisting of such member or members of its body as it thinks fit and it may, from time to time, revoke such delegation and discharge any such committee of the Board either wholly or in part, and either as to persons or purposes, but every committee of the Board so formed shall in the exercise of the powers so delegated conform to any regulations that may from time to time be imposed on it by the Board. All acts done by any such committee of the Board in conformity with such regulations and in fulfilment of the purposes of their appointment but not otherwise, shall have the like force and effect as if done by the Board.

The meetings and proceedings of any such committee of the Board consisting of two or more members shall be governed by the provisions herein contained for

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regulating the meetings and proceedings of the Directors so far as the same are applicable thereto and are not superseded by any regulations made by the Directors under the preceding Articles.

112. (1) A committee may elect a chairman of its meetings.
- (2) If no such chairman is elected or if at any meeting the chairman is not present for five minutes of the time appointed for holding the meeting, the members present may choose one of their members to be chairman of the meeting.
113. (1) A committee may meet and adjourn as it thinks proper.
- (2) Questions arising at any meeting of a committee shall be determined by a majority of votes of the members present and in case of an equality of votes, the chairman shall have a second or casting vote.
114. All acts done by any meeting of the Board or by a committee thereof by any person acting as a Director shall, notwithstanding that it shall afterwards be discovered that there was some defect in the appointment or continuance in office of any such Directors or persons acting as aforesaid: or that they or any of them were disqualified or had vacated office or were not entitled to act as such or that the appointment of any of them had been terminated by virtue of any provisions contained in the Act or in these Articles, be as valid as if such person had been duly appointed, had duly continued in office was qualified to continue to be a Director his appointment had not been terminated and he had been entitled to be a Director provided that nothing in this Article shall be deemed to give validity to any act done by a Director after his appointment has been shown to the Company to be invalid or to have terminated.
115. Subject to Section 289 of the Act and except a resolution which the Act requires to be passed in any board meeting, a resolution in writing, signed by the majority of the Board or of a committee thereof, for the time being entitled to receive notice of a meeting of the Board or committee, shall be as valid and effectual as if it had been passed at a meeting of the Board or committee, duly convened and held.

MANAGING DIRECTOR (S) AND WHOLE TIME DIRECTOR (S)

116. Subject to provisions of Section 197A, 269, 198 and 309 of the Act, Board of Directors may, from time to time, appoint one or more of their body to the office of Managing Director or whole time Directors for a period not exceeding 5 (five) years at a time and on such terms and conditions as the Board may think fit and subject to the terms of any agreement entered into with him, may revoke such appointment, and in making such appointment the Board shall ensure compliance with the requirements of the Companies Act, 1956 and shall seek and obtain such approvals as are prescribed by the Act, provided that a person so appointed, shall not be whilst holding such office, be subject to retirement by the Act but his appointment shall be automatically determine if he ceases to be a Director. He shall be counted in determining the number of retiring Directors.

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117. The Board may entrust and confer upon Managing Director/s or whole time Director/s any of the powers of management which would not otherwise be exercisable by him upon such terms and conditions and with such restrictions as the Board may think fit, subject always to the superintendence, control and direction of the Board and the Board may, from time to time revoke, withdraw, alter or vary all or any of such powers.

SECRETARY

118. (1) Subject to section 383A of the Act, a Secretary of the Company may be appointed by the Board on such terms, at such remuneration and upon such conditions as it may think fit, and any Secretary so appointed may be removed by the Board.
- (2) A Director may be appointed as a Secretary.

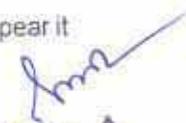
119. Any provision in the Act or these regulations requiring or authorising a thing to be done by or to a Director and the Secretary shall not be satisfied by its being done by or to the same person acting both as Director and as, or in place of the Secretary.

THE SEAL

120. (1) The Board shall provide a common seal for the purposes of the Company and shall have power, from time to time, to vary or cancel and same and substitute a new seal in lieu thereof. The Board shall provide for the safe custody of the seal for the time being.
- (2) Subject to any statutory requirements as to Share Certificates or otherwise, the seal of the Company shall not be affixed to any instrument except by authority of a resolution of the Board or of a committee of the Board authorised by it in that behalf, and, except in the presence of at least one Director and of the Secretary or of two Directors who shall sign every instrument to which the seal of the Company is so affixed in their presence. This is, however, subject to Rule 6 of the Companies (Issue of Share Certificates) Rules, 1960.
- (3) The Board shall also be at liberty to have an official seal in accordance with Section 50 of the Act, for use in any territory, district or place outside India. The Company shall, however, comply with Rule 6 of the Companies (Issue of Share Certificates) Rules, 1960.

DIVIDENDS AND RESERVES

121. The Company in General meeting may declare dividends but no dividend shall exceed the amount recommended by the Board.
122. The Board may, from time to time, pay to the members such interim dividends as appear it to be justified by the profits by the Company.


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- 123 (1) The Board may, before recommending any dividend, set aside out of the profits of the Company, such sums, as it may think proper, as reserve or reserves which, at the discretion of the Board, be applicable for any of the purposes to which the profits of the Company may be properly applied, including provision for meeting contingencies or for equalising dividends and pending such applications may, at the like discretion either be employed in the business of the Company or be invested in such investments (other than shares of the Company) as the Board may, from time to time, think fit.
- (2) The Board may also carry forward any profits which it may think prudent not to distribute without setting them aside as a reserve.
- 124 (1) Subject to the rights of the persons, if any holding shares with special rights as to dividends, all dividends shall be declared and paid according to the amounts paid or credited as paid on the shares in respect whereof the dividend is paid.
- (2) No amount paid or credited as paid on a share in advance of calls shall be treated for the purposes of this regulation as having been paid on the share.
- (3) All dividends shall be apportioned and paid proportionately to the amounts paid or credited as paid on the shares during any portion or portions of the period in respect of which the dividend is paid but if any share is issued on terms providing that it shall rank for dividend as from a particular date such share shall rank for dividend accordingly.
- 125 The Board may deduct from any dividend payable to any member all sums of money, if any, presently payable by him to the Company on account of calls or otherwise in relation to the shares of the Company subject to section 205A of the Act.
- 126 (1) Any dividend, interest or other moneys payable in cash in respect of shares may be paid by cheque or warrant sent through the post direct to the registered address of the holder or in case of joint holders, to the registered address of that one of the joint holders who is first named on the register of members, or to such person and to such address as the first named holder or joint holders may in writing direct.
- (2) Every such cheque or warrant shall be made payable to the order of the person to whom it is sent.
- 127 Any one of two or more joint holders of a share may give effectual receipts for any dividend, bonus or other moneys payable in respect of such share.
- 128 Notice of any dividend that may have been declared shall be given to the persons entitled to share therein in the manner mentioned in the Act.
- 129 No dividend shall bear interest against the Company, irrespective of the reason for which it has remained unpaid.

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ACCOUNTS

- 130 (1) The Board shall cause proper books of accounts to be maintained under section 209 of the Act.
- (2) The Board shall, from time to time, determine whether and to what extent and at what times and places and under what conditions or regulations, the accounts and books of the Company or any or them, shall be open to the inspection of members not being Directors.
- (3) Subject to provisions of section 209 A of the Act, no member (not being a Director) shall have any right of inspecting any account or book or document of the Company, except as conferred by law or authorised by the Board or by the Company in General Meeting.

BALANCE SHEET AND PROFIT AND LOSS ACCOUNT

- 131. Balance sheet and Profit and Loss Account of the Company will be audited once in a year by a qualified auditor for Correctness as per provision of the Act.
- 132. (1) The first auditor of the Company shall be appointed by the Board of Directors within one month after its incorporation who shall hold office till the conclusion of first Annual General Meeting.
- (2) The Board of Directors may fill up any Casual Vacancy in the office of the Auditors.
- (3) The remuneration of the Auditors shall be fixed by the Company in the annual general meeting except that remuneration of the first or any auditors appointed by the directors may be fixed by the directors.

CAPITALISATION OF PROFITS

- 133. (1) The Company in General Meeting may, upon the recommendation of the Board resolve:
 - (a) that it is desirable to capitalise any part of the amount for the time being standing to the credit of any of the Company's reserve accounts or to the credit of the Profit and Loss Account, or otherwise available for distribution; and
 - (b) that such sum be accordingly set free for distribution in the manner specified in clause (2) among the members who would have been entitled thereto, if distributed by way of dividend and in the same proportions.
- (2) The sum aforesaid shall not be paid in cash, but shall be applied, subject to the provisions contained in clause (3) either in or towards:

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- (i) paying up any amounts for the time being unpaid on any shares held by such members respectively;
 - (ii) paying up in full, unissued shares of the Company to be allotted and distributed credited as fully paid up, to and amongst such members in the proportions aforesaid; or
 - (iii) partly in the way specified in sub-clause (i) and partly in that is specified in sub-clause (ii).
- (3) Any share premium account and any capital redemption reserve fund may, for the purpose of this regulation, only be applied in the paying up of unissued shares to be issued to members of the Company as fully paid bonus shares.
- (4) The Board shall give effect to the resolution passed by the Company in pursuance of this regulation.
134. (1) Whenever such a resolution as aforesaid shall have been passed, the Board shall
- (a) make all appropriations and applications of the undivided profits resolved to be capitalised thereby and allotment and issue of fully paid shares, if any and
 - (b) do all acts and things required to give effect thereto.
- (2) The Board shall have full power:
- (a) to make such provisions, by the issue of fractional certificates or by payment in cash or otherwise it thinks fit in the case of shares becoming distributable in fractions; and also
 - (b) to authorise any person to enter, on behalf of all the members entitled thereunto into an agreement with the Company providing for the allotment to them respectively, credited as fully paid up, of any further shares of which that member may be entitled upon such capitalisation or (as the case may require) for the payment by the company on their behalf by the application thereto of their respective proportions of the profit, resolved to be capitalised, of the amounts or any part of the amounts remaining unpaid on their existing shares.
- (3) Any agreement made under such authority shall be effective and binding on all such members.

SECURITY

135. Subject to the provisions of law of land and the Act, no member or other person (not being a Director) shall be entitled to visit or inspect the Company's works without the permission of the Board of Directors or the managing Director to require discovery of any information respecting any details of the Company's business, trading or customers of any matter which is or may be in the nature of a trade


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secret, mystery of trade or secret process or any other matter which may related to the conduct of the business of the Company or which in the opinion of the Directors, it will be inexpedient in the interest of the Company to disclose.

WINDING UP

- (1) If the company shall be would up the liquidator may, with the sanction of a special resolution of the company, and any other sanction required by the Act, divide amongst the members in specie or kind, the whole or any part of the assets of the Company whether they shall consist of property of the same kind or not.
- (2) For the purpose aforesaid, the liquidator may set such values as he deems fair upon any property to be divided as aforesaid and may determine how such division shall be carried out as between the members or different classes of members.
- (3) The liquidator may, with the like sanction, vest the whole or any part of such assets trustees upon such trusts for the benefit of the contributories as the liquidator, with the like sanction, shall think fit but so that no member shall be compelled to accept any shares or other securities whereon there is any liability.

INDEMNITY

137. Subject to the provision of section 201 of Act every Director, auditor, secretary; and other officer or servant of the Company (all of whom are hereinafter referred to as officer or servant) shall be indemnified by the Company and it shall be the duty of the the Directors but of the funds of the comany to pay, all bonafide costs, losses and expenses which any such officer or servant may incur or become liable to by reason of any contract entered into or act or thing done or omitted by him as such officer or servant or in any way in the discharge of the duties; and in particular and so as not to limit the generality of the foregoing provisions against any liability incurred by such officer or servant in defending any bonafide proceedings whether civil or criminal in which a judgement is given in his favour or in which he is acquitted or in discharged or in connection with any application under Section 633 of the Act in which relief is granted to him by the Court The amount for which such indemnity is provided shall immediately attach as a charge on the property of the company.


S.C. Nayak
Qualified Person



GOVERNMENT OF INDIA
Ministry of Finance
(Department of Revenue)

OFFICE OF THE SUPERINTENDENT, CENTRAL EXCISE & CUSTOMS:

JHARSUGUDA -I RANGE : AT-MALIPARA,PO/DIST-JHARSUGUDA (ORISSA)

N FB-08/15/MISC/SMC/JSG-1/08/ 193

Date: 12/5/11



SMC Power Generation Ltd.

At/Po-Hirma,

Dist-Jharsuguda.

Sub:-Certificate for Loading of Iron Ore by Rail.

Sir,

With reference to your letter no. SMCPGI/EX/2010-11 dated 10.05.2011 it is certified that SMC Power Generation Ltd. At/po-Hirma, Jharsuguda have manufactured the following excisable goods during April 2011 as per ER-I submitted in addition to other goods.

1	Sponge Iron	9630.000 MT
2	MS Billets	7311.180 MT
3	TMT Bars/Rods	3769.260 MT

APPROVED

This certificate shall be exclusively used by the Railway Authority for loading of Iron Ore by Rail only.

(A.K. Tirkey)

SUPERINTENDENT

CENTRAL EXCISE & CUSTOMS
JHARSUGUDA-IRANGE, JHARSUGUDA

S.C. Mayak
Qualified Person

ANNEXURE -4

LIST OF BOARD OF DIRECTOR OF M/S SMC POWER GENERATION LIMITED (73)

S.NO.	NAME	RESIDENTIAL ADDRESS	CORRESPONDENCE ADDRESS	CONTACT NO.	EMAIL ID
1	MITHLESH RANI	B-42, GREATER KAILASH, PART-I NEW DELHI 110048	B-42, GREATER KAILASH, PART-I NEW DELHI 110048	9811482335	mitleshraniagg@gmail.com
2	SUSHIL BEHL	2084/37, NAIWALA, GURUDWARA ROAD KAROL BAGH NEW DELHI- 110005	2084/37, NAIWALA, GURUDWARA ROAD KAROL BAGH NEW DELHI- 110005	9811111592	sushilbehl@gmail.com
3	MOOL CHAND AGGARWAL	B-42, GREATER KAILASH, PART- I NEW DELHI 110048	B-42, GREATER KAILASH, PART- I NEW DELHI 110048	9999644771	moolchand@smcpower.co.in
4	SANDEEP AGARWAL	N- 227, GREATER KAILASH, PART- I NEW DELHI 110048	N- 227, GREATER KAILASH, PART- I NEW DELHI 110048	9810071099	sandeepsmcfoods71@gmail.com
5	ANURAG AGARWAL	B- 42, GREATER KAILASH, PART- I NEW DELHI 110048	B- 42, GREATER KAILASH, PART- I NEW DELHI 110048	9810631783	anuragagg@smcpower.co.in
6	SUBASH CHAND AGARWAL	2/1425, WHITE HOUSE, DELHI ROAD SAHARANPUR 247001	2/1425, WHITE HOUSE, DELHI ROAD SAHARANPUR 247001	9897039305	mc_aggarwal@yahoo.com
7	CHANDER PRAKASH AGGARWAL	2/1425, WHITE HOUSE, DELHI ROAD SAHARANPUR 247001	2/1425, WHITE HOUSE, DELHI ROAD SAHARANPUR 247001	9810225755	cp@smcpower.co.in
8	ASHOK RAJAN AGARWAL	H-83, SARITA VIHAR NEW DELHI -110076	H-83, SARITA VIHAR NEW DELHI -110076	9810005486	rajan1503@gmail.com
9	DINESH PRASAD SINGH	25 BAZAR LANE, BENGALI MARKET NEW DELHI- 110001	25 BAZAR LANE, BENGALI MARKET NEW DELHI- 110001	9238473105	dps@smcpower.co.in

FOR AND ON BEHALF OF
SMC POWER GENERATION LIMITED

MOOL CHAND AGGARWAL
NOMINATED OWNER

Place: Bhubaneswar
Date: 05-08-2016

Corporate Office

E-13/29, 2nd Floor, Harsha Bhawan, Middle Circle
Connaught Place, New Delhi - 110001
Phone : 011 41517501-04, Fax 011 41517516
CIN NO. U74899DL2000PLC108467
email : cmd@smcpower.co.in

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www.smcpower.co.in

Works

Vill. Himra, Distt Jharsuguda
Odisha - 768202
email : site@smcpower.co.in

S.C. Nayak
Qualified Person

(74)

LIST OF BOARD OF DIRECTORS OF M/S SMC POWER GENERATION LIMITED

DIN	Director Name	Designation	Appointment Date
03577434	MITHLESH RANI	Whole time Director	04 March 2015
02841938	SUSHIL BEHL	Director	30 March 2015
00002202	MOOL CHAND AGGARWAL	Chairman-cum- Managing Director	09 November 2000
00002205	SANDEEP AGARWAL	Director	09 November 2000
00002214	ANURAG AGARWAL	Whole time Director	08 September 2005
00002215	SUBASH CHAND AGARWAL	Director	29 December 2005
00002217	CHANDER PRAKASH AGGARWAL	Director	05 May 2007
02184390	ASHOK RAJAN AGARWAL	Director	30 March 2015
01181356	DINESH PRASAD SINGH	Whole time Director	03 March 2014


S.C. Nayak
Qualified Person

ANNEXURE -5 (75)

UNDERTAKING FROM THE NOMINATED OWNER/SIGNATORY OF THIS DOCUMENTS REGARDING THE WORKING OF DIRECTORS IN OTHER FIRMS/ COMPANIES/ORGANISATIONS

Dear Sir,

I do hereby undertake that the board of Directors are working in other firms/companies organizations as per following:

S.NO.	NAME OF DIRECTOR	NAME OF FIRMS/COMPANIES/ORGANISATIONS
1	MITHLESH RANI	1. Bharat Bhushan Infratech Private Limited 2. SMC Foods Ltd 3. Creamy Foods Ltd. 4. Moolchand Industrial Estates Pvt. Ltd. 5. Aggarwal Zarda Factory Pvt. Ltd. 6. SMC Developers Ltd. 7. Konark Ispat Ltd. 8. SMC Television Pvt. Ltd. 9. Triaksh Education Pvt. Ltd. 10. Kanha Infracon Pvt. Ltd. 11. Nirala Infratech Pvt. Ltd. 12. SMC Dairies Pvt. Ltd. 13. Shakti Steels 14. Ganesh Steels 15. Maruti Trading Co.
2	SUSHIL BEHL	NIL
3	MOOL CHAND AGGARWAL	1. Creamy Foods Ltd 2. SMC Foods Ltd 3. Konark Ispat Ltd. 4. Moolchand Industrial Estates Pvt. Ltd. 5. Aggarwal Zarda Factory Pvt. Ltd. 6. SMC Developers Ltd. 7. SMC Television Pvt. Ltd. 8. Bharat Bhushan infratech Pvt. Ltd. 9. Triaksh Education Pvt. Ltd. 10. Kanha Infracon Pvt. Ltd. 11. SMC Dairies Pvt. Ltd. 12. Nirala Infratech Pvt. Ltd. 13. Shakti Steels 14. Ganesh Steels 15. Maruti Trading Co. 16. Guru Kripa Steels

Corporate Office

E-13/29, 2nd Floor, Harsha Bhawan, Middle Circle
 Connaught Place, New Delhi - 110001
 Phone : 011 41517501-04, Fax 011 41517516
 CIN NO. U74899DL2000PLC108467
 email : cmd@smcpower.co.in

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Works

Vill. Hirna, Distt Jharsuguda
 Odisha - 758202
 email : site@smcpower.co.in

Mc
mm
S.C. Nayak
Qualified Person

<p>4. SANDEEP AGARWAL</p>	<ol style="list-style-type: none"> 1. Creamy Foods Ltd 2. SMC Foods Ltd 3. Aggarwal Zarda Factory Pvt. Ltd. 4. SMC Developers Ltd. 5. SMC Television Pvt. Ltd. 6. SMC Dairies Pvt. Ltd. 7. Patrapada Coal Mining Company Private Limited
<p>5. ANURAG AGARWAL</p>	<ol style="list-style-type: none"> 1. Creamy Foods Ltd 2. SMC Foods Ltd 3. Konark Ispat Ltd. 4. Moolchand Industrial Estates Pvt. Ltd. 5. Aggarwal Zarda Factory Pvt. Ltd. 6. SMC Developers Ltd. 7. SMC Television Pvt. Ltd. 8. Bharat Bhushan Infratech Pvt. Ltd. 9. Triaksh Education Pvt. Ltd. 10. Kanha Infracon Pvt. Ltd. 11. SMC Dairies Pvt. Ltd. 12. Nirala Infratech Pvt. Ltd. 13. Shakti Steels 14. Ganesh Steels 15. Maruti Trading Co.
<p>6. SUBASH CHAND AGARWAL</p>	<ol style="list-style-type: none"> 1. Creamy Foods Ltd 2. SMC Foods Ltd 3. Konark Ispat Ltd. 4. Moolchand Industrial Estates Pvt. Ltd. 5. Aggarwal Zarda Factory Pvt. Ltd. 6. SMC Developers Ltd. 7. SMC Television Pvt. Ltd. 8. SMC Dairies Pvt. Ltd. 9. Shakti Steels 10. Ganesh Steels 11. Maruti Trading Co. 12. The Western U.P. Chamber of Commerce and Industry
<p>7. CHANDER PRAKASH AGGARWAL</p>	<ol style="list-style-type: none"> 1. Creamy Foods Ltd 2. SMC Foods Ltd 3. Konark Ispat Ltd. 4. Moolchand Industrial Estates Pvt. Ltd. 5. Aggarwal Zarda Factory Pvt. Ltd. 6. SMC Developers Ltd. 7. SMC Television Pvt. Ltd.

S.C. Nayak
S.C. Nayak
 Qualified Person

He

Corporate Office

E-13/29, 2nd Floor, Harsha Bhawan, Middle Circle
 Connaught Place, New Delhi - 110001
 Phone : 011 41517501-04, Fax 011 41517518
 CIN NO. U74899DL2000PLC108467
 email : cmd@smcpower.co.in

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Works

VIII, Hirna, Distt Jharsuguda
 Odisha - 768202
 email : site@smcpower.co.in

		8. SMC Dairies Pvt. Ltd. 9. Shakti Steels 10. Ganesh Steels 11. Maruti Trading Co.
8	ASHOK RAJAN AGARWAL	NIL
9	DINESH PRASAD SINGH	NIL

FOR AND ON BEHALF OF
SMC POWER GENERATION LIMITED

MOOL CHAND AGGARWAL
NOMINATED OWNER

Place: Bhubaneswar
Date: 05-08-2016

S.C. Nayak
Qualified Person

Corporate Office

E-13/29, 2nd Floor, Harsha Bhawan, Middle Circle
Connaught Place, New Delhi - 110001
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Odisha - 768202
email : site@smcpower.co.in

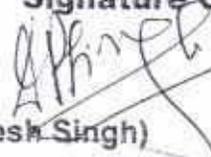
(78)

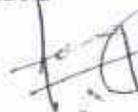
ANNEXURE - 6

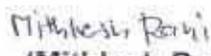
COPY OF THE RESOLUTION PASSED BY THE BOARD OF DIRECTORS OF THE COMPANY IN THEIR MEETING HELD ON 13/ 04/2016

"RESOLVED THAT, Mr. Mool Chand Aggarwal, Director of the Company be and is hereby nominated as the "Owner" of the proposed Khandbandh Iron Ore Mine of the Applicant, M/s SMC Power Generation Limited as per Mines Act, 1952 and other concerned Acts and Rules.

Signature OF Directors


(Dinesh Singh)
Whole -time Director

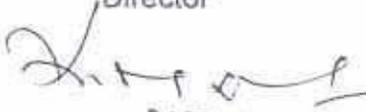

(Anurag Agarwal)
Whole -time Director

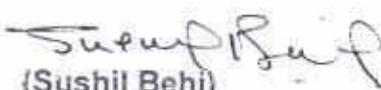

(Mithlesh Rani)
Whole -time Director


(Sandeep Agarwal)
Director


(Subash Agarwal)
Director


(Chander Agarwal)
Director


RAJAN
(Ashok Agarwal)
Director


(Sushil Behi)
Director


S.C. Nayak
Qualified Person

Corporate Office

E-13/29, 2nd Floor, Harsha Bhawan, Middle Circle
Connaught Place, New Delhi - 110001
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email : emd@smcpower.co.in

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Works

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Odisha - 768202
email : site@smcpower.co.in

ANNEXURE -7


 भारत निर्वाचन आयोग
 पहचान पत्र
ELECTION COMMISSION OF INDIA
IDENTITY CARD
 NEC1399898



संजना का नाम	मूलनाम
Elector's Name	Moolchand Aggarwal
पिता का नाम	सुवाम अग्रवाल
Father's Name	Sewaram Aggarwal
लिंग / Sex	पुरुष / Male
1.1.2009 का आयु	52 Years
Age as on 1 1 2009	

NEC1399898

भा. सं. 42 संसदीय क्षेत्र 02ए किलाश, दिल्ली

Address
B-42 - BLOCK- B, GREATER KAILASH, DELHI

Date: 22/02/2009

50-ए संसदीय क्षेत्र के निर्वाचन क्षेत्र के निर्वाचन अधिकारी का कार्यालय में
 Facsimile Signature of the Electoral Registration Officer for 50 GREATER KAILASH assembly Constituency.

इस कार्ड पर जो भी परिवर्तन होना चाहिए, उदाहरण के लिए पता, नाम, आयु आदि, उसे संबंधित निर्वाचन क्षेत्र के निर्वाचन अधिकारी के कार्यालय में प्रेषित करना होगा।
 In case of change in address, mention this card number in the relevant Form for including your name in the roll at the changed address and to obtain the card with the same Number.


S.C. Nayak
Qualified Person

(80)

आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

MOOL CHAND AGGARWAL
SEWA RAM AGGARWAL
24/11/1956
Permanent Account Number
AAMPA4753E


Signature




04052008




S.C. Nayak
Qualified Person

ANNEXURE - 8
MEMORANDUM OF UNDERSTANDING

(81)

BETWEEN

GOVERNMENT OF ORISSA

&

M/s SMC POWER GENERATION LTD.

26.12.2003


S.C. Nayak
Qualified Person

MEMORANDUM OF UNDERSTANDING BETWEEN THE GOVERNMENT OF ORISSA AND M/S SMC POWER GENERATION LTD (SMCPGL) FOR ESTABLISHMENT OF A STEEL PLANT AT HIRMA IN THE DISTRICT OF JHARSUGUDA, ORISSA.

(82)

This Memorandum of Understanding is made this 26th day of December, 2003 between Government of Orissa on the one part and M/s. SMC Power Generation Ltd. on the other part.

1. M/s. SMC Power Generation Ltd. (SMCPGL) having its Registered Office at E-13/29 Harsha Bhawan, 2nd floor, Middle Circle, Cannaught Place, New Delhi- 100001 (hereinafter referred to as SMCPGL which expression shall, unless repugnant to the context or meaning thereof, include its successors, executors, administrators, representatives and permitted assignees), is proposing to set up a steel plant of 0.4 MTPA and a captive power plant of 83 MW in the State of Orissa at Hirma in Jharsuguda district with an estimated investment of about Rs.455 crore.
2. The Government of Orissa, desirous of utilizing its natural resources and rapidly industrializing the State so as to bring prosperity and well being to its people have been making determined efforts to establish new industries in different locations in the State. In this context, the Government of Orissa have been seeking to identify suitable promoters to establish new integrated steel plants in view of the rich iron ore and coal deposits in the State.
3. (a) SMCPGL is desirous of setting up the following manufacturing facilities in the State of Orissa with proposed investment of Rs.141 crore in the Phase-I and Rs.314 crore in Phase-II.

Sl. No.	Project	Capacity in Million Tonne per annum	Project cost (Rs. in Crore)	Time Schedule for commissioning of manufacturing facilities from date of MOU.
Phase-I	Coal based DRI Plant	0.25	47.70	Within three years.
	Steel plant through DRI-EAF/IF	0.25		
	Captive Power Plant through Waste Heat	18 MW		
		Total	141.00	

S.C. Nayak
Qualified Person

(83)

Sl. No.	Project	Capacity in Million Tonne per annum	Project cost (Rs. in Crore)	Time Schedule for commissioning of manufacturing facilities from date of MOU
Phase-II	DRI Plant	0.15	24.55	Within six years.
	Steel Plant through EAF/IF	0.15		
	Steel Rolled Products	0.25		
	Power Plant	65 MW		
		Total	314.00	

(b) Within three months of signing this MOU, SMCPGL shall prepare in consultation with representatives of IPICOL/IDCO detail milestones in the form of annual break up of the physical and financial targets to be achieved in the first phase and furnish the same to the State Government for monitoring. Similar milestones for the second phase should be made ready soon after installation of the first phase expected within three years as in Para-3 (a).

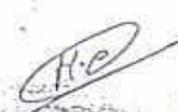
4. This Memorandum of Understanding (MOU) reaffirms the commitment of SMCPGL to establish an integrated steel plant and assistance of the Government of Orissa for providing land, iron ore mines, recommending for coal blocks and other facilities.
5. The major areas of co-operation between the Government of Orissa and SMCPGL are listed below:

(A) Land:

- a. SMCPGL will require approximately 280 acres of land for the purpose of setting up the steel plant and associated facilities.

Name of the Village/District	Area required in acres
Hirma, Jharsuguda	280 acres

- b. For rehabilitation of displaced families, Rehabilitation and Resettlement Package would be implemented as per prevailing guidelines and practices.
- c. The Government of Orissa agree to hand over the land free from all encumbrances to SMCPGL through Orissa Industrial Infrastructure Development Corporation (IDCO) for construction of the plant and allied facilities.


S.C. Nayak
 Qualified Person

d. SMCPGL agrees to pay IDCO/Revenue authorities the cost of the land etc. (84)

(B) Raw Materials:

Coal : The State Government agree to recommend to the Government of India for allotment of suitable coal blocks for captive coal mining for the project either directly or through a PSU. Further, the State Government will assist SMCPGL to get the allocation of coal linkage of suitable grade in the desired quantity to meet its requirement until it is ready for mining of its coal block.

Iron Ore: The State Government agree to assist SMCPGL in making a firm arrangement with Orissa Mining Corporation (OMC) along with other private iron ore lessees in the State to meet a substantial portion of the requirement of iron ore of suitable grade for initial period of steel making under mutually agreeable terms and conditions. Possibility shall also be explored to evolve long term arrangement with OMC under mutually acceptable terms and conditions for development of new iron ore areas. Keeping in view substantial value addition within the State, the State Government also agree to assign appropriate priority in the matter of recommending its application for iron ore mines under the MMDR Act and the MC Rules for mineral concession to meet its requirement subject to adequate progress in implementation of project as envisaged in Para-3 of this MOU and a portion of the requirement to be met through the OMC.

SMCPGL understands that by the time the complete plant and machinery for the steel plant for phase-I as in para 3 is set up and ready for production, but availability of iron ore area for the project is not tied up by then, the State Government would consider assigning priority to this project over other projects who come on stream (become ready for production of steel) later in the matter for allocation of iron ore area to meet their raw material needs to the extent of about 25 years' of requirement of the plant in the Phase-I.

SMCPGL also understands that the State Govt. is in the process of formulating a set of guidelines indicating the criteria to be adopted in the matter of recommending available iron ore areas for steel projects and on assignment of inter-se priority among various steel projects in the State.

Any special consideration for assistance in the matter of sourcing raw material as above will be subject to the position that suitable iron ore areas are available for grant and that SMCPGL do not have an existing mining area or controlling interest in any company /concern having mining area for the relevant mineral in the State. In case they do have such area/interest, their requirement shall be reassessed by the State Government after taking into consideration the quantity of mineral that can be met from these sources.



S.C. Nayak
Qualified Person

(C) Water:

The State Government will permit withdrawal of water from a suitable source for construction/operation of the aforesaid project and housing colony as per the prevailing rates under appropriate terms and approval of the Water Allocation Committee. The approximate requirement of water is as follows:

Phase-I & II - 18,000 Cum/day

The State Government will also permit implementation of the water supply scheme to be prepared by SMCPGL and Water Resources Department.

(D) Power:

SMCPGL plans to set up Captive Power Plant(s) to meet the requirement of energy intensive steel making process and to utilize the residual heat of waste gases and coal rejects. Capacity of captive power plant would be as follows:

- Phase-I - 18 MW
- Phase-II - 65 MW (Additional)

SMCPGL will approach GRIDCO for suitable PPA for sale of excess power, if required for wheeling of power/sale to any new or existing establishment in Orissa.

(E) Environment:

- i. The Government of Orissa agree to assist SMCPGL in obtaining NOC through the State Pollution Control Board for the construction of the plant, the housing colony, mines, pipeline, power project etc.
- ii. Government of Orissa agree to assist SMCPGL in obtaining all clearances from the Central Government.
- iii. SMCPGL will arrange to conduct rapid environment impact assessment (EIA) and detailed EIA study and prepare environment management plan (EMP) for the project. The Government of Orissa agrees to assist SMCPGL in this regard during the time when EIA is being conducted and EMP is being prepared.

(F) Incentives and concessions:

SMCPGL understands that the State Government would consider such incentives and concessions as are provided in the relevant Industrial Policy Resolution (IPR) of the State Government.


S.C. Nayak
Qualified Person

(G) General Clauses:

(86)

- (a) The Government of Orissa appreciate that SMCPGL is a responsible corporate house with a high involvement in employees' welfare and social development. The Government of Orissa, therefore, anticipate that SMCPGL will bring this philosophy to the steel plant project being set up in the district of Jharusuguda to ensure the well being of this district in particular and the people of Orissa in general. In terms of employment, preference will be given to the local persons subject to need and their possessing the necessary qualifications. SMCPGL will make every effort to improve their skill levels, if necessary, through specialized training.
- (b) The Government of Orissa appreciate that SMCPGL will be entitled to induct suitable foreign and/or Indian Joint Venture partners, choose appropriate financial options, suppliers, credit options and technologies in the best interest of the project.
- (c) The MOU shall remain valid for a period of two years from the date of signing. Further extension, if necessary, shall be made as per mutual agreement. However, no such extension shall be considered unless SMCPGL has made substantial progress on implementation of the project in terms of construction, erection of plant and machinery and investment at site to the satisfaction of the State Government, in these two years in implementing the first phase as envisaged in this MOU.
- (d) SMCPGL understands that the offers and special considerations of the State Government indicated in this MOU are for the Steel project envisaged in para-3 where the final product is steel/ steel products and not for any intermediary product unless the same is for captive use in the steel product.
- (e) SMCPGL shall be required to produce document towards financial closure for phase-I within one year of signing of MOU. Such financial closure for the second phase should be produced at least three years before the stipulated date of commissioning of the second phase of the project.
- (f) In the event of non implementation of the project or part thereof, the corresponding support/commitment of the State Government indicated in the MOU with regard to Iron Ore Mines/Coal Block, incentives and concessions of the State Government in particular shall be deemed to be withdrawn.
- (g) It shall be obligatory on the promoter to furnish all information required by the State Government relevant to planning, formulation, lay out, financing and implementation of the project as well as the financial and management status and performance of the promoter as and when so required by the State Government as expeditiously as possible.


S.C. Nayak
Qualified Person





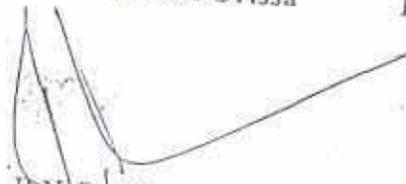
For witness whereof the parties hereto have set their hands to this MOU
on this 26th day of December, 2003.

(87)

SIGNED AND DECLARED BY:

For Government of Orissa

For SMC Power Generation Ltd.



K.N. Bholidar
Principal Secretary,
Department of Steel & Mines



M.C. Agarwal
Director



S.C. Nayak
Qualified Person



GOVERNMENT OF INDIA
MINISTRY OF MINES

ANNEXURE-9

No. 5/16/2010-M.IV

To

The Secretary to the Govt. of Orissa
Department of Steel and Mines,
Bhubaneswar



New Delhi, the 07/04/2010

Sub: Grant of mining lease for iron ore over an area of 246.039 hecets. in villages Khandbandh, Jalahari and Baitarani RF, district Keonjhar in favour of M/s SMC Power Generation Ltd. for a period of twenty five (25) years.

Sir,

I am directed to refer to your letter No. III(A)SM-13/06/7524 dated 3.11.2008 on the above mentioned subject and to convey the prior approval of the Central Govt. under Section 5(1) of the Mines and Minerals (Development and Regulation) Act, 1957 after invoking the provisions of Section 11(5) of the Act and in relaxation of the provisions of Rule 59(1) after invoking provisions of Rule 59(2) of Mineral Concession Rules, 1960 to the grant of mining lease for iron ore over an area of 246.039 hecets. in villages Khandbandh, Jalahari and Baitarani RF, district Keonjhar in favour of M/s SMC Power Generation Ltd. for a period of twenty five (25) years, subject to the imposition of following special condition under rule 27(3) of M.C. Rules, 1960:

"M/s SMC Power Generation Ltd. will utilize the mineral for the captive use in its integrated steel plant at Hirma in the Distt. Jharsuguda".

2. Before allowing grant of mining lease the State Govt. may kindly ensure the compliance of the amended provisions of the Act and Rules, and other applicable Acts and Rules including Forest (Conservation) Act, 1980 and Environmental Notification dated 27/1/94 as issued and amended by MOEF.

3. A copy of the order passed by the State Govt. in the matter may kindly be furnished to this Ministry for record.

Yours faithfully,

(C.K. Rawat)

Under Secretary to the Government of India

Regd./Copy to:

1. The Controller General, Indian Bureau of Mines, Indira Bhawan, Civil Lines, NAGPUR-440001.
2. The Chairman-cum-Managing Director, Mineral Exploration Corporation Ltd., High Land Drive Road, Seminary Hills, NAGPUR-440006.
3. PS to Minister of Mines.
4. M/s SMC Power Generation Ltd. through Secretary, Department of Steel and Mines, Govt. of Orissa, Bhubaneswar.
5. Copy for Guard file.

S.C. Nayak
Qualified Person

(C.K. Rawat)

Under Secretary to the Government

Government of Orissa
Department of Steel & Mines

URGENT
R.P. WITH A.D.

(89)

No. III(A)SM-13/2006-4469 /SM, Bhubaneswar, the

16/7/2010

From

Smt. D.S. Jena
Under Secretary to Government

ANNEXURE - 10

To

M/s SMC Power Generation Ltd.
Village: Hirma,
Jharsuguda, Orissa-768202

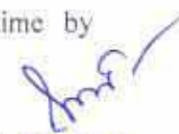
Sub: Application dated 18.03.2006 of M/s SMC Power Generation Ltd. for mining lease for Iron ore over an area of 246.039 hec. in villages Khandbandh, Jalahari & Baitarani R.F. in the District of Keonjhar.

Sir,

I am directed to enquire whether you accept the following terms and conditions that would govern the grant of mining lease in respect of the application read above over an area of 246.039 hec. in villages Khandbandh, Jalahari and Baitarani R.F. of Keonjhar District. Your reply as per enclosed proforma should reach Government on or before 16.08.2010 failing which it will be considered that you do not accept the conditions.

1. The lease will be subject to the general terms and conditions laid down in the Model form of mining lease adopted by the State Government and to the following conditions :-

- i) Royalty and dead rent should be paid at rates provided in the Mines and Minerals (Development & Regulation) Act, 1957 and as amended from time to time.
- ii) Surface rent should be paid at the rate of Rs.10.00 per hec. per annum of waste lands and at rates not exceeding the land revenue and cesses in respect of the cultivated area and water rate as may be fixed from time to time by Government.


S.C. Nayak
Qualified Person

- iii) The lease will be granted for a period of 25 (twenty-five) years subject to submission of duly approved mining plan within a period of six months from the date of issue of this letter after necessary prospecting operations undertaken by the company under the supervision of the Director of Geology, Orissa. If the approved mining plan is not received within the stipulated period of six months then action will be taken to reject the application without further reference to you.
- iv) The assignment is subject to condition that before grant of mining lease, the applicant has to obtain statutory clearances under the provision of Forest (Conservation) Act, 1980 and Environmental Notification dated 27.1.1994 as issued and amended by MOEF.
- v) As required under rule 32 of the M.C. Rules, 1960, an amount of Rs. 10,000/- (Ten thousand) should be deposited towards security deposit for due observance of the terms and conditions stated above. The deposit shall be forfeited to the State if the conditions are not observed in addition to such other remedies or action as may be available under these presents.
- vi) The assignment will be liable for cancellation if it would be in excess of the limits of the authority possessed by the State Government.
- vii) The assignment will be subject to the result of any appeal or revision that may be preferred by any aggrieved party against the decision of the State Govt. granting you lease and in the event of the cancellation of the assignment or the decision of Govt. of Orissa to lease out the area to you either on such appeal or in revision you shall not be entitled to compensation for anything done or attempted to be done in pursuance of the order.
- viii) The grantee shall not cut any tree or clear the forest during the mining operation without prior approval of the Central Government. He shall not also damage any objectionable land during mining operation.
- ix) The area should be surveyed and demarcated by the State Govt. at the expense of the lessee as required under rule 33 of the Mineral Concession Rule, 1960. The party should deposit the required amount of survey and demarcation fees within two weeks of the receipt of the grant order.
- x) The lease out area shall be reclaimed to the satisfaction of the State Govt. before the pit is abandoned.


S.C. Nayak
Qualified Person

- xi) The assignment is subject to the conditions that subject to the provisions of Article-226 of the Constitution of India, any suit of petition in relation to any dispute arising out of the leased area should be filed in the Civil Courts in the State of Orissa.
- xii) The applicant company will utilize the minerals for captive use in its integrated steel plant at Hirma in the district of Jharsuguda.
- xiii) The mining lease will be granted in favour of the company after 50% of investment in the project (excluding the part required to make sponge iron).
- xiv) The applicant company shall have to fulfil all the statutory/ regulatory requirements under M&M (D&R) Act, 1957, Mineral Concession Rules, 1960 and Mineral Conservation and Development Rules, 1988 as well as other Acts, Rules and Regulations and Government Notifications/ Procedures governing establishment and operation of mines before grant & during the period of lease.

Yours faithfully,

[Signature]
Under Secretary to Government

Memo No. _____ /SM. Bhubaneswar, the

Copy forwarded to the Collector, Keonjhar for information and necessary action.

[Signature]
Under Secretary to Government

Memo No. _____ /SM. Bhubaneswar, the

Copy forwarded to the Director of Geology, Orissa, Bhubaneswar/Director of Mines, Orissa, Bhubaneswar/ Deputy Director of Mines, Keonjhar for information and necessary action. The Director of Mines, Orissa is requested to supply the precise area map to the applicant for preparation of mining plan.

[Signature]
Under Secretary to Government

Memo No. _____ /SM. Bhubaneswar, the

Copy forwarded to Shri C.K. Rawat, Under Secretary to Government of India, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi-110011 for kind information.

[Signature]
Under Secretary to Government

S.C. Nayak
Qualified Person



GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES
MCCM CENTRAL ZONE

REGD POST

(92)

ANNEXURE -11

No. 314(3)/2011-MCCM(CZ)/MP-01

6th Floor, "D" Block, Indira Bhawan
Civil Lines, Nagpur - 440102
Email : com.cz@ibm.gov.in
Telephone & Fax : (0712) 2565603
Dated 15 June 2011



To,
M/s SMC Power Generation Limited,
Village - Hirma - 768 202
District - Jharsuguda, Orissa.

Approval of Mining Plan alongwith Progressive Mine Closure Plan under rule 22 of MCR, 1960 of Khandbandh Iron ore deposit of M/s SMC Power Generation Limited over an area of 244.030 hectares, in Keonjhar district of Orissa for grant of lease.

- Reference:-
1. Your RQP's letter No. MSC/MP&PMCP/1238 dated 01.04.2011.
 2. This office letter of even number dated 06.05.2011.
 3. Your RQP's letter No MSC/MP&PMCP/40 dated 24.05.2011.

Sir,

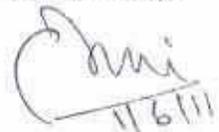
In exercise of the powers conferred by Clause (b) of Sub-Section (2) of Section 5 of Mines & Minerals (Development & Regulation) Act, 1957 read with Government of India Order No. S.O.445(E) dated 26.4.1987, I hereby **approve** the above said mining plan. This approval is subject to the following conditions :-

- i) This mining plan is approved without prejudice to any other laws applicable to the mine/area from time to time whether made by the Central Government, State Government or any other authority.
- ii) It is clarified that this approval of mining plan does not, in any way, imply the approval of the Government in terms of any other provisions of the Mines & Minerals (Development & Regulation) Act, 1957 or the Mineral Concession Rules, 1960 and any other laws including the Forest Conservation Act, 1980.
- iii) It is further clarified that this approval of mining plan under Rule 22 of MCR 1960 is subject to the provisions of Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, and other relevant statues orders and guidelines as may be applicable to the lease area from time to time.
- iv) The provisions of Mines Act, 1952 and Rules and Regulations made there under including submission of notice of opening, appointment of Manager and other statutory officials as required by the Mines Act, 1952 shall be complied with.
- v) The mining plan is approved without prejudice to any other order or direction from the court of competent jurisdiction.
- vi) Your attention is invited to the Supreme Court interim order in W.P. (C) No.202 dated 12-12-96 for compliance. The approval of mining plan is, therefore, issued without prejudice to and is subject to the said directions of the Supreme Court as applicable.
- vii) The details of grant of the lease by the State Government, whenever such an order is passed, may be intimated to the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar.
- viii) This approval for mining operations and associated activities is restricted to the mining lease area only. Requisite permission from the concerned authorities may be obtained for mineral storage/ waste dump and crusher/ separation plant proposed outside the lease area.
- ix) A copy of Environment Impact Assessment - Environment Management Plan (EIA-EMP) as approved by MOEF (Ministry of Environment & Forest) shall be submitted to IBM within a month of approval alongwith a copy of their approval letter.

S.C. Nayak
Qualified Person

- x) If anything is found to be concealed as required by the Mines Act in the content of the mining plan and the proposals for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.
- xi) At any stage, if it is observed that the information furnished in the document are incorrect or misleading or wrong, the approval of the document shall be revoked with immediate effect.
- xii) The department does not undertake any responsibility regarding correctness of the boundaries of the lease area shown on the ground with reference to lease map & other plans furnished by the applicant/lessee.
- xiii) Yearly report as required under rule 23E(2) of MCDR'88 setting forth the extent of protection and rehabilitation works carried out as envisaged in the approved progressive mine closure plan and if there is any deviations, reasons thereof shall be submitted before 1st July of every year.
- xiv) The lessee should submit the financial assurance for Rs. 1244150/- only, to the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar before executing the mining lease deed as per rule 23(F)(3) of Mineral Conservation & Development Rules, 1988.
- xv) The Environmental Monitoring Cell shall be established by the company. This Environmental Monitoring Cell of the company, shall continue monitoring ambient air quality, dust-fall rate, water quality, soil sample analysis and noise level measurements at various stations established for the purpose both in the core zone and buffer zone as per requirement of Environment Guidelines and keeping in view IBM's circular No. 3/92 & 2/93 season-wise every year or by engaging the services of an Environmental Laboratory approved by MOEF/CPCB. The data so generated shall be maintained in a bound pagged register kept for the purpose and the same shall be made available to the inspecting officer, on demand.

Yours faithfully,



(Ranjan Sahai)

Controller of Mines (CZ)

Encl. : Two copies of approved mining plan

Copy for information to :

1. Shri S. C. Nayak, RQP, A/185, Saheed Nagar, Bhubaneswar – 751 007.
2. The Director of Mines Safety, Directorate General of Mines Safety, Chaibasa Region, At & Post Chaibasa, District – Singhbhum West alongwith one copy of approved mining Plan.
3. The Director of Mining, Directorate of Mining & Geology, Government of Orissa, Head of the Department Building, New Capital, Bhubneswar 751 001 Orissa. It is requested to advise the applicant/lessee to submit the financial assurance to the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar, to comply with the provisions of Rule 23(F)(3) of Mineral Conservation & Development Rules, 1988 before executing the mining lease deed. The lease deed shall be executed only after receiving a confirmation letter from the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar.



(Ranjan Sahai)

Controller of Mines (CZ)



S.C. Nayak
Qualified Person

(94)
BY SPEED POST

Government of India
Ministry of Mines

ANNEXURE -12

F.No.5/16/2010-M.IV

New Delhi, Date: 9 November, 2015

To

The Secretary to the Govt. Of Odisha,
Department of Steel & Mines,
Bhubaneswar, Odisha

Subject: - Grant of mining lease for iron ore over an area of 246.039 hectare in village Khandabandh, Jalahari and Baitarani RF of Keonjhar district in favour of M/s SMC Power Generation Ltd. for a period of twenty five-years regarding.

Sir,

Please refer to the State Governments' DO. No. SM-MC-I-MC-0047-2014 4467/cs, dated- 14.5.2015 on the subject mention above. In this regard, the legal opinion has been sought from the Department of Legal affairs.

2. The following clarifications are given on the issue referred by the State Government in the matter.

(i) Since the prior approval of the Central Government for the instant proposal has already been granted in favour of the applicant company, the said case shall be remain eligible under Section 10 A (2) (c) of the MMDR Amendment Act, 2015.

(ii) In regard to the reduction of area from 246.039 hectare to 179.199 hectares for grant of mining lease in favour of SMC Power, calls for action on the part of the State Government as per applicable law in the matter and thus, the requirement of prior approval of Central Government again for reduction of area is not required.

3. Moreover, Section 10 A (2) (c) further gives a timeline. In such cases, the mining lease shall be granted subject to the fulfilment of


S.C. Nayak
Qualified Person

(95)

conditions of the previous approval within a period of 2 years from the commencement of the MMDR Amendment Act, 2015 i.e. 12.01.2015. Thus, the State Government may also adhere to the timelines in this regard.

4. A copy of the order passed by the state Government in the matter may be furnished to this Ministry for record.

5. This issues with the approval of the competent authority.

Yours faithfully,



(Adhir Kumar Mallik)

Under Secretary to the Government of India

Telephone no.:011-23384743

E-Mail:ak.mallik@nic.in

Copy to:

- (i) M/s SMC Power Generation Ltd., E-13/29, 2nd Floor, Harsha Bhawan, Middle Circle, Connaught Place, New Delhi-110001.
- (ii) PS to Hon'ble Minister of Mines.
- (iii) Guard File.

S.C. Nayak
Qualified Person

(96)

ANNEXURE - 13

Urgent

Government of Odisha
Steel & Mines Department

No 3904 /SM, Bhubaneswar, Dated the 13.5.2016
III(A)SM-13/2006

From

Sri B. Behera,
Additional Secretary to Government.

To

The Director of Mines,
Odisha, Bhubaneswar.

Sub- Grant of ML application No 1447 dated 18.03.2006 of M/s SMC Power Generation Ltd over an area of 178.908 hecets in village Khandabandh, Jalahuri and Baitarani RF of Keonjhar district

Ref: Steel & Mines Department letter No 4469/SM dated 16.07.2010 and DM(O) Letter No 12621 dated 29.11.2012 & Letter No 529 dated 27.01.2015

Sir,

With reference to the subject and letter cited above, I am directed to say that Government have been pleased to allow the request of the grantee i.e. M/s SMC Power Generation Ltd to reduce the granted area to exclude lands held by ST persons and the granted area is reduced from 246.039 hecets to 178.908 hecets in village Khandabandh, Jalahuri and Baitarani RF of Keonjhar district.

You are requested to take necessary follow up action in the matter accordingly.

Yours faithfully,

Memo No 3905 /SM dated

Copy forwarded to M/s SMC Power Generation Ltd, Village- Hirma, Jharsuguda, Odisha- 768202 for information and necessary action.


Additional Secretary to Government
13.5.2016


Additional Secretary to Government
13/5/16


S.C. Nayak
Qualified Person

DIRECTORATE OF MINES: ODISHA
BHUBANESWAR

(97)

No. M-IV-(A)-25/2006 4693 DM.,

Dt. 20.5.16

From

Deepak Mohanty, IFS,
Director of Mines, Odisha,
Bhubaneswar.

ANNEXURE - 14

To

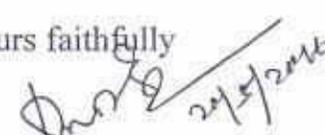
SMC Power Generation Limited
Village- Hirma, District- Jharsuguda
Odisha-768202.

Sub:-Issue of Precise Area Map, Boundary Description and Land Schedule for Iron Ore over 178.908 hec. in village Khandabandh, Jalahari and Baitarani RF of Keonjhar District.

Sir,

In inviting a reference to your letter No-SMC/ML/DM/02 dt.13.05.2016 on the above noted subject, I am to send herewith one copy of the precise area map, boundary description and land schedule for Iron Ore over 178.908 hec. in village Khandabandh, Jalahari and Baitarani RF of Keonjhar District as decided by Govt. vide Order No-3904/SM dt.13.05.2016 for grant of mining lease in favour of SMC Power Generation for preparation of statutory clearances.

Yours faithfully


DIRECTOR OF MINES, ODISHA

Encls: As above

Memo No. _____/DM., Dt. _____

Copy forwarded to the Additional Secretary to Govt. Steel and Mines Department for kind information with reference to Govt. letter No-3904/SM dt.13.05.2016.

\
DIRECTOR OF MINES, ODISHA

Memo No. _____/DM., Dt. _____

Copy forwarded to the D.D.M Joda for information and necessary action.

\
DIRECTOR OF MINES, ODISHA


S.C. Nayak
Qualified Person

ANNEXURE -15

BOUNDARY DESCRIPTION

(98)

57

Boundary Description of the precise area decided for grant of M.L. M/s SMC Power Generation Ltd for Iron Ore in village-Khandabandha, Jalahari and Baitarani R.F. over an area of 442.09 Acres or 178.908 hectares out of the M.L. area over 244.030 hectares under Champua Sub-division of Keonjhar district.

Reference Point :The starting point 'A' is situated with a magnetic bearing of 37°-00' at a distance of 1225 feet or 373.380 mts. from village tri-junction stone of villages-Khandabandha, Jalahari and Baitarani R.F.

From the starting point 'A' the traverse moves anti-clockwise direction as follows:-

Station No.	Line	Magnetic Bearing	Interior Angle	Distance in feet	Distance in Meters	Remarks
A	A - A/1	263°-00'	66°.21'	552	168.250	
A/1	A/1 - A/2		179°.38'	591	180.137	
A/2	A/2 - A/3		179°.42'	447	136.246	
A/3	A/3 - A/4		180°.04'	648	197.510	
A/4	A/4 - A/5		179°.32'	748	227.990	
A/5	A/5 - A/6		180°.04'	998	304.190	
A/6	A/6 - A/7		180°.00'	900	274.320	
A/7	A/7 - A/8		180°.04'	799	243.535	
A/8	A/8 - A/9		179°.45'	800	243.840	
A/9	A/9 - B		180°.00'	345	105.156	
B	B - B/1		81°.00'	740	225.552	
B/1	B/1 - C		180°.00'	600	182.880	
C	C - D		125°.00'	925	281.940	
D	D - E		138°.30'	715	217.932	
E	E - F		144°.30'	700	213.360	
F	F - G		228°.00'	1145	348.996	
G	G - G/1		278°.53'	700	213.360	
G/1	G/1 - H		180°.00'	625	190.500	
H	H - I		91°.00'	330	100.584	
I	I - I/1		289°.00'	890	271.272	
I/1	I/1 - I/2		180°.00'	610	185.928	
I/2	I/2 - I/3		180°.00'	750	228.600	
I/3	I/3 - I/4		180°.00'	710	216.408	
I/4	I/4 - I/5		180°.00'	530	161.544	
I/5	I/5 - J		180°.00'	745	227.076	
J	J - 1		78.30'	740	225.552	
1	1 - 2		269°.00'	250	76.200	
2	2 - 3		229°.30'	500	152.400	
3	3 - 4		207°.30'	400	121.920	
4	4 - 5		109°.30'	350	106.680	
5	5 - 6		155°.30'	890	271.272	
6	6 - 7		109°.00'	520	158.496	
7	7 - 8		88°.00'	270	82.296	
8	8 - 9		268°.00'	600	182.880	

S.C. Nayak
Qualified Person

18/1
CHIEF SURVEYOR
DIRECTORATE OF MINES
BHUBANESWAR

199)

9	9 - 10		90°.00'	1320	402.336	
10	10 - 11		270°.00'	850	259.080	
11	11 - 12		105°.00'	1200	365.760	
12	12 - 13		104°.00'	760	231.648	
13	13 - 14		207°.30'	790	240.792	
14	14 - 15		270°.00'	390	118.872	
15	15 - 16		121°.30'	860	262.128	
16	16 - 17		135°.30'	490	149.352	
17	17 - 18		240°.30'	240	73.152	
18	18 - 19		253°.00'	320	97.536	
19	19 - 20		92°.00'	120	36.576	
20	20 - 21		283°.15'	1600	487.680	
21	21 - L/6		93°.00'	430	131.064	
L/6	L/6 - L/7		179°.30'	421	128.321	
L/7	L/7 - L/8		180°.06'	810	246.888	
L/8	L/8 - L/9		180°.03'	750	228.600	
L/9	L/9 - L/10		179°.49'	300	91.440	
L/10	L/10 - L/11		180°.04'	460	140.208	
L/11	L/11 - A		179°.40'	450	137.160	

Thus the traverse closes covering an area of 442.09 Acres or 178.908 hect.


 Chief Surveyor
 Directorate of Mines
 Odisha
 Bhubaneswar


 S.C. Nayak
 Qualified Person

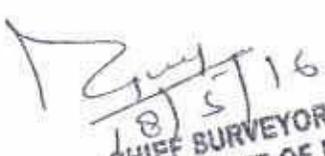
ANNEXURE - 16 (10)

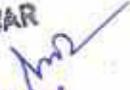
LAND SCHEDULE

Land Schedule of the precise area decided for grant of M.L. M/s SMC Power Generation Ltd for Iron Ore in village-Khandabandha, Jalahari and Baitarani R.F. over an area of 442.09 Acres or 178.908 hectares out of the M.L. area over 244.030 hectares under Champua Sub-division of Keonjhar district.

VILLAGE - KHANDABANDH

Plot. No.	Khata No.	Name of the Tenants	Kissam	Area in Acres	Remarks
1/P	40	Abad Ajogya Anabadi	Pahada	11.50	DLC-192.02
2/P	40	Abad Ajogya Anabadi	Pahada	15.11	
4/P	40	Abad Ajogya Anabadi	Pahada	11.10	
5/P	40	Abad Ajogya Anabadi	Pahada	41.20	
64/P	40	Abad Ajogya Anabadi	Pahada	8.67	
70/P	40	Abad Ajogya Anabadi	Pahada	13.01	
71/P	40	Abad Ajogya Anabadi	Pahada	34.30	
267/P	40	Abad Ajogya Anabadi	Pahada	15.71	
274/P	40	Abad Ajogya Anabadi	Pahada	26.62	
275/P	40	Abad Ajogya Anabadi	Pahada	14.80	
284/P	39	Abad Ajogya Anabadi	Jungle	39.70	77.62
273/P	37	Rakhita	Gramya Jungle	35.80	
VILLAGE-JALAHARI					
1/P	32	Rakhita	Gramya Jungle	2.12	
BAITARANI R.F.				165.28	165.28
VILLAGE-KHANDABANDH (NON-FOREST)					
3	37	Rakhita	Rasta	1.31	7.17
272/p	40	Abad Ajogya Anabadi	Patharagada	5.30	
285/413/P	39	Abad Ajogya Anabadi	Bajephasal-II	0.56	
Total				442.09 Ac or 178.908 Hects	


 18/5/16
 CHIEF SURVEYOR
 DIRECTORATE OF MINES
 ODISHA, BHUBANESWAR


S.C. Nayak
 Qualified Person

ABSTRACT

(10)

D.L.C	192.02 Ac or 77.708 Hects
Jungle	77.62 Ac or 31.412 Hects
Baitarani R.F.	165.28 Ac or 66.887 Hects
Non Forest Land	7.17 Ac or 2.901 Hects
Total	442.09 Ac or 178.908 Hects


CHIEF SURVEYOR
DIRECTORATE OF MINES
ODISHA
BHUBANESWAR

Directorate of Mines, Odisha

Bhubaneswar


S.C. Nayak
Qualified Person



ODISHA SPACE APPLICATIONS CENTRE (ORSAC)

Department of Science & Technology, Government of Odisha

(102)

No.: 2329

Date: 3/8/16

ANNEXURE -17

To

M/s. SMC Power Generation Ltd.,
Plot No. -887/A, Nilakantheswar Marg,
Baramunda Village, Bhubaneswar-751003

Sub: DGPS/ETS survey for Mining lease boundary of Khandbandh-Jalahuri-Baitarani R.F ML area of M/s. SMC Power Generation Ltd in Keonjhar district.

Ref: Your Letter No: SMC/ML/ORSAC/01, dt: 12.03.2016 & Letter No: 03,
dt. 21.05.2016.

Sir,

With reference to the subject cited above, I am directed to inform you that the output maps and DGPS survey geo-coordinates of the boundary pillars as shown in the ground by your surveyor for Khandbandh-Jalahuri-Baitarani R.F ML area have been generated by ORSAC in form of soft and hard copy as mentioned below.

- Geo-coordinates of boundary pillar in Excel format.
- Generated Lease boundary in .shp. file.
- Generated Lease boundary from DGPS survey superimposed on High resolution Satellite image covering 500m. buffer from the M.L.

You are requested to receive the deliverables as mentioned above and acknowledge the same to this office. Further, it is to inform you that the output should not be used for any other purpose than it is meant for.

Thanking you.

Yours faithfully,

Encl: 1 CD & 1 map.


(P.K. TRIPATHY)
SCIENTIST


S.C. Nayak
Qualified Person

(103)

Government of Odisha
Forest and Environment Department

ANNEXURE -18

No. 10F(Cons)246/2016 14161 /F&E dated 01-08-16

From

Sri Debidutta Biswal, IFS
Special Secretary to Govt.

To

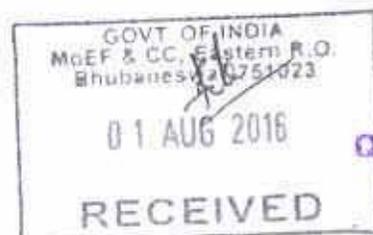
The Assistant Inspector General of Forests,
Govt. of India, Ministry of Environment & Forest and Climate Change
(F.C. Division), Indira Paryavaran Bhawan,
Jor Bagh, Aliganj Road, New Delhi -110003

Sub- Application of M/s SMC Power Generation Limited seeking approval of MoEF&CC under Section 2(iii) of Forest Conservation Act, 1980 over 176.007ha. of forest land within total Mining lease area of 178.908ha. pertaining to Iron ore mining lease area in village Khandabandh, Jalahari and Baitarani RF in Keonjhar district of Odisha

Sir,

I am directed to say that terms and conditions were issued by State Government in Steel & Mines Department pertaining to ML application dt. 18.3.2006 for iron ore in village Khandabandh, Jalahari and Baitarani RF in Keonjhar district over an area of ~~246.039ha.~~ 246.039ha., in favour of M/s SMC Power Generation Limited vide their letter No. 4469/SM dt. 16.7.2010 after having necessary prior permission of Ministry of Mines, GoI in this regard vide their letter dt. 7.4.2010. ML area was later reduced to 244.030ha. and precise area map along with land schedule & boundary description was issued by Director of Mines, Odisha vide his letter dt. 28.2.2011. Accordingly Mining Plan was earlier approved by IBM vide letter No. 314(3)/2011-MCCM(CZ)/MP-01 dt. 1.6.2011. In view of policy of decision of State Government not to include and allot any ST land for the purpose of mining and related activities, the State Government vide its order dt. 13.5.2016 issued order for grant of ML application dt. 18.3.2006 of the applicant company over further reduced area of 178.908ha. This ML area is comprised of 2.901ha. of non-forest land and 176.007ha. of forest land.

As ascertained from Director of Mines, Odisha vide his letter No.4225 dt.4.5.2016, this mining lease application of M/s SMC Power Generation Limited, for which Terms and condition have been issued but lease yet to be granted, is now covered under Section 10A(2)(c) of MMDR Amendment Act and is now pending for consideration of State Government for grant/execution of mining lease as per Rule 8(2) of Minerals(Other than Atomic and Hydro Carbon Energy Minerals) Concession rules, 2016 by 11.1.2017.



S.C. Nayak
Qualified Person

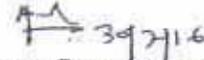
(104)

MoEF&CC, Government of India vide their guidelines bearing F.No. 11-599/2014-FC dt. 1.4.2015 has stipulated at para 3(i) that in case of mining leases, including those of Government authorities, having forest land in part or in full, approval of Central Government under Section 2(iii) of the FC Act for the entire forest land located within a mining lease shall be obtained for execution (including by way renewal) of a mining lease in accordance with the provisions of MMDR Act and Rules framed thereunder.

In view of the above the applicant, M/s SMC Power Generation Limited in its representation dt. 27.7.2016 to F&E Department(Copy enclosed) has requested this department to move their case to the MoEF&CC to accord forest clearance for the entire 176.007ha. of forest land in the mining lease under Section 2(iii) of FC Act, 1980 for assignment of lease in question as per provisions of MoEF&CC guidelines bearing F.No. 11-599/2014-FC dt. 1.4.2015.

In view of present status of mining lease application and in view of provisions of MoEF&CC guidelines bearing F.No. 11-599/2014-FC dt. 1.4.2015, it is recommended that the representation of ML applicant seeking approval under Section 2(iii) of FC Act, 1980 pertaining to entire forest land of 176.007ha. within total ML area of 178.908ha. for the purpose of assignment of lease may be considered subject to fulfillment of conditions to be stipulated by MoEF&CC, GoI.

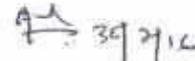
Yours faithfully



Special Secretary to Government

Memo No. 14122 /F&E., Dated- 01-08-16

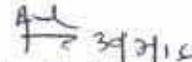
Copy with copy of enclosures forwarded Addl. Principal Chief Conservator of Forests (Central) Government of India, Ministry of Environment and Forests & Climate Change, Eastern Regional Office, A-3, Chandrasekharpur, Bhubaneswar for information & necessary action.



Special Secretary to Government

Memo No. 14163 /F&E., Dated- 01-08-16

Copy forwarded to the Addl. Secretary to Government, Steel & Mines Department for information & necessary action.



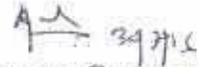
Special Secretary to Government


S.C. Nayak
Qualified Person

(105)

Memo No. 14164 /F&E., Dated- 01-08-16

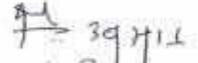
Copy forwarded to the Principal Chief Conservator of Forests., Odisha /Principal Chief Conservator of Forests(WL) & CWLW, Odisha for information & necessary action.

 30/8/16

Special Secretary to Government

Memo No. 14165 /Dated. 01-08-16

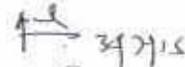
Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle/ Divisional Forest Officer, Keonjhar Forest Division for information and necessary action.

 30/8/16

Special Secretary to Government

Memo No. 14166 /Dated. 01-08-16

Copy forwarded to Chairman-cum-Managing Director(Nominated Owner) for information and necessary action with reference to his representation dt. 27.7.2016 to F&E Department.

 30/8/16

Special Secretary to Government


S.C. Nayak
Qualified Person



Online Submission & Monitoring of Environmental, Forest and Wildlife Clearances - A Single Window Clearance System

Ministry of Environment, Forest and Climate Change
Government of India

Environmental Clearance	Forest and Wildlife Clearances
New Registration Form	

- ▼ Help:
 All fields marked with * are Mandatory.
 * 1. One time registration of User Agency is required on the Portal.
 * 2. User Agency can register more than one Applicant for branch offices under same name.
 NOTE: 3. An applicant (with same user id) can submit more than one proposal on the portal.
 * 4. Once entered, Email Id of User Agency can not be modified.

Already member? [Click here](#) to Log In

User Agency Details

User Agency (Head Office) * :

Enter User Agency Name * :

State * :

District * :

Address * :

Pincode * :

Landmark :

Email Address * :

Landline Telephone No * :

Fax No. :

Mobile * :

Website (if any) :

Legal Status of User Agency * :

Whether any proposal submitted by User agency in past * :

Select Clearance * :

Applicant Details

First Name * :

Middle Name :

Last Name * :

Gender * :

Designation * :

Address * :

State of the Branch/Head Office * :

District of the Branch/Head Office * :

Tehsil of the Branch/Head Office :

Pincode * :

Landmark :

Email Address * :

Landline Telephone No * :

Fax No. :

Mobile * :

Security Question * :

Security Answer * :

<input type="text" value="Khandbarh Inka Ore Mine"/>
<input type="text" value="IA/DR (MIN/7105/2011)"/>
<input type="text" value="Orissa"/>
Select
<input type="text" value="Non-Coal Mining"/>
<input type="text" value="TOR Granted"/>
<input type="button" value="ADD"/>


S.C. Nayak
 Qualified Person



ERSI BBSR <ersibbsr@gmail.com>

Fw: Fwd: Acknowledgement Slip for TOR application

1 message

Sidharth Panda <skpanda2007@rediffmail.com>
To: ERSI BBSR <ersibbsr@gmail.com>

Tue, Aug 2, 2016 at 11:44 AM

S.K.Panda

From: moolchand aggarwal <moolchand@smcpower.co.in>
Sent: Tue, 02 Aug 2016 11:42:42
To: skpanda2007@rediffmail.com
Subject: Fwd: Acknowledgement Slip for TOR application

----- Forwarded message -----

From: <monitoring-ec@nic.in>
Date: 2 Aug 2016 11:03 am
Subject: Acknowledgement Slip for TOR application
To: <s.kumar1958@gov.in>, <moolchand@smcpower.co.in>
Cc: <rb.lal@nic.in>, <sonu.singh@nic.in>, <monitoring-ec@nic.in>

Acknowledgement Slip for TOR

This is to acknowledge that the proposal has been successfully uploaded on the portal of the Ministry. The proposal shall be examined in the Ministry to ensure that required information has been submitted. An email will be sent for seeking additional information, if any, within 5 working days. Once verified, an acceptance letter shall be issued to the project proponent.

Following should be mentioned in further correspondence

- | | |
|---|---|
| 1. Proposal No. | : IA/OR/MIN/58022/2016 |
| 2. Category of the Proposal | : Non-Coal Mining |
| 3. Project/Activity applied for | : 1(a) Mining of minerals |
| 4. Name of the proposal | : Khandabandh Iron Ore Mine of M/s SMC Power Generation Limited |
| 5. Date of submission for TOR | : 02 Aug 2016 |
| 6. Name of the Project proponent along with contact details | |
| a) Name of the proponent | : SMC POWER GENERATION LIMITED |
| b) Mobile No. | : 9999644771 |
| c) State | : Delhi |
| d) District | : New Delhi |
| e) Pincode | : 110001 |


S.C. Nayak
Qualified Person

SMC Power Generation Limited



Date: 20.03.2010

To,

The Chairman & Managing Director ,
SMC Power Generation Ltd.
E-13/29, Harsha Bhawan,
Middle Circle Connaught Place,
New Delhi – 110 001.

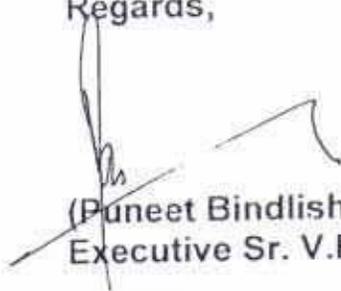
Sir,

This is to inform you that we have taken the 3 samples from our
Iron Ore Mines at Village- Khandbandh, Dist.- Joda. Test report
as under:-

	A	B	C
Fe T	66.000	63.000	45.000
O	28.380	27.090	19.350
LOI	1.530	2.500	5.000
P	0.025	.035	.045
Sio ₂ Al ₂ O ₃	4.070	7.370	30.605
	100.000	100.000	100.000

The above is for your information please.

Regards,


(Puneet Bindlish)
Executive Sr. V.P.


S.C. Nayak
Qualified Person

Corporate Office

E-13/29, 2nd Floor, Harsha Bhawan, Middle Circle
Connaught Place, New Delhi-110001
Phone : 011-41517501-04, Fax : 011-41517516
email: apply@smcpower.co.in

www.smcpower.co.in

Works

Works : Village - HIRMA,
Distt. Jharsuguda, Odisha-768202
Phone : 06645-227089, 93 Fax : 06645-227073, 274314
email : site@smcpower.co.in

FORM - K



[See Rule 10 (5) of the Orissa Minerals (prevention of Theft, Smuggling, Illegal Mining and Regulation of Possession, Storage, Trading and Transportation) Rules, 2007]

CHEMICAL ANALYSIS REPORT OF MINERAL/ORE

Letter Number : 1789

Date :

ANNEXURE - 21

Name of the Laboratory : Govt Laboratory Joda

Certified that samples from the following stacks of 10000x (mineral)

at Khandbari, Talukhara District RA (mines) / beneficiation plant / site have been drawn by the mine owner

of S.P.C. Power Generation Co mines in presence of

The sample(s) has /have been analyzed in our laboratory and results are as follows :

PARTICULARS OF STACKS

Sl. No.	Name of the Mineral <i>Lab No</i>	Quarry No./ Beneficiation Plant Site	Stack Number	Measurement of Stack			Cubic Content (cu.m)	Conversion Factor (tonnes/cu.m)	Quantity in Tonne	Grade of the Mineral
				L	B	H				
01	02	03	04	<i>Rect. 0.55x0.21</i>			<i>4.000</i>	<i>P/07</i>	<i>5708</i>	<i>Loj 09%</i>
	70	<i>Sample No (1)</i>		67.74	0.70	1.50	0.020	0.008	1.00	
	71	<i>Sample No (2)</i>		64.97	1.50	2.00	0.025	0.015	2.50	
	72	<i>Sample No (3)</i>		64.77	1.88	1.98	0.020	0.015	2.40	

AL
24/1/2011
DY. DIRECTOR, CA
Govt Laboratory,
Signature and Designation of Officer
Joda, Keonjhar
Certifying Officer with Date

Certified that the above analysis report of the samples is accepted by me and submitted for issue of mineral removal permission and assessment of royalty.

S.C. Nayak
Qualified Person

Signature of Owner / Agent / Manager

Name of the mines.....

Date :

(110)

OFFICE OF THE DEPUTY DIRECTOR CHEMICAL ANALYSIS

GOVT. LABORATORY, JODA, KEONJHAR

E-mail-ddcagovt_joda@yahoo.com

No.....3328...../DDCA, Dated:.....5/8/16.....

From

Deputy Director, Chemical Analysis,
Govt. Laboratory, Joda, Keonjhar

To

S.M.C Power Generation Ltd.
HIRMA, Jharsuguda, Orissa 768202.

Sub: Approval of modification of approved mining plan of Khandbandh Iron ore Mines along with progressive mine closure plan over an area of 178.908 ha. in Keonjhar district of Odisha-submission of Analysis report thereof.

Ref: Your letter no-Nill/dt-01/08/2016.

Sir,

With reference to your letter on the subject cited above, I am to furnish herewith the chemical analysis report of 14 nos of Iron ore (Lab-3526 to 3539) for your information and necessary action.

Sl. NO	LAB.NO	IDENTITY MARKS	%Fe
1	3526	Sample mark -Float ore Pit-1	68.66%
2	3527	Sample mark -Float ore Near BP-15	68.60%
3	3528	Sample mark -Float ore Near BP-11	34.44%
4	3529	Sample mark -Float ore Near BP-1/5.	63.56%
5	3530	Sample mark -Float ore Near BP-5	61.74%
6	3531	Sample mark -Float ore Near BP-20	39.34%
7	3532	Sample mark -Float ore Near BP-L/6	57.96%
8	3533	Sample mark -Float ore Near BP-L/9	68.32%
9	3534	Sample mark - Insitu Ore-Pit-15	65.52%
10	3535	Sample mark - Insitu Ore-Pit-3	58.24%
11	3536	Sample mark - Float Ore-Near GH line	67.48%
12	3537	Sample mark - Float Ore-Near BP-E	58.38%
13	3538	Sample mark - Float Ore-Near BP-A/5	58.80%
14	3539	Sample mark - Float Ore-Near BP-A/1	62.44%

Yours faithfully,

Deputy Director, C.A
Govt. Laboratory,
Joda, Keonjhar

S.C. Nayak
Qualified Person

(11)

OFFICE OF THE DY. DIRECTOR CHEMICAL ANALYSIS

GOVERNMENT LABORATORY, JODA, KEONJHAR

No. 3327 / DDCA Dt. 5/8/16 BILL No. 143 16-17 Dt. 5/8/16
To M/s. BMC Power Generation Co.

Sub. : Analysis Bill No. Date
Ref. : Your Letter No. Date



Sl. No.	Lab. No.	Particulars	Rate	Amount
1	<u>3528</u>	Analysis charges of Iron / Mn. / Dolomite Ore etc. sample for <u>(14)</u>	Rs. 450/- per Sample	6300.00
2	<u>3539</u>	Processing charges of one sample	Rs. 100/- per Sample	1400.00
<u>Rs. Seven thousand seven hundred and 00</u>				<u>7700.00</u>

Arrear Dues if any
Total

Dy. Director [Signature]
Govt. Laboratory, Joda

[Signature]
S.C. Nayak
Qualified Person



खान अधिनियम 1952
THE MINES ACT 1952

धातु उत्पादक खान के खनन कार्य के सर्वेक्षण के लिए सर्वेक्षक का सक्षमता प्रमाणपत्र
SURVEYOR'S CERTIFICATE OF COMPETENCY TO SURVEY THE WORKINGS OF A METALLIFEROUS MINE
(धातु उत्पादक खान विनियम, 1952 के अन्तर्गत)
(Under the Metalliferous Mines Regulations 1961)

(केवल विद्युत सन्तित युक्त खानों तक ही सीमित)
(Restricted to mines having opencast workings only)

मनोरंजन मिश्रा

जिनकी जन्म तिथि 22 ~ 04 ~ 1968 है, एवं दिनांक जुलाई, 1992 को आयोजित विहित परीक्षा में उत्तीर्ण होने पर एतद्वारा देबल विद्युत सन्तित युक्त धातु उत्पादक खान तक ही सीमित के सर्वेक्षण के लिए सक्षमता प्रमाण-पत्र प्रदान किया जाता है। यह प्रमाण-पत्र 23 ~ 03 ~ 1993 से प्रभावी समझा जाएगा।

Mnaronjan Mishra
born on Twenty Second April Nineteen Hundred Sixty Eight

and having passed the prescribed examination held on July, 1992 is hereby granted SURVEYOR'S CERTIFICATE OF COMPETENCY to survey the workings of a metalliferous mine having opencast workings only. This Certificate is effective from 23 ~ 03 ~ 1993



S.C. Nayak
Qualified Person

सदस्य
खनन परीक्षा बोर्ड
Members of the Board of
Mining Examinations.

[Signature]

Signed and Sealed

Date : 13.6 1994

खनन परीक्षा बोर्ड
Chairman of the Board of
Mining Examinations

[Signature]
अध्यक्ष

ANNEXURE - 22

(112)

No. 353

Prepared by *Aravind*

Checked by *UD*

Sm
S.C. Nayak
Qualified Person

Home Address:—

Father's Name *Gayatri Mishra*

Village *Babalomjore*

Thana *Dharamsala*

District *Cuttack*

State *Orissa*