TEXT

MINING PLAN ALONG WITH PROGRSSIVE MINE CLOSURE PLAN

(PREPARED UNDER RULE 13 OF MINERALS (OTHER THAN ATOMIC & HYDRO CARBON ENERGY MINERAL)
CONCESSION RULES, 2016) AND UNDER RULE 23 OF MINERAL CONSERVATION & DEVELOPMENT RULES, 2017)

OF

LASERDA-PACHERI MANGANESE & IRON BLOCK OVER AN AREA OF 131.800 HECTARES IN VILLAGES DHANURJAYPUR, KANARDA & LASERDA UNDER BARBIL TEHSIL OF KEONJHAR DISTRICT, ODISHA

Registration No. - IBM/22935/2020

(PROPOSAL PERIOD - 5 YEARS FROM THE DATE SUCCESIVE YEAR OF LEASE DEED EXECUTION)

LEASE DETAILS

Mine Category	Date of Execution	Period	Date of Expiry	Forest in ha.	Non-Forest in ha.	Total in ha.
A (Fully Mechanised)	Not Applicable	Not Applicable	Not Applicable	94.351	37.449	131.800

APPLICANT DETAILS	(Qualified Person under 15of M(OTAHCEM)CR, 2016
M/s Thriveni Earthmovers Pvt. Ltd. Ho: 22/110, Greenways Road, Fairlands, Salem, Tamil Nadu -636016 E-mail: info@thriveni.com CO: Unchabali, P.O. Bamebari, Dist. – Keonjhar, Odisha – 758086 E-mail: Orissa@thriveni.com	Sri Deepak Kumar Acharya MSc, Applied Geology (Economic) CO: Unchabali, P.O. Bamebari, Dist. – Keonjhar, Odisha – 758086 Mob. No. – 9777932607 E-mail:- dkaa@thriveni.com Statutory.odisha@thriveni.com

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TEXT

MINING PLAN ALONG WITH PROGRSSIVE MINE CLOSURE PLAN

(PREPARED UNDER RULE 13 OF MINERALS (OTHER THAN ATOMIC & HYDRO CARBON ENERGY MINERAL) CONCESSION RULES, 2016) AND UNDER RULE 23 OF MINERAL CONSERVATION & DEVELOPMENT RULES, 2017)

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			The second secon	The state of the s	
Date of	Period	Date of Expiry	Forest in ha.	Non-Forest in ha.	Total in ha.
Execution	ar a disable	Not Applicable	94.351	37.449	131.800
t Applicable	Not Applicable	Not Applicable	PREMARK PEDICE		
0		Execution	Execution	Execution 94.351	Execution 94.351 37.449

M/s Thriveni Earthmovers Pvt. Ltd. Ho: 22/110, Greenways Road, Fairlands, Salem, Tamil Nadu -636016 E-mail: info@thriveni.com CO: Unchabali, P.O. Bamebari, Dist. – Keonjhar, Odisha – 758086 E-mail: Orissa@thriveni.com	(Qualified Person under 15 of M(OTAHCEM)CR, 2016 Sri Deepak Kumar Acharya MSc, Applied Geology (Economic) CO: Unchabali, P.O. Bamebari, Dist. – Keonjhar, Odisha – 758086 Mob. No. – 9777932607 E-mail:- dkaa@thriveni.com Statutory.odisha@thriveni.com
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MINING PLAN ALONG WITH PROGRESSIVE MINE CLOSURE PLAN OF LASERDA-PACHERI MANGANESE & IRON BLOCK OVER AN AREA OF 131.800 HECTARES IN VILLAGES DHANURJAYPUR, KANARDA & LASERDA UNDER BARBIL TEHSIL OF KEONJHAR DISTRICT, ODISHA

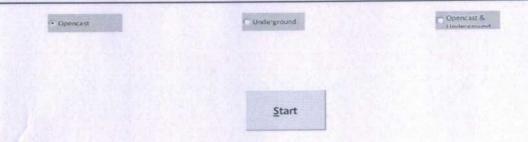
S1.No	LIST OF DOCUMENTS	ANNEXURE No.	PAGE No.
1	Letter of Intent for Grant of Mining Lease	1	1 - 7
2	Authenticated Land Schedule	1(A)	8 - 12
3	Copy of Certificate of Incorporation	2	13 - 13
4	ID and Address proof of Nominated Owner	3	14 - 17
5	Consent letter to Qualified person	4	18 - 19
6	Experience Certificate of Qualified Person	5	20 - 21
7	Authenticated of Final Report of Prospecting (GR)	6	22 - 145
8	Pre-feasibility Report	7	146 - 184
9	Chemical Analysis Report of SGS Pvt. Ltd Chemical Analysis Report of Cotecna Inspection India Pvt Ltd. Chemical Analysis Report of IMMT Chemical Analysis Report of Bureau Veritas India Pvt. Ltd CSV File of Survey, Geology, Collar and assay (soft copy)	8(A) 8(B) 8(C) 8(D) 8(E)	185 - 330 331 - 1916 1917 - 1918 1919 - 1948
10	Copy of Form I	9	1949 - 1950
11	Form J (Borehole log sheet with Assay value)	10	1951 - 2679
12	Bulk Density	11	2680 - 2688
13	Copy of Mineral Processing Flow Sheet Diagram	12	2689 - 2689
14	Location of year wise proposed Boreholes	13	2690 - 2697
15	Year wise tentative excavation with bench RL	14	2698 - 2700°HT?
16	Copy of Performance Security	15	270) - 2705 DIAN

MINING PLAN ALONG WITH PROGRESSIVE MINE CLOSURE PLAN OF LASERDA-PACHERI MANGANESE & IRON BLOCK OVER AN AREA OF 131.800 HECTARES IN VILLAGES DHANURJAYPUR, KANARDA & LASERDA UNDER BARBIL TEHSIL OF KEONJHAR DISTRICT, ODISHA

LIST OF MAPS

Sl.No	Map Particulars	Scale	Reference		
1	Key Plan	1:50000	Plate No. I		
2	Lease Plan and Geo referenced Cadastral Plan Authenticated by State Govt.	1:3960	Plate No. I(A)		
3	DGPS Map showing 5 Km buffer zone	1:5000	Plate No. I(B)		
4	Surface Plan	1:2000	Plate No. II		
5	Geological Plan	1:2000	Plate No. III		
6	Geological Sections	1:2000	Plate No. III (A, B, C, D, E, F & G)		
7	Development Plan & Section 1st Year	1:2000	Plate No. IV(A) & IV(A1, A2 & A3)		
8	Development Plan & Sections 2 nd Year	1:2000	Plate No. IV(B) & IV(B1, B2 & B3)		
9	Development Plan & Section 3 rd Year	1:2000	Plate No. IV(C) & IV(C1, C2 & C3)		
10	Development Plan & Section 4th Year	1:2000	Plate No. IV(D) & IV(D1, D2 & D3)		
11	Development Plan & Section 5 th Year	1:2000	Plate No. IV(E) & IV(E1, E2 & E3)		
12	Environmental Plan	1:5000	Plate No. V		
13	Progressive Mine Closure Plan & Sections	1:2000	Plate No. VI & VI(A, B & C)		
14	Financial Assurance Area Plan	1:2000	Plate No. VII		
15	Conceptual Plan & Sections	1:2000	Plate No. VIII & VIII(A, B, C, D, E, F, G)		

Format for prepration of Mining Plan/Modified Mining Plan/Review of Mining Plan



DEEPAK KUMAR ACHARYA

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Index						
PART A:	CHAPTER 1	GENERAL INFORMATION				
MATORI	CHAPTER 2	GEOLOGY & EXPLORATION				
STEEL STATE	CHAPTER 3	MINERAL PROCESSING				
	CHAPTER 4	MINING OPERATIONS				
	CHAPTER 5	LE MINING				
	CHAPTER 6	PROGRESSIVE MINE CLOSURE PLAN				
	CHAPTER 7	FINANCIAL ASSURANCE/ PERFORMANCE SURETY				
324,-25	CHAPTER 8	REVIEW OF PREVIOUS PROPOSALS				
	CHAPTER 9	IMPACT ASSESSMENT				
N- STEE						
PART B:	ANNEXURES					
PART C:	PLANS & SECTIONS	CONTROL TO SERVICE DE LA CONTROL DE LA CONTR				

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Date: 2021.11.03

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Chapter 1: General Information

1.1: Lease Details

IBM/22935/2020 IBM Registration Number: Not yet Received Lease Code: Mine Code: Not yet Received M/s Thriveni Earthmovers Pvt. Ltd Name of Lessee: Head Office - 22/110, Greenways Road, Fairlands, Salem, Tamilnadu, 636016. Regional Office Unchabali, Bamebari, Keonjhar, Odisha Address of Lessee: Private Type of Lessee: Laserda-Pacheri Mn & Iron Block Name of Mining Lease: Odisha State: District: Barbil Tehsil/ Taluk/ Mandal: Dhanurjoyapur-40, Kanrda-38 & Laserda Village: 131.800 Lease Area (Ha): 94.351 Forest Area (Ha): Name of Minerals: Manganese Name of associated minerals: Fresh grant Type: Proposed 5 years plan period will be implemented from the date of lease deed execution Five Year Block (Financial Year) Type of working: Nature of Use: Non-captive Category of Mine:

पुतन्त्रवर/Bhubaneswar Indian Bureau of Mines षारतीय खान ज्युरा



1.1.1: Initial/subsequent Lease grant details

I.I.I. mitaly subsequen	From	То	Lease deed execution date	Lease registration date
Grant	From	10		
Loi Granted for Mining Lease	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TO

Not Applicable

1.1.2: Mining Plan Submission Criteria Details

Type of Document	Mining plan
Reason/s for modification	Not Applicable
Period for which modification is proposed	Not Applicable
LOI Number:	7731-IV(B)5M-100/2017/5M
Date:	21.09.2021

1.2: Land Ownership Details

		7-1-6-	Area (Ha)	Khasra No	Type of Land	Nature of Land
S.N.	Village	Taluka		THE PARTY OF THE P	Forest Land	Government Waste Land
1	DHANURJOYPUR	Barbil	0.037	769		Private non-Agriculture Land
2	DHANURJOYPUR	Barbil	0.097	770	Forest Land	Government Waste Land
-	DHANURJOYPUR	Barbil	0.022	771	Forest Land	
3	The state of the s	Barbil	0.137	772	Private Land	Private Agriculture Land
4	DHANURJOYPUR		0.226	773	Private Land	Private Agriculture Land
5	DHANURJOYPUR	Barbil		776	Government Land	Government Waste Land
6	DHANURJOYPUR	Barbil	0.006		Private Land	Private Agriculture Land
7	DHANURJOYPUR	Barbil	0.141	760		Private Agriculture Land
-	DHANUR IOYPUR	Barbil	0.507	782	Private Land	Frivate Agriculture cario

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	The second secon	Barbil	0.042	786	Government Land	Government Waste Land
9	DHANURJOYPUR	Barbil	0.014	788	Private Land	Private non-Agriculture Land
10	DHANURJOYPUR	Barbil	0.044	789	Private Land	Private non-Agriculture Land
11	DHANURJOYPUR	Barbil	0.313	790	Private Land	Private Agriculture Land
12	DHANURJOYPUR	The second secon	0.145	791	Government Land	Government Waste Land
13	DHANURJOYPUR	Barbil	0.139	792	Private Land	Private Agriculture Land
14	DHANURJOYPUR	Barbil	0.029	793	Private Land	Private non-Agriculture Lar
15	DHANURJOYPUR	Barbil	0.290	794	Private Land	Private Agriculture Land
16	DHANURJOYPUR	Barbil	0.166	795	Private Land	Private Agriculture Land
17	DHANURJOYPUR	Barbil	1,025	796	Private Land	Private Agriculture Land
18	DHANURJOYPUR	Barbil	0.100	797	Forest Land	Government Waste Land
19	DHANURJOYPUR	Barbil	0.906	798	Private Land	Private Agriculture Land
20	DHANURJOYPUR	Barbil	0.235	799	Private Land	Private Agriculture Land
21	DHANURJOYPUR	Barbil	0.366	800	Private Land	Private Agriculture Land
22	DHANURJOYPUR	Barbil	0.017	813	Private Land	Private Agriculture Land
23	DHANURJOYPUR	Barbil	0.175	814	Government Land	Government Waste Land
24	DHANURJOYPUR	Barbil	0.693	815	Private Land	Private Agriculture Land
25	DHANURJOYPUR	Barbil	0.613	816	Private Land	Private Agriculture Land
26	DHANURJOYPUR	Barbil	0.256	817	Private Land	Private Agriculture Land
27	DHANURJOYPUR	Barbil	0.454	818	Government Land	Government Waste Lan
28	DHANURJOYPUR	Barbil		819	Private Land	Private Agriculture Land
29	DHANURJOYPUR	Barbil	0.361 2.878	820	Forest Land	Government Waste Lan
30	DHANURJOYPUR	Barbil	0.101	821	Private Land	Private Agriculture Land
31	DHANURJOYPUR	Barbil	0.793	822	Private Land	Private Agriculture Land
32	DHANURJOYPUR	Barbil		823	Private Land	Private Agriculture Lan
33	DHANURJOYPUR	Barbil	0.736 0.295	824	Private Land	Private Agriculture Lan
34	DHANURJOYPUR	Barbil		825	Private Land	Private Agriculture Lan
35	DHANURJOYPUR	Barbit	0.292	826	Forest Land	Private Agriculture Lan
36	DHANURJOYPUR	Barbil	0.266	837	Private Land	Private Agriculture Lan
37	DHANURJOYPUR	Barbil	0.050	838	Private Land	Private Agriculture Lan
38	DHANURJOYPUR	Barbil	0.470	839	Private Land	Private Agriculture Lan
39	DHANURJOYPUR	Barbil	0.846	840	Private Land	Private Agriculture Lan
40	DHANURJOYPUR	Barbil	0.231	841	Private Land	Private Agriculture Lan
41	DHANURJOYPUR	Barbil	0,515	776/924	Forest Land	Government Waste Lar
42	DHANURJOYPUR	Barbil	0.010	776/925	Forest Land	Government Waste Lar
43	DHANURJOYPUR	Barbil	0.049		Forest Land	Private non-Agriculture L
44	DHANURJOYPUR	Barbil	0.113	776/926	Forest Land	Government Waste Lar
45	DHANURJOYPUR	Barbil	0.085	798/927	Forest Land	Government Waste La
46	DHANURJOYPUR	Barbil	0.226	798/928	Forest Land	Government Waste Lar
47	DHANURJOYPUR	Barbil	0.453	798/929	Forest Land	Government Waste La
48	DHANURJOYPUR	Barbil	0.371	797/930	Forest Land	Government Waste La
49	DHANURJOYPUR	Barbil	0.236	797/931	Private Land	Private Agriculture Lar
50	DHANURJOYPUR	Barbil	0.189	780/1087	Private Land	Private Agriculture Lar
51	DHANURJOYPUR	Barbil	0.015	792/1088	Private Land	Private Agriculture Las
52	DHANURJOYPUR	Barbil	0.010	796/1089	Forest Land	Government Waste La
53	DHANURJOYPUR	Barbil	0.075	796/1090	Forest Land	Government Waste La
54	DHANURJOYPUR	Barbil	0.115	798/1091	Private Land	Private Agriculture La
55	DHANURJOYPUR	Barbil	0.691	798/1092	Government Land	Government Waste La
56	DHANURJOYPUR	Barbil	0.569	815/1095	Forest Land	Government Waste La
57	DHANURJOYPUR	Barbil	0.304	820/1096		Private non-Agriculture
58	DHANURJOYPUR	Barbil	0.884	820/1097	Forest Land	Private Agriculture La
59	DHANURJOYPUR	Barbil	3.691	820/1098	Private Land	Private Agriculture La
60	DHANURJOYPUR	Barbil	2.259	820/1099	Private Land	Private Agriculture La
61	DHANURJOYPUR	Barbil	1,354	820/1100	Private Land	Private Agriculture La
62	DHANURJOYPUR	Barbil	0.457	820/1101	Private Land	Private Agriculture La
	DHANURJOYPUR	Barbil	0.269	822/1103	Private Land	
63	DHANURJOYPUR	Barbil	0.207	822/1104	Private Land	Private Agriculture La
65	DHANURJOYPUR	Barbil	0.277	822/1105	Private Land	Private Agriculture La
110000	DHANURJOYPUR	Barbil	0.065	822/1106	Private Land	Private Agriculture La
66	DEMNUNGOTEUN	Barbil	0.459	837/1108	Forest Land	Government Waste La

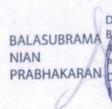
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			1,138	837/1109	Private Land	Private Agriculture Land
68	DHANURJOYPUR	Barbil	0.410	837/1110	Forest Land	Government Waste Land
69	DHANURJOYPUR	Barbil	0.410	837/1111	Forest Land	Government Waste Land
70	DHANURJOYPUR	Barbil	0.485	839/1112	Private Land	Private Agriculture Land
7.1	DHANURJOYPUR	Barbil	0.133	839/1113	Private Land	Private Agriculture Land
72	DHANURJOYPUR	Barbil	0.351	841/1114	Forest Land	Government Waste Land
73	DHANURJOYPUR	Barbil	0.244	841/1115	Forest Land	Government Waste Land
74	DHANURJOYPUR	Barbil		851/1119	Private Land	Private Agriculture Land
75	DHANURJOYPUR	Barbil	0,770	851/1120	Private Land	Private Agriculture Land
76	DHANURJOYPUR	Barbil	0.687	777/1131	Forest Land	Government Waste Land
77	DHANURJOYPUR	Barbil	0.277	820/1159	Private Land	Private Agriculture Land
78	DHANURJOYPUR	Barbil	0.076	820/1184	Forest Land	Government Waste Land
79	DHANURJOYPUR	Barbil	2.013	820/1185	Forest Land	Government Waste Land
80	DHANURJOYPUR	Barbil	9.052	769/1188	Forest Land	Private non-Agriculture Land
81	DHANURJOYPUR	Barbil	0.060	774/1191	Forest Land	Government Waste Land
82	DHANURJOYPUR	Barbil	0.044	773/1192	Private Land	Private non-Agriculture Land
83	DHANURJOYPUR	Barbil	0.001	782/1195	Private Land	Private non-Agriculture Land
84	DHANURJOYPUR	Barbil	0.001		Private Land	Private non-Agriculture Land
85	DHANURJOYPUR	Barbil	0.000	786/1197	Private Land	Private non-Agriculture Land
86	DHANURJOYPUR	Barbil	0.051	792/1199	Private Land	Private non-Agriculture Land
87	DHANURJOYPUR	Barbil	0.084	795/1200	Private Land	Private Agriculture Land
88	DHANURJOYPUR	Barbil	0.073	795/1201	Private Land	Private Agriculture Land
89	DHANURJOYPUR	Barbil	0.084	799/1202	Private Land	Private Agriculture Land
90	DHANURJOYPUR	Barbil	0,310	799/1203	Private Land	Private non-Agriculture Land
91	DHANURJOYPUR	Barbil	0.030	817/1204	Private Land	Private Agriculture Land
92	DHANURJOYPUR	Barbil	0.048	817/1205	Forest Land	Private non-Agriculture Lan
93	DHANURJOYPUR	Barbil	0.081	818/1206	Government Land	Government Waste Land
94	DHANURJOYPUR	Barbil	0.195	818/1207	Private Land	Private Agriculture Land
95	DHANURJOYPUR	Barbil	0.649	820/1208	Forest Land	Government Waste Land
96	DHANURJOYPUR	Barbil	0,306	820/1209	Private Land	Private Agriculture Land
97	DHANURJOYPUR	Barbil	0.020	800/1265	Forest Land	Government Waste Land
98	DHANURJOYPUR	Barbil	7.428	820/1270	Government Land	Government Waste Land
99	DHANURJOYPUR	Barbil	0.098	776/1274	Private Land	Private Agriculture Land
100	DHANURJOYPUR	Barbil	0.158	820/1316	Private Land	Private Agriculture Land
101	DHANURJOYPUR	Barbil	0.311	820/1330	Private Land	Private Agriculture Land
102	DHANURJOYPUR	Barbil	1.248	837/1341	Private Land	Private non-Agriculture Lan
103	DHANURJOYPUR	Barbil	0.062	789/1342	Forest Land	Government Waste Land
104	KANRDA	Barbil	0.595	1	Forest Land	Government Waste Land
105	KANRDA	Barbil	2.764	2	Forest Land	Government Waste Land
106	KANRDA	Barbil	0.403	3	Forest Land	Government Waste Land
107	KANRDA	Barbil	0.227	4	Forest Land	Government Grazing Land
108	KANRDA	Barbil	6.878	5	Forest Land	Government Waste Land
109	KANRDA	Barbil	0.802	42	Private Land	Private Agriculture Land
110	KANRDA	Barbil	0,000	5/470	Private Land	Private Agriculture Land
111	KANRDA	Barbil	3.548	5/471	Private Land	Private Agriculture Land
112	KANRDA	Barbil	1.563	5/472	Private Land	Private Agriculture Land
113	KANRDA	Barbil	0.733	5/473	Forest Land	Private non-Agriculture La
114	KANRDA	Barbil	0.107	5/474	Forest Land	Government Waste Land
115	KANRDA	Barbit	5,247	5/476	Forest Land	Government Waste Land
116	LASARDA	Barbil	0.266	3	Forest Land	Government Waste Land
117	LASARDA	Barbil	0.224	5	Forest Land	Private Agriculture Land
118	LASARDA	Barbil	0.658	6	Forest Land	Government Waste Land
119	LASARDA	Barbil	0.188		Forest Land	Government Waste Land
120	LASARDA	Barbil	0.378	8	Forest Land	Government Waste Land
121	LASARDA	Barbil	0.206	9	Private Land	Private Agriculture Land
122	LASARDA	Barbil	0,176	38	Forest Land	Government Waste Lan
123	LASARDA	Barbil	0,189	39		Government Waste Land
123	LASARDA	Barbil	1.635	40	Forest Land	Government Waste Lan
125	LASARDA	Barbil	0.836	41	Forest Land	Government Waste Land
120	LASARDA	Barbil	0.399	42	Forest rang	South and the state of the stat

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127	LASARDA	Barbil	0.195	43	Forest Land	Government Waste Land Government Waste Land
128	LASARDA	Barbil	0.967	44	Forest Land	Government Waste Land
129	LASARDA	Barbil	0.818	45	Forest Land	Government Waste Land
130	LASARDA	Barbil	3.224	46	Forest Land	A STATE OF THE PROPERTY OF THE
131	LASARDA	Barbil	0.421	47	Private Land	Private Agriculture Land
	LASARDA	Barbil	0.775	48	Private Land	Private non-Agriculture Land
132	LASARDA	Barbil	0.017	49	Private Land	Private non-Agriculture Land
133	LASARDA	Barbil	0.037	50	Private Land	Private non-Agriculture Land
134	LASARDA	Barbil	0.488	51	Forest Land	Private non-Agriculture Land
135	LASARDA	Barbil	0.611	52	Forest Land	Government Waste Land
136	LASARDA	Barbil	0.035	53	Private Land	Private non-Agriculture Land
137	LASARDA	Barbil	0.212	54	Forest Land	Private non-Agriculture Land
138	The Control of the Co	Barbil	0.073	55	Forest Land	Government Waste Land
139	LASARDA	Barbil	0.511	56	Forest Land	Government Waste Land
140	LASARDA	Barbil	0.284	57	Forest Land	Private Agriculture Land
141	LASARDA		0.305	58	Forest Land	Government Waste Land
142	LASARDA	Barbit	0.378	59	Forest Land	Government Waste Land
143	LASARDA	Barbil	0.032	60	Forest Land	Government Waste Land
144	LASARDA	Barbil	0,052	61	Forest Land	Government Waste Land
145	LASARDA	Barbil	0,493	62	Forest Land	Government Waste Land
146	LASARDA	Barbil		63	Forest Land	Government Waste Land
147	LASARDA	Barbil	0.001	64	Forest Land	Government Waste Land
148	LASARDA	Barbil	0.112	65	Forest Land	Government Waste Land
149	LASARDA	Barbil	0.388		Forest Land	Government Waste Land
150	LASARDA	Barbil	0,432	67	Forest Land	Government Waste Land
151	LASARDA	Barbil	0.178	68	Forest Land	Government Waste Land
152	LASARDA	Barbil	0.394	69	Forest Land	Government Waste Land
153	LASARDA	Barbil	0.367	70	Forest Land	Private Agriculture Land
154	LASARDA	Barbil	0.248	71		Government Waste Land
155	LASARDA	Barbil	0.115	72	Forest Land	Government Waste Land
156	LASARDA	Barbil	0.394	73	Forest Land	Government Waste Land
157	LASARDA	Barbil	0.483	74	Forest Land	Government Waste Land
158	LASARDA	Barbil	0.833	75	Forest Land	Government Grazing Land
159	LASARDA	Barbil	0.199	76	Forest Land	Government Waste Land
160	LASARDA	Barbil	0.256	77	Forest Land	
161	LASARDA	Barbil	0.200	78	Forest Land	Government Grazing Land
162	LASARDA	Barbil	0.361	79	Forest Land	Private Agriculture Land
	LASARDA	Barbil	12.132	81	Forest Land	Government Grazing Land
163	LASARDA	Barbil	4,100	274	Forest Land	Government Waste Land
164	LASARDA	Barbil	0.008	317	Forest Land	Government Waste Land
165	LASARDA	Barbil	0.048	320	Private Land	Private Agriculture Land
166	LASARDA	Barbil	0.200	321	Forest Land	Government Waste Land
167		Barbil	0.006	322	Forest Land	Government Waste Land
168	LASARDA	Barbi	0.712	46/736	Forest Land	Private non-Agriculture Lan
169	LASARDA	Barbil	0.129	46/737	Forest Land	Government Waste Land
170	LASARDA	Barbil	0.451	47/738	Private Land	Private Agriculture Land
171	LASARDA	Barbil	0.489	61/739	Forest Land	Private Agriculture Land
172	LASARDA		0.056	62/740	Forest Land	Government Waste Land
173	-LASARDA	Barbil	0.048	66/742	Forest Land	Government Waste Land
174	LASARDA	Barbil	0.088	69/743	Forest Land	Government Waste Land
175	LASARDA	Barbil	0.012	744	Forest Land	Private non-Agriculture Lan
176	LASARDA	Barbil	0.012	47/887	Forest Land	Government Waste Land
177	LASARDA	Barbil	0.076	274/895	Private Land	Private Agriculture Land
178	LASARDA	Barbil	THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TW	- Headlest Annahum	Private Land	Private Agriculture Land
179	LASARDA	Barbil	0.039	81/903	Forest Land	Government Waste Land
180	LASARDA	Barbil	0,346	46/906	Forest Land	Government Waste Land
181	LASARDA	Barbil	0.339	45/907	Forest Land	Government Waste Land
182	LASARDA	Barbil	0.042	46/908		Private non-Agriculture Lar
183	LASARDA	Barbil	0.145	46/909	Forest Land	Government Waste Land
184	LASARDA	Barbil	0.034	97/916	Forest Land	Government Waste Land
1909	LASARDA	Barbil	10.674	81/917	Forest Land	Obsernation waste band

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			1 405	81/918	Forest-Land	GOABLIIIIEUS ALGRES STATE
400	LASARDA	Barbil	1.135		Delegate Land	Private Agriculture Land
188		Barbil	0.433	939	Private Land	and the second s
187	LASARDA		0,238	46/940	Private Land	Private Agriculture Land
400	LASARDA	Barbil		The state of the s	Private Land	Private Agriculture Land
188		Barbil	0.454	46/945		Private Agriculture Land
189	LASARDA		0.431	56	Forest Land	Private Agriculture carlo
-00	LASADDA	Barbil	0,401			

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PREVATE LIMITED, Ou=HO,
pseudonym=6436d8674663e268d5088 db6f52174bea2834b9aaadcf569606202f7 44c43dd48602f4cba313c6bfe17c1b7a7E3 serialNumber=8bE33464cb9c5863d6ac88 9cee0e26837642fc6e639228af10a7135ef7 2beac2, cn=DEEPAK KUMAR ACHARYA Date: 2021.11.03 17:44:59 +05'30'

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1.3: Existing Lease

Date of Execution

1.3.1: Approval of earlier Mining Plan & Its Subsequent Review in Chronological Order

4.	1.3.1. Approval of carner rining			Period	
S.N.	Letter Number	Date	From	То	Type Of Approved Document
The instant proposal is the 1st Mining Plan	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

1.3.2: Partial Surrenderd Area During Stages of Operations in Chronological Order

S.N.	Date	Supplementary Surrender order/ Letter Number	Supplementary Lease Deed Date	Prepared (ha)
3.14.	Date		Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable	NOT Applicable	Hartipalita

1.3.3: Transfer of Lease Area Subsequent to Grant

		Nature of block transferred			
S.N.	Transfer of lease deed	Date of execution of Transfer lease deed	Name of Transferor	Granted through auction	other than through auction for captive use
3.19.					
There is no transfer of lease	Not Applicale	Not Applicate	Not Applicale	Not Applicate	Not Applicale

1.3.4: Statutory Compliances

1 3 4 1: Environment Clearance

Applicable	Yes After approval of Mining Plan, EC process will start		
Letter No			
Date	Not Applicale		
Validity	Not Applicale		
ROM Mineral in tonnes	Not Applicate		

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1 3 4 2 SPCB Approvals

Letter No	During the approval of EC, CTE & CTO will be processed
Approval of	Not Applicate
Date	Not Applicale
Validity	Not Applicate
ROM Mineral in tonnes	Not Applicate

1 3 4 3: Forest Clearance

Applicable	Yes
Letter No	After approval of Mining Plan, FC process will start
Date	Not Applicale
Validity	Not Applicate
Area (Ha)	Not Applicale

1.3.4.4: Land Acquisition Details

Total Area acquired/purchased so far	Nil, It is in application stage
	Not Applicate

1.3.5: Mine Location Details

Windleson a section of the second	
Toposheet Number:	F45H8(73F/8)

1.3.5.1: Location of Boundary Pillars

Pillar No.	Pillar Latitude (dd:mm:ss.ss)	Pillar Longitude (dd:mm:ss.ss) 85*19*15.99748"	
M-1	22"04"11.44231"		
M-2	22"03"41.46540"	85*18'58.42895"	
M-3	22"03'44.72543"	85"18"51.75926"	
M-4	22*03*52.80955*	85*18'48.42172"	
M-5	22"03"52.48892"	85*18'44.49648"	
M-6	22*03*52.12774°	85"18'39.63839"	
M-7	22"03"50.79430"	85*18'37_36794"	
M-B	22°03'50.72136"	85*18*31.20926*	
M-9	22"03"48.35128"	85*18'31.21044"	
M-10	22*03'41.85747"	85*18'30.67383"	
M-11	22*03'34.52683"	85"18"28.95479"	
M-12	22"03'28.26537"	85*18'21.12817"	
M-12	22*03'16.60991"	85'18'11 18513"	
M-14	22*03*25.92856*	85*17"53.81761"	
M-15	22'03'55.63711"	85*18'11.23140"	
M-15	22*03'56.70078"	85*18'15.83292"	
M-17	22*03'52.00934"	85"18"31.19618"	
M-18	22*03*52.07779*	85*18'36.93551"	
M-19	22"03"53.39000"	85"18'39.42033"	
M-19 M-20	22*03*53.71123*	85"18"43.27464"	
M-21	22'03'54.07213"	85*18'47.91582"	
M-22	22*03*59.00540*	85*18'47.98851"	
	22*04*03.85204*	85*18'45.59155"	
M-23 M-24	22"04'08,41959"	85*18'51.55429"	
M-24 M-25	22"04"08,72237"	85"18"53.42447"	
	22*04'15.51014"	85*18'59.18403"	
M-26	22"04'18.63916"	85"19"00.30051"	
M-27 M-28	22"04'19.18502"	85*19'00.80278"	

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1 3 6: Owner/Nominated Owner Details

	PAN of Nominated Owner	Address of Nominated Owner	Mobile Number	Email	Please attach Minutes of Board Resolution in case of Nominated Owner
Name	PAN OF NOTHINGLESS OWNER	Unchabali, Bamebari,			Certificate of incorporation is attached as Annexure - 2
R Prahhakaran	AEFPP5795L	Keonjhar, 758086	9437078399	bpn@thriveni.com	attached as Annexure - 2

1.3.7: Qualified Person Details as per M(OAHCEM)CR, 2016

	Trail Committee Com						exp in years as	
17 3/14			DANI - FOR	Address	Mobile no.	Qualification	prescribed under the rule	Email
S.N.	Prefix	Name	PAN of QP	Address	10 9 11 11	Vanish and the same	7 years of experience of	
				Unchabali, Bamebari, Keonjhar, 758086	9777932607	MSc. Applied Geology	Supervisor Category as per Rule 15(b) of M(OTAHCEM)CR, 2016 Annexure - 5	dkaa@thriveni.com
1	Mr.	Deepak Kumar Acharya	AXDPAG671M	73000				

Digitally signed by DEEPAK KUMAR ACHARYA DEEPAK DE CHIN, OFTHRIVENI EARTHMOVERS PRIVATE pseudonym=6436d86746f3e26 **KUMAR** 8d5088a7db6f52174bea2834b9 aaadcf569606202f74a9b2e, 2.5.4.20=cbecafdbff6986ea9d53 76e0fdc144c43dd48602f4cba31 **ACHAR** 3c6bfe17c1b7a7835, postalCode=758086, st=Orissa, 63d6ac889cee0e26837642fc6e6 39228af10a7135ef72beac2, CH=DEEPAK KUMAR ACHARYA Date: 2021.11.03 17:52:14

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Chapter 2: Geology & Exploration

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2.1: Geology

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Terrain *

Most of thee area is in falt and part of the area having gentle slope

Relief

Highest Level (m) from MSL *

Drainage Pattern *

Dendritic

Lowest Level (m) from MSL * 464

Order of Stream *
Order 3

Average Level (m) from MSL 470

Minimum Distance of Stream from Lease Area (m) *

Karo River Flowing Inside the Lease area in small patch, however the distance of Karo River is 50 Mtrs from the Mine Boundary

2.1.2: Details of Physiographic features and Infrastructures available in and around the lease/ block area

Description	Location if existing Within the lease/block area.	Distance from boundary periphery in kms, if existing outside the lease/block area. (within 5.00Kms)	Remark if any
River/Nallah/Reservoir	Dry Nall is flowing within the learse area	Karo River is flowing from South to North within the Lease area in a very small portion	Karo River is flowing central location of Laserda & Pacheri Block.
Public roads (Tar road, cart road)	A tar road is passes through the Lease area	Bolani - Kiriburu road is adjecent to lease area	Tar road which is inside the lease area will be diverted along the lease boundary within the lease area.
S. C. C. Sanda	NII	4.6 Km	
Railway track Human settlements	27 nos of houses is coming within lease area	Within 100 mtrs	Compensation will be provided to the house hold.
Archaeological monuments/ places of worships/public utilities etc.	Nil	Nii	
Wild life sanctuaries/ national parks	Nil	Nil	
Coastal Regulation Zone (CRZ)	Nil	Nil	
Powertransmision lines/telephone lines	11Kv power is passing through the lease area		Will be divered during the course of mining
Firing range	NII	Nil	
Ordinance factory	Nil	Nil	A 15 A 10 B 5
grazing land/ burial ground or cremation ground	19.409 ha of forest land converted to Grazing land in HAL settelment coming within the lease area		Forest land will be diverted prior to execution.
Any other specify	Nil	Nil	Nil

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Particulars	Distance from lease boundary in kms
Near by village	0.1 Km (Laserda)
Nearest Railway station	6.5 Km (Barbil)
Nearest Port	300 Km (Paradip)
Distance of SH/NH from lease area	12 Km (NH 520)

2.1.3: Regional Geology

Regional Geology *

Rocks of the Iron & Manganiferous mixed facies formation occupy a major part of the Bonal - Keonjhar Belt. The manganese deposits of Lasharada-Pacheri Iron & Managanese Mines is located on (the outer slopes of the eastern limbs of the synclinorium. Hills and domes in the locality are composed of Banded Iron Formation, Banded Iron Formation (BIF) contains iron ore and the shale horizons contain manganese. The weakly metamorphosed lithosequence of Precambrian age is constituting the southerly closing, NNE-SSW extending 60 km long Bonai - Kendujhar belt of North Odisha is the store house of rich iron are deposits and important low phosphorous manganese are deposits. This belt has a disposition pattern more or less similar to the symbol Omega (III) and is referred classically in geological literature as 'Horse Shoe Synclinorium'. The general strike is north east to North, dips are moderate to West. The Western limb of the synclinorium is slightly

The stratigraphic succession established by the earlier workers of GSI (Murty & Ghosh, 1975) is summarized below. The Bonai – Keonjhar belt, is disposed in form of a horse shoe shaped synclinorium with an overturned western limb and low NNE plunge. The general attitude of the litho-units is NNE – SSW dipping Westernly or Low to moderate northwesterly. Antiformal and synformal structures in mesoscopic scale are present in the area investigated. The Keonjhar manganese belt is a part and parcel of Singhbhum Bonai belt and one of the most important manganese ore producing regions of India, this is confined to shale formation of Pre-Cambrian Iron Ore Super Group as in stratiform, stratabound and lateritoid types. Important deposits in the Keonjhar district are located in the areas of Lasarda, Pacheri, Balani, Baneikala, Kendudihi-Purulipada, Roida-Bhadrasahi, Joda west and Belkundi etc.

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2.1.4: Local Geology & Structure

2.1.4.1: Local Geological Set-up *

Lasarda-Pacheri Iron and Manganese Ore Mine is in the southern end of the western limb of the Horse-shoe shaped Iron Ore Range of West Singbhum-Keonjhar-Sundargarh district of Jharkhand & Odisha. The rock types found within the leasehold belong to Banded Iron Formation(BIF) of Koira Group. The main litho units mapped in this area are laterite, Banded Hematite Jasper, shale of different nature and Brecciated Chert. Alluvium occupies especially the low-lying areas. The boundaries of these lithounits are mostly covered with soil or laterite. The litho contacts are observed to be gradational rather than sharp. The litho units of BIF usually strike in a NE-SW to NNE-SSW direction with westerly dips varying from 20° to 60°. The litho contacts delineated on the Geological Plan. It is observed that the manganese ore deposits occurring as lenses, pockets and veins are confined to variagated shale horizon. The iron ore deposits are float iron ore & occupied mainly on the hill slope of Southern and Nothern part of the lease. 'The manganiferous shale with brecciated and pisolitic laterites and cherts occupy the central part of the area. Manganese occur as small pockets /patches within the shale zone. Laterite / soil cover "observed normally in the area varies in thickness from 2 to 3 m above the shale formations of the area. The mode of manganese mineralisation can be considered to be similar to those countered in lateritoid deposits. The irregularity of shapes and sizes can be attributed to local tectonic activities like secondary folding, faulting and weathering. Based on the field studies, the stratigraphic sequence of different litho assemblages of the area is

- interpreted as a) Soil & Alluvium,
- b) Laterite(Ferruginous/Manganeseferous),
- c) Manganiferous shale with Mn-ore
- d) Brecciated Chert with Mn-Ore
- el Dolomite.

The lithounits belong to the Koira Group of the Iron ore Super Group. Manganese mineralisation is confined to the brecciated chert, manganiferous shale and laterite. The area forms part of a NNE plunging synclinorium having southerly closure. The mapped area has imprints of two pervasive planer fabrics, one conforming to the regional fold axis (NNE – SSW) and the other in NW - SE direction. The explored area constitutes a part of the western inverted limb of the "horseshoe synclinorium", the inverted nature being manifested by the reverse order of superposition of the lithounits. The chief planar structural elements are bedding and axial plane cleavage while minor fold axes and bedding - cleavage intersections are the main linear structures observed in the area. Development of weak foliation in shale is quite conspicuous.

Manganese ore bodies occur as conformable but discontinuous bands and/or lensoidal bodies within shale and brecciated chert horizons, extending along the regional strike of the lithounits. In the top laterite, ore bodies occur in football to be a supplication of the lithounits of the lithounits. In the top laterite, ore bodies occur in football to be a supplication of the lithounits. discreet isolated pockets. The width of ore bodies vary from 1m to 8m. The ore bands are mostly affected by weathering to a considerable depth along with the enclosing rocks. Localisation of ore lenses / pockets within the chert fish laterite zone / horizon may be attributed to the geochemical segregation associated with the process of deep chemical weathering and subsequent lateritisation. Further, occurrences of manganese ore zones associated with brediction of the geochemical segregation associated with the process of deep chemical weathering and subsequent lateritisation.

and along weak foliation planes of shale point to the process of shearing and precciation undergone in the area.

The ore is lateritoid type at most of the places and is of low to medium grade. The chief manganese minerals are pyrolusite, psilomelane, lithiophorite, and cryptomelane. Botryoidal, box w

A discontinuance of Soft and Powderly iron ore with good grade of Fe % been found during drilling. Therefore dip and strike has not been properly measured, however strike and dip of BHJ/BHQ and chert area haven measured. A chert band brecciated at the top, forms a marker in Lasarda segment. It strikes N30°E - S30°W with a shallow westerly dip having maximum width of 200m. It pinches out both in the north as well as in south direction. The manganiferous laterite horizon, which hosts the manganese ore pockets in the area, shows a N50°E - S50°W trend. The ore pockets seen with in the manganiferous laterite corroborate with the regional strike. But the ore bands exhibit extreme discontinuous nature both along the strike and in the dip direction.

2.1.4.3: Lithology, Petrographic & Mineralogical Description for Major, Associated & Indicator Minerals *

The detail lithology of the area is as follows:-

Traverses along and across the leasehold, however, show that alluvial soil covers a sizeable portion of the area. The alluvium occupies especially the low lying area. These areas are appeared to be barren where village site and low yielding agricultural fields are seen. The lateritised surface is covered by a thin veneer of soil with thickness varying from 0.5 m to 1.50 m at some places. The soil is yellowish brown to reddish brown to grey colour. The thickness is vary from 1 to 6 mtrs.

It mainly occurs as thick capping at the top of the deposits, showing different colors varying from yellowish red to brick red. They have been formed due to a continuous leaching process under tropical climatic conditions with high annual rainfall. At some places, they are associated with a box-work structure that develops due to leaching and indicates an underlying iron ore deposit and its associated ores below the surface. Two types of laterites found in the area i.e. Ferrugenous Laterite & Manganeseferous laterite. Both are massive, vermicular and pisolitic. Ferruginous laterites occur as intermediate waste and capping at places on the in situ Iron ore horizons having Fe content less than 45% and Fe content more than 55% contain both hematite and goethite. But the pisolitic laterites are sometimes manganiferous, indicating below the BIF mineralised zone. The Ferrugenous Laterite thickness is vary from 5 to 15 mtrs. and the Manganeseferous Laterite thickness is vary from 10 to 35 mtrs.

Iron & Manganese formation of the area is closely associated with the shale. Mainly two types of shales are observed in the area, i.e., Tuffaceous shale and ferruginous shale. The tuffaceous shale is originated from volcanic sources representing upper shale horizon within the iron sequences. They are massive in form and soft in nature, exhibiting different colors such as white, yellow, purple, olive brown and pinkish red . At places, pod structure is also observed, which might have been formed from weathering processes, followed by secondary deposition of in-situ materials that also carried Manganese. The tuffaceous shale is highly enriched in Si and Al and, thus, their association with the Manganese Ore is one of the major factors affecting Manganese ore quality. The ferruginous shale, on the other hand, represents middle or lower shale that mainly occurs as inter-bedded units running parallel to the BIFs sequences. They exhibit extensive leaching process resulting into the formation of high-grade iron ores, such as powdery Ore, Soft ore in the area. The thickness is vary from 10 to 35 mtrs.

It is also an important rock type next to the shale formation and occurs in close association with the Manganese as a massive body or as inter-bedded unit. Brecciated Chert which carries Manganese is highly fractured in nature, indicating imprint of complex deformation in the study area. Its highly fractured nature might have provided avenue for meteoric solutions required for leaching processes during the evolution of high-grade Manganese deposits in the area. The thickness is vary from 1 to 6 mtrs.

It is the most important and wide spread lithological unit present in the area. The iron ore resources in the area are mainly hosted with BHJ. It consists of alternate bands of hematite and jasper: Different types of iron lithosomes such as evenlybanded, unevenly-banded and maculose banding have been observed within BHJ under variable energy conditions that prevailed in the depositional Environment. The thickness of jasper meso-bands generally ranges 2-40 mm, while that of iron-rich meso-bands ranges 1-30 mm. As the said rock is a basement rock, we have proved the thickness upto 100 mtrs from the ground level in Laserda side.

As observed in several boreholes, dolomite occurs probably as a facies variant of chert. Dolomite occures bottom of the manganeferous Zone. The thickness of the dolomite is 10 to 30 mtrs.

2.1.4.4: Mode of Occurance & Controls of Mineralization *

Manganese ore bodies occur as conformable but discontinuous bands and/or lensoidalbodies within shale and brecciated chert horizons, extending along the regional strike of the lithounits. In the top laterite, ore bodies occur in form of discreet isolated pockets. The width of ore bodies vary from 1m to 8m. The ore bands are mostly affected by weathering to a considerable depth along with the enclosing rocks. Localisation of ore lenses / pockets within the chert – shale –

laterite zone / horizon may be attributed to the geochemical segregation associated with the process of deep chemical weathering and subsequent lateritisation. Further, occurrences of manganese are zones associated with brecciated chert and along weak foliation planes of shalepoint to the process of shearing and brecciation undergone in the area. The area is lateritoid type at most of the places and is of low to medium grade. The chief manganese minerals are pyrolusite, psilomelane, lithiophorite, and cryptomelane. Botryoidal, box work and colloform structures are commonly observed within the ore. The ore is, in general steel grey to dull grey in colour and is soft and powdery in nature. Phosphorous content in the Mn oresdoes not show much variation lying in the range of 0.1% to 0.23% which is well within the permissible limit of different end use specifications for various industries.

The banded iron formation is primarily divisible into two discrete units, one composed mainly of chemical sediments represented by jaspilite and the other comprising chemical and clastic sediments rhythmically interbedded. The lower formation is primarily divisible into two discrete units, one composed mainly of chemical sediments represented by jaspilite and the other comprising chemical and clastic sediments rhythmically interbedded. The lower formation is primarily divisible into two discrete units, one composed mainly of chemical sediments represented by jaspilite and the other comprising chemical and clastic sediments rhythmically interbedded. the jaspilite in addition, shows markedly irregular bedding and coarse banding is recognised and traced all along the strike in the mapped area, thus warranting separation into another distinct unit. Thus the three members of the formation gradational into one another. The coarsely banded jaspilite forms about half the thickness of the total formation. As the name implies the banding is very coarse; the component ferruginous and jasper bands range in thickness from

2 cm to as much as 15 cm.

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2.1.4.5: Extent of Weathering/ Alteration *

The ore deposits of both iron and manganese are of sedimentary origin. The block comprises low-grade metamorphosed volcano - sedimentary sequence of Pre- Cambrian age. Extensively weathering, leaching action with partially alteration

2.1.4.6: Nature/Form of Mineral:

Specify if any other Manganese ore

Powdery & Friable Iron &

2.1.4.7: Extent of Mineralization:

The ore pockets seen with in the manganiferous laterite corroborate with the regional strike. But the ore bands exhibit extreme discontinuous nature both along the strike and in the dip direction. The manganiferous laterite traced discontinuously in south-westerly part of the area in a length of 1.0 km with an average width of 300m. In the north-easterly part of the area manganiferous laterite also been traced discontinuously, which is concealed under the alluvium and brecciated chert. Top portion of the south-westerly area in covered with laterite with float iron ore and the low grade Iron ore occurrence also been found in drilling. The Iron ore is found Eastern side of Laserda area in a length 500 of width 100 mtrs. Both the area has been proved through drilling. Southern side of the north-easterly part of the Mining Lease area is cover with BHJ/BHQ. In the western and southern side, the manganiferous laterite horizon gets concealed under

2.1.4.8: Deposit Type (as per MEMC Rule)

Deposit type of Laserda-Pacheri is coming under II of Part IIIof MEMC Rule, 2015 i.e. Lenticular bodies of all dimensions including boding occurring en echelon, silified linear zones of composite veins. Lenses, pockets, stock-works; irregular shaped modest to small size bodies.

/ Trend of the Ore Body: *	50	E	то	2	50	W
				Amount of Din of the	Ore Body (degree) *	
unt of Dip of the Ore Body (d	egree) *		7	iso		
The state of the s			J	(to)		
n)						
				Plunge of Mineral Bo	ody (degree) (if any) *	
			7	270		
Direction of the Ore Body *	85					

2.2: Exploration

2.2.1: Summary of The Previous Exploration (for fresh grant) / During Last Plan Period (for existing leases)

10 to 45

SW

Name of The Agency * Geological Survey of India Kartikay Exploration & Mining Service Natural Resources Exploration & Mining Pvt. Ltd Semcokati Exploration & (P) Ltd Phriveni Earthmovers Pvt. Ltd APC Drilling & Construction Pvt. Ltd C13 Tools Manufacturing Pvt. Ltd

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2.2.1.1: Geological Mapping

S.N.	Year	Scale	Area Covered (Hect/km²)
,	Geological Mapping was carried out during the time of prospecting period	1.430555556	131.8

2 2 1 2: Airhorne Geophysical Survey

2	Z.Z.1.Z: Airborne Geophy	Sical Survey			Latitu	ıde	Longitu	de
		The second		Area Covered (Ha/km²)	То	From	То	From
S.N.	Type of Survey	Spacing (m)	Total line (km)		Not Applicable	Not Applicable	Not Applicable	Not Applicable
5711	Not Done	Not Applicable	Not Applicable	Not Applicable	NOT Applicable	Teat reported to		

	2.2.1.3: Ground Geophys	ical Survey			Latitu	ide	Longitu	de
	2.2.1.3: Ground Geophys	icai sui vey		Area Covered	То	From	То	From
S.N.	Type of Survey	of Survey Spacing (m) Total line (km)	Total line (km)	(Ha/km²)		Not Applicable	Not Applicable	Not Applicable
3.14.	N-s Para	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	1. The state of th	-

2 2 1 4: Geochemical Survey

	.Z.1.4. Geochemical sai	1		Area Covered
S.N.	Type of Sample	No of Samples	Aanlysis reprt	(Ha/km²)
3.14.	. 11		Attach analysis report in	The second second
1	Not Done	Not Applicable	csv/excel format	Not Applicable

2.2.1.5: Pitting

Number of Pits * Trial Pit 1

_				The Control of the Co		veriler in			Ding sate
		Attribute the state of the state of	DIA ID	Length of Pit (m)	Width of Pit (m)	Depth of Pit (m)	Depth (from)	Depth(to)	Running mtr
	S.N.	Year	Pit ID	rengmon tricking	40	15	0	1.5	1.5
-		2010.00	TP 1	17	10	4.10			

	Table continued		The state of the s		
	tist - wite expected	Name of the radical	Av Grade(in %)	Latitude	Longitude
S.N.	Litho units exposed	Tauren	4.0	2440684.626	325083.703
4	Magniforous Laterite	Mn	16	2410001020	

2.2.1.6: Trenching

Number of Trenches *

2.2.1.6.1: Spacing

Min (m) *

Not Applicable

Not Applicable

Avg (m) * #VALUE!

Width of Trench | Depth of Trench | Depth(from) Depth(to) Length of Trench (m) Trench ID Year Not Applicate Not Applicale Not Applicabe Not Applicable

Table continued...

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Running mtr
Not Applicate

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	Links welts avnoted	Name of the	Av.grade	Latitude(from)	Longitude (from)	Latitude(to)	Longitude (to)
S.N.	Litho units exposed	radical			Mark Amelicable	Not Applicable	Not Applicable
4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Truck rappingsons	

2.2.1.7 Exploratory Drilling(Core/non Core)

	2.2.1.7 Exploratory Drilling(Core/non Core)		Core holes		Non-core (R	Non-core (RC/DTH)		Grand total	
s.N.	Year	Exploration agency	Number of boreholes drilled	Total metr	Number of boreholes drilled	Total mtrs	Total boreholes	Total mtr	Attach log sheet of each borehole in csv/excel format.
		Geological Survey of	81	4581.35	0	0	81	4581.35	Attach in Annexure - 10
	2000 - 2005	India Kartikay Exploration &	18	994.3	0	0	18	994.3	Attach in Annexure - 10
	2018 - 2019	Mining Service Gemcokati Exploration &	i	65	0	0	1	65	Attach in Annexure - 10
	2018 - 2019	(P) Ltd Natural Resources Exploration & Mining Pvt.	2	112.7	0	0	2	112.7	Attach in Annexure - 10
	2018 - 2019	Ltd Kartikay Exploration & Mining Service	10	524.7	0	0	10	524.7	Attach in Annexure - 10
	2019 - 2020	Gemcokati Exploration &	70	3807	0	0	70	3807	Attach in Annexure - 10
	2019- 2020	Natural Resources Exploration & Mining Pvt.	13	656.5	0	0	13	656.5	Attach in Annexure - 10
	2019 - 20	Thriveni Earthmovers Pvt. Ltd	31	1672.9	0	0	31	1672.9	Attach in Annexure - 10
	2019 - 20	C13 Tools Manufacturing Pvt. Ltd	5	239.45	0	0	5	239.45	Attach in Annexure - 10
10	2019 - 2020	APC Drilling & Construction Pvt. Ltd	0	0	4	291	4	291	Attach in Annexure - 10

2.2.1.8: Exploratory Mining

	2.2.1.8: Exploratory IVIII	ing			1/-1/31	
C 81	Pit/Adit ID	Length in Mtr	Width in Mtr	Depth in mtrs	Volume (m³)	
S.N.	FILIPAULTE		Not Applicable	Not Applicable	#VALUE!	
1	Not Done	Not Applicable	Not Applicable	The same of the sa		

2	2.2.1.9: Sampling			Location		
S.N.	Type of sample	No of samples collected	Number of samples analyzed	Latitude	Longitude	Remark if any
	Old Pit 1	3	3	2441446.919	326646.989	
1	Old Pit 2	40	40	2441522.629	326450.282	1
2	Old Pit 5	10	10	2440495.462	325152.772	
3		21	21	2440611.653	325136.908	
4	Old Pit 6	4	4	2440665.372	325019.597	
5	Old Pit 7	12	12	2440025.222	324728.113	
6	Old Pit 8	32	4	2440466.893	325265.731	
7	Old Pit 9	40	10	2440705.359	325092.88	3
8	Old Pit 10	10	9	2440684.626	325083.703	Old pits were
9	Trial Pit 1	9	1	2441216.09	326251.5	
10	Surface Sample 1	1		2441512.31	326537.88	1200
11	Surface Sample 2	1	1	2441528.09	326465.8	7
12	Surface Sample 3	3	3	2441160.3	325486.0	
13	Surface Sample 4	1	1	2440785.98	326276.2	
14	Surface Sample 5	1	1		326185.4	
15	Surface Sample 6	1	1	2440787.45	32010374	

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		1 1	2441215.09	326252.5	
	Surface Sample 7	1	2440746.18	324922.13	
7	Surface Sample 8	1	2440634.97	325123.39	
18	Surface Sample 9	1 1	2440026.44	324705.64	
19	Surface Sample 10	1 1	2440584.63	325120.55	
0	Surface Sample 11	1			

S.N.	2.2.1.10: Chemical Analysis Sample ID	Minerals	Radical with garde in %	Name of Agency	Type of agency	Attachment
3.14.	Chemical Analysis report of different	Iron & Manganese	Mn, Fe. 5102, Al203, P	SGS India Pvt. Ltd	NABL accredited	Attach chemical analysis report(Pdf) Annexure - 8 (A)
1	Agency is attached. Annexure - 8(A) Chemical Analysis report of different		Mn, Fe. SiO2, Al2O3, P	Cotecna Inspection India	NABL accredited	Attach chemica analysis report(Pdf) Annexure - 8(8
2	Agency is attached. Annexure - 8(B) Chemical Analysis report of different	Iron & Manganese Manganese	Mn, Fe. SiO2, Al2O3, P, Lol	Institute of Minerals & Materials Technology	Govt. lab	Attach chemica analysis report(Pdf) Annexure - 8©
3	Agency is attached. Annexure - 8© Chemical Analysis report of different Agency is attached. Annexure - 8(D)	Iron & Manganese	Mn, Fe. SiO2, Al2O3, P	Bureau Veritas India Pvt.	NABL accredited	Attach chemica analysis report(Pdf) Annexure - 8(0

^{*} Chemical analysis of core /non vore samples may be uploaded in CSV file which shall normally include Five files namely collar file, survey file and Geology log file, Assay file and RQD File. (Annexure - 8(E))

2.2.1.11: Petrology & Mineralogical Studies

2	.2.1.11: Petrology & IVI	m 1			
6.11	Type of Sample	Number of Sample Drawn	Number of Sample Analyzed	Petrographic Study Report	
S.N.	Type of Sample		No. Amelianista	Not Applicable	
4	Not done	Not Applicable	Not Applicable	1401 reppireums	

2.2.1.12: Beneficiation Studies

S.N.	Type of Beneficiation	Number of Samples	Attach	
2.14.	Not Done	Not Applicable	Attach beneficiation stud report (pdf)	

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2.2.1.13: Bulk Density Study as per M(EMC) Rules, 2016 and SOP of CGPB

Method adopted for calculating bulk density of ore and waste

The folloowing method has been adopted for calculation of Bulk Density of Ore. A pit of 1 cu.ft (1' X 1' X 1') was dug on the ore body. The entire material was weighed. The pit was covered with polythene. It was filled with measured (weighed) quantity of water. Specific Gravity was calculated with the following formula. Bulk density / Sp. Gravity = Weight of the ore / weight of the water. Further we have been determined the bulk density from 6 nos of sample of Manganese, Iron & Dolomite (Each 2nos) tested at NABL lab. The test methodology for Iron is adupted ISO3852,2007 (E)Method - 1 and for Minganese the test method is adupted IS-5842-1986,RA/2008, cluse 5.2. for laterite and chert the test method is adupted IS-13030:1991. The analysis report is as follows:-

Manganese 24.56% Mn - 2.49

26.35%Mn - 2.51 Iron 54.85%Fe - 2.80

56.03%Fe - 3.01

Waste - 2.2

Attached Annexure - 11.

S.N.	Nature of Ore/OB	Mineral	Number of samples	Bulk Density Established (t/m³)
21141		Manganese	1	2,49
1	SG Ore (-25% Mn)	- AND STREET,	1	2.51
2	Ore (+25% Mn)	Manganese	-	2.8
-	SG Ore (-55%Fe)	Iron	1	
3	AND ADDRESS OF THE PARTY OF THE	- Lon	1	3.01
4	Ore (+55%Fe)	Iron		2.2
-	Waste	Laterite	1	6.6

2 2 1 14: Area Covered under Exploration

	Are	Total area in Ha	
Level of exploration	Forest	Non-forest	1500.00
G-1	0	0	0
	72.707	19.884	92.591
G-2 G-3	0	0	0
G-4	0	0	0
Area proved as Non- mineralized (G-2 level of exploration)	21.701	17.597	39,298
Area to be explored	0	0	0
Total	94.408	37.481	131.889

2.2.2: Summary of The Previous Exploration (Before Last Plan Period)

Name of The Agency *

Fresh Mining Lease

2.2.2.1: Geological Mapping

	E I TO T OF THE PARTY OF THE PA		111-1		
S.N.	Year	Scale	Area Covered (ha)		
	Not Applicable	Not Applicable	Not Applicable		
1 1	DOT Withingarie	200000000000000000000000000000000000000			

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2 2 2 2 Airhorne Geophysical Survey

	.E.E.E. PHI 201110	Spacing (m)	Total line (km)	Area Covered (ha)	Latitude	Longitude
S.N.	Type of Survey	Spacing (m)	1000	Not Applicable	Not Applicable	Not Applicable
	Not Applicable	Not Applicable	Not Applicable	Not Applicable		

2 2 2 3. Ground Geophysical Survey

2	.Z.Z.S. Ground Geophys	Teer services				
	AND DESCRIPTION OF THE PARTY OF	urvey Spacing (m)	Total line (km)	Area Covered (ha)	Latitude Not Applicable	Longitude
S.N.	Type of Survey			No. Applicable		Not Applicable
3.14.		Not Applicable	Not Applicable	Not Applicable	Trial Carlotte	
4	Not Applicable	tant ubburgane				

2.2.2.4: Geochemical Survey

S.N.	Type of Sample	No of Samples
1	Not Applicable	Not Applicable

2 2 2 5. Pitting

	2.2.2.5: Pitting					Litho Unit	
The same		to set of Dit (m)	Width of Pit (m)	Depth of Pit (m)	Litho Unit Exposed	From (m)	Litho Unit To (m)
S.N.	Pit ID	Length of Pit (m)		Not Applicable	Not Applicable	Not Applicable	Not Applicable
1	Not Applicable	Not Applicable	Not Applicable	THE CONTRACTOR OF THE CONTRACT			

Table continued.

	Average Grade (%)	Running Meters (m)	Latitude	Longitude
S.N.	Average Grade (70)		Not Applicable	Not Applicable
	Not Applicable	Not Applicable	Tros rapping	

2.2.2.6: Trenching

Number of Trenches * Not Applicable

Spacing

Min (m) *

Not Applicable

Max (m) * Not Applicable Avg (m) * #VALUE!

Area Covered Under Trenching

Co-ordinates

Lattitude * Not Applicable North

Longitude *

Not Applicable East

				Dough of Tronch		Average	Running Meters (m)
-	Trench ID	Length of Trench	Width of Trench (m)	(m)	Litho Unit Exposed	Grade (%)	
S.N.	Henchilo	(m)		Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Stat Analicable	Not Applicable	Not Applicable	Not Applicable			

	Table continued			T w to decide
	From Latitude	From Longitude	To Latitude	To Longitude
S.N.	From Lautude	Not Applicable	Not Applicable	Not Applicable

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	2.2.2.7: Exploratory Drilli	'E	Core holes		Non-core		Grand total		
S.N.	2.2.1.7.1:Core/Non-core Drilling Year Not Applicable	Exploration agency	Number of boreholes	Total meter	Number of boreholes drilled	Total meter	Total boreholes Not Applicable	Total mtr	Attach log sheet of each borehole in csv/excel format. Not Applicable

2.2.2.8: Exploratory Mining

S.N.	Pit ID	Volume (m³)	
1	Not Applicable	Not Applicable	

2	.Z.Z.J. Jamping				
S.N.	Type of Sample	Number of Samples	Area Covered (ha)	Latitude	Longitude
		Samples		Not Applicable	Not Applicable
- 1	nt Annicable	Not Applicable	Not Applicable	HOT Whomene	NAME OF TAXABLE PARTY.

2.2.2.10: Chemical Analysis

	Erferter & Criteria		- 4 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
S.N.	Sample ID	Minerals	Radical Analysis	
2.14.		Arrest Arrest Control of	Not Applicable	
1	Not Applicable	Not Applicable	INCI POPPILES CITE	

2 2 2 11 Petrology & Mineralogical Studies

S.N.	Type of Sample	Number of Sample Drawn	Number of Sample Analyzed	Petrographic Study Report
	Not Applicable	Not Applicable	Not Applicable	Annexure in pd format.

2.2.2.12: Beneficiation Test

Number of Samples
Samples
HIOH Jumpies
Not Applicable

2 2 2 13: Bulk Density

	12121201			
SI. No.	Rock Types	Number of Samples	Minerals	Bulk Density Established (t/m³)
SI. 140.	Hock Hes	Average and the state of	Not Applicable	Not Applicable
1	Not Applicable	Not Applicable	NOT Applicable	

2.2.2.14: Area Covered under Exploration

G1 (Ha)	Not Applicable
G 2 (Ha)	Not Applicable
G3 (Ha)	Not Applicable
G4 (Ha)	Not Applicable
G1+G2+G3+G4 (Ha)	0

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Year	Area converted to G1 from G2, G3 & % increase in G-1 Area		Remaining Area % In G2	Remaining Area % in G3	Remaining Area % in G4	Remaining Area in G2	Remaining Area in G3	Remaining Area in G4
	G4			Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
fear 1	Not Applicable	Not Applicable	The state of the s		March Control		Not Applicable	Not Applicable
fear 2	Not Applicable	Not Applicable	Truct opposite	TO THE PERSON NAMED IN COLUMN		ttoring passage		10.000
STATE OF THE PARTY	Not Applicable	Not Applicable	Not Applicable	Market Laboratoria	Not Applicable	Teur Applicanie		2 11
fear 3		Not Applicable	Not Applicable	Not Applicable	Not Applicable	140c Supplications	1.00	
Year 4	Not Applicable		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Year 5	Not Applicable	Not Applicable	Not Applicable	The state of the s				
Potentially Mineralised area (Ha)								

2.2.3: ORE BODY GEOMETRY & GRADE

S.N.	Name of the ore band	General Strike / Trend	Dip Of Mineral Body	Average Strike Length (m)	Average Width (m)
1	The Manganese occurance of the lease area basically in lateriod type (top) and with an irregular pocket associate with Manganiferous shale and chert. However there is no continuty of ore bands are found.	N-S	20° to 60°	1000	300
2	There is only one place in Laserda Block (Eastern side of the area) found a small band of Iron ore	N-S	E	500	100

	Table continued				
	Average Depth (m)	Name of the radical	Min Grade (%)	Max Grade (%)	Avg Grade (%)
S.N.	Average Depth (m)		10	53.03	19.52
1	45	Mn		68.32	52.85
2	41	Fe	45	00.32	

2.2.4: Reserve / Resource Estimation Method

2.2.4.1: Methodology

Resource / Reserve Estimation Method *

Sectional Area Method

Methodology The resource and reserve has been calculated by cross sectional method. The Cross-sectional area of the ore zones (marked through analysis results) has been calculated in a particular section and then multiplied with the influence of the ore body to get the volume of ore. Tonnage is calculated after multiplying the volume with the average bulk density. Cross sectional area was calculated with the help of Auto CAD. The same method has been used during estimation of Reserve also.

The cut-off grade parameter for Manganese is considered +25% Mn. and for Iron ore it is considered +55% Fe. Further as per the notification of threshold value published by Indian Bureau of Mines vide letter dated 25.04.2018 for Manganese is 10% Mn and for Iron it is 45% Fe, which will be mineral reject.

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2.2.4.2: Resource Calculation (Manganese 10 to 25% Mn)

	2.2.4.2: Resource Calculat	Sectional Area/Block area		Death is mir	Volume (m³)	Bulk Density (t/m³)	Resource Quantity (t)	Level of Exploration
S.N.	Cross section/Block	(sq mtr)	Influence (m)	Depth in mtr	136219.89	2.5	340549.725	G2
3.14.	A-A'	1918.59	71	4 to 60	311521	2.5	778802.5	G2
1	B-B'	3115.21	100	5 to 47	32788	2.5	81970	G2
2	C-C	327.88	100	5 to 67		2.5	106102.5	G2
3	D-D'	424.41	100	12 to 44	42441	2.5	221315	G2
4		885.26	100	2 to 50	88526	2.5	211407.5	G2
5	E - E'	845.63	100	7 to 58	84563	2.5	40702.5	G2
6	F-F'	162.81	100	23 to 27	16281		28947.5	G2
7	G-G'	115.79	100	10 to 28	11579	2.5	78112.5	G2
8	н-н'		100	4 to 44	31245	2.5	70455	G2
9	1-3'	312.45	100	18 to 63	28182	2.5	335215	G2
10	N - N°	281.82	100	10 to 60	134086	2.5	The state of the s	G2
11	0-0'	1340.86	100	7 to 72	134995	2.5	337487.5	G2
12	p - p'	1349.95	75	4 to 44	523827	2.5	1309567.5	G2
13	Q-Q'	6984.36	50	2 to 35	171095.5	2.5	427738.75	
14	R - R'	3421.91		1 to 39	262324	2.5	655810	G2
15	S-S'	5246.48	50	1 to 50	166208.5	2.5	415521.25	G2
16	T-T'	3324.17	50	The state of the s	149870.25	2.5	374675.625	G2
	U-U'	1998.27	75	1 to 50	72617	2.5	181542.5	G2
17	V-V'	726.17	100	10 to 65	16564	2.5	41410	G2
18	W - W'	165.64	100	30 to 56		2.5	7872.5	G2
19	X - X'	31.49	100	31 to 43	3149	2.5	5662.5	G2
20	Y - Y	22.65	100	15 to 23	2265	2.5	196665.75	G2
21	7.7	874.07	90	10 to 40	78666.3	2.0		

	Table continued	Name of the radical	Grade (%)	Method used fo resource estimation
S.N.	Type of Land	Manganese	10 - 25% Mn	Cross_Sectional
1	Forest	Manganese	10 - 25% Mn	Cross_Sectional
2	Forest		10 - 25% Mn	Cross_Sectional
3	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross Sectional
4	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectional
5	Forest	Manganese	10 - 25% Mn	Cross Sectional
6	Forest	Manganese	10 - 25% Mn	Cross_Sectional
7	Forest	Manganese		Cross_Sectional
8	Forest	Manganese	10 - 25% Mn	Cross_Sectional
9	Forest	Manganese	10 - 25% Mn	Cross_Sectional
10	Forest	Manganese	10 - 25% Mn	Cross_Sectional
11	Forest	Manganese	10 - 25% Mn	
12	Forest	Manganese	10 - 25% Mn	Cross_Sectional
13	Forest	Manganese	10 - 25% Mn	Cross_Sectional
14	Forest	Manganese	10 - 25% Mn	Cross_Sectional
15	Forest	Manganese	10 - 25% Mn	Cross_Sectional
16	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectional
17	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectional
-	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectional
18	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectional
19	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectiona
20	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectiona
21	Forest & Non-Forest	Manganese	10 - 25% Mn	Cross_Sectiona

Manganese

Forest & Non-Forest

22

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		acae cal	100	8 to 57	263664	2.8	738259.2	62
8	H-H'	2636.64		AND DESCRIPTION OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED I	71396	2.8	199908.8	G2
9	1-1'	713.96	100	10 to 60	The second secon	2.0	249547.2	62
10	M - M,	891.24	100	2 to 10	89124	2.8		02
11	0-0'	861.99	100	2 to 41	86199	2.8	241357.2	02
12	p - p'	940.08	100	26 to 47	94008	2.8	263222.4	G2
14	0-0'	1836.14	75	2 to 43	137710.5	2.8	385589.4	G2
13			50	10 to 35	35200	2.8	98560	G2
14	R - R'	704	30		72202.5	2.8	202167	G2
15	5 - 5'	1444.05	50	1 to 28	The second secon	2.0	274846.6	G2
16	T-T'	1963.19	50	8 to 33	98159.5	2.5	274040.0	02

S.N.	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
1	Forest	Iron	45 - 55% Fe	Cross_Sectional
2	Forest	Iron	45 - 55% Fe	Cross_Sectional
3	Forest & Non-Forest	Iron	45 - 55% Fe	Cross_Sectional
4	Forest & Non-Forest	Iron	45 - 55% Fe	Cross_Sectional
5	Forest	Iron	45 - 55% Fe	Cross_Sectional
6	Forest	Iron	45 - 55% Fe	Cross_Sectional
7	Forest	Iron	45 - 55% Fe	Cross_Sectional
8	Forest	Iron	45 - 55% Fe	Cross_Sectional
9	Forest	Iron	45 - 55% Fe	Cross_Sectional
10	Forest	Iron	45 - 55% Fe	Cross_Sectional
11	Forest	Iron	45 - 55% Fe	Cross_Sectional
12	Forest	Iron	45 - 55% Fe	Cross_Sectional
13	Forest	Iron	45 - 55% Fe	Cross_Sectional
14	Forest	Iron	45 - 55% Fe	Cross_Sectional
15	Forest	Iron	45 - 55% Fe	Cross_Sectional
16	Forest & Non-Forest	Iron	45 - 55% Fe	Cross_Sectional

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2.2.4.2. Resource Calculation (Iron >55%Fe)

S.N.	Cross section/Block	Sectional Area/Block area (sq mtr)	Influence (m)	Depth in mtr	Volume (m³)	Bulk Density (t/m³)	Resource Quantity (t)	Level of Exploration
2.14.			100	12 to 60	253937	3	761811	G2
1	G - G'	2539.37				3	811431	G2
2	H-H'	2704,77	100	20 to 50	270477	- 3	2010000000	-
- 2	1-7	3158.29	100	10 to 50	315829	3	947487	G2
3	1-1	217.33	100	0 to 4	21733	3	65199	G2

S.N.	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
1	Forest	Iron	>55%Fe	Cross_Sectional
2	Forest	Iron	>55%Fe	Cross_Sectional
3	Forest	Iron	>55%Fe	Cross_Sectional
4	Forest	Iron	>55%Fe	Cross_Sectional

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2.2.4.3: Mineral Resource Estimate for Conversion to Mineral Reserve

i) Geological mapping (1:2000 scale)

A fresh geological mapping is being carried out by geological team over entire area and Geological map on 1:2000 scale at a square grid pattern of 50m x 50m grid interval showing major lithological units, extend of surface mineralisation, structural & tectonic features, location of bore holes, trench, old pits etc.

II) Geological Sections

Fresh geological sections of 26 nos of cross sections at an interval of 100 mtrs, has been prepared on the Geological Map. These sections show the vertical extension of different litho units of the area on the basis of Bore hole logs, pit sections etc.

iii) The extent and variability of the mineralization expressed

The extent and viability minerals are being prepared on the basis of 149 No's [143 No's for Mn. & low grade iron and 6 no's for purely Iron ore) of bore holes and 6 No's of old pits, surface sample and a trial pit, where vertical depth of the ore/non-ore zone and horizontal extension of the ore/nonore zone is indicated.

iv) Description the adequacy of exploration done for estimation of resources under various categories:

The ore body has been delineated on the basis of lithological & chemical data received from exploratory boreholes done over entire potential mineralised area and existing old pits. Total 235 Nos. of boreholes have been drilled within the granted Lol area including 81 nos of GSI holes of grid interval 50 m. x 100m. and a small patch has been taken in close spacing i.e. 50m x 25m grid interval in mineralized area.

v) Logging and Sampling method

The lithology of the all bore holes is attached in Excel format as per Annexure-IV of format for final report of prospecting (Geology file). The core and RC material, which are recovered from the drilling, were logged systematically to demonstrate various litho-units. The Logging of core and powdery material help to describe the physical character like shape, size and their nature eg:(Lamination, Brecciation) besides these analytical data were helped in delineating the ore and Non-ore zone. Core sampling of all boreholes have been completed and also analysed. Each core sample was split into two haives. One half was preserved while the other half was first sun dried to remove moisture if any. The dried samples were weighed using a spring balance in order to check loss of sample in course of processing. Then the dried sample is handed over to NABL accredited lab for analysis. 100% of sample has been carried out in NABL accredited lab.

vi) Describe Quality of assay data and laboratory tests.

The assaying & laboratory procedures adopted are as per the BIS standard. The chemical analysis (Assay) is done as per IS-1493-7(1993) standard. The precession level is ±0.5%. Our total samples are analyzed in the NABL accredited laboratory by wet chemical process.

The prepared sample send to M/s SGS India Pvt. Ltd and Cotecna inspection India Pvt. Ltd., a NABL accredited laboratory for sample preparation and chemical analysis etc. Method of Analysis is being done by SGS under IS 1473-2004 Reaff 2011 - WI XRF-01 ver., method of analysis is being done by Cotecna Inspection India Pvt. Ltd. under IS 1473-2004 and for dolomite the method of analysis is being done under IS 1947-1980 and IS 1760 -1992 and method of analysis is being done by BUREAU VERITAS India Pvt. Ltd. under IS 1473 (Part-1):1981. Further 2 nos of Manganese sample and 2 nos of dolomite sample have been carried out at IIMT, Bhubaneswar.

vii) Describe method adopted for Determination of Moisture content in the ore/mineral.

The test sample of a prescribed mass and sample size will be dried by heating in a dry oven at a prescribed temperature. The difference of the initial and dried masses of the sample, the moisture content, as percentage by mass will be determined. The procedure is being followed in Laboratories. viii) Description of the method adopted for estimation of resources

The resource and reserve has been calculated by cross sectional method. The Cross-sectional area of the ore zones (marked through analysis results) has been calculated in a particular section and then multiplied with the influence of the ore body to get the volume of ore. Tonnage is calculated after multiplying the volume with the average bulk density. Cross sectional area was calculated with the help of Auto CAD.

2.2.4.4: Threshold value & Cut off Parameters

The cut-off grade parameter for Manganese is considered +25% Mn. and for Iron ore it is considered +55% Fe. Further as per the notification of threshold value published by Indian Bureau of Mines vide letter dated 25.04.2018 for Manganese is 10% Mn and for Iron it is 45% Fe. which will be mineral reject.

2.2.4.5: Mining Factors or Assumptions

Though the mineral occurrence of the said area is up to the depth of 100 mtrs from the surface level, therefore the method of mining will be opencast with benching system of the height of Iron ore will be 10 and in Manganese ore the bench will be 5 mtrs and width will be equal or more than the height. So as per the statute safety zone area must be left out and then open pit work can be carried out. Considering the same there is a chance the

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entire material cannot be extracted. Therefore, Mineral Reserve will be the less than Mineral Resource.

2.2.4.6: Metallurgical Factors or Assumptions

At present there is no proposal of commissioning of any wet processing plant in the M.L area. RoM ore raised from the mine will be sorting & sizing of Manganese ore in different grade and size. For Iron ore RoM ore raised from the mine will be crushed and screened mechanically for separation of ores in to various sizes.

2.2.4.7: Cost & Revenue Factors

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

2.2.4.8: Market Assessment

The market demand of Manganese and Iron is good enough to consume the materials in open market as per the present scenario. There is an open market for Lump for Manganese ore and also there is a future market in low grade manganese fines, but till date there are only market of 10-75 mm of manganese, for Iron ore is there is a huge market for both lump and fines. The steel market and ferromanganese plants are fully dependent upon Iron & Manganese, if there is any shortfall in the current market then there is a possibility of supply of mineral from the said mine.

2.2.4.9: Other Modifying Factors

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

2.2.4.10: Classification

Mineral reserves has been classified in to varying confidence categories since major part of mineral resources explored under G2 level of exploration is economically mineable considering the marketing, legal, social, environmental factors etc. The micro-economic profitability is encouraging and therefore, making investment in this for Iron and Manganese ore project is worthwhile and economically viable.

Due to constraints of safety zone barrier there is a possibility of reduction in the quantity of material when it is converted from Mineral Resource to Mineral Reserve, the reduced quantity is very marginal, so it won't harshly affect the project.

Mineral Reserve estimation has been taken with considering of all statutory laws/rules etc. such as mineral occurrence are there but could not able to extract due to safety zone barrier.

In few boreholes, where very nominal mineral occurrence is there and is also in depth, which will not be an economical, it is also not being considered

The Mineral resources estimated of Manganese and occurrence of Iron (Major Mineral) is classified under UNFC code 332 (Indicated Mineral

Justification assigning UNFC Code 122

Under Part III (Exploration norm of different types of deposit) of Mineral (Evidence of Mineral Contents) Rule, 2015 the exploration of the said area is being considered as lenticular bodies of all dimensions including bodies occurring Lenses, Pocket, irregular shaped modest to small size bodies of manganese, for that to confirming G2 level exploration the bore hole spacing was taken in 100 x 50 mtrs and a small patch has been taken in close spacing i.e. 50m x 25m grid interval in mineralized area.

Details exploration has not carried out, it will becarriot out after execution of lease deed. Further Statutory clearance is also be not yet granted till date, so feasibility is to be under F2 code.

The market rate of Iron & Manganese is good and enough at this stage, therefore the economic is to be under E1 code. Details is elaborated in Pre-feasibility study attached as Annnexure -7.

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2.2.4.11: Calculation of blocked resources (Manganese 10 - 25%Mn)

S.N.	Reserves blocked due to	Cross section/Block	Sectional area/ block area (in Sq mrt)	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³)
		A-A'	1918.59	49.7	43 to 62	95353.923	2.5
1	Ultimate Pit limit	B - B'	413.43	100	43 to 55	41343	2.5
2	Ultimate Pit limit		11.31	100	63 to 67	1131	2.5
3	Ultimate Pit limit	C-C'	34.58	100	37 to 44	3458	2.5
4	Ultimate Pit limit	D - D,		100	17 - 50	6914	2.5
5	Ultimate Pit limit	E - E'	69.14		22 to 58	29963	2.5
6	Ultimate Pit limit	F-F'	299.63	100	23 to 30	6009	2.5
8	Ultimate Pit limit	G - G'	60.09	100	The second secon	1148	2.5
9	Ultimate Pit limit	H-H'	11.48	100	25 to 28	5659	2.5
10	Ultimate Pit limit	1-1'	56.59	100	16 - 44	-	2.5
11	Ultimate Pit limit	N - N*	281.82	100	18 - 63	28182	2.5
12	Ultimate Pit limit	T-T'	173.84	50	46 - 55	8692	
	Ultimate Pit limit	X - X'	31.49	100	30 to 44	3149	2.5
13		Y-Y'	22.65	100	16 to 23	2265	2.5
14	Ultimate Pit limit		874.07	54	10 to 40	47199.78	2,5
15	Ultimate Pit limit	Z - Z'	974.07				
			4350.71				

	Table continued					
S.N.	Resource Quantity (t)	UNFC code	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
	238384.8075	222	Forest	Manganese	10-25%Mn	Cross-Sectional
1	103357.5	222	Forest	Manganese	10-25%Mn	Cross-Sectional
2	2827.5	222	Forest & Non Forest	Manganese	10-25%Mn	Cross-Sectional
3	8645	222	Forest	Manganese	10-25%Mn	Cross-Sectional
4	17285	222	Forest	Manganese	10-25%Mn	Cross-Sectional
5	74907.5	222	Forest	Manganese	10-25%Mn	Cross-Sectional
6	15022.5	222	Forest	Manganese	10-25%Mn	Cross-Sectional
8		222	Forest	Manganese	10-25%Mn	Cross-Sectional
9	2870	222	Forest	Manganese	10-25%Mn	Cross-Sectional
10	14147.5	222	Forest	Manganese	10-25%Mn	Cross-Sectional
11	70455 21730	222	Forest	Manganese	10-25%Mn	Cross-Sectional
1	7872.5	222	Forest	Manganese	10-25%Mr	Cross-Sectional
13	5662.5	222	Forest	Manganese	10-25%Mr	Cross-Sectional
14	117999.45	222	Forest	Manganese	10-25%Mr	Cross-Sectional

2.2.4.11: Calculation of blocked resources (Manganese >25%Mn)

S.N.	Reserves blocked due to	Cross section/Block	Sectional area/ block area (in Sq mrt)	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³)
			288.53	49.7	40 - 48	14339.941	2.5
1	THE RESERVE OF THE PARTY OF THE	A - A'	8.82	100	36 to 38	882	2.5
2	Ultimate Pit limit	B - B'			38 to 80	35551	2.5
3	Ultimate Pit limit	C-C	355.51	100	33 to 37	8131	2.5
4	Ultimate Pit limit	D - D'	81.31	100	43 to 51	8794	2.5
5	Ultimate Pit limit	E-E"	87.94	100		3708	2.5
6	Ultimate Pit limit	F - F'	37.08	100	17 to 46		2.5
9	Ultimate Pit limit	G-G	8.17	100	13 to 15	817	2.5
	Ultimate Pit limit	H - H'	45.07	100	21 to 24	4507	
8		N - N'	22.29	100	23 to 70	2229	2.5
9	Ultimate Pit limit	IN-IN					



Total	646.19	

S.N.	Resource Quantity (t)	UNFC code	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
	35849.85	222	Forest	Manganese	>25% Mn	Cross-Sectional
2	2205	222	Forest	Manganese	>25% Mn	Cross-Sectional
2	88877.5	222	Forest & Non Forest	Manganese	>25% Mn	Cross-Sectional
3	20327.5	222	Forest	Manganese	>25% Mn	Cross-Sectional
4	21985	222	Forest	Manganese	>25% Mn	Cross-Sectional
5	9270	222	Forest	Manganese	>25% Mn	Cross-Sectional
0	2042.5	222	Forest	Manganese	>25% Mn	Cross-Sectional
-	11267.5	222	Forest	Manganese	>25% Mn	Cross-Sectional
9	5572.5	222	Forest	Manganese	>25% Mn	Cross-Sectional

2.2.4.11: Calculation of blocked resources (Iron 45% to 55%Fe)

s.N.	Reserves blocked due to	Cross section/Block	Sectional area/ block area (in Sq mrt)	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³
-	Ultimate Pit limit	A-A'	1146.85	49.7	30 to 41	56998,445	2.8
1		D-D'	37.24	100	2 to 6	3724	2.8
2	Ultimate Pit limit		134.04	100	2 to 6	13404	2.8
3	Ultimate Pit limit	E - E"			12 to 62	140065	2.8
4	Ultimate Pit limit	F-F	1400.65	100		23038	2.8
5	Ultimate Pit limit	G-G'	230.38	100	26 to 35		2.8
6	Ultimate Pit limit	H-H'	360.86	100	26 to 32	36086	
7	Ultimate Pit limit	M - M,	891.24	100	2 to 10	89124	2.8
_	- Company of the Comp	Total	4201.26				

	Table continued					
s.N.	Resource Quantity (t)	UNFC code	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
	159595,646	222	Forest	Iron Ore	45 to 55% Fe	Cross-Sectional
1	10427.2	222	Forest & Non Forest	Iron Ore	45 to 55% Fe	Cross-Sectional
2	37531.2	222	Forest	Iron Ore	45 to 55% Fe	Cross-Sectional
3	392182	222	Forest	Iron Ore	45 to 55% Fe	Cross-Sectional
4	64506.4	223	Forest	Iron Ore	46 to 55% Fe	Cross-Sectional
5		222	Forest	Iron Ore	45 to 55% Fe	Cross-Sectional
6	101040.8 249547.2	222	Non Forest	Iron Ore	46 to 55% Fe	

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2.2.4.11: Calculation of blocked resources (Iron > 55%Fe)

s.N.	Reserves blocked due to	Cross section/Block	Sectional area/ block area (in Sq mrt)	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³
	The second secon		1178.21	100	26 to 60	117821	3
1	Ultimate Pit limit	G-G'	1598.92	100	6 to 60	159892	3
2	Ultimate Pit limit	H+H'			13 to 49	97907	3
3	Ultimate Pit limit	1+1	979.07	100	15 to 49	27207	
	The state of the s						
		Total	3756.2				

	Table continued					
S.N.	Resource Quantity (t)	UNFC code	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
	353463	222	Forest	Iron Ore	> 55% Fe	Cross-Sectional
1		-	Forest	Iron Ore	>55% Fe	Cross-Sectional
2	479676	222			100000000000000000000000000000000000000	The state of the s
2	293721	222	Forest	Iron Ore	>55% Fe	Cross-Sectional

2 2 4 12: Calulation of Reserves (Manganese 10% to 25%Mn)

	S. S. S. S. S. Olask	Sectional area/block area in Sq mtr	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³)	Reserves Quantity (t)
S.N.	Cross Sectinon/Block		21.3	4 to 60	40865.967	2.5	102164.92
1	A-A'	1918.59	100	5 to 47	270178	2.5	675445.00
2	B - B'	2701.78	100	5 to 67	31657	2.5	79142.50
3	C-C	316,57	100	12 to 44	38983	2.5	97457.50
4	D - D'	389.83		2 to 50	81612	2.5	204030.00
5	E-E,	816.12	100	7 to 58	54600	2.5	136500.00
6	F - F*	546	100	23 to 27	10272	2.5	25680.00
7	G-G'	102.72	100	10 to 28	10431	2.5	26077.50
8	н-н'	104.31	100		25586	2.5	63965.00
9	1-1	255.86	100	4 to 44	134086	2.5	335215.00
10	0 - 0'	1340.86	100	10 to 60	134995	2.5	337487.50
11	P - P'	1349.95	100	7 to 72	523827	2.5	1309567.50
12	Q-Q'	6984.36	75	4 to 44	171095.5	2.5	427738.75
13	R - R*	3421.91	50	2 to 35	262324	2.5	655810.00
14	5 - 5'	5246.48	50	1 to 39	157516.5	2.5	393791.25
15	T - T'	3150.33	50	1 to 50	The second secon	2.5	374675.63
16	U-U'	1998.27	75	1 to 50	149870.25	2.5	181542.50
17	V - V'	726.17	100	10 to 65	72617	2.5	41410.00
18	W - W'	165.64	100	30 to 56	16564	2.5	78666.30
20	Z - Z'	874.07	36	10 to 40	31466.52	2.3	10000.50

c N	UNFC code	Type of Land	Name of the of radical	Grade (%)	Method used for resource estimation
S.N.		Forest	Manganese	10-25%Mn	Cross-Sectional Method
1	122	Forest	Manganese	10-25%Mn	Cross-Sectional Method
2	122	Forest & Non-Forest	Manganese	10-25%Mn	Cross-Sectional Method
3	122	Forest & Non-Forest	Manganese	10-25%Mn	Cross-Sectional Method
4	122	Forest & North-Orest	Manganese	10-25%Mn	Cross-Sectional Method
5	122	Forest	Manganese	10-25%Mn	Cross-Sectional Method
6	122		Manganese	10-25%Mn	Cross-Sectional Method
7	122	Forest	Manganese		Cross-Sectional Method
8	122	Forest	Manganese		Cross-Sectional Method
9	122	Forest			Cross-Sectional Method
10	122	Forest	Manganese		Cross-Sectional Methor
11	122	Forest	Manganese		Cross-Sectional Method
12	122	Forest	Manganese	10-25%Nin	CLOSS-Sectional Method

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13	122	Forest	Manganese	10-25%Mn	Cross-Sectional Method
14	122	Forest	Manganese		Cross-Sectional Method
15	122	Forest & Non-Forest	Manganese	CONTRACTOR DE LA CONTRA	Cross-Sectional Method
16	122	Forest & Non-Forest	Manganese	The second secon	Cross-Sectional Method
17	122	Forest & Non-Forest	Manganese	THE RESIDENCE AND ADDRESS OF THE PERSON NAMED AND ADDRESS OF T	Cross-Sectional Method
18	122	Forest & Non-Forest	Manganese	The state of the s	Cross-Sectional Method
20	122	Forest & Non-Forest	Manganese		Cross-Sectional Method

2.2.4.12: Calulation of Reserves (Manganese >25%Mn)

S.N.	Cross Sectinon/Block	Sectional area/block area in Sq mtr	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³)	Reserves Quantity
1	A-A'	288.53	21.3	4 to 48	6145.689	2.5	15364.2225
2	B - B'	22.12	100	15 to 75	2212	2.5	5530
3	C-C'	262.02	100	15 to 78	26202	2.5	65505
4	D - D'	34.4	100	33 to 47	3440	2.5	8600
5	E-E	418.32	100	14 to 75	41832	2.5	104580
6	F - F'	198.71	100	17 to 46	19871	2.5	49677.5
7	G - G'	43.02	100	13 to 15	4302	2.5	10755
8	H~H*	119.09	100	10 to 24	11909	2.5	29772.5
9	1-1'	209.8	100	6 to 34	20980	2.5	52450
10	0-0'	810.07	100	23 to 53	81007	2.5	202517.5
11	P - P'	803.61	100	7 to 50	80361	2.5	200902.5
12	R - R'	135.85	50	15 to 23	6792.5	2.5	16981.25
13	5-5'	387.09	50	20 to 37	19354.5	2.5	48386.25
14	T+T'	421	50	25 to 49	21050	2.5	52625
15	0-0'	236.33	75	30 to 40	17724.75	2.5	44311.875
16	V - V*	63.82	100	52 to 58	6382	2.5	15955

S.N.	UNFC code	Type of Land	Name of the of radical	Grade (%)	Method used for resource estimation
1	122	Forest	Manganese	>25% Mn	Cross-Sectional Method
2	122	Forest	Manganese		Cross-Sectional Method
3	122	Forest & Non-Forest	Manganese		Cross-Sectional Method
4	122	Forest & Non-Forest	Manganese		Cross-Sectional Method
5	122	Forest	Manganese		Cross-Sectional Method
6	122	Forest	Manganese		Cross-Sectional Method
7	122	Forest	Manganese		Cross-Sectional Method
8	122	Forest	Manganese	THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO PERSONS AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO PERSON NAMED	Cross-Sectional Method
9	122	Forest	Manganese		Cross-Sectional Method
10	122	Forest	Manganese		Cross-Sectional Method
11	122	Forest.	Manganese		Cross-Sectional Method
12	122	Forest	Manganese	>25% Mn	
13	122	Forest	Manganese		Cross-Sectional Method
14	122	Forest & Non-Forest	Manganese		Cross-Sectional Method
15	122	Forest & Non-Forest	Manganese		Cross-Sectional Method
16	122	Forest & Non-Forest	Manganese		Cross-Sectional Method

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2.2.4.12: Calulation of Reserves (Iron 45% to 55%Fe)

S.N.	Cross Sectinon/Block	Sectional area/block area in Sq mtr	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³)	Reserves Quantity
1	A - A'	1146.85	21.3	8 to 47	24427.905	2.8	68398.134
2	8 - 8'	2394.58	100	2 to 30	239458	2.8	670482.4
3	C-C	975.61	100	1 to 22	97561	2.0	273170.8
4	D - D'	2227.79	100	2 to 20	222779	2.0	623781.2
5	E - E'	1018.07	100	2 to 20	101807	2.0	285059.6
6	F - F'	1915.53	100	5 to 60	191553	2.8	536348.4



	0.01	25.53	100	26 to 35	2553	2.8	7148.4
7	G - G'			8 to 57	227578	2.8	637218.4
8	H - H'	2275.78	100			2.8	199908.8
9	1-1'	713.96	100	10 to 60	71396	2.0	241357.2
10	0-0'	861.99	100	2 to 41	86199	2.8	
11	P - P*	940.08	100	26 to 47	94008	2.8	263222.4
12	Q-Q'	1836.14	75	2 to 43	137710.5	2.8	385589.4
12	R - R'	704	50	10 to 35	35200	2.8	98560
13	K-K	1444.05	50	1 to 28	72202.5	2.8	202167
14	2-2		50	8 to 33	98159.5	2.8	274846.6
15	T - T'	1963.19	50	8 (0 33	30133.3		

Table continued.

S.N.	UNFC code	Type of Land	Name of the of radical	Grade (%)	Method used for resource estimation
3.141	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Method
2	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Method
2	122	Forest & Non-Forest	Iron	45 to 55% Fe	Cross-Sectional Method
4	122	Forest & Non-Forest	Iron	45 to 55% Fe	Cross-Sectional Method
5	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Method
6	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Method
7	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Method
8	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Metho
9	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Metho
10	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Metho
11	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Metho
12	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Metho
13	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Metho
14	122	Forest	Iron	45 to 55% Fe	Cross-Sectional Metho
15	122	Forest & Non-Forest	Iron	45 to 55% Fe	Cross-Sectional Metho

2.2.4.12: Calulation of Reserves (Iron >55%Fe)

S.N.	Cross Sectinon/Block	Sectional area/block area in Sq mtr	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³)	Reserves Quantity (t)
5.14.		1361.16	100	12 to 60	136116	3	408348
1	G - G'		100	20 to 40	110585	3	331755
2	H-H'	1105.85				3	653766
2	1-1	2179.22	100	10 to 32	217922	3	
4	1-1'	217.33	100	0 to 4	21733	3	65199
				THE RESERVE THE PARTY OF THE PA			

Table continued

S.N.	UNFC code	Type of Land	Name of the of radical	Grade (%)	Method used for resource estimation
3.14.	122	Forest	Iron	> 55% Fe	Cross-Sectional Method
1		Forest	Iron	> 55% Fe	Cross-Sectional Method
2	122				Cross-Sectional Method
3	122	Forest	Iron		
4	122	Forest	Iron	> 55% Fe	Cross-Sectional Method

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Mineral	Manganese					
Reserves/ Resources estimated as on	01/04/202	1				
UNIT of estimation	Metric To	n				
Classification	Code		Quantity		Grad	e
		Forest	Non-Forest	Total	Forest	Non-Forest
A. Mineral Reserve		Topological Land				
1. Proved Mineral Reserve (A)	111	0	0	0		
2. Probable Mineral Reserve (A)	121	0	0	0		
3. Probable Mineral Reserve (A)	122	850000.51	73913.088	923913.598	Above 25% Mn	Above 25% Mr
B. Remaining Resources	211	1 0		1 0 1	4	1
Feasibility Mineral Resource (B)	211	0	0	0		
2. Prefeasibility Mineral Resource (B)	221	0	0		Above 25% Mn	Above 25% Mr
Prefeasibility Mineral Resource (B)	222	197397.350	0.000	197397.35	Above 25% Min	Above 25% IVII
4. Measured Mineral Resource (B)	331	0	0	0		
5. Indicated Mineral Resource (B)	332	0	0	0		
6. Inferred Mineral Resource (B)	333	0	0	0		
7. Reconnaissance Mineral Resource (B)	334	0	0	0		
				1121310.95		
Total Mineral Resources (A+B)	Mineral Resources (A+B)			1121310.95		
2.2.4.13:						
Mineral	Manganese					
Reserves/ Resources estimated as on	01/04/2021					
JNIT of estimation	Metric To	n				
Classification	Code	I Me Tribe	Quantity		Grad	e
		Forest	Non-Forest	Total	Forest	Non-Forest

2. Probable Mineral Reserve (A)	121	0	0	0		
3. Probable Mineral Reserve (A)	122	5102657.49	443709.35	5546366.84	Above 10%-25% Mn	bove 10%-25% Mr
B. Remaining Resources						
Feasibility Mineral Resource (B)	211	- 0	0	0		
2. Prefeasibility Mineral Resource (B)	221	0	0	0		
3. Prefeasibility Mineral Resource (B)	222	701166.760	0.000	701166.76	Above 10%-25% Mn	bove 10%-25% Mr
4. Measured Mineral Resource (B)	331	0	0	0		
5. Indicated Mineral Resource (B)	332	0	0	0		
6. Inferred Mineral Resource (B)	333	0	0	0	The second second	

Total Mineral Resources (A+B)

7. Reconnaissance Mineral Resource (B)

A. Mineral Reserve 1. Proved Mineral Reserve (A)

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Date: 2021.11.03

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Mineral	Iron					
Reserves/ Resources estimated as on	01/04/20	21				
UNIT of estimation	Metric t	on				
Classification	Code		Quantity		Grade	
		Forest	Non-Forest	Total	Forest	Non-Forest
A. Mineral Reserve						
1. Proved Mineral Reserve (A)	111	0	0	0		
2. Probable Mineral Reserve (A)	121	0	0	0		
3. Probable Mineral Reserve (A)	122	1459068	0	1459068	Above 55% Fe	
		V. Santa III				
B. Remaining Resources						
Feasibility Mineral Resource (8)	211	0	0	0		
2. Prefeasibility Mineral Resource (B)	221	0	0	0	11 200.0	
3. Prefeasibility Mineral Resource (B)	222	1126860		1126860	Above 55% Fe	
4. Measured Mineral Resource (B)	331	0	0	0		
5. Indicated Mineral Resource (B)	332	0	0	0		LOW I
6. Inferred Mineral Resource (B)	333	0	0	0		
	334	0	0	0		
7. Reconnaissance Mineral Resource (B)	334	U		_		
Total Mineral Resources (A+B)	354			2585928		
Total Mineral Resources (A+B) Associated Mineral (A1)	lron			2585928		
Total Mineral Resources (A+B) Associated Mineral (A1) Mineral	Iron	E		2585928		
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on		21		2585928	1	
Total Mineral Resources (A+B) Associated Mineral (A1) Mineral Reserves/ Resources estimated as on	lron 01/04/20	21	Quantity	2585928	Grade	
Total Mineral Resources (A+B) Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation		21	Quantity Non-Forest	2585928	Grade	Non-Forest
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification		121 on				Non-Forest
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve		121 on		Total 0		Non-Forest
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A)	lron 01/04/20 Metric t Code	Forest	Non-Forest 0 0	Total 0 0	Forest	Non-Fores
A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A)	lron 01/04/20 Metric t Code	21 on Forest	Non-Forest 0	Total 0		Non-Forest
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A)	Iron	Porest 0 0	Non-Forest 0 0	Total 0 0	Forest	Non-Forest
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A) 3. Probable Mineral Reserve (A)	Iron	Porest 0 0	Non-Forest 0 0 0	Total 0 0 4767258.73	Forest	Non-Fores
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A) 3. Probable Mineral Reserve (A) 8. Remaining Resources	Iron	721 On Forest 0 0 4767258.73	Non-Forest 0 0 0	Total 0 0 4767258.73	Forest	Non-Fores
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A) 3. Probable Mineral Reserve (A) 8. Remaining Resources 1. Feasibility Mineral Resource (B)	Iron	0 0 4767258.73	Non-Forest 0 0 0 0 0	Total 0 0 4767258.73	Forest Above 45% to 55% Fe	Non-Fores
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A) 3. Probable Mineral Reserve (A) B. Remaining Resources 1. Feasibility Mineral Resource (B) 2. Prefeasibility Mineral Resource (B)	Iron	721 On Forest 0 0 4767258.73	Non-Forest 0 0 0 0 2 249547.2	Total 0 0 4767258.73 0 0 1014830.45	Forest	Non-Fores
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A) 3. Probable Mineral Reserve (A) B. Remaining Resources 1. Feasibility Mineral Resource (B) 2. Prefeasibility Mineral Resource (B) 3. Prefeasibility Mineral Resource (B)	Iron	765283.25 0	0 0 0 0 0 249547.2 0	Total 0 0 4767258.73 0 0 1014830.45 0	Forest Above 45% to 55% Fe	Non-Fores
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A)	Iron	0 0 4767258.73 0 0 0 765283.25	0 0 0 0 0 2 49547.2 0	Total 0 0 4767258.73 0 0 1014830.45 0 0	Forest Above 45% to 55% Fe	Non-Forest
Associated Mineral (A1) Mineral Reserves/ Resources estimated as on UNIT of estimation Classification A. Mineral Reserve 1. Proved Mineral Reserve (A) 2. Probable Mineral Reserve (A) 3. Probable Mineral Reserve (A) B. Remaining Resources 1. Feasibility Mineral Resource (B) 2. Prefeasibility Mineral Resource (B) 3. Profeasibility Mineral Resource (B) 4. Measured Mineral Resource (B) 4. Measured Mineral Resource (B)	Iron	765283.25 0	0 0 0 0 0 249547.2 0	Total 0 0 4767258.73 0 0 1014830.45 0	Forest Above 45% to 55% Fe	Non-Forest

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Total Mineral Resources (A+B)

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2.2.5: Future Exploration Proposal

2.2.5.1: Geological Mapping

S.N.	Year	Scale	Area Covered (ha)
1	Year1	Not Applicable	Not Applicable
1	Year2	Not Applicable	Not Applicable
1	Year3	Not Applicable	Not Applicable
1	Year4	Not Applicable	Not Applicable
1	Year5	Not Applicable	Not Applicable

2.2.5.2: Ground Geophysical Survey

			The Survey of the	1 1 1 1 1 1 1 1 1 1		
S.N.	Type of Survey	Spacing (m)	Total line (km)	Area Covered (ha)	Latitude	Longitude
1	Not Proposed	Not Proposed	Not Proposed	Not Proposed	Not Proposed	Not Proposed

2.2.5.3: Pitting

Number of pits *

Not Proposed

7577		TO A SECOND IN	THE REPORT OF			Depth of Pit		
SN.	Year	Land type	Pit ID	Length of Pit (m)	Width of Pit (m)	(m)	Latitude	Longitude
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

2.2.5.4: Trenching

Number of Trenches *
Not Proposed

2.2.5.4.1: SPACING

Min (m) *
Not Applicable

Max (m) *
Not Applicable

Avg (m) *

2.2.5.4.2: Area Covered Under Trenching

Co-ordinates

S.N.	Year	Land type	Trench ID	Length of Trench (m)	Width of Trench (m)	Depth of Trench (m)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

S.N. From Latitude From Longitude To Latitude To Longitude

Not Applicable Not Applicable Not Applicable Not Applicable

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2.2.5.5: Exploratory Drilling

2.2.5.5.1: Core Drilling & Non-Core Drilling

	In forest area						
S.N.	Year	No. of boreholes	Total mtr	Type of borehole	Grid interval		
1	1sy Year	146	7300	Core	50 x 25 m		
2	2nd Year	109	5450	Core	50x 25 m		
3	3rd Year	58	2900	Core	50 x 25 m		
4	4th year	104	5200	Core	50 x 25 m		
5	5th Year	90	4500	Core	50 x 25 m		

Table continued...

	BY EUR DON DE DES LOS						
S.N.	No. of boreholes	Total mtr	Type of borehole	Grid interval	Total borehole	Total Mtr	Attachment
1	36	1800	Core	50 x 25 m	182	9100	Shown in Geological Map
2	0	0	0	0	109	5450	Shown in Geological Map
3	0	0	Core	50 x 25 m	58	2900	Shown in Geological Map
4	20	1000	Core	50 x 25 m	124	6200	Shown in Geological Map
5	38	1900	Core	50 x 25 m	128	6400	Shown in Geological Map

^{*}The proposed borehole depth will be end of the mineralisation or as per Geological interpitation

2.2.5.6: Exploratory Mining

S.N.	Year	Pit ID	Length in mtrs	Width in mtrs	Depth in mtrs	Volume (m³)
1	Not Proposed	Not Applicable				

2.2.5.7: Sampling

S.N.	Type of Sample	Number of Samples proposed	Area Covered (ha)	Latitude	Longitude
	Drill core	9100	38.71	Bore Hole Sample	Bore Hole Sample
	Drill core	5450	21.36	Bore Hole Sample	Bore Hole Sample
	Drill core	2900	12.69	Bore Hole Sample	Bore Hole Sample
	Drill core	6200	25	Bore Hole Sample	Bore Hole Sample
	Drill core	6400	25.51	Bore Hole Sample	Bore Hole Sample

2.2.5.8 Petrology & Mineralogical Studies

S.N.	Type of Sample	Number of Sample proposed
1	Not Proposed	Not Applicable

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Chapter 3: Mineral Beneficiation / Processing

Name of The Ore/Mineral Manganese and Iron

3.1: Mineralogy of the ROM ore/ Mineral:

	THE ROLL OF THE PARTY OF THE PA	VI ST OUGULA	- Nequelanic	Its/feboule/En
S.N	Valuable Mineral	Approx. Mineral	Gangue Mineral/s Name	Approx. Gangue Mineral %
	Not Available	Not Available	Not Available	Not Available

3.2: Complete Chemical Analysis of the ROM Ore/Mineral:

S.N	Backley Co.	THE PERSON NAMED IN
	Radicals	Wt %
	Not Available	Not Available

3.3: Crushing Section:

3.3.1: Primary Crushing

S.N	Type of Crusher	Make	Capacity of Crusher (tph)	Feed Size (mm)	Product Size (mm)
1	Jaw Crusher	METSO/ Equivalent	200 x 2	40+	0 to 10, 10 to 40 & 40 to 120

3.3.2: Secondary Crushing

S.N	Type of Crusher	Make	Capacity of Crusher (tph)	Feed Size (mm)	Product Size (mm)
1	Cone	METSO/ Equivalent	200 x 2	40 to 120	0 - 5, 5 - 18, 10 - 40

3.3.3: Tertiary Crushing

S.N	Type of Crusher	Make	Capacity of Crusher (tph)	Feed Size (mm)	Product Size (mm)
1	Cone	METSO/ Equivalent	200 x 2	Oct-40	0-5 & 5-18

Based on requirement

3.4: Grinding Section

3.4.1. Dry Grinding

S.N	Type of Mill	Stages	Make of the mill	Feed Flow Rate (tph)	Feed Size (mm)	Product Size Mill Discharge (mm)	Type of screen
-	Not Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table continued...

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S.N	Make	Aperture Size of Screen/Classifier (mm), if applicable	Classifier / Screen undersize (tph)	Classifier / Screen oversize (tph)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.4.2: Wet Grinding

S.N	Type of Mill	Stages	Make of the mill	Feed Flow Rate (tph)	Feed Size (mm)	Product Size (mm)	Type of screen / Classifier
1	Not Proposed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table continued...

S.N.	Aperture Size of Screen/Classifier (mm), if applicable	Classifier / Screen undersize (tph)	Classifier / Screen oversize (tph)	Water Requirement (I/h)	Fresh Water Requirement (I/h)	Recirculated Water (I/h)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.5: Dry Processing

3.5.1: Screening and Classification

s.N	Type of screen / classifiers	Stages	Make	Capacity (tph)	Aperture Size of Screen/Classifier (mm), if applicable	Feed Size (mm)	Product Size (mm)	Product quality (if applicale)
	Vibrating Screen	Multiple	Horizon/Equivalent	250 x 2	Not Applicable	0 to 300	0 - 5, 5 - 18, 10 - 40, +40	Not Applicable
	Vibrating Screen	Multiple	Horizon/Equivalent	150 x 1	Not Applicable	0 to 300	0 - 5, 5 - 18, 10 - 40, +40	Not Applicable

3.5.2: Other Operations

1	Type of equipment /	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product Size (mm)	Product-Mid (tph), if available	Product-Tail (tph)
1	Not Proposed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.5.3: Product Quality

Products	Wt %	In tonnes	Size (range) mm	Complete chemical analysis
Concentrate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Sub-grade	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Rejects	Not Applicable	Not Applicable	Not Applicable	Not Applicable

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3.6: Wet Processing

3.6.1: Scrubbing / Washing

S.N	Type of Scrubbers / washers	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product Size (mm)	Product quality (if applicale)
1	Not Proposed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table continued...

S.N	Water Requirement (I/h)	Fresh Water Requirement (I/h)	Recirculated water (I/h)
1	Not Applicable	Not Applicable	Not Applicable

3.6.2: Screening and Classification

s.N	Type of screen / classifiers	Stages, if applicable	Make	Capacity (tph)	Aperture Size of Screen/Classifier (mm), if applicable	Feed Size (mm)	Product Size (mm)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table continued...

S.N	Product quality (if applicale)	Water Requirement (I/h)	Fresh Water Requirement (I/h)	Recirculated water (I/h)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.6.3: Gravity Separation

S.N	Type of separators (jig, table, spiral, etc.)	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product (Conc) (tph)	Product-Mid (tph), if available
1	Not Proposed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table continued...

S.N	Product-Tail (tph)	Water Requirement (I/h)	Fresh Water Requirement (I/h)	Recirculated water (I/h)
	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.6.4: Magnetic Separation

SI. No.	Type of magnetic separators (magnetic intensity)	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product-Mag (tph)	Product-Mid (tph), if available
1	Not Proposed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table continued...

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SI. No.	Product non-Mag (tph)	Water Requirement (I/h)	Fresh Water Requirement (I/h)	Recirculated water (I/h)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.6.5: Flotation

S.N	Type of flotation equipment (froth/ column)	Stages (rougher/ cleaner, etc), if applicable	Make	Capacity (tph)	Feed Size (mm)	Product-Float (tph)	Product non-Float (tph)
	Not Proposed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

S.N	Water Requirement (I/h)	Fresh Water Requirement (I/h)	Recirculated water (I/h)
1	Not Applicable	Not Applicable	Not Applicable

3 6 6. Other Operations

S.N	Type of equipment / operation	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product-Conc (tph)	Product-Mid (tph), if available
1	Not Proposed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

S.N	Product-Tail (tph)	Water Requirement (I/h)	Fresh Water Requirement (I/h)	Recirculated water (I/h)
	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.6.7: Product Quality (wet processing)

Products	Wt %	In tonnes	Size (range) mm	Complete chemical analysis
Concentrate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Sub-grade	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Rejects	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.7: Overall Product Quality (Dry cum Wet Processing)

Products	Wt %	In tonnes	Size (range) mm	Complete chemical analysis
Concentrate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Sub-grade	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Rejects	Not Applicable	Not Applicable	Not Applicable	Not Applicable

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3.8: Disposal Method for tailing/ rejects

a) Explain the disposal method for tailing or reject from processing plant with detail chemical / mineral analysis of tailing	Not Applicable	Not Applicable
b) Size and capacity of tailing pond, toxic effect of such tailings, process adopted to neutralise its effect (if any)	Not Applicable	Not Applicable
c) Any other data (if available)	Not Applicable	Not Applicable

3.9: Overall water requirement of mining and mineral processing

Indicate quantity, source of supply, disposal of water and extent of recycling and chemical analysis of water	Attach överall water balance chart	Not Applicable
--	------------------------------------	----------------

3.10: Flow sheets and charts

Material balance chart of mineral processing plant(s) (each stage of process)	Attach as annexure -	
Attach flow sheet of beneficiation of plant(s)	Not Applicable	Not Applicable
Any other data (if applicable)	Not Applicable	Not Applicable

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Chapter 4: Mining Operations

4.1: Mining Method (Opencast)

4.1.1: Existing Method of Mining

Choose one or more Fresh Grant Mining Lease.

4.1.2: Proposed Method of Mining

Choose one or more HEARM with deephole drilling

Beasons for Proposed Changes

iverburden and ROM are being removed by using shovel-dumper combination

The benches are being maintained for iron ore is 10 mtrs of height and width will be equal and more han the height at the same time for Manganese ore the height will be 5 Mtrs and width will be equal and more than the height. The

haul road having width of 8 - 12m with gradient of 1:16 is designed in the sarries. Blast holes for both overburden and ore are drilled by 100mm diameter rawler drills with 365 cubic feet per minute (cfm) compressors.

The blasted run-off mine Manganese ore is being hauled to sorting places located at the designated site. The ROM is then dressed, sorted, sized and graded, the blasted run-off. The piecerated (Mazdoor/Reja) are deployed at different sorting places considering the average output per man shift of 1 ton (Avg.) viewing the finished ore production required from the particular quarry / pit. The different quality of finished ore are then loaded manually / mechanically to the dumpers and transported to stacking ground for stacking the ore in regular geometrical shapes and samples are collected and analyzed at our laboratory. Then removal permission is obtained from Mining Department of State Government after stack verification.

The blasted run-off mine Iron ore is being hauled to processing plant area as deginated for screening and crushing. The different quality of finished ore are then loaded mechanically to the dumpers and ransported to stacking ground for stacking the ore in regular geometrical shapes and samples are offected and analyzed at our laboratory. Then removal permission is obtained from the Mining Department of State Government after stack verification.

For Iron Saleable - >55% Fe, Mineral Reject - 45 to 55%Fe, Waste - <45%Fe

For Manganese Saleable - >25%Mn, Mineral Reject - 10 to 25%Mn, Waste - <10%Mn.

Mineral Reject will be stacked separately at the earmarked location, which will be sale as per the narket demad and also blend with the available high grade materials.

As the nature of the ore is hard, about 30% of the total production will be required blasting. The roposed mining will have 10m height benches in Iron & 5m height benches in Manganese and will be drilled for blast holes by 115 mm diameter DTH drills fed by compressed air. These holes will be drilled n staggered pattern with burden and spacing of 2.5m and 3.0m respectively. No secondary blasting will be done. Rock breaker will be utilized breaking big boulders if any.

Deep hole blasting has been proposed for loosening of hard materials. In the proposed mining area, 11m &5.5m deep Blast holes will be drilled which consists of 10m & 5m bench height and 1m & 0.5m

High explosives will be loaded by bottom charging or deck charging. The stemming length is proposed to be one third of the hole depth. The explosive column will be blasted under "V" type blasting pattern nitiated by detonator & NONEL and safety fuse.

For deep hole blasting, permission has been obtained from Directorate General of Mine Safety, Chaibasa regions.

Drilling pattern

Staggered pattern of drilling and row to row sequence with the help of ordinary delay detonators will be adopted for the blasting purpose. During blasting of multi-rows or more numbers of holes in a single row, provision of delay detonator and NONEL/RAYDET shall be utilized in order to control ground

Type of explosive and detonator to be used

Nitrate mixture such as Power gel explosive will be used for blasting. Electric detonator and Nonel

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system will be used for initiation / ignition. The use of Nonel system of initiation will have the following

2 High blasting efficiency

Minimize ground vibration

It Control fly rocks

Better fragmentatio

25 Safe to handle

Storage of Explosive The explosive for blasting will be out sourced by agreement under Rule 22 from authorized agencies as per the requirement. Hence, there will be no storage facilities for explosive within the mine.

Precautionary measures during blasting

The major hazards associated with blasting are as follows:

ij Ground vibration and resulting damage to structure and surrounding rock strata.

II) Fly rock

(ii) Noise and air overpressure and

(v) Dust and fumes

Some of measures proposed to be adapted to restrict these hazards with acceptable limit are:

i) Adopting the safe charge per day to restrict the peak particle velocity (ppv) of ground vibration as per

ii) Avoiding holes of uneven depth of blacked hales from tie-up sequence.

iii) Avoiding water accumulation in the holes, and if there is any water accumulation in the hole, the same has to be dewatered wherever practicable.

iv) Muffing the blasting, as far as practicable, particularly where safe zone is not possible to be adhered

v) Covering the detonating cords by soil layers.

4.2: Operational Parameters

4.2.1: Inventory of Existing Pits & Dumps

4.2.1.1: Pits

S.N.	Pit ID	Pit Status	Area Covered by Pit (Ha)	Pit Dimension (m x m x m)
1	Quarry-1	Old Quarry	0.111	48 x 23.13 xx 5
2	Quarry-1A	Old Quarry	0.045	44 x 13.54 x 3
3	Quarry-18	Old Quarry	0.016	15.1 x 3.33 x 2
4	Quarry-1C	Old Quarry	0.016	16 x 3.33 x 2
5	Quarre-1D	Old Quarry	0.02	16.9 x 4.17 x 3
6	Quarry-2	Old Quarry	0.166	61 x 34.58 x 5
7	Quarry-2A	Old Quarry	0.043	28.7 x 8.96 x 11
8	Quarry-28	Old Quarry	0.02	15.6 x 4.17 x 1
9	Quarty-5	Old Quarry	0.141	50.8 x 29.38 x 10
10	Quarry-3A	Old Quarry	0.01	12.88 x 2.08 x 2
11	Cluarry-36	Old Quarry	0.01	16.6 x 2.08 x 2
12	Quarry-3C	Old Quarry	0.045	27.4 x 9.38 x 5
13	Quarry-3D	Old Quarry	0.007	8.9 × 1.46 × 3
14	Quarry-3E	Old Quarry	0.064	30 x 13.33 x 5
15	Quarry-SF	Old Quarry	0.032	23.6 x 6.67 x 6
16	Quarry-3G	Old Quarry	0.201	47 x 21.04 x 5.5
17	Quarry-3H	Old Quarry	0.047	32.5 x 9.79 x 4

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13	Quarry-38	Old Quarry	0.113	46 x 23.54 x 4
19	Quarry-4	Old Quarry	0.134	100.1 x 27.92 x 2
20	Quarry-4A	Old Quarry	0.034	34.5 x 7.08 x 2
21	Quarry-48	Old Quarry	0.021	21 x 4.38 x 2
22	Quarry-4C	Old Quarry	0.042	42 x 8.75 x 2
23	Quarry:40	Old Quarry	0.001	43 x 0.21 x 1.5
24	Quarry-4E	Old Quarry	0.005	9.5 x 1.04 x 1.5
25	Quarry-4F	Old Quarry	0.007	9 x 1.46 x 1.5
26	Quarry-46	Old Quarry	0.017	17 x 3,54 x 1.3
27	Quarry-fill	Old Quarry	0.048	39 x 10 x 2
28	Quarry-5	Old Quarry	0.101	59 x 21.04 x 2
29	Quarry-5A	Old Quarry	0.01	.22 x 2.08 x 1
30	Quarry-6	Old Quarry	0.193	77 x 40.21 x 3.5
31	Quarry-5A	Old Quarry	0.024	18.5×5×4
32	Quarry-7A	Old Quarry	0.178	86 x 37.08 x 2
33	Quarry-7	Old Quarry	0.559	57.5 x 33.13 x 4
34	Quarry-76	Old Quarry	0.013	15.4 x 2.71 x 2
35	Quarry-7C	Old Quarry	0.058	41 × 12,08 × 4
36	Quarry-7D	Old Quarry	0.021	19 x 4.38 x 2.5
37	Quarry-7E	Old Quarry	0,022	18 x 4.58 x 2
38	Quarry-7F	Old Quarry	0.049	33.9 x 10.21 x 2
39	Quarry-8	Old Quarry	0.124	38 x 25.83 x 10
40	Quarry-9	Old Quarry	0.099	59.5 x 20.63 x 4.5
41	Quarry-9A	Old Quarry	0.006	10.8 × 1.25 × 2
42	Quarry-98	Old Quarry	0.006	9.5 x 1.25 x 1
43	Querry-9C	Old Quarry	0.031	27.3 x 6.46 x 2
44	Quarry-90	Old Quarry	0.016	16.8 x 3.38 x 1.5
45	Quarry-9E	Old Quarry	0.045	34.8 × 9.38 × 2

	4.2.1.2.1: Dump Details						
5.N	Dump ID	Dump Status	Type of Dump	Total Dump Quantity (t)	Area covered by Dump (Ha)	Height (m)	Location
	There is no existing Dump	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

	4.2.1.2.2: Stack Details				
S.N	Stack ID	Type of Stack	Total Stack Quantity (t)	Area covered by Stack (Ha)	Height (m)
4	There is no existing Stack	Not Applicable	Not Applicable	Not Applicable	Not Applicable

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4.2.1.3: Details of stabilised dumps

S.N	Dump ID	Number of Terraces	Average Height of Terraces (m)	Length of Toe Wall (m)	Length of Garland Drain (m)	Area Stabilized (ha)	Method of Stabilization
1	There is no existing Dump	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

4.2.2: Opencast Mining

Pit Id	Year	Max Height of	Min Width of	Slope of the Bench in	Max Height of the	Minimum Width of the	Slope of the Bench in	Overall Slope of Pit
		the Benches in Over Burden (m)	the Benches in Over Burden (m)	Over Burden (degree)	Benches in Mineral (m)	Benches in Mineral (m)	Mineral (degree)	(degree)
Lasenga_Pit_1	Vear 1	10	10	85 or more	30	10 or more	85 or more	27 to 6
Lasenda_Pit_2	Vear 1	5	5	85 or more		S or more	85 or more	45 to 5
Laserda_Pit_1	Year 2			0	10	10 or more	85 or more	27 to 5
Laterda Pit 2	Year 2	0	0	0	5	5 or more	85 or more	45 to 5
Lasenda_Fit_1	Year 3	10	10	85 or more	30	10 or more	85 or more	17 to 5
Lasenda Pit 2	Year 3	5	5	85 or more	5	5 or more	85 or more	18 to 2
Lasenda_Pit_2	Year 4		0	0	- 5	5 or more	85 or more	1
Laserda Pit 3	Year 4	5	5	ES or more	5	5 or more	85 or more	47 to 6
Lasenda_Pit_2	Year 5	0	0	0	5	5 or more	85 or more	13 to 5

Max Slope Angle of Year-Wise Year-Wise Development Number of Depth of Water Pit Id Number of Benches Number of Max Depth of Haul Roads (1 in) Development & & Production Section Benches in Workings (m) Table (m) in Top Soil Benches in Over **Production Plan** Burden Mineral Plate No - WAL AZ & AX Loserda Pt 1 Mate No - IV(81, 62 & 63) 490 RL 490 RL Plate No - N(81, 82 & 33) Laserda Pit 2 Laserda Pit 1 21 mtrs from OG 16 Plate No - IV (C) 16 Plate No - IV (C) 490 RL 490 RL 490 RL 16 Plate No - IV (D) Plate No - IV(01, 02 & 03 4 27 mtrs.from OGL 8 24 mtrs from OGL Lasenda_Pit_2

S.N	Year	Pit ID	Bench	Direction	Bulk Density of Overburden (BD1) (ton/m³)	Bulk Density of Mineral (BD2) (tonn/m³)	Top Soil Volume (Length x Width x Height) (m³)	Over Burden Volume (Length x Width x Height) (m³)	Over Burden Quantity (t)	Column1
1	Year 1	Laserda_Pit_1	1	North - South	2.2	3	0	537686	1182909	Cinly Iron Pit
2	Year Z	Lüserda Pit 1	- 6	North - South	22	1	0	255284	561625	Only tran Pit
	Year 2	Laserda_Pit_2		East - West		1100/120	0	0	0	Manganese dominated pit, therefore total waste for been calculated for Manganese.
	Year 3	Laserda_Pit_1	1	North - South	22	2.6	0	420889	925956	Only from Pit
4	Year 4	Laserda_Pit_2	3	East - West	73	7.8	0	36061	79334	Iron dominited Pit.
	Year 4	Lacerda_Pit_3		East - West	0	2.8	D	0	0	Manganese dominated pit, therefore total waste ha been calculated for Manganese.
7	Year 5	Lacerda_Pit_2	4	East - West	2.2	2.8	0	150558	287316	fron dominited Pit

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S.N	ROM Volume (Length x Width x Height) (m³)	ROM Quantity (t)	Recovery	Mineral Reject (t)	Production Main (t)	Production Associated (t)	Location of Advancement	OB to Ore Ratio (ton/m ³
1	580712	1545433	300	0	1545433	0	326314.85E, 2440724.01N & 326375.67E, 2441102.46N	01:00
2	257132	711396	100	0	711396	0	326315.71E, 2440748.32N & 326395.85E, 2441056.57N	01:00
3	19160	53641	100	0	53648	0	326335.90E, 2441451.12N & 326525.35E, 2441448.66N	00:00
4	224837	629630	100	:472147	157302	0	326375.69E, 2441103.08N & 326568.19E, 2441203.22N	01:00
5	96046	268929	100	201697	67232	0	326392.61E, 2441523.20N & 326657.01E, 2441501.07N	03:00.
6	25910	72548	100	54411	18137	0	326121 25E, 2440987,51N & 326274,70E, 2441044,93N	80:00.
,	127286	356401	100	267301	89100	0	326362.32E, 2441510.76N & 326622.95E, 2441508.26N	01:00

S.N	Pit ID	Total Topsoil Volume (m³)	Total Over Burden Volume (m ⁵)	Total Over Burden Quantity (t)	Total ROM Volume (m³)	Total ROM Quantity (t) (Iron)
1	Laserda_P/t_1	0	1211859	2670490	992676	2486259
2	Laserda Pit 2	0	166659	366650	242492	678978
3	Laterda_Pit_3	0	0	0	25910	72548

4.2.2.2: Yearwise Opencast Development (Manganese)

S.N	Year	Pit ID	Bench	Direction	Bulk Density of Overburden (BD1) (ton/m³)	Bulk Density of Mineral (BD2) (tonn/m³)	Top Soil Volume (Length x Width x Height) (m ³)	Over Burden Volume (Length x Width x Height) (m³)	Over Burden Quantity (t)	Column1
1	Year 1	Laserida_Pit_2	3	East - West	2.2	2.5	12449	114470	251834	Manganese Dominated Pit
2	Year 2	Laserda_Pit_2	2	East - West	2.2	2.5	0	79839	175646	Manganese Domineted Pit
3	Year 3	Laserda Pt 2	2	East - West	2.2	2.5	0	30530	67166	
4	Year 4	Caserda_Pit_2	1	East - West	2.2	2.5	8411	0	0	iron dominated pit, therefore total waste has been calculated for Iron.
5	Year 4	Laserda Pit 3	6	East - West	2.2	2.5	0	161438	355164	Manganese Domineted Pit
6	Year.5	Laserda_PR_2	4	East - West	2.2	2.5	1228	0	0	Iron dominated pit, therefore total waste has been calculated for iron.

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S.N	ROM Volume (Length x Width x Height) (m ³)	ROM Quantity (t)	Recovery	Mineral Reject (t)	Production Main (t)	Production Associated (t)	Location of Advancement	OB to Ore Ratio (ton/m
	7406	18515	100	15738	2777	0	326358.94E, 2441432.57N & 326145.93E, 2441454.37N	01:06.2
,	13780	24450	100	29282	5168	0	325335.90E, 2441451.12N & 326525.35E, 244144E,66N	01:02.3
	10147	25368	100	11097	14271	0	326378.97E, 2441439.01N & 326487.43E, 2441457.97N	01:01.2
	7720	19300	100	16405	2895	0	326392.61E, 2441523.20N & 326657.01E, 2441503.07N	0.00.0
	17205	49013	100	17793	25220	0	326121.25E, 2440987.51N & 326274.70E, 2441044.93N	01:01.8
	4426B	110670	100	94070	16601	0	326362.32E, 2441510.76N & 326622.95E, 2441508.26N	0:00

S.N	Pit ID	Total Topsoil Volume (m³)	Total Over Burden Volume (m³)	Total Over Burden Quantity (t)	Total ROM Volume (m³)	Total ROM Quantity (t) (Mn)	Column1
	Laserda Pit 2	22088	224839	494646	83321	206303	
3	Laserda Pit 3	0	161438	355164	17205	43013	

4.2.2.3: Transportation & Hauling Equipment

S.N	Type	Make	Capacity (m³)	No. of Equipments
1	Tipper	VOLVO	18	12
2	Water Tanker	Ashok Leyland	32.65	2
3	Loader	SDLG	3.5	2

4.3: Material Handling Summary

4.3.1: Studies Undertaken

5 Unuertaken		
Blast Vibration Study Report	No	(If yes attach report as annexure)
Slope Stability Study Report	No	(If yes attach report as annexure)
Recovery Study Report	No	()f yes attach report as annexure)
Hydrological Study Report	No	(If yes attach report as annexure)
Mineral Beneficiation Study Report	No	(if yes attach report as annexure)
Subsidence Study Report	No	(If yes attach report as annexure)
Geotechnical Study Report	No	[if yes attach report as annexure]
Any Other Study Report	No	(If yes attach report as annexure)
Bulk Dansity Study Report	Yes (Annexure - 11)	(If yes attach report as somexore)

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4.3.2: Insitu Mining (Iron)

S.N.	Year	Total Handling (t)	Waste Quantity (t)	ROM Quantity (t)	ROM Quantity Saleable Mineral (t)	ROM Quantity Mineral Reject (t)	Quantity)	Grade Range (%	Column1 Not Applicable
	Year 1	2726342	1182909	1545433	1545433	0	01.00 E	58.35 Fe	
	Year 2	1326669	561625	765044	765044	0	00:00.7	60.03 Fe	Not Applicable
					157382	872147	01:01.5	52 to 55% Fe	"Mineral Reject will be stacked at the earmarked location shown in the map, which will be sale as per the market demad and also blend with the available high grade materials.
	Year 3	1555486	925956	629530				50 to 55% Fe	do
	Year 4	420811	79334	341477	85369	256108	01:00.2		- 40
	Year 5	643717	287316	356401	89100	267303	01:00.8	52 to SSN Fe	00.

S.N.	Mining (Mangar Year	Total Handling (t)	Waste Quantity (t)	ROM Quantity (t)	ROM Quantity Saleable Mineral (t)	ROM Quantity Mineral	Ore to OB Ratio (ROM Quantity / Waste Quantity)	Grade Range (%	Column1
		270349	251834	18515	2277	15738	01:12.6	10 to 30% Mn	"Affineral Reject will be stacked at the earmarked location shown in the map, which will be sale as per the market demad and also blend with the evailable high grade materials.
	Year 1					13	01:05.1	10 to 30% Mm	"Mineral Reject will be stacked at the earmarked location shown in the map, which will be sale as per the market demad and also blend with the availabl high grade materials.
	Year 2	210056	175606	34450	5168	29282			- Anna Anna Anna Anna Anna Anna Anna Ann
	Year 3.	92534	67166	25.568	14271	11097	03:00:4	10 to 30% Mn	00.
	- Contract		355164	62313	28115	34198	01:05.7	10 to 30% Mn	da
	Year 4	417477		110670	16601	54070	00.00.0	10 to 30% Mn	do

S.N.	Year	Dump ld	Location Latitude	Location Longitude	Area (m²)	Avg Height of Dump (m)	Valume (m³)	Total Dump Quantity (t)
1	No Dump Working proposed during plan period	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

S.N.	Proposed Dump Handling Quantity (t) (A)	Proposed Recovery of Saleable Mineral (t)(B)	Proposed Waste Quantity (t) (A- B)	Grade Range (%)	Justification
1	Not Applicable	Not Applicable	Nat Applicable	Not Applicable	Not Applicable



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Year	Year 1	Year 2	Year 3	Year 4	Year S	Total
(A) Total 90M quantity (t)	1545433	765044	472148	256108	267401	3306134
(B) Saleable ore from ROM (t)	1545433	765044	157382	85369	89100	2642328
(C) Proposed Dump Handling Quantity (t)	0	0	0	0	0	
(D) Saleable Ore recovered from dump workings (t)	0	0		0	0	
(E) Total Saleable Ore (t) (=B+O)	1545433	765044	0	R5360	89100	2642323
(F) Total Quantity Handled (t) (=A+C)	1545433	765044	472148	256108	267401	3306134

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total
(A) Total ROM quantity (t)	18515	34450	25368	62313	110670	251316
(f) Saleable ore from ROM (f)	2777	5168	14271	28115	16601	66533
(C) Proposed Dump Handling Quantity (t)	0	0	0	0	0	
(D) Saleable Ore recovered from dump workings (t)	0	0	0	0	o	
(E) Total Saleable Ore (t) (=8+0)	2777	5168	14271	28115	16601	66933
(F) Total Quantity Handled (t) (#A+C)	18515	34450	25368	62313	110670	25131

4.4: Machine Calculation

4.4.1: Machine Requirement Summary

ne requirement summary		
Number of Average Working Days in One Year	r(A)	. 330
Number of Shifts per Day (8)		2
Material Handling Required per Day (t) ((D)=L	argest of (Q1,Q5)/(A))	9067
Material to be Handled per Shift (t) ((E)=(D)/(I		4543,47
Material to be Handled per Shift (1) ((E)=(D)/(I Handling Required per Hour (1) ((F)=(E)/8 hour	R2)	4543,47 605,80

4.4.2: Shovel / Excavator Requirement

Effective Shift Time: 7 Hours

S.N. Type	(m³)(A)	[0]	Swell Factor (C)	(m ³ /t) (D)	Factor (%) (U)	Efficiency (%) (E)	Cycle time (sec) (F)
1 Hydrolic Excavi		85%	85%	2.66	90%	85%	35
2 Hydrolic Excavi		86%	85%	2.35	9016	85%	30

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5.N.	(G) TPH = TPH (G) = ((3600 × A × B × C × D × E × U) / F)/1000	Total Hours (H) =Number of working days x Number of shifts/day x Effective shift hours	Yearly handling by one Excavator (t) (I)=(G x H)	Maximum handling of the material by this machine during the block period (t) (J)	Number of excavator machines required (K) = (J / I)	Standby excavator (L)
-	378	4950	1871100	2728342	I.	1
2	280	4950	1386000	417477	1.0	0

4.4.3: Dumper Requirement

S.N.	Total Hours=Number of working days (W)x Number of shifts/day x Effective shift hours (Machine Requirement Summary) (A)		Speed of the dumper (KMPH)	Lead Distance (KM)	Time taken to cover distance in minutes(iii) =(ii/i) x 60	Queuing, Loading Time at Shovel (min) (iv)	Queuing, Unloading Time during unloading (min) (v)	Total Time to complete one trip(vi) = (iii + iv + v
	4950	30	15	3	52	4.5	1.5	18
3	4950	30	15	3.	12	7	15	21

S.N.	No. of Trips / hr = (60 / vi)	Total transportation per hour ={ B X vii}	Yearly handling by one dumper (ix) = A x TPH	Maximum handling of the material by this machine during the block period (t) (x)	Number of dumpers will be (xi) =(x / ix)	Plus Standby dumper (xii)
1	3,333333333	100	495000	2728350	- 6	3
2	2.926829268	87.60487805	434534.1463	362504	1	0

4.4.4: Drill Machine Requirement

S.N.	Type of Drill	Depth of Hole(including Sub-grade Drilling (m)	Spacing (m)	Burden (m)	Bulk Density of Waste (t/m³)	Bulk Density of Mineral (t/m³)	Yield per Hole (t)	Yield per Meter (t/m)
-	Hydraulic (LM100)	11	3	2.5	2.2	2.9	210	19

	Annual Target	Drilling Requirement per	Drilling Requirement per	Rate of Drilling per	Required Number of	
S.N.	Known (t)	Day (m)	Shif t(m)	Hours (m/hr)	Drills (m/c)	Stand by Drill
1	818505	130	65	15	1	0
	VANCOUS.	10		46	1	0

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4.4.5: Machine Deployment Details

4.4.5.1: Excavator & Loading Equipment

5.N.	Type	Make	Capacity (m³)	No. of Equipments
	Hydrolic Crawler Mounted	TATA Hitach//Equivalent Capacity	25	1
2	Hydrolic Crawler Mounted	Komatso/Equivalent Capacity	1.8	2

4.4.5.2: Dozers Details

	Type	Make	Supported field	No. of Equipments
1 Crawle	er Mounted	Cater Pillar	200 HP	1

4.4.5.3: Drilling Details

S.N.	Type	Make	Capacity (t)	Diameter of Hole (mm)
1	Crawler Mounted	Atlas Copco		115

4.5 Blasting Requirement

4.5.1: Blasting & Evolosive Requirement in Waste/Development

3141 210/20						Maximum Number of		
	Drill Pattern /	Burden of Holes	Number of Rows	Yield per Holes in	Frequency of Blasting	Holes Blasted in a		
5.N.	Spacing of Holes (m)		/ Rings	Waste (m³)	in a Week	Round	Charge per Hole (kg)	Charge per Round (kg)
4	Spring or trover (111)	2.5	2	87.5	2	18	41.25	742.5
-	1	25	2	41.25	2		20.6	165

	Toble continued		
S.N.	Explosive Requirement Per Month in Development (kg)	Powder Factor in Development / Waste (kg/t)	Depth Of Hole
1	5940	0.2	11
2	1360	0.2	5.5

4.5.2: Blasting & Explosive Requirement in Mineral / Ore

Type of Explosive	Type of Explosives used / to be Used

5.N.	Total ROM proposed to be handled in CUM/annum		Spacing of Holes	Burden of Hales (m)		The state of the s		Maximum Number of Holes Blasted in a Round	No of Holes Required to be Blasted per Round	Charge per Hole (kg)
1	251639	763	1	2.5	2	82.5		407		24.75
	22203	101	-	3.6		41.25	2	5.		67177

Table continued.

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NIAN PRABHAKARAN Date: 2021.11.03

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S.N.	Charge per Round	Explosive Requirement Per Month for ROM Zone Blasting (kg)	Powder Factor in	Pop Shooting (no of Boulders)	Plaster Shooting (no of Boulders)	Use of Rockbreaker	Capacity	Secondary Blasting Requirements	Depth Of Hole
4	991	7128	0.21	No	No.	Yes:	50 T	No	- 11
3	74.25	594	0.24	No	No	Yes	SOT	No	5.5

4.6: Man Power Deployment

4.6.1: Managerial

5.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
1	1st Class Manager	.0	0	0	1	1
2	2nd Class Manager	1	1	0	0	2
3	Mining Engineer	1	1	0	0	2
4	Geologist	0	0	0	1	1
5	Mechanical Engineer	1	1	0	0	2
- 6	Electrical Engineer	0	0	0	1	1
7	Others	0	0	0	2	2
			The second second			

S.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
1	Foreman	1	1	0	0	2
2	Mine-mate	1	1	0	0	2
. 3	Blaster	0	0	0	1	1
A .	Other	4	1	0	2	4

s.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
	Operator	2	2	0	0	4
	Dumper Operator	7	7	0	0	14
9.83	Pump Operator	0	0	0	1	
	Technician	1	1	0	0	2
	Drill Operator	2	2	0	0	4
	Dozer/Grader Operator	1	1	0	0	2
	Other	5	5	0	3	13

A 6 A: Semi-skilled Workers

S.N.	Number of Persons in Shift 1	Number of Persons in Shift 2	Darcone in Shift	Number of Persons in General Shift	Total No. of Persons per day	Column1
		0	0	70	70	Persons will be worked for Sorting & Sizing of Manganes ore

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ACHARYA cerde26837642fc6o63922flof10a7135 besc2, cn=DEEPAX KUMAR ACHARYA Date: 2021.11.03 19:50:28 +05'30'

4.6.5: Unskilled Workers

\$.N.	Number of Persons in Shift 1	Number of Persons in Shift 2	Dersons in Shift	Number of Persons in General Shift	Total No. of Persons per day	Column1
	0		0	150	150	Persons will be warked for Sorting & Sizing of Manganes one

4.6.6: Others Specify

S.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
1	0	25	25	0	5	55

4.6.7: No of Persons Engaged Per Day

Number of Persons	Number of	Percent in Shift	Number of Persons in	Total No. of Persons
in Shift 1	Persons in Shift 2		General Shift	per day
49	49	0	257	335

No of Shifts per Day ((A) = Machine Requirement Summary (R))	2
Average Daily Employment per Shift ((II) = (Total Number of Fenon per Day) / (A))	166
Material to be Handled per Shift () = Machine Requirement Surromary (E))	4544

4.6.8: Supervision

S.N.	Particulars	Qualification	Requirement / Proposed	In Position / Existing Strength	(-) Shortage / (+) Excess	Remarks
1	- 0	0	. 0	0	. 0	0

4.7: Waste Management

4.7.1: Existing Dump

S.N.	Year	Dump Id	Type of Dump	Proposed Area (ha)	Height (m)	Total Dump Quantity (m³)	Existing Dump Location
1	No Existing Dump	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

s.N.	Year	Dump Id	Type of Dump	Proposed Area (ha)	Height (m)	Total Dump Quantity (m³)	New Dump Location	Remarks
	Year 1	Dump 1	Waste	2.645	22	430149	Near Mt. Pillar No. 3	20% of waste meterials will be used in road maintainance
	Year 1	Dump 2	Waste	1.843	15	91576	Near Mt. Pillar No. 23	20% of waste materials will used in road maintainance
	Year 2	Dump 1	Waste	0.751		204227	Near ML Pittar No. 3	20% of waste materials will used in road maintainance
4	Year 2	Dump 2	Waste	0.695	5	63671	Near Mi, Pillar No. 23	20% of waste materials will bused in road maintainance

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4.7.3: Existing Stack

S.N.	Year	Stack ID	Type of Stack	Proposed Area (ha)	Height (m)	Total Stack Quantity (m³)	Existing Stack Location
1	No Existing Stack	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

4.7.4: New Stack

S.N.	Year	Stack ID	Type of Stack	Proposed Area (ha)	Height (m)	Total Stack Quantity (m³)	New Stack Location
1	Year 1 to Year 5	Temporary MR Stack Yant - 1	Mineral Reject of Manganese	1218	10	71754	326100 00E, 2441300 00N
2	Year 3	Temporary MR Stack Yard - 2	Mineral Reject of Iron pre	1.637	72	168624	326053.656, 2440923.56N
3	Year 4	Temporary MR Stack Yard - 2	Mineral Reject of Iron ore	0.751		91467	326053.65E, 2440923.56N
4	Year S	Temporary MR Stack Yard - 3	Mineral Reject of Iron ore	1	15	05465	Fop of Back Filled area of Laserda Pit 1

4.8: Mineral Waste Handling To Utilize As Minor Mineral

S.N.	Year	Dump ld	Type of Dump	Proposed Area (ha)	Quantity Handled (t)	Quantity Recovered (t)	Name Of Minor Mineral	Alternative Waste Utilization (m³)
1	No Proposal in the instant Proposal	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Apolicable	Not Applicable

4.9: Use of Minerals

S.N.	Proposed Use Of Mineral	Name Of Mineral	Relevant Use Of Mineral	Physical Specifications	Chemical Specifications
1	Direct Selling	iron & Manganese		IBON Colour - Cherry Red to Brown, Lateritead with Jaspiller type of ore, MANGANESE Colour - Steel Gray to Iron Black, Sol Froger (Pyrelastite), Weathered biotycid type (Phersillone)	tran - Fe 55% Mn + 25%

* Choose among these: 1) Captive use in Own industry 2) Direct Selling 3) Selling Post-Beneficiatio / Up-gradation *Select more than one, if applicable

MANIAN PRABHAKAR PRABHAKARAN AN

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> **DEEPAK KUMAR ACHARYA**

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174ben2834b9anack/569606202f74x9b2x, 2.5.4.20-cbecafdbif6986ea9d5376e0fdc144c43d d48602f4cba313c6bfe17c1b7a7835, postaX.oder 758086, str-Onissa, serialNumbers 8bf33464cb9c5863d6aci89cer0e 26837642fc5e639228af10a7135ef72beac2. CH-DEEPAK KUMAR ACHARYA Date: 2921.11.03 19:57:58 +05'30'



Chapter 5: Sustainable Mining



5.1: Sustainable Mining and SDF Implementations in Compliance of Rule 35 of MCDR'2017

	ng Plan is 1st Mining Plan prior to execution of Mining Lease. Therefore it is				
(Total 200 chara	cters)				
Compliance of workplace.	Vishakha Committee Guidelines for prevention of women harassmen	Not applicable			
	INITIATIVES				
5.2.1: YEA Details of Work Segment	k Proposed during the Year / Measures Planned for the Affected	Cumulative Wor	k done / Measures Taken		
5.2.1.1: Are	ea to be Developed for Recreation				
Area (Ha)	Nil	Area (Ha)	Not Applicable		
5.2.1.2: Are	ea for Water Storage & Recharge Facility				
Area (Ha)	Nil	Area (Ha)	Not Applicable		
5.2.1.3: Effe	orts Made towards Housing for Local Communities				
Number of House	Processing the second s	Number of Houses	25		
5.2.1.4: Effe	orts Made towards Providing Transport to Local Co	mmunities			
Number of Beneficiaries	School Van will be provide to school Children	Number of Beneficiaries	40		
5.2.1.5: Effe	orts Made towards Providing Healthcare to Local Co	ommunities		DEEPAK	Dignally signed by DEEPAK XERARI ACHERYA DN 10-IN, 0-THENWENEARTHMOVERS FRINATE EMSTED, married
Number of Beneficiaries	Dispensary with free medicine and Ambulance will be provided	Number of Beneficiaries	300	KUMAR	presentior-prime-distillation (2012)
5.2.1.6: Effe	orts Made towards Providing Hygiene & Sanitation	to Local Commu	nities	ACHARYA	#268376-42fr6e63922fuf10u713fef72besc2. CHI-DEEPAK KUMARI ACHARIYA Dala: 2621-11.03-2681-42 -485'98'
Number of Beneficiaries	Toilet will be provided to surrounding villegers under ODF	Number of Beneficiaries	20	DALAGIA.	
5.2.1.7: Effc	orts Made towards Skill Development Programs to	Local Communiti	es	DALASO.	Digitally signed
Number of Beneficiaries	ITI Training will be provided to local villagers	Number of Beneficiaries	40	BRAMA E	BALASUBRAMATITATO
5.2.1.8: Effo	orts Made to Promote Education & Knowledge Base	ed Initiatives		ALLANI	PRABHAKARAN
Number of Beneficiaries	Vocational Training, Farming	Number of Beneficiaries	50	DDADIIA	Date: 2021.1103
5.2.1.9: Con	nmunication Facilities Provided to Local Communit			1	1:10:02 3 WASSING
Number of Beneficiaries	A travel mode will be provided for local villagers as and when required	Number of by tl Beneficiaries	150	KARAN 4	-05'30' LESTE

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5.2.1.10: An	ny Other Steps Taken for Improving the Socio-Econo	mic Standard o	f Local Communities		
Number of		Number of	A THE STATE OF STATE		
Beneficiaries	Will be taken care as per SIA Study	Beneficiaries	- 150		
	doption of ODF				
Number of Toilets		Number of	100		
Built inside the Le	ease 4 outside the Lease Area:	20 Beneficiaries			
5 2 1 12: AV	wareness Program among Wine Workers for Swatch	ata			
Number of		Number of	3		
Swatchata	Will be implementaed	Swatchata			
Programmes	after start of Mining	Programmes Held	E C		
proposed:	Operation				
F 2 1 12: EH	torts for groon energy				
5.Z.1.13; EII	Solar Energy will be				
Total energy	used in Camp & office Green energy				
consumption (KW		15			
5.2.1.14: W	ater & recycled use				
Total water					
consumption (KLI	D) 95 Water recycled (% of total)	30			
5.2.2: YEA					
Details of Work	Proposed during the Year / Measures Planned for the Affected	Cumulative Wo	rk done / Measures Taken		
Segment	CONTRACTOR SERVICE SER				
5.2.2.1: Are	a to be Developed for Recreation				
Area (Ha)	NIL.	Area (Ha)	NIL		
5.2.2.2: Are	a for Water Storage & Recharge Facility		A STATE OF THE STA	BALASUB	Digitally signed
Area (Ha)	NIL	Area (Ha)	NIL		
					by
5.2.2.3: Effo	orts Made towards Housing for Local Communities				BALASUBRAMA
Number of House	es R&R Will be implemented and the same will continue	Number of House	0	N	NIAN
					PRABHAKARAN
5.2.2.4: Effo	orts Made towards Providing Transport to Local Com	imunities		DDADLAZ	Date: 2021.11.03
	A travel mode will be			ARAN	11:10:45 +05'30'
	provided for local	Number of			
Number of	villagers as and when	Beneficiaries	150		भारतार
Beneficiaries	required by them.		Total Control of the		AND WAND OF CO
5 2 2 E. Eff	orts Made towards Providing Healthcare to Local Co	mmunities			7 87
3.2.2.3. 2110	Dispensary with free			DEED ALL DO	tally signed by DEEPAK KEJARAR
	Dispensary with free medicine and			I JEEP AK DA	ANYA CIPIN (INTERPRENERATIFIMOVERS ATELEMITEO, JUNIO)
Number of	Ambulance will be	Number of	1 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	960	attenym 6-O6d86746Csr368r5088a7dh 174bes2834t/9saaskt56900G2227A3rh
Beneficiaries	provided	Beneficiaries	300	KUMAR /	L30=etweraldullis986eands376e0lde144 72 7
				c43	660860214chart leishfer7c1b7a7835.
				ACHARYA :	Momber: 88833404chscs85560ce898 238837642bbee: 89238410a7135672bea ne-DEEPAR KUMAR ACHABYA
					n=DEEPAK KUMAR ACHARYA 2921.11.03.20.05.39 +05'30'

5.2.2.6: Effort	s Made towards F	Providing Hygiene	& Sanitation to	Local Commun	nities	
	Basic hygience	1/1/201				
	materials will be	THE SHOW NAMED IN				
	provided to locals like				1000000	
Number of	Sanitiser, Soap, Hand	Rail Thirty Co.		Number of	1 1 1 1 1 1 1 1 1	
Beneficiaries	Wash etc.	THE RESERVE OF THE PERSON OF T		Beneficiaries		300
Jenemena nes	Wash etc.			Beneficialites		500
5.2.2.7: Efforts	s Made towards S	kill Development	Programs to Loc	al Communiti	es	
Number of	DATE OF THE PARTY	THE PART WHERE EN		Number of		
Beneficiaries	ITI Training will be provi	ded to local villagers		Beneficiaries		40
5.2.2.8: Efforts	Made to Promo	te Education & Kn	owledge Based I	nitiatives		
	Vocational Training,				The state of the s	
	Farming, Goatary,					
	Mushroom Cultivation,	THE ANN SHAPE				
lumber of	Fishery traing will be			Number of		
Beneficiaries	imparted			Beneficiaries	Total Facilities	150
ACTICIOTACS	Imparted			Detrementative2		130
5.2.2.9: Comm	unication Facilitie	es Provided to Loc	al Communities			
	TO THE WAY				1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
	A travel mode will be	The second second				
	provided for local	255 AST 111 AV				
lumber of	villagers as and when			Number of		
leneficiaries	required by them.			Beneficiaries		150
	0.1 C		- Carla Faranci	- Canadaud of	Lauri Camanata	
lumber of	Other Steps Taker	for Improving th	e Socio-Economi	Number of	Local Communit	ies
leneficiaries	NA			Beneficiaries	NIL	
enenciaries	INA			benenciaries	IVII.	_
5.2.2.11: Adop	tion of ODF					
	HALL PARTY OF THE REAL PROPERTY OF THE REAL PROPERT			Number of		100
		Billian Street	5 nos. will be	Beneficiaries		
	Wat Zandura		constructed in 2nd			
	GATTER TOTAL	STATE OF THE PARTY	year and	large and the side		
lumber of Toilets	4 no. will be provided in	THE WAY IN THE	maintenance of 20		A Shaller and a	
uilt inside the Lease	1st year and same will	Number of Toilets Built	nos. as implemented		722	
rea:	be continued	outside the Lease Area:	in 1st year	7417.77		
				el III		
5.2.2.12: Awar	eness Program ar	mong Mine Worke	ers for Swatchata			
				Number of		- 4
Solution Co.	Training program will be			Swatchata	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
lumber of	imparted & different			Programmes Held:	2.00	
watchata	awareness program on					
rogrammes	Swachatta will be					
roposed:	carried					
.2.2.13: Effort	ts for green energ	v				
746 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		Total States				
	Solar Energy will be		A CAMPAGE PAR			
	used in Camp & office			CHO ST.		
otal energy	areas. Total reuirment	Green energy				
ortal chickby		mineral enter B1	The second second second second second			

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5.2.2.14: Wa	ter & recycled use			
Total water consumption (KLD)	95 Water recycled (% of total)	30		
5.2.3: YEAR	3			
Details of Work F	Proposed during the Year / Measures Planned for the	e Affected Cumulative Wo	rk done / Measures Taken	
Segment				
5.2.3.1: Area	to be Developed for Recreation			
Area (Ha)	Nil	Area (Ha)	NIL	
5.2.3.2: Area	for Water Storage & Recharge Facility			
Area (Ha)	NIL	Area (Ha)	NIL	
5.2.3.3: Effor	ts Made towards Housing for Local Con	nmunities		
	R&R Will be			
	implemented and the			
Number of Houses	same will continue	Number of House	5 0	
5.2.3.4: Effor	ts Made towards Providing Transport to	o Local Communities		
	A travel mode will be			
	provided for local			
Number of	villagers as and when	Number of	144	
Beneficiaries	required by them.	Beneficiaries	150	
5.2.3.5: Effor	ts Made towards Providing Healthcare	to Local Communities		
	Dispensary with free			
	medicine and			
Number of	Ambulance will be	Number of		
Beneficiaries	provided	Beneficiaries	300	
5 2 3 6. Effor	ts Made towards Providing Hygiene & S	Sanitation to Local Commu	nities	DALACUED Digitally signed
SIZISIOI EIIOI	Basic hygience	difficultion to Eocal Commit	The state of the s	BALASUBR by
	materials will be			AMANIAN BALASUBRAMA
	provided to locals like			NIAN
Number of	Sanitiser, Soap, Hand	Number of		DDADIIAI
Beneficiaries	Wash etc.	Beneficiaries	300	D. (2021 11 02
5.2.3.7: Effor	ts Made towards Skill Development Pro	ograms to Local Communit	ies	ARAN Date: 2021.11.03 11:12:15 +05'30'
SIEISIFI EIIOI	ITI Training will be	Arams to accar commune		
Number of	provided to local	Number of		भारता ।
Beneficiaries	villagers	Beneficiaries	40	A DIAN BURE CON
			A L	Copied complex control copy of the copy of
5.2.3.8: Effor	ts Made to Promote Education & Know	ledge Based Initiatives		DEEPAK
	Magazianal Tablaian			KUMAR Sandrassin Sandr
	Vocational Training,			ACHARY
	Farming, Goatary,			otherwise and the state of the
Number of	Mushroom Cultivation, Fishery traiing will be	Number of		A PRINCIPAL OF THE PRINCIPAL AND
Beneficiaries	imparted	Beneficiaries	150	156
Delicitionies	miparted	DETICITEDETES.	130	

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5.2.3.9: Com	munication Facilities Provided to Loc	cal Communities		
Number of Beneficiaries	A travel mode will be provided for local villagers as and when required by them.	Number of Beneficiarie	s 150	
5.2.3.10: Any	y Other Steps Taken for Improving th	e Socio-Economic Standa	rd of Local Communities	
Number of		Number of		
Beneficiaries	[NA	Beneficiarie	s NIL	
5.2.3.11: Add	option of ODF			
Number of Toilets Built inside the Lea Area:	4 no. will be provided in 1st year and same will Number of Toilets Built outside the Lease Area:	2 nos. will be constructed in 2nd year and maintenance of 20 nos. as implemented in 1st year	200 s	
5.2.3.12: Aw	areness Program among Mine Work	ers for Swatchata		
Number of		Number of	2	
Swatchata		Swatchata		
Programmes		Programme	s Held:	
proposed:	2			
5.2.3.13: Effe	orts for green energy			
		10% implemented in		
Total energy	Green energy	1st year will be		Control of the contro
consumption (KWh	750 consumption (% of total)	continue		BALASUBRA Digitally signed by
5 2 3 14· Wa	iter & recycled use			BALASUBRAMANI
3.2.3.14. vva	nter & recycled use			MANIAN AN
Total water		PAGE STATE OF THE		PRABHAKAR PRABHAKARAN
consumption (KLD)	95 Water recycled (% of total	30		Date: 2021.11.03
				AN 11:13:04 +05'30'
5.2.4: YEAR	24			11:13:04 +03 30
	Proposed during the Year / Measures Planned for	the Affected Cumulative	Work done / Measures Taken	
Segment				
	to be Developed for Recreation	Personal Property Co. Co.		
Area (Ha)	NIL	Area (Ha)	NIL	, आरतीय
5.2.4.2: Area	for Water Storage & Recharge Facili	ty		T. "Harman
Area (Ha)	xx	Area (Ha)	XX	DEEDAL CHILDREN SAN HAMAN ACHAMAN
F 2 4 2 F/	4- 84- do 4			DEEPAK
5.2.4.3: Effor	rts Made towards Housing for Local C	ommunities		KUMAR 22.4 (a. or of the base of September 1.4 September 1.4 Cold
	R&R Will be		Shirt Shirt Shirt Shirt Shirt	positely designed and the second
	implemented and the		Mel D	ACHARYA
Number of Houses		Number of	Houses 0	TEAL

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5.2.4.4: Effor	ts Made towards	Providing Transpo	rt to Local Comn	nunities		
Number of Beneficiaries	A travel mode will be provided for local villagers as and when required by them.			Number of Beneficiaries		1
5.2.4.5: Effor	ts Made towards I	Providing Healthca	are to Local Com	munities		
Number of Beneficiaries	Dispensary with free medicine and Ambulance will be provided			Number of Beneficiaries	unities	3
J.E. T.O. EITO	Basic hygience	Toviding Hygiene	& Sanitation to	Local Collini	unities	
Number of Beneficiaries	materials will be provided to locals like Sanitiser, Soap, Hand Wash etc.			Number of Beneficiaries		3(
5.2.4.7: Effor	ts Made towards S	Skill Development	Programs to Loc	al Communi	ities	
Number of Beneficiaries	ITI Training will be provided to local villagers		- Control of the Local of the L	Number of Beneficiaries	NICS .	
5.2.4.8: Effor	ts Made to Promo	te Education & Kn	owledge Based I	nitiatives		
Number of Beneficiaries	Vocational Training, Farming, Goatary, Mushroom Cultivation, Fishery training will be imparted			Number of Beneficiaries		15
5.2.4.9: Comr	munication Facilitie	es Provided to Loc	al Communities			
Number of Beneficiaries	As and when demanded by the local villagers, mobile tower will be provided			Number of Beneficiaries		50
5 2 4 10· Δnv	Other Steps Taker	for Improving th	e Socio-Economi	c Standard o	of Local Comp	nunitio
Number of Beneficiaries	NIL NIL]	e 30cio-Economi	Number of Beneficiaries	NIL NIL	idiffice
5.2.4.11: Ado	ption of ODF					
Jumber of Toilets Juilt Inside the Lease Grea:	4 no. will be provided in 1st year and same will	Number of Toilets Built outside the Lease Area:	2 nos. will be constructed in 4th year and maintenance of already provided will be carried	Number of Beneficiaries		15

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5.2.4.12: Av	wareness Program among Mine Workers for	Swatchata	
Number of	W ROLLINGS UNSAINER CONTRACTOR	Number of 2	
Swatchata		Swatchata	
Programmes		Programmes Held:	
proposed:	2		
5.2.4.13: Eff	forts for green energy		
Total energy	Green energy		
consumption (KW	AND THE RESERVE OF THE PARTY OF	10%	
5.2.4.14: W	ater & recycled use		
Total water			
consumption (KLE	95 Water recycled (% of total)	30%	
5.2.5: YEA			
Details of Work Segment	Proposed during the Year / Measures Planned for the Aff	ected Cumulative Work done / Measures Taken	
5.2.5.1: Area	a to be Developed for Recreation		
Area (Ha)	NIL	Area (Ha)	
5.2.5.2: Area	a for Water Storage & Recharge Facility		
Area (Ha)	xxx	Area (Ha)	
5.2.5.3: Effo	orts Made towards Housing for Local Commu	unities	
		Al-Bistic	
	R&R Will be	1000	
	implemented and the		
Number of House	s same will continue	Number of Houses 0	
5.2.5.4: Effo	rts Made towards Providing Transport to Lo	ocal Communities	Biolegica de la companya de la compa
		Marian Company of the	BALASUBR Digitally signed by
	A travel mode will be		
	provided for local		AMANIAN BALASUBRAMANI
Number of	villagers as and when	Number of	AN
Beneficiaries	required by them.	Beneficiaries 150	PRABHAK PRABHAKARAN
5.2.5.5: Effo	rts Made towards Providing Healthcare to L	ocal Communities	Date: 2021 11 03
	Dispensary with free		ADAN
	medicine and		11,17,71
Number of	Ambulance will be	Number of	भारताक
Beneficiaries	provided	Beneficiaries 300	TO MOVE BURE
5 2 5 6: Effo	rts Made towards Providing Hygiene & Sani	tation to Local Communities	DEEPAK Comments of the second
Number of	Tits Wade towards Froviding Hygiene & Sam	Number of	neon-tiple Official and the Control of the Control
Beneficiaries	Basic hygience materials will be provided to locals like Saniti		KUMAR
5 2 5 7· Effo	rts Made towards Skill Development Progra	oms to Local Communities	ACHARYA CONTRACTOR CON
	Tits Made towards 3kill Development Progra	Number of	P. Jakel
Number of Beneficiaries	ITI Training will be provided to local villagers	Beneficiaries 40	TELL
DETICITED TO	THE FEMALES WILL DE PLOYIDED TO LOCAL VIHABELS	WEITERILIBITES 40	

5.2.5.8: Efforts	s Made to Promo	te Education & Kno	wledge Based I	nitiatives	
Number of		STATE STATES		Number of	
Beneficiaries	Vocational Training, Far	ming, Goatary, Mushroom C	ultivation, Fishery trail	r Beneficiaries	150
					Managar the same
5.2.5.9: Comm	nunication Faciliti	es Provided to Loca	al Communities		
Number of				Number of	
Beneficiaries	As and when demanded	by the local villagers, mobil	e tower will be provide	Beneficiaries	500
	Other Steps Taker	n for Improving the	Socio-Economi	c Standard of	Local Communities
Number of		The state of the s		Number of	
Beneficiaries	NA			Beneficiaries	NA
.2.5.11: Adop	TION OF CULF				
			2 nos, will be	Number of	150
	1945		constructed in 4th	Beneficiaries	130
	4 no. will be provided in	LOUIS DATE OF THE PARTY OF THE	year and		
lumber of Toilets	1st year and same will		maintenance of		1
wilt inside the Lease	be continued &	Number of Toilets Built	already provided will		
rea:	maintained	outside the Lease Area:	be carried		
			THE DISK NOW		
5.2.5.12: Awar	eness Program a	mong Mine Worker	rs for Swatchata	1	
lumber of			1000	Number of	2
watchata				Swatchata	
rogrammes				Programmes Held:	
roposed:	2				
.2.5.13: Effort	ts for green energ	XY.			
otal energy	The same of the last of	Green energy			
onsumption (KWh)	750	consumption (% of total)	10%		
.2.5.14: Wate	r & recycled use				
		Die collo			
otal water					
onsumption (KLD)	95	Water recycled (% of total)	30%	NOTE OF THE PERSON NAMED IN	

5.3: Rehabilitation & Resettlement of Affected Persons

Particular	Year 1	Year 2	Year 3	Year 4	Year 5
Proposed Number of Project Affected Persons(PAP)	and the second	and the first of the second			and the second of
Proposed Number of Person for Alternate Arrangement for Sustainable Livelihood					
Proposed Number of Person for Skill Training	(It will be decided as per the or		dy in reference LA&RR, 2013		था
Proposed Number of Person Likely to get Direct Employment		A TOTAL PROPERTY.			ALD. USE
Proposed Number of Person Likely to get Indirect Employment		The Control of			13.5
Proposed Project Affected Families Skilled and Absorbed					18/ -
Proposed Number of Project Affected Families					12 2 1 1 2

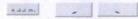
DEEPAK KUMAR ACHARYA

Dispute regional by DEFAIX ELANAR ACTANYA-Chin and author/See Earline Child Play 121 (24713), one of the child Play I be child Play 121 provides yet and the child Play I be child Play I be child 2.3 Act 20th child Play I be child Play I be child I be child Spiele (2014), but I be child Play I be child I be child Spiele (2014), but I be child Play I be child I be child yet (2014), but I be child Play I be child Play I be child with the child Play I be child Play I be child Play I be child with the child Play I be child Play I be child Play I be child with the child Play I be child Play I be child Play I be child with the child Play I be child Play I be child Play I be child with the child Play I be child Play BALASUBRAMA NIAN PRABHAKARAN

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Chapter 6: Progressive Mine Closure Plan



6.1: Status of Land

Total Area Degraded				Total mined out area Reclaimed and Rehabilitated			Other Areas Reclaimed and Rehabilitated		
	nder excavation in ne lease	Area under	Area under	Area under	Mined out Area	Mined outArea fully	Area under Water	Stabililized	Virgin area
Area under mining operation	Mined Out area in the lease	Dumps(in hect)	utility services(in hect)	Stack yards(in hect)	Reclaimed but not rehabilitated(in hect)	Rehabilitated from Reclaimed area(in hect)	Reservoir considered Rehabilitate d (in hect)	Waste dump Rehabilitate d (in hect)	Green Belt (in hect)
0	0	0	0	0	0	0	0	0	0

6.2: Progressive Reclamation and Rehabilitation Plan

6.2.1: Backfilling

Quantity of Waste / Fill Material Available at Site (m³)	623613
Availability of Top Soil for Spreading (m3)	22088
Spread Area (m²)	

6.2.1.1: Year Wise Proposal

S. N.	Year	Pit ID	Area (m²)	Top RL	Bottom RL	Estimated Expenditure (INR)
	Year 3	Laserda Pit - 1	2.324	480	450	31779904
	Year 4	Laserda Pit - 1	1.491	480	450	13903936
	Year 5	Laserda Pit - 1	5.283	490	480	9194112

6.2.2: Water Reservoir

Average Rainfall of The Area (mm)	1350
Proposed Area under Water Storage	0

6.2.2.1: Preparations For Ground Water Recharging

6.2.2.1.1: Drilling Holes					
Year	Proposed no of Holes to be Drilled				
Year 1	1				
Year 2	0				
Year 3	0				
Year 4	0				
Year 5	0				

6.2.2.1.2:Preparation of Course Gravel Bed				
Year	Proposed Area of Bed (LxW)			
Year 1	2 x 2 mtrs			
Year 2	0			
Year 3	0			
Year 4	0			
Year 5	0			

Please specify, if others

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6.2.2.2: Protective measures (Please specify running meter)

6.2.2.2.1: Fencing					
Year	Proposed Fencing Length (m)	Co-ordinates from	Co-ordinates to		
Year 1	2644	325972.293, 2440943.09	326670.265 , 2441325,149		
Year 2	3384	326676.218, 2441347.705	325964.487, 2440985.225		
Year 3	Maintenance	Not Applicable	Not Applicable		
Year 4	Maintenance	Not Applicable	Not Applicable		
Year 5	Maintenance	Not Applicable	Not Applicable		

6.2.2.2.3: Garland Drains						
Year	Proposed Bund Length (m)	Co-ordinates from	Co-ordinate:			
		325952.407E,	325981.263E,			
Year 1	222	2441320.197N	2441137.096N			
THE THE		326065.781E,	326191.246E,			
Year 1	292	2440850.80N	2440647.533N			
Contract of the second		325981.263E,	326043.27E,			
Year 2	240	2441137.096N	2441267.923N			
		326191.246E,	326247.42E,			
Year 2	110	2440647.533N	2440741.45N			
Year 3, 4 & 5	Maintenance					
	ALC: No. of the Access of the	03.550				

6.2.3: Green Belt Development
6.2.3.1: Cumulative work done (upto end of previous block of five years)

S. N.	Total Expenditure Incurred up to Last Year (INR)	Area Covered (Ha)	Number of Plants	Survival Rate (%)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable

6.2.2.2: Retaining Wall						
Year	Proposed Wall Length (m)	Co-ordinates from	Co-ordinates to			
Year 1	222	325952.407E, 2441320.197N	325981.263E, 2441137.096N			
(Cill A	ELL	326065.781E,	326191.246E,			
Year 1	292	2440850.80N	2440647.533N			
		326128.699E,	326082.411E,			
Year 1	183	2441426.133N	2441347.481N			
		325981.263E,	326043.27E,			
Year 2	240	2441137.096N	2441267.923N			
Charles and the area		326191.246E,	326247.42E,			
Year 2	110	2440647.533N	2440741.45N			
The Later Court of		326019.20E,	326061.98E,			
Year 3	202	2440993.44N	2440855.81N			
Year 3, 4 & 5 maintennace	0					

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6.2.3.2: Year Wise Proposal

S. N.	Year	Green Belt Location (s)	Area Proposed to be Covered (Ha)	Number of Plants Proposed	Expected Survival Rate (%)	Estimated Expenditure (INR)
1	Year 1	Along the Mine Boundary	0.535	535	75	107000
2	Year 2	Along the Mine Boundary	0.356	356	75	71200
3	Year 3	Along the Mine Boundary and Road Safety Zone	0.702	702	75	140400
4	Year 4	Along the Mine Boundary and Road Safety Zone	0.869	869	75	173800
5	Year 5	Along the Mine Boundary	0.461	461	75	92200

6.2.4: Use of shallow pits
6.2.4.1: Cumulative work done (upto end of previous block of five years)

S. N.	Pit ID	Work Done	Area covered (m²)	Total Expenditure Incurred (up to last five year block) (INR)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable

6.2.4.2: Year Wise Proposal

s. N.	Year	Pit ID	Total Area (Ha)	Area Proposed for Crops (Ha)		Area Proposed for Grass (Ha)	Total Proposed Expenditure (INR)	Location (s)	Remarks
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

6.2.5: PISCICULTURE

6.2.5.1: Total Expenditure incurred as on Date (INR)

Not Applicable

6.2.5.2: Cumulative work done as on Date

S. N.	Pit ID	Area (m²)	Expenditure (INR)
1	Not Applicable	Not Applicable	Not Applicable

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6.2.5.3: Year Wise Proposal

S. N.	Year	Pit ID	Area (m²)	Estimated Expenditure (INR)
1	No Proposal	Not Applicable	Not Applicable	Not Applicable

6.2.5.4: Source of Water for Pisciculture 6.2.5.5: Whether the quality of water has been assessed & found to be suitable for Pisciculture

Not Applicable

6.2.6: Recreational Facility 6.2.6.1: Total Expenditure Incurred (up to last five year block) (INR)

Not Applicable

6.2.6.2: Cumulative work done as on Date

S. N.	Pit ID	Area (m²)	Expenditure (INR)
1	Not Applicable	Not Applicable	Not Applicable

6.2.6.3: Year Wise Proposal

S. N.	Year	Type of Recreational Facility	Area Covered (Ha)	Location	Estimated Expenditure (INR)
1	Year 1	No Proposal	Not Applicable	Not Applicable	Not Applicable
2	Year 2	No Proposal	Not Applicable	Not Applicable	Not Applicable
3	Year 3	No Proposal	Not Applicable	Not Applicable	Not Applicable
4	Year 4	No Proposal	Not Applicable	Not Applicable	Not Applicable
5	Year 5	No Proposal	Not Applicable	Not Applicable	Not Applicable

6.2.7: Dump Area Stabilization & Development

s. N.	Year	Dump ID	No of Terraces	Average Height of Terraces (m)	Length of Toe Wall (m)	Length of Garland Drain (m)	Area Stabilized (Ha)	Method of Stabilization	Estimated Expenditure (INR)	No of Check Dams
	Year 3	Dump - 1	1	15	462	462	2.445	Retreat Method	2934000	0
	Year 4	Dump - 2	1	10	402	402	1.84	Retreat Method	2211600	0

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6.2.8: Other Form of Reclaiming the Area

6.2.8.1: Cumulative work done as on Date

S. N.	Total Expenditure incurred as on Date (INR)	Work Done
1	Not Applicable	Not Applicable

6.2.8.2: Year Wise Proposal

S. N.	Year	Work Proposals	Estimated Expenditure (INR)
1	Year 1	No Proposal	Not Applicable
2	Year 2	No Proposal	Not Applicable
3	Year 3	No Proposal	Not Applicable
4	Year 4	No Proposal	Not Applicable
5	Year 5	No Proposal	Not Applicable

6.2.9: TOPSOIL MANAGEMENT

6.2.9.1: Cummulative Work Done as on

s. N.	Top Soil Generated (m³)	Top Soil Utilized (m³)	Topsoil Stored (m³)	Total expenditure incurred as on date (₹)
1	Not Applicable	Not Applicable	Not Applicable	Not Applicable

6.2.9.2: Year Wise Proposal

Year	Topsoil Generated (m³) (A)	Topsoil Utilized (m³) (B)	Topsoil Stored (m³) (A-B)	Estimated Expenditure (INR)
Year 1	12449	4000	8449	40000
Year 2	0	4000	8449	40000
Year 3	0	4000	4449	40000
Year 4	8411	4000	8860	40000
Year 5	1228	4000	6088	40000

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6.2.10: Tailings Dam Management

Year	Yearly generation of Tailing (m³) (A)	Total capacity of Tailing Pond (m³)	Measures Proposed for Periodic Desilting	Yearly Utilization of Tailing (m³) (B)	Disposal of Tailing to Tailing Pond (m³) (A-B)	Tailing Dam Design	Structural Stability Studies
Year 1	No Proposal	Not Applicable	Not Applicable	Not Applicable	#VALUE!	Not Applicable	Not Applicable
Year 2	No Proposal	Not Applicable	Not Applicable	Not Applicable	#VALUE!	Not Applicable	Not Applicable
Year 3	No Proposal	Not Applicable	Not Applicable	Not Applicable	#VALUE!	Not Applicable	Not Applicable
Year 4	No Proposal	Not Applicable	Not Applicable	Not Applicable	#VALUE!	Not Applicable	Not Applicable
Year 5	No Proposal	Not Applicable	Not Applicable	Not Applicable	#VALUE!	Not Applicable	Not Applicable

6.2.11: LAND USE OF LEASE AREA AT THE EXPIRY OF LEASE PERIOD (CONCEPTUAL STAGE)

Total Area Degraded			Non Degraded area	Total mined out area Reclaimed and Rehabilitated			Other Areas Reclaimed and Rehabilitated				
Mined Out area in the lease	Area under Dumps(in hect)	Area under the Tailing Dam	Area under utility services(in hect)		Mined out Area Reclaimed but not rehabilitated(in hect)	Mined outArea fully Rehabilitated from Reclaimed area(in hect)	Area under Water Reservoir considered Rehabilitate d (in hect)	PARTICIPATION OF THE PARTICIPA		ed Area under utility	Rehabilitat ed Area under Tailing dam (in hect)
75.803	18.672	0	31.211	5.114	0.963	74.84	0	18.672	6.114	28.785	0

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Date: 2021.11.03 11:20:49 +053

Chapter 7: Financial Assurance/ Performance Surety (AREA PUT TO USE)

YEAR 1

YEAR 1

Consolidated View of Financial Assurance

SI. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B	
1	Area under Mining	2.491	6.640	9.131	
2	Topsoil stacking	0	0.667	0.667	
3	Overburden	0	4.287	4.287	
4	Mineral Storage	0	3.899	3.899	
5	Infrastructure (Workshop, Administrative Building etc.)	0	0.621	0.621	
	7				
6	Roads	1.175	0.891	2.066	
7	Railways	0	0	0	
8	Tailing Pond	0	0	0	
9	Effluent Treatment Plant	0	0.01	0.01	
10	Mineral Separation Plant	0	0.8	0.8	
11	Township Area/ Camp Area	0	1.125	1.125	
12	Others to Specify (Inhabited Sites, Settling Pond)	0.368	0.187	0.555	

Old quarries were existing prior to grant of Composite Licence (Lol dated 27.01.2017).

Waste Dump with Environmental Safe guard. Including area for Sorting & Sizing of Mn. ore & Mineral Reject Stack yard.

Internal (Path) Road were existing prior to grant of Composite Licence (LoI dated 27.01.2017).

Total 4.034 19.127 23.161

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YEAR 2

Consolidated View of Financial Assuran

SI. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B)
1	Area under Mining	9.131	0.217	9.348
2	Topsoil stacking	0.589	0	0.589
3	Overburden/Waste Dumping	4.287	0	4.287
4	Mineral Storage	3.899	0	3.899
5	Infrastructure (Workshop, Administrative Building etc.)	0.621	0	0.621
6	Roads	2.066	0	2.066
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0.01	0	0.01
10	Mineral Separation Plant	0.8	0	0.8
11	Township Area/ Camp Area	1.125	0	1.125
12	Others to Specify (Inhabited Sites, Settling Pond)	0.555	0	0.555

Total	23.083	0.217	23.3

YEAR 3

SI. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B
1	Area under Mining	9.348	2.153	11.501
2	Topsoil stacking	0.589	0	0.589
3	Overburden	4.287	0	4.287
4	Mineral Storage	3.899	1.524	5.423
5	Infrastructure (Workshop, Administrative Building etc.)	0.621	0	0.621
6	Roads	2.066	0	2.066
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0.01	0	0.01
10	Mineral Separation Plant	0.8	0	0.8
11	Township Area/ Camp Area	1.125	0	1.125
12	Others to Specify (Inhabited Sites, Settling Pond)	0.555		0.555

Mineral Reject Stack yard including Environment Safe guard.

26.977 3.677 23.3 Total

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YEAR 4

Consolidated View of Financial Assurance

SI. No. Particular		Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B
1	Area under Mining	11.501	3.467	14.968
	Teasallate ablas	0.589	0	0.589
3 Financi	al Assurance Performance suret	4.287	0	4.287
4	Mineral Storage	5.423	1.433	6.856
5	Infrastructure (Workshop, Administrative Building etc.)	0.621	0	0.621
6	Roads	2.066	0	2.066
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0.01	0	0.01
10	Mineral Separation Plant	0.8	0	0.8
11	Township Area/ Camp Area	1.125	0	1.125
12	Others to Specify	0.555	0	0.555

Sorting & Sizing area of Mn. ore.

Total	26.977	4.9	31.877

YEAR 5

Consolidated View of Financial Assurance

SI. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B
1	Area under Mining	14.968	0.3	15.268
2	Topsoil stacking	0.589	0	0.589
3	Overburden/Waste Dumping	4.287	0	4.287
4	Mineral Storage	6.856	0	6.856
5	Infrastructure (Workshop, Administrative Building etc.)	0.621	0	0.621
6	Roads	2.066	0	2.066
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0.01	0	0.01
10	Mineral Separation Plant	0.8	0	0.8
11	Township Area/ Camp Area	1.125	0	1.125
12	Others to Specify	0.555	0	0.555

Total	31.877	0.3	32.177
Grand Total	Pel Rabbia Santa Per Pel Skill		

DEEPAK KUMAR ACHARYA

Displaidy signated by DESPAKALIMANA PCENTAL IN IN IN IN INVESTIGATE AND ANALYSIS OF THE PROPERTY OF THE PROPER

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Regional Controller of wirdly girl ogti

APPROVED

Performance Surety

Lease Category (A/B)	Total Resources in tonnes for calculation of Performance Surety*	Existing Performance surety amount in Rs	The same of the sa	Upload copy of existing Performance Security as attachment
A (Fully Mechanised)	Manganese - 7.368 Million tons (+10% Mn.) Iron - 8.368 Million Tons (+45%Fe)	67695545	08/01/2026	Copy of the Performance Securit is attached as Annexure - 15

^{*}Submit updated performace security at State based on updated Resources

Under 27(1) of MCDR

DEEPAK KUMAR ACHARYA

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Chapter 8: Review of Previous Proposals (Not applicable for fresh grant)

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8.1: General

8.1.1: Lease Area Utilization Not Applicable

Sl. No.	Type of land use (in ha)	Area at the beginning of the proposal period	Area proposed under activity	Actual Area utilized in the proposal period	Deviation	Reasons for deviation
1 TABLE 1	Mining		1000	THE WITH THE	Territory of the	
2	Mineral storage			The Victorian Control		
3	Mineral Beneficiation				143.E	
4	plant				444	
5	Township		danie		LT PARTY NEED	
6	Tailing Pond		P. Wandara			
7	Railways Roads					
8	Infrastructure (Workshop, administrative building etc.)					
9	OB/waste dump	new Title I team				
10	Top soil preservation Others					
12	Total area put to use		Bit 195			
13	Excavated area reclaimed		No.	THE WAY		
14	Waste dump area reclaimed					
15	Undisturbed Area					
	Total				Maria de Artico	The state of the s

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8.1.2: SDF and CSR Expenditures

Activity	Prop	oosals	Achievemen t	Deviation	Reasons for deviation
Total expenditure incurred for implementation of SDF at mine level including - Environment Protection - CSR & other welfare activities in peripheral area (Explanation: Expenditure is not over and above the statutory levies imposed by the Government; However, THIS EXCLUDES CONTRIBUTION TO DMF & NMET and is over and above the statutory levies imposed by the Government.)	10% of Royalty (a)	Total Expenditure for SDF implementation (b)			
CSR (Corporate Social Responsibility) spending at the mine level in Proposal Period (as per Companies Act, 2013 or otherwise)					

8.2: Technical Details

8.2.1: Exploration

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Number of Boreholes/ Pits/ Trenches		Marin David	Mary Control	HARLES AND A STREET
Boreholes Meterage (If Boreholes selected in first row) (m)			EXTRA E	N. C.
Grid	The second second	DESCRIPTION OF THE PARTY OF THE	100 7 100	AND DESCRIPTION OF THE PERSON
G Axis upgradation during Proposal Period as per guidelines of MEMC Rule 2015)				
Area converted under G1 from G2/G3		The second second		

8.2.2: Mine Development (Opencast/ Underground/ Both/ Dump Mining)

Particulars	Proposed	Actual	Deviation	Reasons for deviation
				ueviation

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8.2.2.1: Generation of Ore/Waste While Development

Ore	1 1 1 1 1 1 1	A-L-	
Waste		<u> </u>	
Generated Waste while ROM recovery		77	
Dumping Site (For Surface)			
Removal of waste/ over burden in cubic meters			
Generated Waste while ROM recovery			
Dumping site of waste/ overburden			

8.2.2.2: Excavation

Lateral extent		
Vertical extent		

8.2.3: Mining operation: Dump Mining

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Handling of Material		Contract Laboratory		
Waste Generated post recovery				
Dumping site for waste				

8.2.4: Zero Waste Mining

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Alternative use / Disposal of Waste Generated (excluding top soil)	3.5			

8.2.5: Backfilling

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Site (Co-ordinates)				
Area	1000			
Depth	DECEMBER 2		(1) (1) (1)	
Volume Backfilled (CuM)	The state of the state of			
Backfilled Area available for Reclamation and Rehabilitation		THE SECTION		
Backfilled Area Reclaimed and Rehabilitated				
Balance Backfilled Area		Section 1		

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8.2.6: Production of Mineral(s):

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
8.2.6.1: ROM				
Opencast			Tay of the party of	
8.2.6.2: Cleaned Ore				A PLAN - In
Opencast				
Dump Mining				Total Salara
Recovery from Mineral Rejects or Tailings	A Day atten			62 3 THE RES
Total				

8.2.7: Handling of Mineral Rejects/ Sub-Grade

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Generation of mineral rejects		YALLES TO SE		N WATER
Opencast				
Dump mining				
Other recovery				THE PERSON NAMED IN
Stacking of mineral rejects/ sub-grade mineral				
(Select Dump Id)				
Blending of mineral reject / sub-grade				

8.2.8: Environment Compliances

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
8.2.8.1: Top soil		- 14-67-77		a de la la company
Generation				I III III
Utilization				A PARTY NAMED IN
Stacking (Dump Id)	SILVER BUILDINGS STATE		252	de delena
Reclamation			No. 1 Television	
Rehabilitation				
8.2.8.2: Afforestation	(Dumps/Benches/Backf	illed Area etc.)		Visit Taris
Year 1		Sekal a I	111111111111111111111111111111111111111	A Charles
Year 2			- 11/1	1 - 19 8 -
Year 3	A STATE OF THE STA			
Year 4				
Year 5	Contract to the Contract Contr	THE PERSON NAMED IN		

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8.2.8.3: Afforestation (Green Belt)

OTHER COLORS				
Year 1 Year 2 Year 3 Year 4 Year 5		- Or A second		
Year 2	10 - 10 mg 24-			
Year 3	HAVE DESCRIPTION		STATE OF STATE	
Year 4	The standard of the standard o	into the through		
Year 5				
Construction of check dams	A Prince of the	Aller Are		
Construction of garland drains				
Construction of retaining walls		THE REAL PROPERTY.		

8.2.8.4: Tailings

Generation	point rections to the	A STATE OF THE STA	and the second second
Utilization (Autofill from production)	Male in a small move	The Control of the Co	N. M. Marian
Disposal	The State of the S		

8.3: Socio-Economic Review

8.3.1: Rehabilitation & Resettlement for Project Affected People

Particulars	Proposals	Actual	Deviation	Reasons for deviation
No. of Project Affected People (PAP)		TOTAL TOTAL	- I NAME OF THE OWNER,	
%age of PAP for whom alternate arrangements made for sustained livelihood	BU BURN	17		
% of project affected families given employment	or store are the			
% of project affected families who have been skilled by the lessee and absorbed (% of total employment given to affected families)				

8.3.2: Grievance Redressal

Year 5	
1.0001.0	
Voor E	
Tear 5	
	Year 5

8.3.3: Welfare and socio-economic development programs for local communities

8.3.3.1: Support for Drinking Water & Agriculture

No. of Water Storage Tanks constructed	Year 1	Year 2	Year 3	Year 4	Year 5
Drinking Water Facilities provided (Bore wells/	Year 1	Year 2	Year 3	Year 4	Year 5
Irrigation Support provided (Canals/ Pumps etc.)	Year 1	Year 2	Year 3	Year 4	Year 5
No. of Water tanks De-silted	Year 1	Year 2	Year 3	Year 4	Year 5
Water Treatment facilities provided (A/NA)	Year 1	Year 2	Year 3	Year 4	Year 5
Amount of Water treated (in kL) (if selected A in above)	Year 1	Year 2	Year 3	Year 4	Year 5

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8.3.3.2: Support to Health & Medical Services

	Year 1	Year 2	Year 3	Year 4	Year 5
seases of Health Camps/ Medicine Camps Organized	Year 1	Year 2	Year 3	Year 4	Year 5

8.3.3.3: Support to Skill development & Education

Vocational Training Provided/ Support Provided					
No. of employees undergone Vocational training	Year 1	Year 2	Year 3	Year 4	Year 5
No. of other persons undergone Vocational training	Year 1	Year 2	Year 3	Year 4	Year 5
Number of Literacy & Education Camps held/ Supported	Year 1	Year 2	Year 3	Year 4	Year 5

8.3.3.4: Support to Transportation Services & Infrastructure

Expenditure on Transportation Services &	Year 1	Year 2	Year 3	Year 4	Year 5
Road development (m) in the peripheral area (not	Year 1	Year 2	Year 3	Year 4	Year 5
ease area) No. of Public transport support provided (Ambulance/Buses/ School Vans etc)	Year 1	Year 2	Year 3	Year 4	Year 5

8.3.3.5: Swatchata Programs: Creating/providing sanitation and healthy condition in and around the mine area

Adoption of ODF within mining lease area			lucio a	Vers #	Year 5
No. of Toilets built in the Lease Area	Year 1	Year 2	Year 3	Year 4	Teal 5
Adoption of ODF in nearby villages	Phone .				V-ne F
No. Of Toilets built in the villages	Year 1	Year 2	Year 3	Year 4	Year 5
Provision for greenage recreational facility (Withi	n Lease Area/	Outside)			
Recreational Area Type (Picnic Spot/ tracks/Park	Year 1	Year 2	Year 3	Year 4	Year 5
Etc)	10012				Year 5
Area covered (For within Lease Area only)	Year 1	Year 2	Year 3	Year 4	Year 5
Awareness program among Mine workers for Swi	atchata				
No. of Swatchchta Programmes held	Year 1	Year 2	Year 3	Year 4	Year 5

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Chapter 9: Impact Assessment (for fresh grand Row



9.1: Baseline Information

and the first terminal termina	Yes
Whether Area falls under Forest*	No
Whether Area falls under Wildlife Sanctuary*	No
Whether Area falls under Coastal Regulation Zone (CRZ)*	No.
Whether Area falls under Defence Land*	15000
Any Other Clearance (specify)*	No

Any Significant Objections from any Agency Involved in Stakeholder's Consultation.

There are no objection from any Agency in and around the Mining Lease area. Prior to getting Lol for Mining Lease the said has granted for Composite Licence, we have explored the said area, during the said period peoples are too much interested for opening the mining.

(Total 500 characters)

9.2: Environment Parameters

9.2.1: Environment Monitoring

Monitoring Activity

9 2 1 1. Ambient Air Quality

J.E.I.I. Filliolette		
Core Zone (Quarterly Monitoring Planned) *	Yes	
	Yes	
Buffer Zone (Quarterly Monitoring Planned) *	163	_

9 2 1 2: Water Quality

Sizizizi itari.	William Control of the Control of th
Core Zone (Quarterly Monitoring Planned) *	Yes
	V
Buffer Zone (Quarterly Monitoring Planned) *	Yes

9.2.1.3: Noise Level

Core Zone (Quarterly Monitoring Planned) *	Yes
Buffer Zone (Quarterly Monitoring Planned) *	Yes

9.3: Impact Assessment

9.3.2: Land Environment

9 3 2 1. BASE / PRESENT STATUS

J.J.Z.I. DAJE / TRESERT STITLE	AREA (Ha)	
Pre Mining Use	ARLA (na)	
Barren / Waste land with small bushes & shrubs	T A CONTRACTOR	
Land under Agriculture / Crops	27,248	It included Sabik forest
Land covered with Plants	0	
Land under Grass Cover	4 407	
Land under Public Infrastructure / Utilities (water bodies, roads, railways, electric lines, telephone lines etc.)	1.187	It included Sabik forest
Land under Habitation	0.368	It included Sabik forest
Land under Monuments & places of Historical Importance	0	
Degraded by Pits & Excavation	2.491	It included Sabik forest

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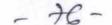
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Degraded by Dumps & Material Staking	0
Covered under Mine Infrastructure (plants, shades, buildings etc.)	0
Land under Forest	94.408
Historically, Culturally & Ecologically Important Places	0
Any Other, please specify below	0
Date of Observation	

Revenue Forest, Sabik Forest

9.3.2.2: ANTICIPATED IMPACT

Post Mining Use	AREA (Ha)
Degradation by Excavation	74.84
Degradation by Dumps & Material Staking	18.672
Covered under Plants, Shades & Buildings	Nil
Covered by Roads & Approaches	3.389
Any Other, please specify below	34.899
Stacking area, Camp area, sorting sizing area, office area etc	Control of the last

9.3.2.3: MITIGATION MEASURES

9.3.2.3.1: Backfilling *

Backfilling will be carried out after the exshaust of minerals. But as per the statute safety zone area must be left out and then open pit work will be carried out. Therefore in the Iron pit (Laserda Pit-1) entire materials can not be exshausted, due to safety constraint. In 2nd year the maximum materials will be excavaed from the above pit and then from 3rd year onwards back filling will be carried out in the said pit over an area of 5.283 ha. After backfilling proper terracing will be done and further grass patching and plantation will be done for stabilization towards control of soil erosion

(Total 1000 characters)

9.3.2.3.2: Area proposed to be covered by Plantation in Backfilled Area *

During the plan period no plantation proposed in the back filling area due to the mined out area has not been fully reclaimed during the 1st 5 year period. Total back filled area will be 5.283 ha.

(Total 1000 characters)

9.3.2.3.3: Proposed Area under Agriculture *

There are no proposal for Agriculture within the Mining Lease area.

(Total 1000 characters)

9.3.2.3.4: Proposed Area to be converted to Grazing Land *

There are no proposal for converting to Grazing land within the Mining Lease area.

(Total 1000 characters)

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027	2 5.	Ground	Water	Rechai	reine *
3.3.2.		Ground	AABICI	THE CHILD	Part of Part

Various measures will be taken care durin the Mining Operation for augmentation of Ground Water Recharging. The various measures are as follows: 1) 2 Nos of Settling pond of area 0.187 ha will be provided at the strategic locations of the 2 nos of waste dump area, which will be acted as Settling cum Percolation pond. Further, check weir and check dams will also be implemented at the strategic locations for manaement of the mines surface run off water.

2) Roof top rain water harvesting structure will be constructed at the camp premises for recharge the ground water through recharge well.

9.3.2.3.6: Green Belt Development *

Total 6.114 ha of land will be abided for green belt plantation along the 7.5 mtrs of Mine boundary, 50 mtrs of road safety zone. During the plan period it is proposed to plant over 2.243 ha. of area along the Mining Lease bounday and 50 mtrs of road safety zone in Laserda side. The waste dumps ear marked in the lease area will be covered with plantation & grass patching after proper stabilization followed be compaction. Different types of native plants will be selected for plantation purposes. Further green belt/plantation and other mitigative measures are and will be carried out to abate noise propagation in the

(Total 1000 characters)

9.3.2.3.7: Agriculture *

There is no proposal of any Agriculture within the Mining Lease area.

(Total 1000 characters)

9.3.3: Air Environment

9.3.3.1: Climate & Meteorology (Please provide average of 10 years)

Temperature (°C) *			
Maximum	46		
Minimum	5		

Relative I	Humidity (%)
	75

Average	Rainfall (mm)
	1350	0

9.3.3.2: Air Quality Details for Base line Information / Present Status

s.N.	Station Name	Season	PM10 (μg/m3)	PM10 Excess (μg/m3)2	PM2.5 (μg/m3)	PM2.5 Excess (μg/m3)2
4	Core Zone	Pre-Monsoon	57.4	No	29.5	No
1	Core Zone	Pre-Monsoon	57.6	No	29.2	No
2		Pre-Monsoon	50	No	25.1	No
3	Laserda Village Baiadihi Village	Pre-Monsoon	48.3	No	24.4	No
5	Harmutu Village	Pre-Monsoon	48.9	No	24.5	No
6	Nawaedihi Village	Pre-Monsoon	49.9	No	29.4	No
7	Barbil Town	Pre-Monsoon	68.9	No	37.5	No
8	Bolani Village	Pre-Monsoon	58.5	No	29.9	No
9	Kiriburu	Pre-Monsoon	55.6	No	28.9	No
10	Pandulposi	Pre-Monsoon	48.8	No	24.8	No

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Table continued...

S.N.	SO ₂ Value (μg/m3)	SO ₂ Excess (μg/m3)	NO _x Value (μg/m3)	NO _x Excess (μg/m3)	Date of Observation	Action
1	8.5	No	14.3	No	05.03.21 to 24.05.21	Not Applicable
2	0.0	No	13.5	No	05.03.21 to 24.05.21	Not Applicable
3	5.7	No	11.3	No	05.03.21 to 24.05.21	Not Applicable
4	5.6	No	11.3	No	05.03.21 to 24.05.21	Not Applicable
4		No	11	No	05.03.21 to 24.05.21	Not Applicable
~	5.8	No	12.7	No	05.03.21 to 24.05.21	Not Applicable
6	6.8		17.6	No	05.03.21 to 24.05.21	Not Applicable
/	12.6	No	15.2	No	05.03.21 to 24.05.21	Not Applicable
8	9.4	No		No	05.03.21 to 24.05.21	Not Applicable
9	8.6	No	14.4		05.03.21 to 24.05.21	Not Applicable
10	5.5	No	10.9	No	05.03.21 to 24.05.21	NOT Applican

9.3.3.3: Impact Assessment & Mitigation Measures

9.3.3.3.1: Anticipated Impact *

Give details on Prediction of fugitive dust emissions due to mining activities, crushing & cleaning plants, loading & unloading, transportation by rail, road or conveyor

The mining operation along with crusher and screen plant and other allied operations in the area may result in deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in the area due to mining and allied activities are:

- a) Drilling and blasting operation
- b) Extraction of ore and overburden by shovels/excavators
- c) Movement of HEMM, such as shovels/excavators, dozer, dumpers etc
- d) Loading and unloading operation,
- e) Overburden / ore transportation,
- f) Crushing and screening operation,
- g) Transportation outside the lease area. Larger suspended particles are generally filtered in the nose and throat and do not cause problems. Particulate matter less than 10 microns, referred to as PM10, can settle in the bronchi and lungs and cause health problems. Particles less than 2.5 micrometers (PM2.5), tend to penetrate into the gas exchange regions of the lungs. Besides, larger particles (higher than 10 microns in diameter) tend to settle to the ground by gravity in a matter of hours whereas the small particles (less than 10 microns) can stay in the atmosphere for weeks and are mostly removed by precipitation.

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9.3.3.3.2: Mitigation Measure *

Give details on measures to reduce the emissions of pollutants during mining, loading, unloading, transportation, drilling, blasting, crushing etc. to maintain the air quality

Drilling with dust extractors, usage of sharp drill bits and with inbuilt water injecting system. Provision of PPE's including nose mask to the workers engaged In the operation. Well-designed blast by effective stemming and use of milli second delay detonators. Controlled blasting technique as per the recommendation of CIMFR.

Proper maintenance of HEMM to control exhaust emission & noise. Provision of dust filters / mask to workers working at highly dust prone zones. Proper maintenance of haul road and other roads. Water sprinkling to be done regularly with the help of water tanker/ fixed sprinkling system within the lease area at the mineral handling area to reduce the dust emission. Maintaining DG set emissions under control by regular maintenance & follow-up of preventive maintenance. Providing inbuilt nozzles for spraying water in the form of mist (Dry fogging) for efficient dust suppression at dust generating sources at Crushing & Screening plants. Maintain and regular grading of haulage road. Establishment of Quick Dispatch system. Provision of sweeping of road through road sweeping machine. Provision of 300 m cement concrete road from the exit gate to inside the mine and Wheel washing system at the exit gate so that mines dust will not come to the road. Furibed, ther detailed analysis will be done during the time of EIA/EMP study and accordingly management plan will be prescribed

(Total 1000 characters)

9.3.4: Water Environment

9.3.4.1: RAIN WATER

9.3.4.1.1: Base / Present Status *

(Details of Rivers, Springs, Lakes, Reservoirs & Drains up to First Order in Study Area)

The drainage pattern of the lease area is controlled by Karo River which has passed through the lease area. Apart from that one seasonal nalla passed through the lease area and further connect to Karo. The drainage pattern is dendritic in nature.

(Total 1000 characters)

9.3.4.1.2: Anticipated Impact *

(Impact on Surface Water Bodies / Groundwater Table Regime / Streams / Lake / Springs due to Mining, to be Assessed from Hydro-geological StudyGive details about impact on vegetation) Wash off / runoff of mine workings, waste dumps, ore stock piles, during monsoon may carry the silt / ore residues and pollute the nearby nallah / streams,

lands if it is let-out as such. Generation of effluent water from workshop, service building and Domestic effluent may impact on the near by nalla/river. Water will be required for mining & allied activities like dust suppression, green belt development, domestic use. So ground water will be extracted for this

purpose. Due to this there will be impact on ground water regime.

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9.3.4.1.3: Mitigation Measure *

(Possibilities of Rain Water Harvesting & Artificial Recharge with in the Mining Lease)

Various measures will be taken care during the mining operation for augmentation of ground water regime;

- 1. 2 Nos of Settling pond of area 0.203 ha will be provided at bottom of 2 nos of waste dump area at the starategic locations, which will be acted as Settling
- 2) Total 1249 mtrs of retaining wall will be constructed on the toe of the Dump and mineral reject stack area and 864 mtrs of garland drain will be constructed during the plan period.
- 3. Roof-Top rain water harvesting structure will bemade in the camp premises towards recharge the ground water through recharge well.
- 4. The runoff from the other non mining areas will be channelized to series of settling ponds and check dams before discharge to nearby natural water bodies.
- 5. Settling ponds will be made to prevent flow of fine particles from OB / Waste dumps, check dams, parapet/retaining walls & garlanded drains.

(Total 1000 characters)

9.3.4.2: WATER BODY

9.3.4.2.1: Base / Present Status *

(Water Bodies Existing & Water Bodies likely to be created due to Mining Activities & their Water Holding Capacity)

River Karo has been crossed through the lease area. It's a perennial river. During the mining activity, quarry will be formed which will help in percolation of rainwater towards augmentation of ground water table. Different run off management practices will be implemented like guard wall, check weir, check dams etc. for protection of the water bodies.

(Total 1000 characters)

9.3.4.2.2: Anticipated Impact *

(Ingress of Sea Water, Particularly for Mining Projects in Coastal Areas)

Due to mining & allied activities there may be chance of Wash off / runoff from mine workings, waste dumps, ore stockpiles from the mine effect on the nearby river/nalla. So, the different run off management practices will be implemented like guard wall, check weir, check dams etc. for protection of the water bodies.

(Total 1000 characters)

9.3.4.2.3: Mitigation Measure *

(Steps to Minimize Impact on Water Table if Mining Intercepts Groundwater Regime)

There will be intersection of ground water table in the plan period. However NOC from CGWA will be taken for both ground water usage along with working below ground water table. Detail hydro geological study will be done by accredited CGWA consultant. Pumping facility will be provided during the mining operation and water will be used for sprinking, plantation and ancillary activities. Detail mitigation measures will be implemented. Further Surface run-off management structures like retaining wall along with garland drain, Settling cum de-silting pond will be provided at the strategic location towards run-off management & augmentation of ground water.

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9.3.4.3: WATER BALANCE

9.3.4.3.1: Base / Present Status *

(Water Balance (Withdrawal of Surface Water & Release of Mine Drainage Water) Water Requirement & Waste Water Generation from various Activities of Mine, Including Beneficiation)

There will be requirement of water for mining & allied activities i.e. for dust suppression, Plantation, Domestic and washing of vehicle. The total water requirement will be 95 KLD which will be sourced form Ground water. Waste water generated from domestic consumption and washing vehicles will be treated through STP & ETP. The treated water will further use for plantation & gardening purpose. Out of 95 KLD, 85 KLD will be sourced from mine seepage/dewater and 10 KLD will be sourced from bore well for domestic purposes. A detailed hydrogeology study will be carried to understand the generation of the total mines seepage water.

(Total 1000 characters)

9.3.4.3.2: Anticipated Impact *

(Impact of Water Drawl on Surface & Groundwater Resources Impact on Surface & Groundwater Quality due to Discharges from Mining, Tailings Pond, Workshop, Township, & Leach ate from Solid Waste Dumps etc)

Due to consumption of ground water there may be impact on local hydrogeology. Detailed hydrogeological study will be done and rain water harvesting structures will be implemented towards water conservation. Waste water generated from dome sting consumption and washing vehicles will be treated through STP & ETP. The treated water will further use for plantation & gardening purpose. There will be no such generation of tailings from the mine. Further the run-off which will be generated during rainy day will be channelized through surface run-off management structures like retaining wall, garland drain, settling cum de-silting pit etc.

(Total 1000 characters)

9.3.4.3.3: Mitigation Measure *

(Construction of Check Dams, Sedimentation Ponds, Settling Tanks, Retaining Walls etc. with Design & Site Features for Control of run-off Mine Water Treatment for Meeting the Prescribed Standard Waste Water Treatment for Township Sewage, Workshop(s), Tailing Pond Overflow etc)

Waste water generated from domestic consumption and washing vehicles will be treated through STP & ETP. There will be no such generation of tailings from the mine. Further the run-off which will be generated during rainy day will be channelized through surface run-off management structures like retaining wall, garland drain, settling cum de-silting pit, settling pond etc.

(Total 1000 characters)

9.3.5: NOISE

9.3.5.1: Critical Locations Identified within Lease Area *

The critical location within the lease area will be crusher & screen plant area, mine pit area, haulage road, blasting zone etc.

(Total 1000 characters)

9.3.5.2: Give Detail About Prediction of Noise Level by using Mathematical Modeling at Different Locations Identified *

Noise level prediction Modelling will be done during the EIA/EMP study

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9.3.5.3: Measures to Minimize the Impact on Receiving Environment *

Mitigation measures will be taken towards minimize the noise impact

- 1. Planting trees at various places within the lease area to act as acoustic barriers.
- 2. Proper and regular maintenance of vehicles, machinery and other equipment. All HEMM are monitored for any abnormal sound and rectified with due precaution by maintenance personnel.
- 3. Providing in-built mechanism for reducing sound emissions.
- 4. Providing Sound proof operator's cabin for equipment's like dumpers, shovel, tippers, etc.
- 5. Blasting study will conducted by CIMFR and the recommendation towards safe blasting practices will be maintained. Further the vibrations and noise are to be recorded in daily basis by vibro meter.
- 6. Providing workers with earmuffs & earplugs, as a protection from exposed to higher noise level
- 7. Noise mapping will be practiced and accordingly meausres will be taken.

(Total 1000 characters)

9.3.5.4: Noise Details for Base / Present Status

Noise Standards *						
A C	C-1	Limits in	dB(A)Leq			
Area Code	Category of Area	Day Time	Night Time			
A	Industrial Area	75	70			
В	Commercial Area	65	55			
С	Residential Area	55	45			
D	Silence Area	50	40			

Note:

- 1. Day time reckoned in between 6.00 am to 9.00p.m
- 2. Night time reckoned in between 9.00p.m.to 6:00am
- 3. Silence zone is defined as areas up to 100 meter around such premises as Hospitals, Educational institutes and Courts. The Silence zones are to be declared by the competent Authority
- 4. Mixed categories of areas should be declared as "one of the four above mentioned categories" by the Competent Authority and the corresponding standards shall be applied.

S.N.	Station Name	Season	Type of Area	Noise At Day Time:	Excess Noise At Day	Noise At Night Time:	Excess Noise at Night	Date of Observ ation
1	Core Zone	Summer	Commercial	52.1	No	40.5	No	12.03.21
2	Core Zone	Summer	Commercial	51.8	No	40.9	No	12.03.21
3	Laserda Village	Summer	Residential	45.6	No	37.2	No	12,03/21
4	Baiadihi Village	Summer	Residential	43.2	No	37.8	No	12.03.20
5	Harmutu Village	Summer	Residential	46.2	No	38.2	No	1/ 32.08 1
6	Nawaedihi Village	Summer	Residential	45.6	No	38.5	No	13:03:20
7	Barbil Town	Summer	Commercial	54.2	No	42.6	No	(日393.20
8	Bolani Village	Summer	Commercial	53.8	No	43.2	No	20.00.01
9	Kiriburu	Summer	Commercial	53.6	No	42.8	No	18/13/14
10	Pandulposi	Summer	Residential	44.8	No	40.1	No	18.8321

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9.3.5.5: Impact Assessment & Mitigation Measures

9.3.5.5.1: Anticipated Impact *

Give details on impact on ambient noise level due to rock excavation, transportation, processing equipment's & ancillaries

Noise is one of the inevitable causes of pollution in mining operations, largely due to the extensive mechanization adopted. Besides, other operations such as drilling, blasting, movement of vehicles, crushing, screening etc., also produce noise of considerable magnitude in mining operations. Prolonged exposure to a high noise level is harmful to the human auditory system and can create mental fatigue, rebellious attitude, annoyance and carelessness, which may lead to neglect of work and also result in accidents.

(Total 1000 characters)

9.3.5.5.2: Mitigation Measure *

Give details on measures for noise abatement including point source & line source

Mitigation measures will be taken towards minimize the noise impact

- 1. Planting trees at various places within the lease area to act as acoustic barriers.
- 2. Proper and regular maintenance of vehicles, machinery and other equipment. All HEMM are monitored for any abnormal sound and rectified with due precaution by maintenance personnel.
- 3. Providing in-built mechanism for reducing sound emissions.
- 4. Providing Sound proof operator's cabin for equipment's like dumpers, shovel, tippers, etc.
- 5. The safe blasting practices are done and the vibrations and noise are recorded in daily basis by vibrometer.
- 6. Providing workers with earmuffs & earplugs, as a protection from exposed to higher noise level
- 7. For dust suppression of haul road 1 km of fixed sprinkling system and 2 x 16 KI mobile water tanker will provided for water sprinkling of all other mines road.
- 8. Dry fog system along with hood over the conveyor belt will pbe provided in Mineral processing plant for dust suppresion.
- Mobile mist canon with water tanker will be provided for mineral stack yard and remote area.

(Total 1000 characters)

9.3.6: VIBRATION

a a c 1. Vibration Dotails for Base / Present Status

s.N.	(EVENT)	Season	Distance from the Blasting Site (m)	Peak Particle Velocity (mm/s)	Air Over Pressure (DB)	Frequency (Hz)	Date of Observation
	Will be carried out after commencing of	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

9.3.6.2: Impact Assessment & Mitigation Measures

9.3.6.2.1: Anticipated Impact *

(Give details on impact of vibrations including damage to materials/structures due to blasting)

Vibrations due to blasting may cause damage to nearby structures, if appropriate control measures are not adopted. Fly rock is another possible damage causing outcome of blasting constitutes, one of the main source of material damage and harm to people. There are many factors, which influence these aspects.

(Total 1000 characters)

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9.3.6.2.2: Mitigation Measure *

Give details on measures for noise abatement including point source & line source

The following control measures need to be implemented towards control the vibration

- 1) Optimally controlled blasting techniques, after necessary field trials.
- 2) Drilling and charging pattern is ideally formulated, with less explosive charge, etc., after field trials.
- 3) Use of suitable initiating sequence and millisecond delay detonators.
- 4) Reduction of amount of explosives charged per day optimally.
- 5) To contain fly rocks, stemming column will not be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation

(Total 1000 characters)

9.3.7: SOCIO-ECONOMIC ENVIRONMENT

9.3.7.1: Demographic Profile

s.N.	Type of Area	Name of Village	Total Population	Male to Female Ratio	Literacy Rate (%)	Employment Rate (%)
1	Scheduled	Lasarda	791	98.24	40	27
2	Scheduled	Pachari	943	97.25	39	26
3	Scheduled	Nawadih	343	101.22	47	31
4	Scheduled	Bhaliadihi	465	87.5	38.3	24
5	Scheduled	Kundaroda	397	102.32	37	28
6	Scheduled	Damurda	582	101.29	37	29
7	Scheduled	Panduliposhi	588	96.39	47	29
8	Scheduled	Lotapani	176	85.26	22.5	30
9	Scheduled	Shankarjor	1022	101.92	41	32
10	Scheduled	Barpada	651	101.54	51	33
11	Scheduled	Champuasahi	10393	101.12	39	31
12	Scheduled	Balagorha	907	97.26	52	30
13	Scheduled	Bolani	2194	96.77	44	32
14	Scheduled	Murgaberha	519	95.62	42	28
15	Scheduled	Meghatiburu	5992	106.2	70	35
16	Scheduled	Kiriburu	1769	105.93	69	33

9.3.7.1.1: Anticipated Impact *

(Give details about impact on the cropping pattern & crop productivity in the core zone)

The mining lease area i.e. core zone has been allotted by Govt. of Odisha for mining & allied activities. At present there is no such crop production inside the allotted area. So there will be no such impact.

(Total 1000 characters)

9.3.7.1.2: Mitigation Measure *

(Give details about compensation for loss of land & crops)

Compensation will be paid as per LA&R&R 2013. Detailed Social Impact Assessment Study will be carriot out as per norm.

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9.3.7.2: Traditional Skills & Source of Livelihood

9.3.7.2.1: Base / Present Status*

(Give details about present status on traditional skills & source of livelihood)

Villagers are mainly depending on the mining activities of the nearby mines. Substantially they are doing agriculture like paddy, Bajra, Maize & vegetables.

(Total 1000 characters)

9.3.7.2.2: Anticipated Impact *

(Give details about positive & negative impacts on present status of livelihood in the area)

There will be no such negative impact on the livelihood of the local peoples. The mining activity will increase their daily income both directly & indirectly. Apart from this there will be socio economic development of local people in terms of infrastructure, education etc.

(Total 1000 characters)

9.3.7.2.3: Mitigation Measure *

(Give details about training to locals for employment in the project training for making them self-employable or elsewhere)

ITI training for mechanical, electrical, fitter and driving training will be given to local people, so that after successful completion they will be engaged in the mining. Apart from this training on Agriculture, pisciculture, bee culuture will be provided for self-sustain. Local women will be trained in tailoring, mushroom culture etc. Help will be extended to Self Help Groups (SHG).

(Total 1000 characters)

9.3.7.3: Economic Profile of the Population in Core & Buffer Zone

9.3.7.3.1: Base / Present Status*

(Give details about economic profile of the population in core & buffer zone)

As per the secondary data most of the villagers are mainly depending on mining & allied activities of the nearby mines both directly & indirectly. Very small portion of the population partially depending on the agriculture.

(Total 1000 characters)

9.3.7.3.2: Anticipated Impact *

(Give details about impact on community resources such as grazing land)

There will be no such impact on community resources like grazing land etc.

(Total 1000 characters)

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9.3.7.3.3: Mitigation Measure *

(Give details about employment opportunities & access to other amenities such as education, health care facilities to be extended to locals, addressing local unemployment, tourism or recreation opportunities, efforts for sustainable development of the local community)

After the opening of mine priority will be given to local people for employment. Under the CER, Lessee will focus on infrastructure development, educational development & augmentation in health care facility

(Total 1000 characters)

9.3.7.4: Human Settlement in Core & Buffer Zone

9.3.7.4.1: Base / Present Status*

(Give details about human settlement in core & buffer zone)

In the core zone there are only 22 no's of hutments. Compensation will be paid as per LA&R&R 2013. Detailed Social Impact Assessment Study will be done. Buffer zone population with villages will be studied during the EIA/EMP.

(Total 1000 characters)

9.3.7.4.2: Anticipated Impact *

(Give details about any displacement of human settlements during the life of the mine)

There are only 22 hutments inside the mining lease area, so there will be displacement as per LA and R&R 2013.

(Total 1000 characters)

9.3.7.4.3: Mitigation Measure *

(Give details about rehabilitation & resettlement of land ousters & displaced people)

Rehabilitation & Resettlement of land ousters and displaced people will be as per the LA and R&R 2013. Detail Social Impact Assessment (SIA) will be done during the study.

(Total 1000 characters)

9.3.7.5: Health Profile of Population in Core & Buffer Zone

9.3.7.5.1: Base / Present Status*

(Give details about health profile of population in core & buffer zone)

The district has a three tier public health care system viz. village level, Block level and District level. There are primary health centres, private clinics, government hospitals and drug vendors that meet the basic health care needs of people in the district. Services provided include disease prevention and mother and child health care. The detail health profile study will be conducted during SIA and EIA/EMP study.

(Total 1000 characters)

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9.3.7.5.2: Anticipated Impact *

(Give details about any adverse impact on the general health condition of the population in core & buffer zone)

Due to mining & allied activities there will be generation of dust which may impact on the human health. However, detailed precaution measures will be taken towards minimizing the dust pollution. Apart from this there is no such area of impact which may cause the impact on health.

(Total 1000 characters)

9.3.7.5.3: Mitigation Measure *

(Give details about avenues like dispensaries, hospitals, maternity homes if any to be created)

Due to mining & allied activities there will be generation of dust which may impact on the human health. However, detailed precaution measures will be taken towards minimizing the dust pollution. Apart from this there is no such area of impact which may cause the impact on health. Dispensary will established during the start of mining operation. Doctor with free medicine will be provided to locals. Ambulance will be provided for any emergency.

(Total 1000 characters)

9.3.7.6: Historically, Culturally & Ecologically Important Places in Core & Buffer Zone

9.3.7.6.1: Base / Present Status*

(Give details about historically, culturally & ecologically important places in core & buffer zone)

Historically & culturally there are no such places in the core & buffer zone area. Ecologically in the buffer zone Saranda RF (in the West Singhbhum district of Jharkhand) is situated which is rich in flora & fauna.

(Total 1000 characters)

9.3.7.6.2: Anticipated Impact *

(Give details about risk profiling)

Historically & culturally there no such impact on both core & buffer zone. However, there may be impact on ecological factors which may minimize with proper conservation measures.

(Total 1000 characters)

9.3.7.6.3: Mitigation Measure *

(Give details about public health benefits (e.g. clean water to an aboriginal community), measure for safeguard against damage etc.)

Historically & culturally there no such impact on both core & buffer zone. However, there may be impact on ecological factors which may minimize with proper conservation measures. Under CER drinking water facility having deep bore well with overhead tank will facilitate to locals. Safeguard measures will be provided for any damage to local infrastructures.

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List of Annexures (in pdf format):

1	Letter of Intent /Letter of lease grant (Annexure - 1)
2	Copy of lease deed executed (Not Applicable)
3	Copy of Environment and Forest Clearence, Consent to Establish, Consent to Operate (Not Applicable)
4	Copy of Declaration of Owner/Nominated Owner in case of Company/partnership firm (Not Applicable)
5	Copy of Registration of Company (80C)/Partnership firm (Registration) & Deed (Annexure - 2)
6	ID & Address Proof of Owner/ Nominated Owner (Annexure - 3)
7	Consent letter for Qualified Person (Annexure - 4)
8	Experience & Qualification Details of Qualified Person (Annexure - 5)
9	Copy of Study reports conducted as per Para 4.3.1 (Bulk Density - Annexure - 11)
10	Copy of feasibility Report (Pre-fesibility Report - Annexure - 7)
11	Copy of Scale relaxation approval granted(if applicable) (Not Applicable)
12	Exploration details (Authenticated GR, Form I and Borehole log sheet and assay report) Annexure - 10
13	Chemical and Mineralogical analysis report (Annexure - 8(A, B, C, D, E)
14	Any other Report or Certification as required in the submitted Document.
15	Mineral processing flowsheet with stage wise recovery (Annexure - 12)
16	Copy of Bank Guarantee (Not applicable)
17	Copy of Performance Surety (Annexure - 15)
18	Copy of MDPA (as applicable) (Not applicable)

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List of Plates (Geometry type: Polygon, Datum: WGS 84):

1	Lease Cadastral Plan (scanned image)	The Scanned copy shall be of the original lease map issued by State Government along with other details
2	Surface Plan(.KML /.KMZ/.SHP format)(Georeferenced)	A statutory plan as per MCDR, 2017. The Plan should be submitted showing different color codes for:(1) Active Pits & Excavation area(2) Excavated area reclaimed & rehabilitated (3)Active dumps (4) Stabilized & rehabilitated dump area, (5) Green belt (6) Mineral Stacks (7) Utilities such as plant, buildings etc (8) Lease boundary along with other details.
3	Surface Geological Plan of the lease (.KML /.KMZ/.SHP format)(Georeferenced)	The Plan should be submitted showing different color codes for: (1) Lithological/Geological Occurance (2) Area under G1,G2,G3 & G4 (3) Active pits & Excavation area (4) Dump Area (5) Mineral Stacks (6) Lease boundary along with other details.
4	Surface Geological sections (in Pdf/.dwg format)	Geological sections with different color coding depicting all the features shown in Surface Geological Plan.
5	Five year Production and Development plan(.KML /.KMZ/.SHP format)(Georeferenced)	The Plan should be submitted showing different color coding for: (1) Active Pit and Excavation area, (2) Year wise excavation proposal for year I to V (3) Active dump and yearwise dump proposal for year I to V (4) Year wise Dump working proposal for year I to V (6) Lease boundary (with reference to chapter 4) along with other details.
6	Five year Production and Development sections(in pdf/.dwg format)	Year wise excavation and dumping proposals with different color coding depicting all the features as shown in the Five year Production and development plan.
7	Progressive Mine Clouser Plan (.KML /.KMZ/.SHP format)(Georeferenced)	The Plan should be submitted showing different color coding for : (1) Yearwise excavated area Reclaimed & rehabilitated for year I to V (2) Year wise dump area to be stabilized and dump area to be rehabilitated for year I to V (3) Year wise Green area proposed from year I to V (4) Any other reclamation and rehabilitation measures proposed (5) Lease boundary (with reference to chapter 6) along with other details.
8	Progressive mine Clouser sections(in pdf/.dwg format)	Year wise Progressive mine clouser sections showing all the yearwise reclamation, rehabilitation proposals as depicted in the Progressive mine clouser plan.
9	Conceptual Plan and section(.KML /.KMZ/.SHP format)(Georeferenced)	The Plan should depict the staus of lease area as envisaged at the end of life of Mine showing all the details. Status of land use shall be depicted by different color coding.
10	Geo referenced Cadastral Plan	Duly certified by the State Government
11	Environmental Plan(.KML /.KMZ/.SHP format)(Georeferenced)	As per MCDR, 2017 indicating all the details.
12	Any other plan/section as deemed necessary by approving authority	

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