MINING PLAN

OF

PATHRAI BAUXITE ORE DEPOSIT

IN

VILLAGE- PATHRAI TAHSIL- SITAPUR,

DISTRICT – SURGUJA (CHHATTISGARH)

CATEGORY "A"

Area 99.350 Ha

(Govt. Forest Land, categorized as Chhote Jhad ka Jungle)

SUBMITTED TO THE COMPETENT AUTHORITY
(Indian Bureau of Mines)

UNDER RULE 22(4) OF MCR 1960

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पत्र संख्या द्वारा
VIDE LATTER No. SPG/BX/MPLN-1145/NGP dt. 16.09.2015

APPLICANT:
Chhattisgarh Mineral Development Corporation (CMDC)

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RQP:

Geo Solutions (P) Ltd.

(RQP/NGP/4 27/2011/B)
Valid upto 2021
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क्षेत्रीय खान नियंत्रक (ना. क्षे.)
Regional Controller of Mines (N. R.)
भारतीय खान ब्यूरो नागपुर
Indian Bureau of Mines, Nagpur

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Proposed production for Fifth Year: (B.D. Soil =1.7, Laterite & waste = 2, Ore = 2.3)

S. No.	BH / Pit No.	OB (T)		Bauxite Zone (T)		Chemical Analysis (%)		stripping ratio
		soil	laterite	waste	Bauxite	Al_2O_3	SiO_2	
1	N29W10	C	0	2688	5741	43.85	3.93	2.08
2	N29W11	C	5760	1344	2870	42.98	4.85	4.38
3	N29W12	C	0	2464	5252	51.10	2.29	2.08
4	N29W13	C	0	1852	3956	46.43	5.33	2.08
5	N29W14	C	0	1344	2870	38.74	4.09	2.08
6	N29W15	680	0	3416	7296	47.64	4.85	2.20
7	N29W16	C	0	6720	14352	41.18	2.90	2.08
8	N29W17	153	0	1071	2287	42.60	1.64	2.17
9	N28W9	1632	3840	1344	2870	35.10	4.32	4.38
10	N28W10	C	0	3024	6458	41.28	3.89	2.08
11	N28W12	495	0	1630	3480	48.26	3.80	2.27
12	N28W13	689	1350	520	1110	49.06	3.72	4.31
13	N28W14	C	0	4962	10598	51.56	2.33	2.08
14	N28W15	C	1920	1344	2870	39.90	2.74	2.85
15	N28W16	816	0	2016	4306	50.59	1.60	2.33
16	N28W17	7507	0	2419	5167	39.65	1.05	4.04
17	N27W9	C	0	6048	12917	45.51	6.83	2.08
18	N27W10	C	0	4704	10046	43.66	6.04	2.08
19	N27W11	C	0	907	1938	42.45	2.03	2.08
20	N27W14	C	0	974	2081	47.17	4.96	2.08
21	N27W15	541	0	4256	9090	41.27	3.09	2.16
22	N27W16	3978	7488	3276	6997	37.03	3.52	4.08
23	N26W7	C	11520	4032	8611	44.73	5.90	3.62
24	N26W8	C	15360	2688	5741	35.58	1.84	5.15
25	N26W9	C	15360	2016	4306	45.79	5.33	6.18
26	N26W10	C	0	1911	4081	41.54	5.68	2.08
27	N26W13	C	264	277	592	35.40	1.75	2.59
28	N25W7	C	7680	3360	7176	44.26	4.92	3.31
29	N25W8	243	1430	2402	5131	34.76	1.63	2.46

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Proposed production for Second Year: (B.D. Soil =1.7, Laterite & waste = 2, Ore = 2.3)

S. No.	BH / Pit No.	OB (T)		Bauxite Zone (T)		Chemical Analysis (%)		stripping ratio
		soil	laterite	waste	Bauxite	Al_2O_3	SiO_2	
1	N25W5	0	23040	6720	14352	36.01	1.43	3.92
2	N24W4	0	21660	7581	16191	43.50	2.97	3.62
3	N24W6	0	756	529	1130	44.36	8.02	2.85
4	N23W10	148	0	183	390	50.89	1.49	2.59
5	N23W11	1397	5754	1726	3687	36.90	1.63	4.38
6	N23W12	6528	0	2912	6219	47.80	1.27	3.50
7	N23W13	2703	3180	890	1902	40.16	3.40	5.92
8	N22W9	326	0	454	969	37.84	2.89	3.23
9	N22W10	4712	0	1940	4144	51.43	2.82	3.62
10	N22W11	3927	0	2541	5427	42.19	2.42	3.06
11	N21W8	510	0	1050	2243	38.40	1.06	2.38
12	N21W9	8109	1908	2671	5705	46.13	1.00	4.38
13	N21W10	1734	0	512	1093	46.56	3.14	4.22
14	N16W7	5440	1920	1344	2870	40.84	2.62	5.41
15	N16W10	2448	0	2688	5741	43.67	2.24	2.65
16	N16W11	4896	5760	672	1435	37.72	0.22	11.31
17	N16W12	3264	10560	4032	8611	45.86	1.24	4.00
18	N16W13	2448	0	3024	6458	35.10	2.30	2.59
19	N15W7	7072	0	1344	2870	41.38	2.75	5.41
20	N15W10	0	0	2016	4306	44.93	1.75	2.08
21	N15W11	0	0	2016	4306	35.27	1.39	2.08
22	N15W12	816	4800	1008	2153	34.98	4.12	5.15
23	N14W7	2088	0	6720	14352	38.43	1.38	2.18
PIT	N24W5	0	0	2598	5549	47.27	1.42	2.08
Total		**58066**	**79338**	**57171**	**122103**	**41.58**	**1.98**	3.47

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The estimation of bauxite resources of General Exploration of G-2 category under **Indicated Mineral Resources (332)** is as under (B.D. of bauxite has taken as 2.3):

S No.	B. H. / Pit No.	Thickness			Area	Volume of the Bauxite zone		Tonnage of saleable bauxite	Chemical Analysis	
		OB		Bauxite Zone		Total	Recovery			
		soil	laterite			100%	65%		Al_2O_3	SiO_2
		m	m	m	m^2	m^3	m^3	Tonnes	%	%
1	N34W8	2.70	0.00	3.00	800	2400	1560	3588	47.69	2.38
2	N33W7	1.10	0.00	8.05	800	6440	4186	9628	45.38	2.77
3	N32W7	0.30	0.00	2.70	800	2160	1404	3229	45.65	1.95
4	N31W8	0.00	0.00	8.40	800	6720	4368	10046	42.09	6.55
5	N31W13	0.40	0.00	2.15	2660	5719	3717	8550	45.97	5.65
6	N30W8	0.37	2.03	3.60	1600	5760	3744	8611	36.14	1.58
7	N30W15	0.00	0.00	3.00	2800	8400	5460	12558	42.95	3.16
8	N29W9	0.30	0.60	4.20	1600	6720	4368	10046	46.77	3.71
9	N28W9	0.30	0.60	0.60	1600	960	624	1435	35.10	4.32
10	N26W5	0.00	0.00	3.00	4000	12000	7800	17940	47.90	5.01
11	N26W7	0.00	2.40	2.40	800	1920	1248	2870	44.73	5.90
12	N25W5	0.00	3.60	3.00	1600	4800	3120	7176	36.01	1.43
13	N24W4	0.00	3.00	3.00	2040	6120	3978	9149	43.50	2.97
14	N19W9	1.80	0.60	2.40	800	1920	1248	2870	47.35	5.65
15	N19W11	3.60	0.00	1.80	800	1440	936	2153	43.54	2.34
16	N19W17	1.50	0.00	1.20	1600	1920	1248	2870	45.34	2.26
17	N19W21	0.30	0.00	0.60	800	480	312	718	44.00	1.46
18	N19W22	0.30	0.00	2.05	800	1640	1066	2452	46.93	3.16
19	N19W24	0.30	0.60	0.60	700	420	273	628	43.18	2.34
20	N18W18	0.60	0.00	2.40	800	1920	1248	2870	36.83	3.02
21	N18W20	0.60	0.00	1.80	800	1440	936	2153	34.59	1.41
22	N18W23	0.00	0.00	1.20	700	840	546	1256	40.00	0.84
23	N17W8	2.55	0.00	0.95	800	760	494	1136	46.04	2.08
24	N17W10	2.40	1.20	2.40	800	1920	1248	2870	35.62	1.04
25	N17W22	0.00	1.80	1.80	1600	2880	1872	4306	41.99	1.86
26	N16W9	1.20	0.00	2.35	800	1880	1222	2811	47.50	2.00

123	N15W12	0.20	1.00	0.60	1600	960	624	1435	34.98	4.12
124	N15W14	0.00	0.00	3.00	1600	4800	3120	7176	41.87	2.11
125	N15W15	0.00	0.00	2.40	1600	3840	2496	5741	43.95	1.82
126	N15W17	0.20	1.00	0.60	1600	960	624	1435	45.42	0.69
127	N14W5	0.00	1.50	1.20	1600	1920	1248	2870	41.60	2.86
128	N14W7	0.20	0.00	3.00	1600	4800	3120	7176	38.43	1.38
129	N14W14	0.00	0.00	2.40	1600	3840	2496	5741	42.17	2.00
PIT	N24W5	1.40	0.00	2.90	1600	4640	3016	6937	47.27	1.42
PIT	N25W9	1.15	0.00	2.85	1600	4560	2964	6817	46.21	2.05
PIT	N16W14	0.30	0.00	3.30	1600	5280	3432	7894	42.12	2.51
	Total	**0.84**	**0.53**	**2.54**	**202570**	**514118**	**334179**	**768606**	**42.92**	**2.79**

The Measured Mineral Resources (category 331) of Bauxite ore is 7,68,606 Tonnes.

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	the fact that the mined out land after complete removal of bauxite will be converted as a sloppy land covered by such plantation which can be grounded to increase the fertility of land for agriculture.
(vii) Acid Mine drainage	There is no acid mine drainage
(viii) Surface subsidence	After exhaustion of entire mineable ore, the mined out pit will be concurrently backfilled and a part of pit will be converted into water reservoir.
(ix)Socio-Economics	There will be no adverse impact on socio-economic and demography. As stated above there are other mines running in nearby areas, and nearby village people are already working in the bauxite mines. The education level of the area s very low and most of the people are illiterate. As in the bauxite mining, labour category people are required in good number for manual breaking and sorting work, therefore, bauxite mines give ample opportunity for employment of local people, thereby their earning will improve a lot due to continuous employment in the mine with better wage rate. Opening of this mine will give more opportunity for employment. Their increase of earning will definitely help in improving the education, health and living standard of the villagers.
(x) Historical-Monuments	There is no public building, place of worship and monuments in the lease area. The public buildings in the buffer zone will not be affected due to mining.

88	N18W9	2.10	0.00	2.40	1600	3840	2496	5741	52.67	1.86
89	N18W10	2.40	0.00	3.00	1600	4800	3120	7176	34.41	1.45
90	N18W11	3.00	0.00	3.90	1600	6240	4056	9329	33.13	0.85
91	N18W12	2.70	0.00	0.30	1600	480	312	718	38.50	2.56
92	N18W13	4.20	1.10	2.75	1600	4400	2860	6578	42.77	1.30
93	N18W14	2.30	0.00	1.90	1600	3040	1976	4545	43.93	1.97
94	N18W16	1.20	0.00	3.60	1600	5760	3744	8611	43.55	2.29
95	N18W17	1.80	0.90	0.20	1600	320	208	478	48.50	0.58
96	N18W18	0.60	0.00	2.40	1600	3840	2496	5741	36.83	3.02
97	N18W20	0.60	0.00	1.80	1600	2880	1872	4306	34.59	1.41
98	N18W23	0.00	0.00	1.20	1600	1920	1248	2870	40.00	0.84
99	N17W5	1.80	0.00	0.60	1510	906	589	1354	46.10	1.40
100	N17W6	0.00	0.00	0.60	1600	960	624	1435	48.30	0.48
101	N17W8	2.55	0.00	0.95	1600	1520	988	2272	46.04	2.08
102	N17W10	2.40	1.20	2.40	1600	3840	2496	5741	35.62	1.04
103	N17W11	3.00	1.20	4.20	1600	6720	4368	10046	35.61	1.63
104	N17W12	2.70	2.70	2.40	1600	3840	2496	5741	36.07	1.40
105	N17W13	1.80	1.60	5.40	1600	8640	5616	12917	39.74	1.50
106	N17W14	1.80	0.00	1.80	1600	2880	1872	4306	37.76	1.93
107	N17W15	1.80	0.45	2.40	1600	3840	2496	5741	42.00	0.73
108	N17W16	1.20	0.00	2.40	1600	3840	2496	5741	44.48	4.05
109	N17W19	0.00	0.00	0.60	1600	960	624	1435	42.34	3.84
110	N17W22	0.00	1.80	1.80	1600	2880	1872	4306	41.99	1.86
111	N16W7	2.00	0.60	1.20	1600	1920	1248	2870	40.84	2.62
112	N16W9	1.20	0.00	2.35	1600	3760	2444	5621	47.50	2.00
113	N16W10	0.90	0.00	2.40	1600	3840	2496	5741	43.67	2.24
114	N16W11	1.80	1.80	0.60	1600	960	624	1435	37.72	0.22
115	N16W12	1.20	3.30	3.60	1600	5760	3744	8611	45.86	1.24
116	N16W13	0.90	0.00	2.70	1600	4320	2808	6458	35.10	2.30
117	N16W16	0.00	0.00	1.80	1600	2880	1872	4306	50.03	1.71
118	N16W17	0.60	0.00	1.20	1600	1920	1248	2870	48.40	1.98
119	N15W5	0.60	1.80	1.80	1600	2880	1872	4306	40.67	1.78
120	N15W7	2.60	0.00	1.20	1600	1920	1248	2870	41.38	2.75
121	N15W10	0.00	0.00	1.80	1600	2880	1872	4306	44.93	1.75
122	N15W11	0.00	0.00	1.80	1600	2880	1872	4306	35.27	1.39

(ii) Air Quality	Due to various mining activities like drilling, blasting, loading and transportation, emission of some amount of noxious gases are likely to be generated. Air monitoring survey will be carried out at established stations on season-wise basis and all existing dust control measures will be followed i.e. wet drilling, water spraying on haul roads, water spray on blasted mass and plantation of trees along lease boundary etc. Thus, air quality is expected to be well within prescribed limits.
(iii) Water Quality	The area has no perennial nala, hence there will be no impact on water regime due to mining operation. The mining will start from general ground level, since, the water table is 10-12 m below the ground level, and there will be no adverse effect in ground water regime. Only during rainy season there are chances of pollution of nearby water regime through silt, rain wash of mine exposed area. There is no chance of working going beyond 9 m depth (maximum depth of bauxite is 8.40 m in one bore-hole). The only source of water is ground water through dug wells and tube wells. There is no adverse effect on water quality due to mining because mining is restricted above the water table. There is no toxic contamination in OB or in bauxite.
(iv) Noise levels	This is likely to increase due to movement of machineries, drilling, blasting, transportation, etc. The measures will be taken to maintain the noise level within limits Periodical maintenance of equipments will be carried out. Moreover, the building of green belt that will be continued on the backfilled mined out area. Noise due to blasting will be controlled by adopted controlled blasting technique, like muffle blasting, if required.
(v) Vibration level (due to blasting)	Multi-row blasting will be adopted and charge per delay to be kept within limit by putting 25 ms DDR at required interval. Control blasting will be used, which controls air blast and ground vibration effectively. Blasting will be done preferably in the afternoon. During blasting all the safety measures will be strictly followed. There will be no adverse effect of vibration due to blasting. However, ground vibration monitoring will be done regularly from the installed stations.
(vi) Water regime	There will be no accumulation of rain water in working area due to

53	N25W7	0.00	2.40	3.00	1600	4800	3120	7176	44.26	4.92
54	N25W8	0.10	0.00	2.40	1600	3840	2496	5741	34.76	1.63
55	N25W12	0.30	0.00	2.10	1600	3360	2184	5023	43.68	3.93
56	N25W14	1.50	0.00	1.20	1600	1920	1248	2870	36.16	3.18
57	N25W15	1.80	1.20	3.00	1220	3660	2379	5472	35.75	1.54
58	N24W4	0.00	3.00	3.00	1600	4800	3120	7176	43.50	2.97
59	N24W6	0.00	1.80	3.60	570	2052	1334	3068	44.36	8.02
60	N24W7	0.20	0.00	2.80	1100	3080	2002	4605	45.77	7.60
61	N24W11	0.15	0.00	2.40	1600	3840	2496	5741	42.65	2.85
62	N24W12	0.00	0.00	1.65	1600	2640	1716	3947	43.20	2.96
63	N24W13	2.15	2.60	3.65	1600	5840	3796	8731	42.55	5.95
64	N23W10	0.30	0.00	0.90	1600	1440	936	2153	50.89	1.49
65	N23W11	0.60	2.10	1.80	1600	2880	1872	4306	36.90	1.63
66	N23W12	2.40	0.00	2.60	1600	4160	2704	6219	47.80	1.27
67	N23W13	3.00	3.00	2.40	1080	2592	1685	3875	40.16	3.40
68	N22W8	0.00	1.55	3.85	1490	5737	3729	8576	46.83	3.43
69	N22W9	0.90	0.00	1.20	1600	1920	1248	2870	37.84	2.89
70	N22W10	1.80	0.00	1.80	1600	2880	1872	4306	51.43	2.82
71	N22W11	2.10	0.00	3.30	1390	4587	2982	6858	42.19	2.42
72	N21W8	0.60	0.00	3.00	1600	4800	3120	7176	38.40	1.06
73	N21W9	3.00	0.60	2.40	1600	3840	2496	5741	46.13	1.00
74	N21W10	3.00	0.00	2.15	740	1591	1034	2379	46.56	3.14
75	N19W6	0.00	0.00	1.20	1110	1332	866	1991	43.05	4.17
76	N19W8	1.20	0.00	1.20	1180	1416	920	2117	39.36	3.87
77	N19W9	1.80	0.60	2.40	1210	2904	1888	4341	47.35	5.65
78	N19W11	3.60	0.00	1.80	1280	2304	1498	3444	43.54	2.34
79	N19W17	1.50	0.00	1.20	1580	1896	1232	2835	45.34	2.26
80	N19W20	1.50	0.00	2.40	1600	3840	2496	5741	45.32	1.97
81	N19W21	0.30	0.00	0.60	1600	960	624	1435	44.00	1.46
82	N19W22	0.30	0.00	2.05	1600	3280	2132	4904	46.93	3.16
83	N19W23	0.40	0.00	1.80	1600	2880	1872	4306	47.93	1.22
84	N19W24	0.30	0.60	0.60	830	498	324	745	43.18	2.34
85	N18W6	0.75	0.00	3.60	1600	5760	3744	8611	40.42	2.00
86	N18W7	3.60	1.80	3.60	1600	5760	3744	8611	48.02	2.77
87	N18W8	3.00	0.00	0.30	1600	480	312	718	37.08	2.78

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

(i) Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads workshop, processing plan, township etc.

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The land use upto life of the mine will be as under:

S. No.	Description	*Area in Ha*			
		Present	Additional requirement during 5 year	End of the 5 year	conceptual period
1	Area under Pits	NIL	20.34	20.34	7.08
2	Area backfilled	Nil	13.48	13.48	13.95
3	Area under roads	0.45	0.65	1.10	1.10
4	Area under soil Dump	NIL	NIL	NIL	NIL
5	Area under OB/waste dumps	NIL	NIL	NIL	NIL
6	Area under ore stack	NIL	NIL	NIL	NIL
7	Area under Crusher	NIL	NIL	NIL	NIL
8	Area under Infrastructure	NIL	0.15	0.15	0.15
9	Area under magazine	NIL	NIL	NIL	NIL
10	Area under Plantation	NIL	5.00	5.00	5.00
	Total	**0.45**	**26.14**	**26.59**	**27.28**

Note: (i) Since, the area of OB and waste dumps will be of temporary in nature, hence not considered for calculation of the land use.

Area under backfilled is already calculated in area under pit, hence not considered.

18	N30W15	0.00	0.00	3.00	1600	4800	3120	7176	42.95	3.16
19	N29W9	0.30	0.60	4.20	1600	6720	4368	10046	46.77	3.71
20	N29W10	0.00	0.00	2.40	1600	3840	2496	5741	43.85	3.93
21	N29W11	0.00	1.80	1.20	1600	1920	1248	2870	42.98	4.85
22	N29W12	0.00	0.00	2.20	1600	3520	2288	5262	51.10	2.29
23	N29W13	0.00	0.00	1.80	1470	2646	1720	3956	46.43	5.33
24	N29W14	0.00	0.00	1.20	1600	1920	1248	2870	38.74	4.09
25	N29W15	0.25	0.00	3.05	1600	4880	3172	7296	47.64	4.85
26	N29W16	0.00	0.00	6.00	1600	9600	6240	14352	41.18	2.90
27	N29W17	0.10	0.00	1.70	1210	2057	1337	3075	42.60	1.64
28	N28W9	0.30	0.60	0.60	1600	960	624	1435	35.10	4.32
29	N28W10	0.00	0.00	1.80	2400	4320	2808	6458	41.28	3.89
30	N28W12	0.30	0.00	2.40	2400	5760	3744	8611	48.26	3.80
31	N28W13	0.90	1.50	1.65	1470	2426	1577	3626	49.06	3.72
32	N28W14	0.00	0.00	5.10	1600	8160	5304	12199	51.56	2.33
33	N28W15	0.00	0.60	1.20	1600	1920	1248	2870	39.90	2.74
34	N28W16	0.30	0.00	1.80	1600	2880	1872	4306	50.59	1.60
35	N28W17	4.60	0.00	3.60	1170	4212	2738	6297	39.65	1.05
36	N27W9	0.00	0.00	5.40	1600	8640	5616	12917	45.51	6.83
37	N27W10	0.00	0.00	4.20	1600	6720	4368	10046	43.66	6.04
38	N27W11	0.00	0.00	2.40	1600	3840	2496	5741	42.45	2.03
39	N27W13	0.00	1.20	0.80	1430	1144	744	1710	47.00	6.80
40	N27W14	0.00	0.00	2.40	1600	3840	2496	5741	47.17	4.96
41	N27W15	0.20	0.00	3.80	1600	5080	3952	9090	41.27	3.09
42	N27W16	1.50	2.40	3.00	1600	4800	3120	7176	37.03	3.52
43	N26W5	0.00	0.00	3.00	1600	4800	3120	7176	47.90	5.01
44	N26W7	0.00	2.40	2.40	1600	3840	2496	5741	44.73	5.90
45	N26W8	0.00	4.80	2.40	1600	3840	2496	5741	35.58	1.84
46	N26W9	0.00	4.80	1.80	1600	2880	1872	4306	45.79	5.33
47	N26W10	0.00	0.00	4.20	1600	5720	4368	10046	41.54	5.68
48	N26W13	0.00	0.60	1.80	1600	2880	1872	4306	35.40	1.75
49	N26W14	0.70	0.00	0.50	1600	800	520	1196	47.60	5.10
50	N26W15	0.30	0.00	1.70	1600	2720	1768	4066	37.85	3.56
51	N26W16	0.50	0.00	2.50	1030	2575	1674	3850	39.60	2.13
52	N25W5	0.00	3.60	3.00	1600	4800	3120	7176	36.01	1.43

(iv)	**Quality of air**	There are number of existing mining leases within the 10 kms radius. The air may be polluted due to generation of dust by plying of vehicles. There is no other source of air pollution except wind which may carry dust from external dumps and due to drilling and blasting. The lease area is a virgin land and mining activities are seen nearby the lease area.
(v)	**Ambient Noise level**	In the mining, noise pollution is generally caused due to drilling, blasting and movement of vehicles. It is well below the permissible limit as defined by the CPWB
(vi)	**Quality of Water**	The only source of water near the lease area is ground water from tube well with hand pump situated at nearby villages. The water is potable.
(vii)	**Climatic condition**	Climate of this area is tropical. During peak summer the temperature rises to Maximum 43^0C during May, while winter temperature falls down to 02^0C during Jan. & Dec. The rain fall is confined to the rainy season from July to September and the annual rainfall is av. 1200 mm.
(viii)	**Human settlements**	The area is moderately populated and average density per km is also low. The main source of income of the local people is from agriculture or forest seed collection. The mining activity will provide employment to local people to some extent. Their main source of entertainment is local festival, folk songs and dances.

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

The estimation of bauxite resources of Detailed Exploration of G-1 category under **Measured Mineral Resources (331)** is as under (E.D. of bauxite has taken as 2.3):

S. No.	B. H. / Pit No.	Thickness			Area	Volume of bauxite zone		Tonnage of saleable bauxite	Chemical Analysis	
		OB		Bauxite Zone		Total	Recovery			
		soil	laterite			100%	65%		Al_2O_3	SiO_2
		m	m	m	m^2	m^3	m^3	Tonnes	%	%
1	N34W3	2.70	0.00	3.00	850	2550	1658	3812	47.69	2.38
2	N33W7	1.10	0.00	8.05	1350	10868	7064	16247	45.38	2.77
3	N33W3	0.90	0.00	5.10	1600	8160	5304	12199	47.73	1.27
4	N33W9	0.50	0.00	4.00	650	2600	1690	3887	48.38	3.68
5	N32W7	0.30	0.00	2.70	1270	3429	2229	5126	45.65	1.95
6	N32W8	0.20	0.00	5.20	1600	8320	5408	12438	45.74	1.98
7	N31W8	0.00	0.00	8.40	1600	13440	8736	20093	42.09	6.55
8	N31W9	0.00	0.00	7.20	1580	11376	7394	17007	49.66	4.04
9	N31W10	0.60	1.20	2.40	1600	3840	2496	5741	44.40	2.71
10	N31W11	0.30	1.50	1.20	1600	1920	1248	2870	47.20	1.31
11	N31W13	0.40	0.00	2.15	1600	3440	2236	5143	45.97	5.65
12	N30W8	0.37	2.03	3.60	1600	5760	3744	8611	36.14	1.58
13	N30W9	0.00	0.00	6.00	1600	9600	6240	14352	47.75	5.01
14	N30W10	0.00	0.00	2.40	1600	3840	2496	5741	47.77	3.74
15	N30W11	0.30	2.40	1.80	1600	2880	1872	4306	45.51	2.38
16	N30W13	0.00	0.75	6.00	1600	9600	6240	14352	43.38	2.89
17	N30W14	0.00	0.60	6.00	1600	9600	6240	14352	32.60	2.80

(ii).	**Water regime**	As per seen in local villages, the water-table is about 10-12 m below the plateau. The water table goes down to 12 m during dry season and rises upto 10 m during rainy season. The main drainage of the area is through different seasonal water courses originating from the plateau. Streams of the plateau exhibit a combination radial and dendritic pattern. Major streams are flowing towards north direction and joined to Mangarda Nala which is flowing towards north direction. The Gungata nala is the nearest nala from the area near the southern boundary of the applied lease area and flowing towards northern direction. One seasonal nala is flowing within the lease area and joined to Gungata nala. The main drainage of the area is through different seasonal water courses originating from the plateau. No perennial nala is flowing within the lease area
(iii)	**Flora and Faura**	Natural plants growth has been largely degraded by human intervention. In the lease area, there are a few Sal trees and bushes. Snail, white ant, red ant, black ant and toad and some domestic animals like, cow, goat, buffalo, donkey, hen, etc. are seen within the 5 kms radius of the area. Owl, kite, parrot and Indian myna are the common bird found nearby the area.

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

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

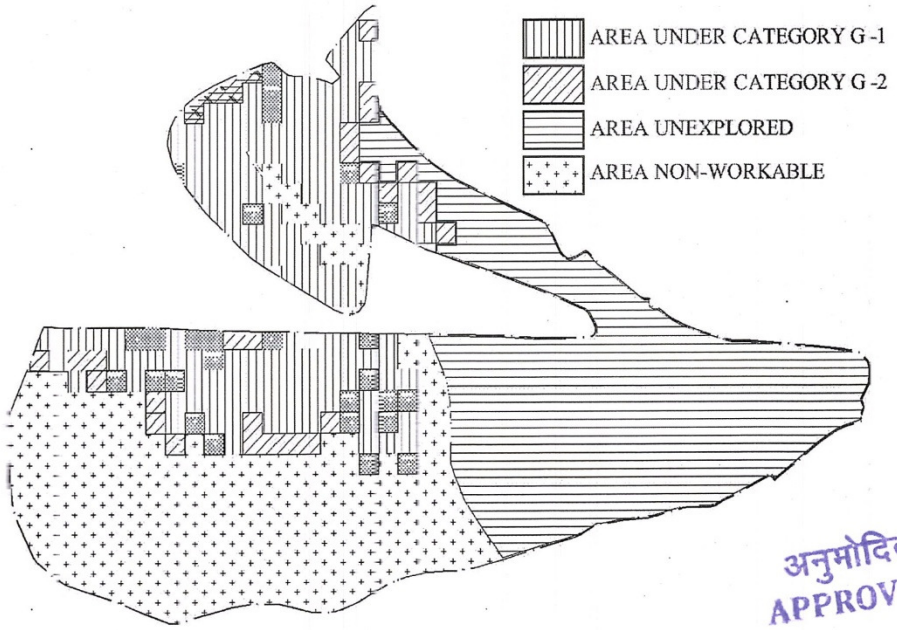
(i) Existing Land use Pattern indicating area already degraded due to quarrying / pitting, dumping, roads, Processing plant, work-shop, township etc.

The existing land use pattern is given below:

Pits and quarries	Nil
Dumps	Nil
Road	0.45 Ha
Infrastructure	Nil
Processing plant	Nil
Hutment	Nil
Site services	Nil
Private lands	Nil
Waste land	Nil
Forest land (Chhote Jhad ka Jungle)	99.350 Ha

Land use within 500 m and 60 m radius from the lease area:

Land use	Area falls within 500 m radius (Ha)	
	500 m radius	60 m radius
Agriculture land	85	Nil
Barren Land	160	Nil
Forest Land	225	135
Hutment	6	2
Road	4	1
Drainage pattern	8	2



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The categorization of reserve/ resources of bauxite as per the UNFC norms as per the following considerations:

a. The bauxite reserve falls under Stratiforms, Stratabound and tabular deposits of irregular habit (bauxite zone).

b. The area was earlier prospected by DGM, Regional Office Bilaspur in detail.

c. Detailed geological mapping has been done on 1:2,000 scale.

d. The topographical mapping was carried out with 2 m contour interval and with marking of TBM.

e. Total 151 bore-holes and 3 pits are falling within the area at about 40 m grid interval and bauxite ore is encountered in only 129 boreholes and 3 pits.

Employment required for the mine:

Technical, skilled and semi-skilled personnel

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S. No.	Particulars	Qualification	Nos. required
1	Wagon Drill operator	Experienced	2
2	Jack Hammer operator	Experienced	2
3	Compressor operator	Experienced	2
4	Portable small dozer cum scrapper operator	Experienced	2
5	Loader/Shovel operator	Experienced	3
6	Dumper/Tipper driver	Experienced	7
7	Diesel Tanker / Water Tanker driver	Experienced	1
8	Jeep /van driver	Experienced	2
9	Semi skilled labours	Experienced	130
	Total		**151**

Note: On the basis of present practice in running bauxite mines of Mainpat plateau, the OMS of sized bauxite is taken as about 5.5 T.

*****

Bauxite is pisolitic, massive, concretionary and bracciated in nature. The pisolitic bauxite consists of closely packed pisolites of aluminous material occurring at the upper horizon of the bauxite zone. Bauxite occurs in various shades of grey, pinkish grey, pinkish white and grayish white. It is hard and compact in nature. The lenses of bauxite vary in thickness from 0.20 (BH No. $N_{18}W_{17}$) to 8.40 m (BH No. $N_{31}W_{8}$), where maximum thickness is encountered.

At some places bauxite and aluminous laterite rests directly over lithomarge zone, where intervening laterite is absent. Gibbsite (Al_2O_3 $3H_2O$) is the main constituent mineral.

The physical properties of bauxite are as under:

The bauxite in the lease area is moderately hard and massive in nature.

Colour– grey, Form– pisolitic/ botryoidal and massive, Lusture– earthy, Streak– white to yellowish brown, Hardness– variable maximum 3, Sp. gr. – 2.3.

As per the boreholes data falling within the applied lease area, the chemical analyses of the samples shows, that Al_2O_3% varies from 33.13 to 50.03% (wt. av. 42.93 %) and SiO_2 varies from 0.22 to 8.02% (Wt. av. 2.79 %).

Soil-

Generally soil is found in most of the plateau area and at places along the gentle slope in the nala sections. It is grayish black to light grey and dirty yellow in colour. The thickness of this soil ranges from 0 to 4.60 m (BH No $N_{17}W_{7}$).

Mode of Occurrence of bauxite:

Bauxite of the area is derived from basaltic lavas of Deccan Trap by residual weathering. Most exposures of bauxite are observed along the edges of plateau in the area and at places in plains grounds. It forms irregular and discontinuous lenses, lensoid or tabular bodies mostly in upper hard zone of laterite profile. The occurrence of bauxite, however, is not only confirmed to the margin and rims of plateau but extends inside the plateau also under a

1.0 GENERAL

a) Name of applicant / lessee	M/s Chhattisgarh Mineral Development Corporation Ltd. (CMDC)
Rule 45 registration No.	IBM/8239/2011
Address	Sona Khan Bhawan, 2nd Floor, Ring Road No. 1, Purena. Post – Ravi Gram, Raipur.
District	Raipur.
State	Chhattisgarh
Pin code	492006
Phone	Phone- 0771 4283557, 0771 4043477 Fax- 0771 4001074
b) Status of applicant/lessee	Private limited company

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List of the Board of Directors

S.N.	Name of the Directors	Designation	Designation in CMDC
1	Shri D. S. Mishra	Upper chief Secretary, Finance & Planning	President CMDC
2	Shri A. K. Singh	Chief Conservator of Forest	Director
3	Shri Aman Singh	Secretary, Energy deptt.	Director
4	Shri Subodh Singh	Secretary Mineral Resource deptt.	Director
5	Shri Anbalagan P.	Director, DGM	Managing Director
6	Shri D. S. Mishra	Upper chief Secretary, Finance & Planning	President CMDC

BLASTING.

Blasting will be carried out in accordance with the provision of Explosive Act and MMR, 1961. The following precautions will be taken to minimize noise and vibration caused by blasting.

- Bottom initiation in blasting by proper stemming.

- Free face will be ensured, and loose stone will be cleared off from blasting area.

- Blasting by delay detonators will be resorted to place between row to row or even group of holes.

- Blasts will be well-designed as per site specific conditions, and will be done periodically rather than hastily planned blast daily.

- Blasting will be carried out only in day time at 7AM or during the lunch break.

- Blasting will be carried out by qualified blaster (certificate-holder) only.

- Blasting shelters, blasting barriers will be provided, and sufficient sentries will be provided with whistle.

- Area of blasting will be covered with red flag, and danger zone will be demarcated in ground.

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Goethite-

A thin band of goethite is encountered in a few boreholes above the lithomarge. It is dark brown, hard, compact and brittle.

Laterite-

It is a weathered product of basalt forming capping over the plateau and is the main lithounit. Type of laterite forming the laterite profile in ascending order are ferruginous laterite, aluminous laterite and Pisolitic laterite. The maximum thickness of laterite above the bauxite zone is 5.10 m as encountered in BH N32W10.

(i) Ferruginous laterite-

It is lowest unit of laterite, rich in iron and hence show dark reddish brown colour, vesicular and compact in nature. Chert, hematite and goethite occurs as thin bands within this laterite as observed a few boreholes.

(ii)Aluminous laterite-

It is host rock of bauxite and predominantly covers almost entire investigated area. It is light grey to brownish grey and Pisolitic in nature with pisolites filled with aluminous material.

(iii) Pisolitic laterite-

The pisolitic laterite usually caps the laterite profile. It is brown, hard, compact and pisolitic in appearance. The pisolites are of ferruginous compaction. Occurrence of pockets and boulders of bauxite within this laterite is common.

Bauxite-

In this area, bauxite is found in form of pockets and lenses within laterite masses as irregular and discontinuous bodies. Occurrence of bauxite is not only confined to the margin and ridges of plateau, but extending towards plateau and also under a mantle of thick soil.

Equipments for allied operation and Machineries related to Mining are as under:

S no.	Name	Nos	Capacity	Purpose	Motive Power
1	Wagon Drill drills	3	100 mm dia	For drill above 1.5m of bauxite bench	Diesel Power
2	Jack hammer	2	32 mm dia	For drill upto 1.5m of bauxite bench	Diesel Power
3	Portable small dozer cum scrapper	2	small	For removal of OB	Diesel Power
4	Loader/Shovel	4	1.25 cum Bucket	After blasting for loading of OBS and ROM to dumpers	Diesel Power
5	Dumper/Tipper	10	15 tonner	For transport or OBS and ROM ore	Diesel Power
6	Diesel Tanker	1	5000 litres	For filling diesel to different equipments	Diesel Power
7	Water Tanker	1	10000 litres	For spreading on quarry road	Diesel Power
8	Jeep	1	-	For Supervision	Diesel Power
9	Service van	1	-	For general purpose	Diesel Power

Recent	Alluvium (soil)
Sub-recent	Laterite & bauxite
Paleocene	Deccan trap (basalt)

The different lithology occurs in laterite and bauxite profile are as under:

Laterite

Aluminous laterite and Bauxite

Bauxite

Ferruginous laterite

Goethite

Lithomarge

Bauxite can be put into two distinct categories viz pisolitic bauxite and massive bauxite. The Pisolitic bauxite consists of closely packed pisolites ranging from few mm to five cm in diameter. It occurs mostly in upper horizon of the bauxite zone. The main mineral constituent is Gibbsite The upper contact of the bauxite with overlying pisolitic laterite is quite sharp, whereas its lower contact is mostly gradational.

Lithomarge-

The exposure of lithomarge is exposed in nala sections. It is lowest horizon of the lateritic profile as observed in the bore-hole. Generally it overlies the greenish weathered basalt. It is residual clay left at places of origin by removal of Fe-Al material by process of leaching. It consists of various friable clays that are soft in nature. The thickness of lithomarge is about 22 m in the Mainpat area. The lithomarge is pink, purple, red, yellow and white in colour.

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INTRODUCTORY NOTES

The Bauxite deposit in village - Pathrai, Tehsil – Sitapur and District – Surguja falls in the Mainpat plateau.

The letter of intent for preparation of Mining Plan was issued by the State Govt. vide letter No. F-3-4/2007/12, dated 10/07/2013 and thereafter the same has been extended further six months vide letter No. F-3-4/2007/12, dated 31/03/2014, presently the same has been further extended for additional six months vide letter No. F-3-4/2007/12, dated 11/05/2015, copy enclosed as **Annexure No. VI**).

The area was earlier prospected by Directorate of Geology and Mining (DGM), Regional Office Bilaspur during their field season 2005-06 & 2006-2007 (from Nov. 2005 to April 2007) and the Report was published on the year 2009. Copy of the Report is enclosed as **Annexure No. XVI**.

During prospecting, the cutoff grade of bauxite is considered as Al_2O_3 minimum 40%, while for the preparation of this Mining Plan, the reserve has been estimated as per the threshold value of Al_2O_3 30% with reactive silica 5%.

This is a fresh lease and production proposed as indicated in the Mining Plan considering the market demand and economic viability of the project as per the exploration carried out till date.

The mining of bauxite is more environment friendly than the other mining. The mined out pit after the fully exhaustion of the bauxite zone will be backfilled concurrently and simultaneously in a systematic way. And after the backfilling and leveling, the plantation of fast growing plants will be carried out on the backfilled area for increasing the fertility of the soil and ultimately suitable for agriculture. Finally the lands will be handed over to the society.

(3). Dumper of 15 Tonner for Haulage and Transport Ore and OB:-

S. No	Particulars	Quantity
1	Topsoil to be removed per annum	84,832 T
	OB/ laterite to be removed per annum	79,604 T
2	Ore to be excavated per annum	2,00,000 T
3	As the Topsoil is to be kept separately and is required to be spread over the backfilled areas hence double handling required (considering 20%)	16,966 T
4	Similarly concurrent back filling system will be adopted but 10% laterite (OB) will be required to shifted will need double handling	7,960 T
5	Total annual qty to be handled = Considering blasted mass ore qty for handling by excavator against the rock breakers and unfolding of blasted mass	4,82,479 T
6	Carrying capacity of dumper taking 90 % safe loading from quarry to temporary stock yard (about 1.0 km) of graded bauxite will be about 20 minutes i.e. 3 trips per hour. Therefore, quantity to be handled per hour is 15 T x 0.9 = 13.5 T x 3 trips = 40.5 T.	Say 40 T
7	As per standard practice, taking utilization factor as 0.65, availability of the tippers will be 8 hours / 0.75 = 6 hours	6 hours
8	Annual capacity of 15 Tonner tipper (40 T/ Hr × 6 Hr/day × 280 days)	67,200 T
9	Therefore nos. of Excavator to be deployed (4,82,479 / 67,200 = 7.19)	Say 7 nos.
10	Three extra dumpers will required as standby, hence total dumper required will be 7 + 3 = 10	10 nos.

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The generalized geological succession is as under:

Recent	Alluvium
Sub recent	Laterite and bauxite
Palaeocene	Deccan Trap – Basalt
Upper cretaceous Lametas (infrastructure)	Calcareous sandstone
----------Unconformity----------	
Upper Carboniferous Gondwana	Barakar Sandstone, Coal, Talchir boulder bed
----------Unconformity----------	
Archaean	Granites, Gneisses, Phyllites, Meta-sediments, etc

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

Bauxite occurs in lensoid form within laterite horizon with comprises various recognizable lithologic units. On the basis of detailed study of outcrops, escarpment sections and boreholes data, the following generalized lithologic sequence established in the area is as under:

(2) Requirement of excavator and loader for removal of OB and loading of ore- For removal of OB:

S. No	Particulars	Quantity
1	Topsoil to be removed per annum	84,832 T
2	OB/ laterite to be removed per annum	79,604 T
	Waste to be excavated per annum	93,118 T
3	Ore to be excavated per annum	2,00,000 T
4	As the Topsoil & laterite (OB) is to be kept separately and is required to be spread over the backfilled areas hence double handling required (considering 20%)	32,887 T
5	Similarly concurrent back filling system will be adopted but 10% waste will be required to shifted will need double handling	9,312 T
6	Total annual qty to be handled = Considering blasted mass ore qty for handling by excavator against the rock breakers and unfolding of blasted mass	4,99,752 T say 5,00,000 T
7	Excavator 1.25 cum bucket capacity Cycle time of excavator 60 sec, Therefore in one hour (3600 sec), the quantity to be loaded will be (3600 x 1.25 x 0.9 x 0.74) /60 = 49.95 cum x 2.0 (B.D.) = 99.9	Say 100 T
8	As per standard practice, taking utilization factor as 0.85, availability of the excavator will be 8 hours / 0.85 = 6.8 hours	Say 7 hours
9	Annual capacity of 1.25 cum bucket size excavator (100 T/ Hr × 7 Hr/day × 280 days)	1,96,000 T
10	Therefore nos. of Excavator to be deployed (5,00,000 / 1,96,000 = 2.55)	Say 3 nos.
11	Two extra excavator will required as standby, hence total dumper required will be 3 + 1 = 4	4 nos.

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The Khasra-wise detail of the applied lease area is as under:

S. No.	Khasra Nos.	Area (Ha)	Type of land
1	15 / 6	18.135	Chhote Jhad Ka Jungle
2	16 / 19	5.533	---do---
3	95 / 4 (Ka)	28.585	---do---
4	95 / 10	1.011	---do---
5	95 / 18	0.283	---do---
6	96 / 3	39.766	---do---
7	96 /6	0.821	---do---
8	96 / 7	2.245	---do---
9	96 / 8 (Ka)	1.619	---do---
10	96 / 9	0.405	---do---
11	96 / 10	0.094	---do---
12	96 / 11	0.853	---do---
Total		**99.350**	**---do---**

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

An emergency plan for the situation of temporary discontinuances or incomplete programme due to court order or due to statutory requirement will be drawn up and executed depending upon the situation. Since the mining is not hazardous and total mining strength-executives, supervisors & workers will be about 170, the situation for emergency plan is evinced. The entire mining work will be under the supervision of qualified Mines Manager, who will responsible for any emergent situation.

However, the following steps will be taken during temporary discontinuance of the mine.

1. Security guards will be posted at strategic points.
2. The maintenance of plantation area will be ensured.
3. Periodical inspection of the mine will be carried out by competent persons during temporary discontinuance period.
4. Notice and Returns will be sent as per Rules, Regulation, and Act.

8.6 Financial Assurance: The financial assurance can be submitted in any encashable form preferably a Bank Guarantee from a Scheduled Bank as stated in Rule 23(F)(2) of Mineral Conservation and DevelopmentRules,1988 for five years period expiring at the end of validity of the document. The amount calculated for the purpose of Financial Assurance is based on the CCOM's Circular no. 4 dated 2006 as below.

The Financial Assurance in the form of Bank Guarantee of ₹ 6,64,750/- in favor of the Regional Controller of Mines, Indian Bureau of Mines, Nagpur region will be submitted before the execution of the mining lease.

m and some suitable part of the mined out pit will be left as water tank/ pond for utilization for irrigation.

During this plan period, area to be back filled is as under:

Year	Area of working (m^2)	Av. Pit depth (m)	Total quantity of waste and OB /laterite (m^3)	Net quantity of Waste to be backfilled including swell factor (20%) (m^3)	Avg Backfilled Height	Area backfilled (m^2)	Area backfilled (Ha)
I YEAR	45440	2.69	39141	46969	1.50	31313	3.13
II YEAR	36100	4.22	68256	81907	2.50	32763	3.28
III YEAR	28010	6.20	51733	62080	4.50	13795	1.38
IV YEAR	39960	4.02	65298	78358	3.50	22388	2.24
V YEAR	53840	3.86	86363	103636	3.00	34545	3.45
Total	**203350**	**4.18**	--	--	--	**134804**	**13.48**

Hence, total mined out area will be about 2,03,350 sq m (20.34 Ha), out of this about 1,34,804 sqm (13.48 Ha) will be backfilled and about 68,546 sq m (6.85 Ha) area will be left

Upto conceptual period, additional 7,020 sq m area will be mined out, out of which about 4,736 sq m (0.47 Ha) area will be backfilled upto about 2 m depth and about 2,284 sqm (0.23 Ha) area will be left.

Taluka / Forest Division	Sitapur
Forest range / Village	Pathrai
Wheter the area falls under Coastal Regulation Zone (CRZ) if any, details thereof	N. A. अनुमोदित APPROVED
Existing of public road / railway line, if any nearby and approximate distance	The lease area is located in Mainpat plateau in village Pathrai of Mainpat Block, which is about 60 kms from the district headquarter Ambikapur, which is approachable by own conveyance upto lease area by Narmadapur-Kamaleshwarpur road via Darima. The nearest Railway Station is Ambikapur at a distance of about 60 kms. The Kamleshwarpur is the main township of the Mainpat Plateau which is about 5 km from the applied area.
Toposheet No. With latitude and longitude of al corner boundary point/ pillars	The area falls in Toposheet No. 64 N/5 The Lat/Long taker by EPS (WGS/84) of all corner pillars is tabulated below and others are given on Surface Plan.
c) Attach a general location map showing area and access routes. It is preferred that the area be marked on Survey of India topographical map or a cadastral map or forest map as the case may be. However, if none of these are available, the area may be shown on an administrative map.	
The Khasra Plan is enclosed as **Plate no. I** and Location Plan is enclosed as **Plate no. I A.** The Key plan is enclosed as location plan as **Plate no. II**	

	Afforestation on the backfilled area	--	3.13	2.28	1.38	2.24		
	Rehabilitation by making water reservoir					6.85		
	Any other means (specify)							
Rehabilitation of waste land	Area available (ha)	1.0	1.0	1.0	1.0	1.0		
	Area rehabilitated	1.0	1.0	1.0	1.0	1.0		
	Method of rehabilitation (Green belt)							
Others (specify)								

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

The applicant company is capable of taking all the necessary measures to meet any eventually & assistance required from the local authorities.

The lease boundary will be properly fenced to prohibit entry of outsiders. The lessee is capable to meet any eventualities and assistance required during the high risk management period.

However, due to sudden unforeseen eventualities because of above activities, immediate report on incident will be intimated to District Administration at Surguja for necessary assistance and relief measures to mitigate the situation. Adequate communication network has been made by providing mobile phones to all supervisors and staff of the mine. Mock rehearsal for emergency preparedness is being carried out at regular intervals.

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(iii) Conceptual OB/waste dumps management.

(a)Conceptual generation of top soil:

During this plan period, the generated top soil will be 1,66,145 cum (2,82,447 T), this top soil will be spreaded over the backfilled area of about 13.48 Ha with an average height of 1.0 m.

After this plan period upto conceptual period, the quantity of generated top soil will be 599 T

Thus, total quantity of top soil generated will be 2,82,447 + 599 = 2,83,046 T, this generated top soil will be spreaded over the backfilled and leveled area of 13.95 Ha with an average height of 1.0 m.

(b) Conceptual generation of OB/laterite:

During this plan period, the generated OB will be 2,56,916 T.

After this plan period upto conceptual period, the quantity of generated OB will be 1,764 T.

Thus, total quantity of OB / laterite generated will be 2,56,916 + 1,764 = 2,58,680 T

The generated OB will be utilized for concurrently backfilling the mined out pit after fully exhaustion of bauxite ore.

(c)Conceptual generation of waste material: During blasting of ROM (bauxite zone), about 35% will be generated as waste material.

During this plan period, the generated waste will be 3,64,666 T.

After this plan period upto conceptual period, the quantity of waste will be 14,022 T.

Thus, total quantity of waste will be 3,64,666 + 3,78,688 T.

The generated waste material will also be utilized for concurrently backfilling the mined out pit after fully exhaustion of bauxite ore

(iv) Conceptual reclamation and rehabilitation of the worked out area.

Since, the thickness of bauxite zone is more than the thickness of OB, hence the mined out pit cannot be fully backfilled upto the original profile. Hence, backfilling will be carried out by left about 1-2 m height of the mined out pit, so as to original surface profile will reduced by 1

2.0 LOCATION AND ACCESSIBILITY

a) Lease Details/ Existing mine	
Name of the Mine	Pathrai Iron ore deposit
Lat /Long of any boundary point	Latitudes 22° 47' 42.42" N Longitudes 83° 15' 06.73" E
Date of grant of lease	Since, this is a fresh Mining Plan, the date of grant of lease is not applicable.
Period / Expiry Date	Not applicable.
Name of lease holder/applicant	M/s Chhattisgarh Mineral Development Corporation (CMDC)
Address	2nd Floor, Sona Khan Bhawan, Ring Road No. 1, Purena. Post – Raviginam, Raipur.
District	Raipur.
State	Chhattisgarh
Pin code	492006
Phone	Phone- 0771 4283557, 0771 4043477 Fax- 0771 4001074
b) Details of applied / lease area with location map (fresh area / mine)	
Forest land	99.350 Ha (Chhote Jhad Ka Jungle)
Non-forest land	(i) Waste land nil (ii) Grazing land nil (iii) Agriculture land nil (iv) Others(specify) nil
Total lease area / applied area	99.350 Ha
State	Chhattisgarh
District	Surguja

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Shalabh Saha

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

The life of the mine will be about 6 years and this will get increase after the proposed exploration is completed.

The conceptual plan has been visualized on the basis of present mineable reserves, after the exploration is completed, the conceptual plan will also get revised.

Conceptual Plan is enclosed as Plate no.-IX and Its sectional plan is in Plate no.-IX A.

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(i) Conceptual Exploration.

It is proposed to drill 117 vertical core drill BHs at about 50 m grid, the depth of bore-holes will depend upon the thickness of bauxite zone encountered.

Thereafter, entire applied area will be fully explored and no further exploration will required.

The details of the proposed exploration have been tabulated and annexed as **Annexure No. XII.**

(ii) The conceptual mine development.

Presently, the area is a virgin land.

During this Mining Plan period, the mined out area will be 2,03,350 sqm upto an average depth of about 4.18 m.

After this Mining Plan period, 7,020 sq m will remain for conceptual mining. Thus the total 2,03,350 + 10,170 = 2,10,370 sqm area will be mined out upto life of the mine.

During this plan period, area to be back filled is as under:

Year	Area of working (m^2)	Av. Pit depth (m)	Total quantity of waste and OB /laterite (m^3)	Net quantity of Waste to be backfilled including swell factor (20%) (m^3)	Avg Backfilled Height	Area backfilled (m^2)	Area backfilled (Ha)
I YEAR	45440	2.69	39141	46969	1.50	31313	3.13
II YEAR	36100	4.22	68256	81907	2.50	32763	3.28
III YEAR	28010	6.20	51753	62080	4.50	13795	1.38
IV YEAR	39960	4.02	65298	78358	3.50	22388	2.24
V YEAR	53840	3.86	86363	103636	3.00	34545	3.45
Total	**203350**	**4.18**	--	--	--	**134804**	**13.48**

Hence, total mined out area will be about 2,03,350 sq m (20.34 Ha), out of this about 1,34,804 sqm (13.48 Ha) will be backfilled and about 68,546 sq m (6.85 Ha) area will be left and developed as a water recharging area by converting in to water reservoir, and it will be help full for rain water harvesting also.

The generated top soil of 1,66,145 cum (2,82,447 T) will be spreaded over the backfilled area of about 13.48 Ha with an average height of about 1.0 m.

Total quantity of OB and waste generated will be as under:

Year	Working Area	Depth of pit	Volume			
			OB		Bauxite zone	Total quantity of waste and OB /laterite (m^3)
			soil	laterite	Waste	
	m^2	m^2	m^3	m^3	m^3	m^3
I YEAR	45440	2.69	29538	11720	27421	39141
II YEAR	35100	4.22	34157	39669	28587	68256
III YEAR	28010	6.20	49901	13440	38293	51733
IV YEAR	39960	4.02	14389	23827	41471	65298
V YEAR	53840	3.86	37660	39802	46561	86363
Total	**203350**	**4.18**	**166145**	**128458**	**182333**	**310791**

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

The development and production plans for year-wise have been prepared on a scale of 1:2,000 and enclosed as **Plate No. VI B to VI F.**

The year-wise development and production sections has been prepared on a scale of 1:1,000 and enclosed as **Plate No. VI A.**

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

The method of mining will be open cast mechanized method under category 'A' by using DTH drills for drilling and sub-sequent blasting as described earlier.

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

The OB (laterite) and generated waste/rejects will be concurrently backfilled in the mined out pit and leveled, thereafter top soil will be spreaded over the leveled areas.

Since, the thickness of bauxite zone is more than the thickness of OB, hence the mined out pit cannot be fully backfilled upto the original profile. Hence, backfilling will be carried out by left about 1-2 m height of the mined out pit, so as to original surface profile will reduced by 1 m and some suitable part of the mined out pit will be left as water tank/ pond for utilization for irrigation.