BAJRANG METALLICS & POWER LIMITED

GOEL

Khasra No. 213, Village - Gandawara,
Dist. - Raipur 493221
CIN:U27106CT2006PLC019116

GEOLOGICAL PROSPECTING REPORT OF

CHHOTEDONGAR IRON ORE AREA GRANTED UNDER PROSPECTING LICENSE

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Shri Bajrang Power & Ispat Ltd.

Director/Authorised Signatory

GOEL

SHRI BAJRANG METALLICS & POWER LIMITED

PROSPECTING REPORT OF CHHOTEDONGAR IRON ORE DEPOSIT

Introduction:

Shri Bajrang Metallics & Power Limited (SBMPL) – a Company of Geol Group is one of the leading producers of Iron and Steel in Chhattisgarh State of the Country and a leading player of Central India. **"Goel Group"** is one of the leading business houses in Chhattisgarh. During the period Goel Family has carried out the business of trading and manufacturing in the various fields. The Company is growing under the chairmanship of Shri Suresh Goel who is amongst the eminent personalities of the State with considerable professional expertise in diverse fields such as industry, banking, law and economics. Its product brand **"Geol TMT"** needs no words for introduction in the field of Infrastructure Industry.

The Goel Group commenced its operations with first unit established in 1991 at Urla Industrial area, near Raipur, Chhattisgarh in the name of Shri Bajrang Alloys Ltd. It has been the first indigenous fully automatic Merchant Structural Mill in Central India Company. The Company is producing wide range of structural of various grades and sizes i.e. angles up to 250 x 250mm, channel up to 400mm, beam upto 400mm, H beams and rounds 150mm dia. The Company M/s. Shri Bajrang Alloys Ltd. is engaged in manufacture of Round, TMT bars upto 32mm adopting the most modern advanced technology. The Company's products are ISI approved and are being marketed under the brand name Goel TMT. Under the backward integration programme, the Company has set up a steel making division with continuous casting of an installed capacity of 105600 tones per annum. The Company manufactures various sizes of billets and blooms from 100mm to 250mm and 200mm of mild steel, high tensile and alloys steels. Under the ongoing expansion programme the Company has established most modern fully automatic rolling mill to manufacture TMT bars with an annual capacity of 150000

Shri Bajrang Metallics & Power Ltd.

Director/Authorised Signatory

tones and 16MW power plant for captive consumption. The present installed capacity of steel making is 325000 tones per annum.

A step further to strengthen the Group continue backward integration plan, the Company signed MoU with Chhattisgarh Government for setting up of mega projects with an investment of rupees 130 crores. Under Mou presently it has 2x350 TPD sponge Iron Plant with 18 MW captive power plant. The entire unit is indigenous and has been commissioned with a shortest gestation period of 11 months.

Further, under expansion programme in phase II, it signed MoU with the Government of Chhattisgarh for investment of rupees 1400 crores against which 4x8 tones induction furnace with continuous casting machine, 8 MW biomass power plant and 8MVA ferro alloys have already been commissioned.

Companies growth and expansion plan includes to increase the sponge Iron capacity from existing 2.1 lacs tones to 5.25 lacs tones per annum and generation of power from 24MW to 75MW and also installation of 250TPS coal washery plant, 6Lacs TPA capacity Pelletisation plant including mining of iron ore, coal, manganese, dolomite, limestone and other minerals for captive use.

The company has therefore identified a small virgin Iron Ore deposit located at Chhotedongar Village in Narayanpur district of Chhattisgarh State, and has obtained a P.L. over an area of 57.00 hectares for assessing the reserves and grade of Iron Ore occurring therein, by carrying out necessary prospecting operations. The Government of Chhattisgarh has issued Letter of Intention vide letter No. F 3-84/2003/12/2 dated 19/12/2005 in favour of M/s SHRI BAJRANG METALLICS & POWER LIMTED, Kh. no. 2/3, Village Gondwara, Urla Industrial Area, Raipur – 493 221 (C.G.) to grant prospecting lease for a period of 2 Years w.e.f. date of execution of PL deed. Accordingly, the PL period has been from 12.02.2007 to 11.02.2009 for detailed geological prospecting of iron ore deposit.

Location, Accessibility & vicinity:

The area is located near Chhotedongar Village in Narayanpur district of Chhattisgarh State. The area is marked on topo sheet No. 65 E/7 showing lease area with surrounding detail (radius 05 Km.) of the village (Ref: Location Map – Plate No.1, Key plan - Plate No.2). The area is bounded by latitudes and longitudes as under:

Latitudes : N $19^0$24'12.5"- N $19^0$24'51.4"
Longitudes : E $81^0$16'58.6"- E $81^0$17'31.9"

The area is approachable from Chhotedongar village via Dhanora and Madamnar (20Km). Chhotedongar village is 43Km from Narayanpur on Narayanpur – Orcha road. From Raipur to Kondagon (170Km), we have to follow Kondagon – Narayanpur road to reach Narayanpur by traveling 52Km.

The road condition from Chhotedongar to Dhanora is partly metalled and partly kaccha but fair and motorable. Road from Dhanora to Madamnar is not motorable during rainy season whereas from Madamnar to the area is jungle track path. Thus total distance from Raipur to the area is 245Km.

Nearest Railway station is Jagdalpur which is about 130Km from Narayanpur District Headquarter.There is no inhabitation within the lease area. Nearest Air port is MANA which is about 270 Kms. near Raipur Headquarter.

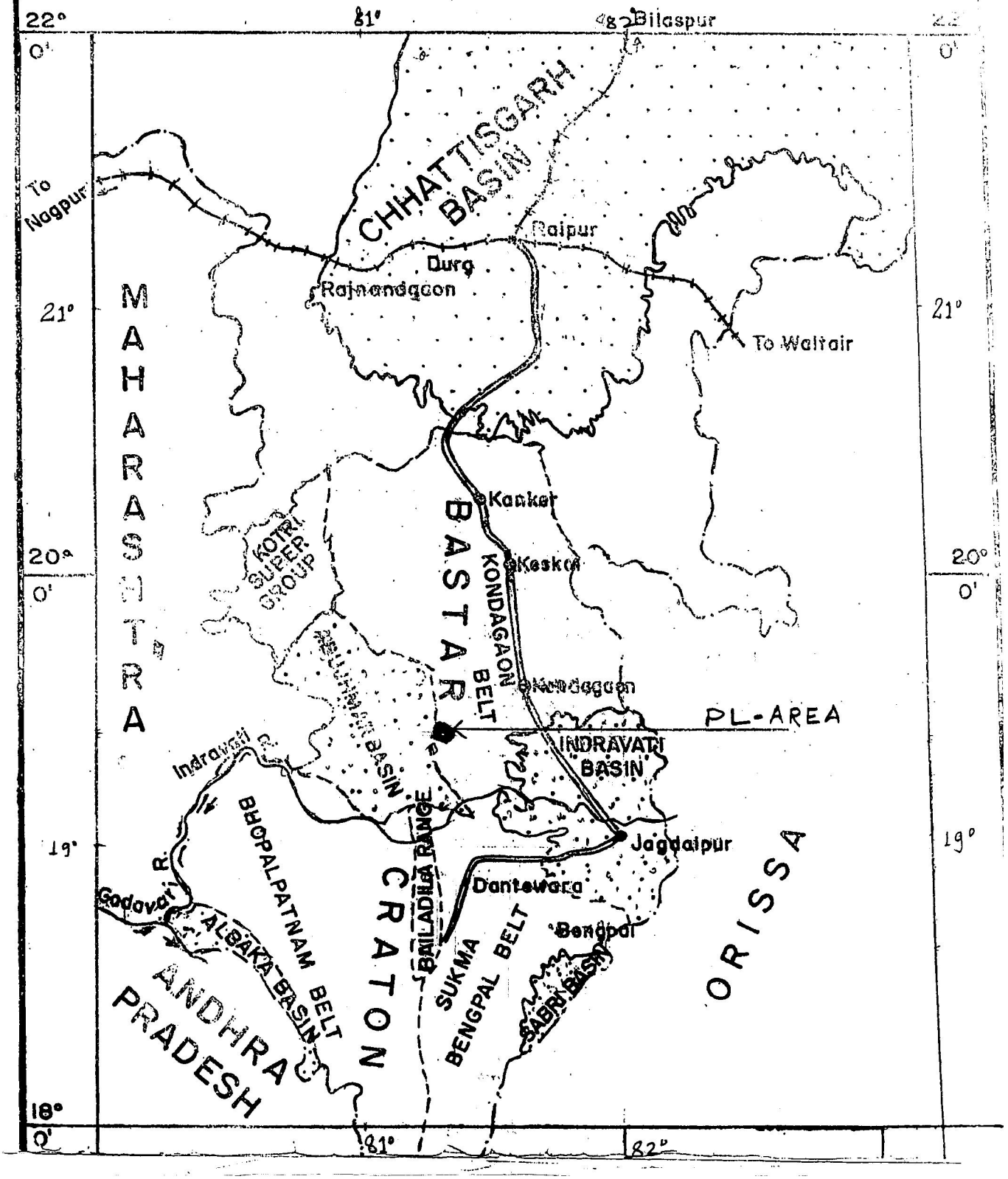
Climate & Vegetation:

The area is tropical monsoonal in climate. Rainy season extends from June to September. The maximum rainfall is in August. Winter showers are confined to January. May is hottest part of the year when the temperature rises to 46^0 c (approx.) and usual temperature range is 27^0 c to 46^0 c. January is the peak winter when the temperature ranges from the max. and min. around 25^0 c and 10^0 c respectively. Hot dusty winds blow from mid April.

SHRI BAJRANG METALLICS & POWER LTD.
RAIPUR, CHHATTISGARH
LOCATION MAP
CHHOTEDONGAR IRON ORE P.L.AREA
DISTT. NARAYANPUR, CHHATTISGARH

SCALE-1:2250000

Kms. 50 25 10 0 50



Physiography & Drainage:

The area is thickly forested. Topographically, the area of interest forms hilly terrain of Chhattisgarh. General ground level is about 540m above mSL (Out of the area of interest) and rises to 959m maximum in area through rise from 825mSL. The region is defined by alternating hills and valleys. The area of interest forms elongated hill trending almost NS having longest axis 1140m (length) and lowest is 500m (Width).

The iron-ore is located on the top of the hills, NNW, and WSW of Chhote Dongar village. The hill range forms more or less the eastern boundary of "Abujh Mar" (unknown hill) reserved for Marias, the famous aboriginal tribe of Bastar.

The area is drained by 'Madin Nadi' (Gudra River, on the Survey of India map) which flows with many tributaries from the hills, west of Chhote Dongar and meets the Indravati river (19^0 12': 81^0 25'). The area of interest forms the water divide of the area from where many radial drainage of I order forms which terminates into nearest Nalas known as Dabran and Kundel. Being the reserved forest the area is highly vegetated resulting the land being safe from erosion. The area forms the SW part of Madin Nadi & Gudra river basin. The rivers flow in NE direction at a distance of 5Km. then it takes EW course finally it flows from north to south indicating general ground slope from North to South.

Regional Geology:

The area is part of Bastar Craton and stratigraphically, it belongs to the Lower Proterozoic age represented by Bailadila group. Precambrian Banded Iron formations of Bastar Craton are well known all over the world because of their famous iron ore deposits. Banded Iron formation of Bastar Craton, grouped under the Bailadila Group (Crookshank, 1963), unconformably overlie the high grade metamorphites of Bengpal group.

The unconformity is not pronounced everywhere but the structural discordance, lithological discontinuity and low grade metamorphism provide vital evidences to group them separately. These Iron Formations have close similarity in lithological association and tectonic-metamorphic history with the Iron formation of other belts. The important ranges are Bailadila, Chhotedongar, Rowghat, Durg Kondal and Lohattar extending northwards upto Dalli Rajhara in Durg District.

The stratigraphic sequence of the Bailadila Group has been described in detail by Crookshank (1963) and modified by Bandopadhyay et al. (1977). Bailadila Group comprises quartz-sericite schist, arkosic quartzite at the base followed by Banded Iron formation on which it has been designated as Bose Iron Formation composing ferruginous shale-siltstone, carbonaceous shale and interbanded tuffs intruded by Galli Nala greenstone and granites.

Bastar craton exhibits typical Archean shield association similar to other shield area of the world Archean high grade complex of Bastar craton is designated as Bengpal Group – the basement horizon of Bastar craton, comprising meta-sedimentary and meta-igneous enclaves within the gneissic complex. The high grade metamorphites have undergone poly phase deformation and metamorphism and extensively migmetized.

Precambrian Banded Iron Formations of Bastar show distinct sedimentary characters, are disposed along a NS trending linear belt and indicates similar conditions of disposition and profuse basic igneous activities. Intrusive granites of post Bailadila are responsible for the present disposition of Iron Formation in isolated belts.

In Chhotedongar and Rowghat areas BIF is represented by BHQ, BMQ, and Banded ferruginous chert with intercalation of ferruginous shale followed by greenstone and granite intrusion. The succession of the Archaean rocks of Bastar region is tabulated below:

AGE	SUPERGROUP		GROUP	LITHOUNITS
Upper Proterozoic	Indravati Group		Sabari Group	Buff calcareous Shale, Limestone Basal Conglomerate Sandstone - Green and Red Shale
	Pakhal Group			Arenites with intercalated shale and limestone
Middle Preoterozoic	KOTRI SUPER GROUP	Tulsi Dongar Group	Abujhmar Group	Maspur Trap - gabbro - basalt Gundul Formation- Sandstone- Conglomerate – Shale
			Sitagaon Granite	Medium to coarse grained
			Ainhur Group	Hammatwahi Basic Suite Mahala Rhyolite
			Dargarh Group	Andhawera buff Shale Conglomerate and Sandstone
Lower Proterozoic			Baladila group	Banded Iron formation (Gali Nala Fm) – greenstone Sequence (Baladila – Chhotedongar and rowghat belts)
				Loa formation
				Iron bose Formation
Archaean	Bengpal Group		Bijapur Gneiss	Granite rocks Granite gneiss and migmatite; charnokite rocks Metaultramafic; amphibolite; Pyroxene granulite
			Chintavagu Quartzite	Metapelites; calcareous; arenaceous and ferruginous metasediments
Basement - Not exposed – Sialic (?)				

The first phase of deformation was more intense which developed the N-S to NE-SW trending folds plunging 20^0 to 25^0 southerly. The major synclinorium with culmination and depression in the Iron Formation of Chhotedongar (Central part of Bailadila Group) is also reported. The iron ore deposits of Chhote Dongar occur in the Proterozoic rocks grouped in Bailadila Group. The Bailadila series with or without other formations of the age comprise more or less a continuous belt, about 160Km long, which starts from the Bailadila range, about 100Km South of Chhota Dongar and continuous past Chhota Dongar as for as Rawghat and beyond in the North with a general N-S trend. Primary sedimentary structures such as ripple marks and current bedding have been observed in these Iron Formations indicating their undoubted sedimentary origin.

Local Geology:

The area of interest has been traversed across the trend of the hill and the contact so encountered has been marked in the Plan prepared on scale 1:2000 (Ref: Surface Geological Plan – Plate No.3) and three cross sections and one longitudinal section have been prepared on same scale (Ref: Geological Sections – Plate No.4) which have been made the part of this prospecting report.

The area around Chhotadongar is a small portion of Chhotadongar hill range and mainly comprises of quartzite, ferruginous shale and BHQ. The rock types belong to Archaean age of Bastar area. The general trend of the hill range is NW-SE. The rocks are almost striking NW- SE and dip being 58^0 to 64^0 due SE. On the basis of Geological mapping and drilling data, the rock shows following sequence:

Bailadila Iron Ore Series	Iron Ore (Hematite)
	BHQ with shale intercalation
	Banded Hematite Quartzite
	Ferruginous shale
	Quartzite

Iron ore of the area is exposed cropping out erratically through out the core of the hill at higher elevations. The width of the band varies from 30m to 38m as measured on the outcrops. The lower horizons are occupied by float ore of workable grade of iron ore.

It is massive, hard and compact in hand specimen. It is steel grey in colour having fine to medium grained texture showing metallic lustre. It is totally devoid of any layered contaminations excepting some laminations of quartzite band here and there. Occasionally the ore is found to be porous and laminated but major part of the band is massive. The specific gravity of the ore is 3.2. The bulk density of float ore is around 1.5.

In polished section it is uniaxial negative but interference figures are rarely seen probably due to deep colours and extreme dispersion and birefringence.

Hematite of the area is usually opaque accept near thin edges, where it is deep red brown. Thin plates of specularite variety are deep red and pleochroic. The form is flat trigonal crystal with basal parting. Birefringence is 0.28 max. The interference colour is of very high order. Laminar twinning is very common.

Chemically, the ore is hematite. The chemical composition of the chip samples so collected during the field investigation is given as under:

Sample Code	Physical character	Fe %
SCHPL-1	Hard and Massive, fine grained, steel grey	64 – 66
SCHPL-2	Hard and Massive, fine grained, steel grey	64 – 66
SCHPL-3	Laminated Iron Ore, medium grained, purple	62 – 63
SCHPL-4	Porous laminated, medium grained	< 61
SCHPL-5	Hard and Massive, fine grained, steel grey	64 – 66
SCHPL-6	Laminated Iron Ore, medium grained, purple	62 – 63
SCHPL-7	Laminated Iron Ore, medium grained, purple	62 – 63
SCHPL-8	Porous laminated, medium grained	< 61
SCHPL-9	Laminated Iron Ore, medium grained, purple	62 – 63
SCHPL-10	Hard and Massive, fine grained, steel grey	64 – 66
SCHPL-11	Lateritic, weathered, medium grained rusty brown	45 – 55

It has been visualized that metal recovery percentage of the different grade of the ore from the total deposit as tabulated above have different as mentioned and tabulated below:

Grade	Grade wise Recovery % of the deposit	Fe %
Hard and Massive	70	64 – 66
Laminated Iron Ore	15	62 – 63
Porous laminated	10	< 61
Lateritic, weathered	5	45 – 55

Structure:

The area is a very small part of Sargipalli – Konkan hill range wherein at different places like Bailadila, Chhotedongar, Raughat and Rajhara elevations are lying impregnated by different known deposit of Iron ore of the Country. The Chhotadongar forms the central part of the above said tract. The presently exposed tract of the hill is the result of many orogenic activities giving rise to emergence of alternating anticline and syncline anticlinorium and synclinorium. The Iron ore depositional activities have been taken place in major synclinal part of the area and the later tectonic stresses trending EW has resulted to develop alternating anticlinal and synclinal folds in the region. In succeeding phase of orogenic cycle, stress trending NS has resulted refolding of the earlier developed anticline and synclines to develop number of small sequential overturning giving rise to anticlinorium and synclinorium. The area under present interest is the part of one isoclinals anticlinorium of which major part of higher level of topography has been denuded.

Prospecting:

The area has been prospected by deploying Company's Geologists and Mining Engineers on scale of 1:2000. The methodologies so adopted are described below:

(i) Survey:

The area is surveyed for topography by Total Station and a contour plan was prepared on scale 1:2000 with contour interval of 5m. The map reflects the drainage pattern, elevations and slope etc. of the area.

(ii) Geological Mapping:

The area of interest has been divided in equal grid of 100m x 100m. Two Geologists along with one expertise has been engaged for the purpose. The entire area was covered by 6 traverses; 5 across the longest axis of the hill and one parallel to this axis. The Detailed geological mapping was carried out in the area on 1: 2000 scale with an objective to identify and locate different contacts of rock types of the area with local variation in lithology and ore body delineation. Detailed geological mapping revealed the presence of very specific, patchy outcrops of iron ore of different dimensions on the top most part of the hill. The iron ore is disposed having strike of NW-SE dipping at 50^0 due south east. The centre part of the deposit of the area is porous in nature which is probably because of tropical weathering process. The laminated ore is here and there exposed in the area whereas the massive ore is located in the crestal part of the hill. The lateritic float ore is lying at the slope of the hill along the low lying part of the hill.

(iii) Drilling:

The ultimate objective of the exploration is to evaluate a potential deposit for its economic exploitation. As per prospecting scheme proposed and submitted by us, 12 number of vertical bore holes were planned to be driven. Due to condition imposed by forest department, the Company has no choice but to access the area by tracking and transport of machine could only be possible when it was dismantled and transported by head load. Transport of water for drilling has been another limitation during whole process. Owing to the some unavoidable circumstances and thereby limitations in the area, only three bore holes each having meterage 30.9 (BH-1), 30.2(BH-2) and 30.7(BH-3) have been drilled to cover the area and to get the subsurface economics of the deposit (Ref: Plate Nos 3 & 4). This not only has delayed the whole process of drilling / exploration but also increased the project cost. Only Nx -size bit having core diameter of

54mm have been used. The strata being hard, there has been no requirement of casing.

(a) Depth:

Since the iron ore body is dipping and topography of the area is very tough for accessibility, only 30m depth proving from the outcrops of the mineral is planned and drilled. The details of the holes are as under:

BH Code	Collar mRL	Depth of hole (m)
BH-1	964	30.9
BH-2	922	30.2
BH-3	962	30.7

(b) Grid Interval:

The drilling as per proposed and submitted prospecting scheme has been on grid interval of 300m X 200m. After surface features and while considering the limitation as mentioned earlier, a slight deviation in plan was made by restricting the number of holes from 12 to 3 only and grid interval to almost random pattern.

(iv) Core Logging / Sampling:

The cores of the project were properly logged and placed in core boxes (Ref: Annexure No. 1a, 1b, 1c, 2a, 2b & 2c). Total 6 samples for each bore holes were collected and analysed. The samples have been prepared for chemical analysis by adopting well established method i.e. splitting the half part of the core by splitter, crushed, mixing and reducing by coning and quartering method.

(v) Analysis Report:

The Company has its own in house facilities for chemical analysis. The detailed analysis report is tabulated below:

Annexure No.1a

PROJECT: CHHOTEDONGAR IRON ORE PROSPECTING

COMPANY: SHRI BAJRANG METALLICS & POWER LTD., RAIPUR

BORE HOLE LOGGING

BORE HOLE NUMBER: BH-I DATE OF STARTING: 20.12.2008 DATE OF CLOSING: 03.01.2009

COLAR mRL: 964m

Date	Run of Bore Hole (m)			Core Dia. (m)	Metrage of core	Recovery %	Rock type	Nature
	From	To	Depth					
1	2	3	4	5	6	7	8	9
20.12.2008	0	0.4	0.4	Nx	NIL	NIL	Lateritic soil	Loose
21.12.2008	0.4	3.6	3.2	Nx	1.6	50.00	Lateritic iron ore	Porous
22.12.2008	3.6	7.8	4.2	Nx	3.3	78.57	Laminated porous iron ore	Laminated & Porous
23.12.2008	23.12.2008 to 24.12.2008 Drilling machine stop due to bit jam and labour problem							
25.12.2008	7.8	12.6	4.8	Nx	3.5	72.92	Laminated iron ore	Laminated
26.12.2008	12.6	15.5	2.9	Nx	1.8	62.07	Hard and massive iron ore	Massive
27.12.2008	15.5	18.07	2.57	Nx	1.9	73.93	Hard and massive iron ore	Massive
28.12.2008	From 29.12.2008 to 30.12.2008 Work stopped due to Local Problem							
31.12.2008	18.07	21	2.93	Nx	1.7	58.02	Hard and massive iron ore	Massive
01.01.2009	21	23.87	2.87	Nx	1.4	48.78	Ferruginous shaley BHQ	Massive and Banded
02.01.2009	23.87	27.07	3.2	Nx	2.4	75.00	Ferruginous shaley BHQ	Massive and Banded
03..01.2009	27.07	30.9	3.83	Nx	3.1	80.94	Ferruginous shaley BHQ	Massive and Banded
TOTAL			**30.9**		**23.1**	**74.76**		

Date- 05.01.2009
Place- Raipur

Signature
Name of Full: Sunil Kasar
Designation :Mining Engineer

Annexure No.1b

PROJECT: CHHOTEDONGAR IRON ORE PROSPECTING

COMPANY: SHRI BAJRANG METALLICS & POWER LTD., RAIPUR

BORE HOLE LOGGING

BORE HOLE NUMBER: BH-II **DATE OF STARTING: 04.01.2009** **DATE OF CLOSING: 22.01.2009**

COLAR mRL: 922m

Date	Run of Bore Hole (m)			Core Dia. (m)	Metrage of core	Recovery %	Rock type	Nature
	From	To	Depth					
1	2	3	4	5	6	7	8	9
04.01.2009	04.01.2009 to 07.01.2009 Drilling machine shifting work.							
08.01.2009	0	0.65	0.65	Nx	0.35	53.85	Float ore	Porous
09.01.2009	0.65	1.8	1.15	Nx	0.6	52.17	Lateritic iron ore	Porous
10.01.2009	1.8	3.8	2	Nx	1.43	71.50	Laminated porous iron ore	Laminated and porous
11.01.2009	3.8	6.8	3	Nx	1.8	60.00	Laminated iron ore	Laminated
12.01.2009	12.02.2009 TO 14.01.2009 Some part of the internal machine brake.							
15.01.2009	6.8	10.2	3.4	Nx	2.4	70.59	Laminated iron ore	Laminated
16.01.2009	10.2	12.85	2.65	Nx	1.2	45.28	Hard and massive iron ore	Massive
27.01.2009	12.85	15.56	2.71	Nx	1.8	66.42	Hard and massive iron ore	Massive
18.01.2009	15.56	18.95	3.39	Nx	2.8	82.60	Hard and massive iron ore	Massive
19.01.2009	18.95	22.5	3.55	Nx	2.4	67.61	Hard and massive iron ore	Massive
20.01.2009	22.5	25.5	3	Nx	2.3	76.67	Ferruginous shaley BHQ	Massive and banded
21.01.2009	25.5	27.64	2.14	Nx	1.5	70.09	Ferruginous shaley BHQ	Massive and banded
22.01.2009	27.64	30.2	2.56	Nx	1.9	74.22	Ferruginous shaley BHQ	Massive and banded
TOTAL			**30.2**		**20.48**	**67.81**		

Date-24.01.2009

Place- Raipur

Signature

Name of Full: Sunil Kasar

Designation : Mining Engineer

Annexure No.1c

PROJECT: CHHOTEDONGAR IRON ORE PROSPECTING

COMPANY: SHRI BAJRANG METALLICS & POWER LTD., RAIPUR

BORE HOLE LOGGING

BORE HOLE NUMBER: BH-III **DATE OF STARTING: 23.01.2009** **DATE OF CLOSING: 05.02.2009**

COLAR mRL: 962m

Date	Run of Bore Hole (m)			Core Dia. (m)	Metrage of core	Recovery %	Rock type	Nature
	From	To	Depth					
1	2	3	4	5	6	7	8	9
23.01.2009	23.01.2009 to 25.01.2009 Work stop due to shifting of Drilling machine.							
26.01.2009	0	0.25	0.25	Nx	NIL	NIL	Lateritic soil	Loose
27.01.2009	0.25	2.8	2.55	Nx	1.7	66.67	Laminated porous iron ore	Laminated & Porous
28.01.2009	2.8	5.55	2.75	Nx	1.9	69.09	Laminated iron ore	Laminated
29.01.2009	5.55	7.87	2.32	Nx	1.5	64.66	Laminated iron ore	Laminated
30.01.2009	7.87	11.5	3.63	Nx	2.4	66.12	Hard and massive iron ore	Massive
31.01.2009	11.5	14.1	2.6	Nx	1.7	65.38	Hard and massive iron ore	Massive
01.02.2009	14.1	16.7	2.6	Nx	2.1	80.77	Hard and massive iron ore	Massive
02.02.2009	16.7	18	1.3	Nx	1	76.92	Hard and massive iron ore	Massive
03.02.2009	18	22.5	4.5	Nx	3.5	77.78	Ferruginous shaley BHQ	Massive and Banded
04.02.2009	22.5	26.8	4.3	Nx	3.4	79.07	Ferruginous shaley BHQ	Massive and Banded
05.02.2009	26.8	30.7	3.9	Nx	3.2	82.05	Ferruginous shaley BHQ	Massive and Banded
TOTAL			**30.7**		**22.4**	72.96		

Date- 07.02.2009

Place- Raipur

Signature

Name of Full: Sunil Kasar

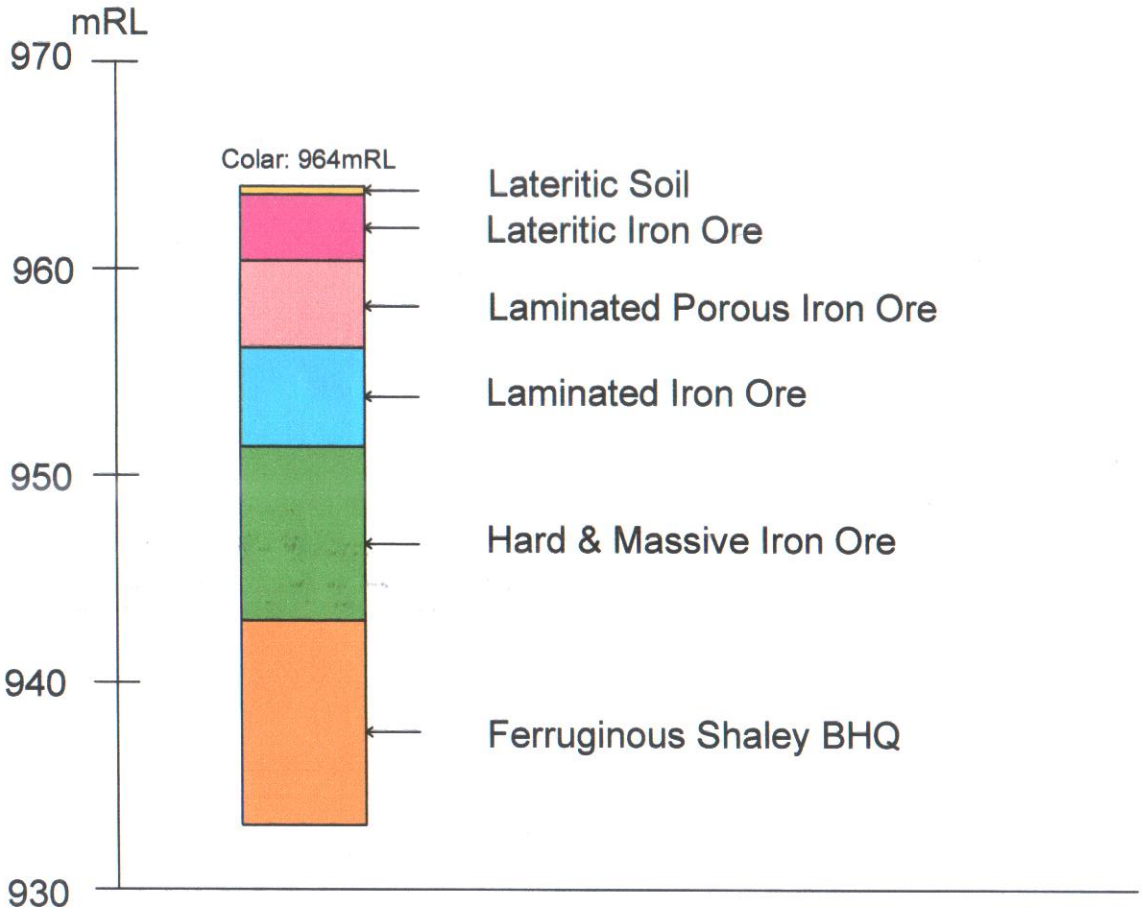
Designation : Mining Engineer

Annexure No. 2a

BORE HOLE LOG

BH-1

Chhotedongar P.L.Area
Mineral: Iron Ore
Shri Bajrang Metallics & Power Ltd.
Raipur, (C.G.)



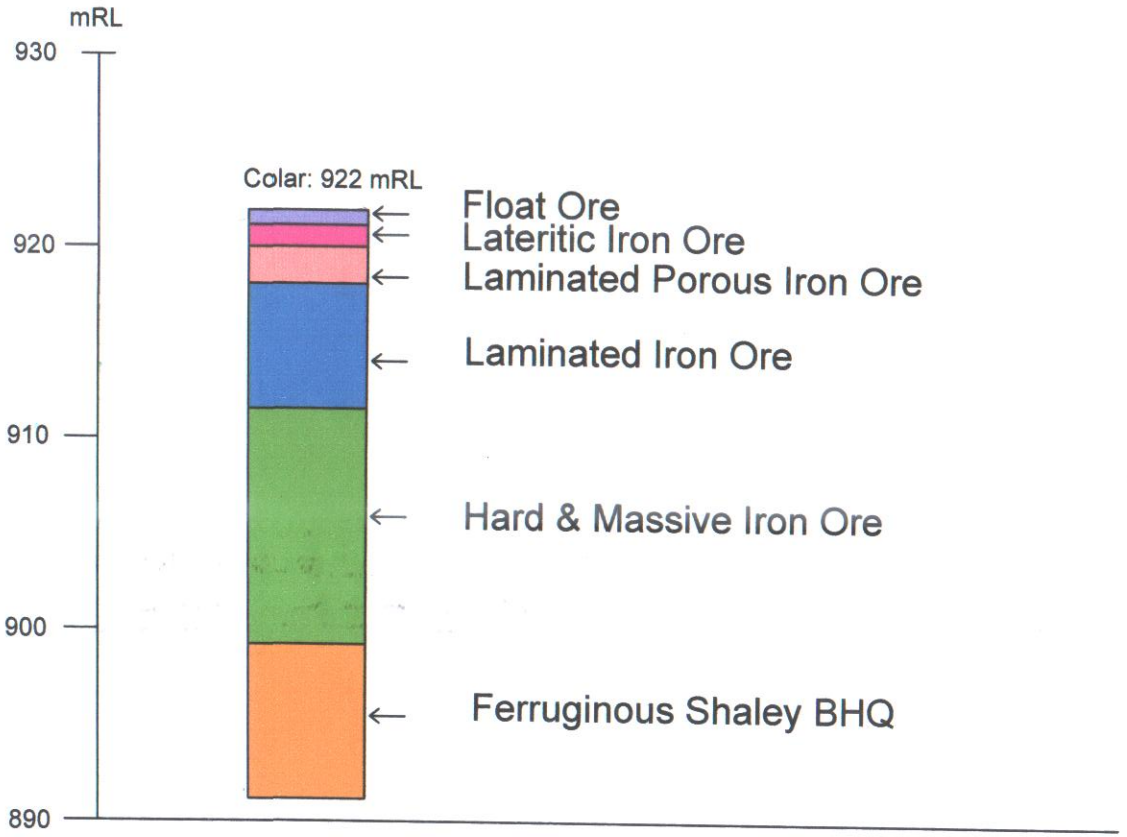
Annexure No. 2b

ANNEXURE NO. 2b

BORE HOLE LOG

BH - 2

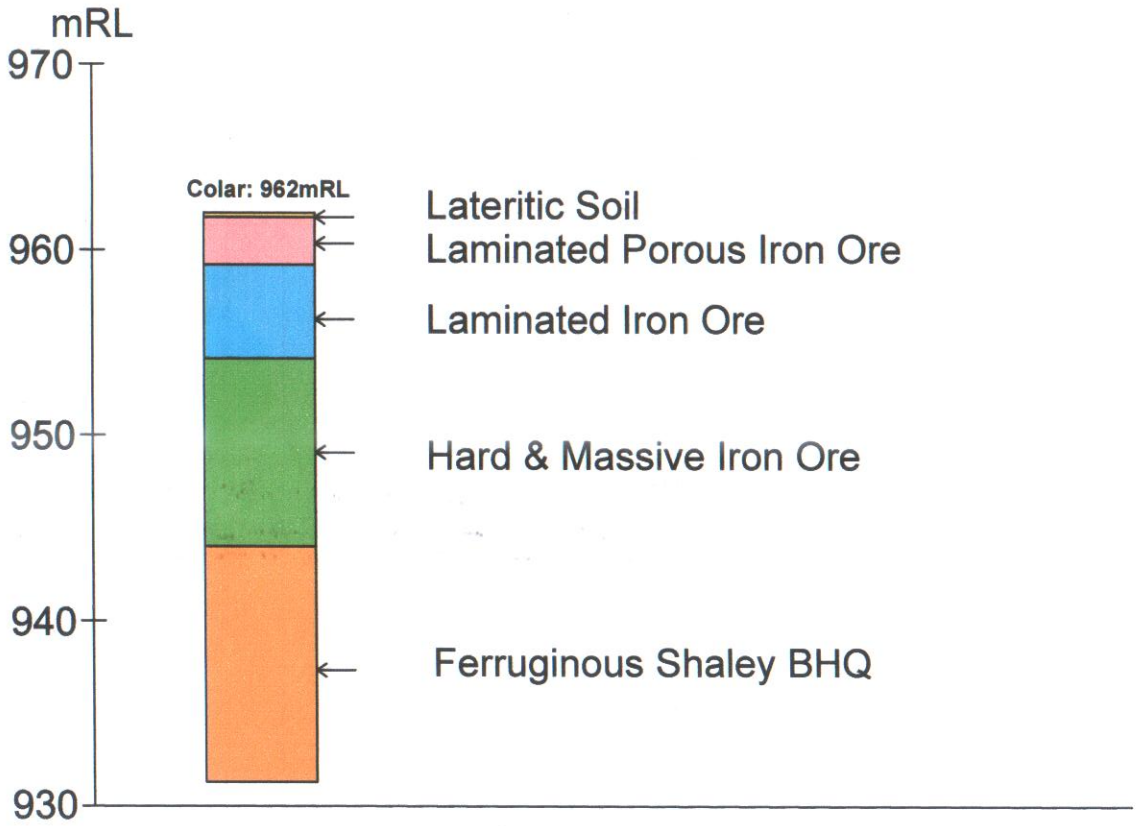
Chhotedongar P.L. Area
Mineral: Iron Ore
Shri Bajrang Metallics & Power Ltd.
Raipur, (C.G.)



Annexure: 2c

BORE HOLE LOG
BH-3

Chhotedongar P.L. Area
Mineral: Iron Ore
Shri Bajrang Metallics & Power Ltd.
Raipur, (C.G.)



Sample No.	Chemical analysis			
	Fe	Sio_2	Al_2O_3	P
BH-1/1	62.05	1.02	1.29	0.04
BH-1/2	61.92	1.05	1.37	0.047
BH-1/3	63.9	1.09	0.99	0.05
BH-1/4	65.96	1.27	1.76	0.039
BH-1/5	63.89	2.69	1.39	0.044
BH-1/6	59.96	1.29	1.78	0.046
BH-2/1	58.09	2.39	2.78	0.045
BH-2/2	64.49	1.29	4.48	0.043
BH-2/3	66.58	1.18	1.30	0.039
BH-2/4	61.79	3.29	1.78	0.033
BH-2/5	65.93	1.97	1.9	0.049
BH-2/6	60.56	7.56	2.78	0.035
BH-3/1	61.47	3.05	1.79	0.05
BH-3/2	64.76	2.58	1.72	0.043
BH-3/3	62.56	1.29	1.59	0.048
BH-3/4	62.59	2.09	0.98	0.042
BH-3/5	42.59	2.39	2.78	0.047
BH-3/6	64.72	1.59	1.47	0.049

(vi) Grading:

Grab samples from different deposits were collected to asses the quality of the ore. Separate samples from the exposures representing different categories of ore, namely, massive or laminated or porous laminated or lateritic, were drawn. Where different types of ore are intermixed, chips from different types were taken to form a single sample for that zone. The details of grade with Fe% and recovery % are as below.

Grade	Fe %	Grade wise Recovery % of the deposit
Hard and Massive	64 – 66	70
Laminated Iron Ore	62 – 63	15
Porous laminated	< 61	10
Lateritic, weathered	45 – 55	5

Reserve Calculation:

(i) Categorization of reserve:

The area is defined by alternating hills and valleys. The reserves in the entire area so explored have been categorized as proved reserve, probable reserve and possible reserve. In proven type of reserve category, the dimensions of ore body that is length, width and depth have been witnessed either by surface exposure or by drilling. Whereas in probable category the 2 dimensions i.e. length and width have been taken as per exposure and third dimension is assumed. In respect of possible category all dimensions of the ore body is assumed.

(ii) Basis of parameter adopted:

A) Parameter adopted for proven category:

a) Length: Length of the ore body is taken as per true length exposed in the field as measured on map.

b) Width: Width is taken as true width of the ore body as measured on the different cross sections drawn.

c) Depth: The deepest horizon (900 mRL) as tapped by BH-2 is taken as proved limit.

B) Parameter adopted for probable category:

Looking to the mode of occurrence of the deposit, it is anticipated that further 20m depth from proven limit is also mineralized. Similarly strike wise also it is extended for 20 mts. Thus the depth of probable limit is 880mRL.

C) Parameter adopted for possible category:

Likewise for possible limit further 40 mts from probable depth is anticipated that is upto 840 mRL.

(iii) Reserve estimation:

Looking to the mode of occurrence of deposit, cross-sectional method of reserve calculation is adopted wherein cross sectional area measured on each cross section (Ref: Plate No. 4) is multiplied by length as measured on longitudinal section or on plan (Ref: Plate No. 3) to get the volume. This volume is multiplied by 3.2 (specific Gravity of iron ore) to obtain the tonnage. While considering the limitation of number of bore holes only 60% of this tonnage will be recovered as Geological Reserves. The estimation is tabulated below:

CATEGORY	REF. SECTION	CROSS SECTIONAL AREA (m^2)	LENGTH (m)	VOLUME (m^3)	TONNAGE	RECOVERY TONNAGE	TONNAGE in million tones
		(a)	(b)	a x b= c	cx3.2=d	d x 60% =e	e/1000000
Proved mRL-900	$X-X_1$	2352	258	606816	1941811.2	1165086.7	1.16
	$Y-Y_1$	560	404	226240	723968	434380.8	0.43
	$Z-Z_1$	1920	174	334080	1069056	641433.6	0.64
Total							**2.23**
Probable mRL-880	$X-X_1$	728	268	195104	624332.8	374599.68	0.374
	$Y-Y_1$	672	342	229824	735436.8	441262.08	0.441
	$Z-Z_1$	528	266	140448	449433.6	269660.16	0.269
Total							**1.084**
Possible mRL-840	$X-X_1$	1456	306	445536	1425715.2	855429.12	0.855
	$Y-Y_1$	1456	342	497952	1593446.4	956067.84	0.956
	$Z-Z_1$	1272	308	391776	1253683.2	752209.92	0.752
Total							**2.563**

SUMMARY OF GEOLOGICAL RESERVE

CATEGORY	UNFC CLASSIFICATION	QUANTITY (Million tones)
Proved	(111)	2.23
Probable	(121) & (221)	1.084
Possible	(333)	2.563
Total		**5.877**

SUMMARY OF MINEABLE RESERVE (Considering 10% inevitable mining loss from Geological reserves) is tabulated ahead.

CATEGORY	Geological reserves (Million tones)	UNFC CLASSIFICATION	90% of Geological reserve (mTones)
Proved	3.38	(111)	2.007
Probable	1.63	(121) & (221)	0.975
Total			**2.982**

Apart from the above insitu ore reserves, some float ore will also be recovered as calculated under:

CALCULATION OF FLOAT ORE (SURFACE AREA X DEPTH X BULK DEPOSIT)

S.N.	AREA		Length (a)	Width (b)	Depth (c)	Volume (m^3)	Bulk Density	Reserves (In Ton)	Reserves (mT)
1	Core Area	Northern Part	148	28	6	24864	1.5	37296	0.037
		Central Part	400	80	4	128000	1.5	192000	0.192
		Southern Part	146	28	6	24528	1.5	36792	0.0367
2	Eastern Slope		420	50	6	126000	1.5	189000	0.189
3	Western Slope		534	70	6	224280	1.5	336420	0.336
Total								**791508**	**0.791**

RECOVERY TONNAGE IS 60% = 474904.80 tones

RECOVERY IN MILLION TONES = 0.47 (111)

Total Mineable Reserves (Proved + Probable + Float Ore)

= 2.007 + 0.975 + 0.47 = **3.452 million tones**

Grading of mineral reserves:

The grading of iron ore so explored in the area is made based on Fe% as discussed earlier and grade wise reserve is tabulated below:

Grade	Grade wise Recovery % of the deposit	Quantity (million tones)
Hard and Massive	70	2.4164
Laminated Iron Ore	15	0.5178
Porous laminated	10	0.3452
Lateritic, weathered	5	0.1726
Total		**3.452**

Justification under UNFC classification:

(i) **Economic Axis:**

A detailed exploration has been carried out in the lease area with systematic approach of topographical survey, geological survey, geological mapping, core drilling exploration and sampling. Geological sections are drawn. The area with erratic exposures of iron ore and random drilling done has served the purpose for proving the area for the potentiality. The deposit of this belt is known for the banded depositional structure with grade orientation.

The detail analysis reveals that, the deposit is of good quality having adequate mineable reserves of 2.477 million tones proved (including float ore) and 0.975 million tones probable. Almost entire area is explored to categorize in proved, probable and possible category. Hence as per UNFC standards, the deposit gets rating of axis 1 for proved reserve, 2 for probable and 3 for possible reserve.

(ii) **Feasibility Axis:**

SBMPL has different expansion programmes for manufacturing sponge iron and other alloys. Thus the mineral as explored here has no problem of marketability but to consume in captive ways i.e. to meet out the requirement of raw material for proposed expansion programme of the Group Company.

With due consideration of various parameters of the deposit for economical exploitation, the area has been explored for mining and consequently to feed the captive expansion programmes of the Company. SBMPL is already operating existing sponge iron and steel manufacturing plants and it is anticipated that the cost parameters of the proposed expansion etc are within the norm of the sponge iron and steel making plants specify overall from demand perspective. The fundamentals look bright. As such in UNFC system, this deposit gets 1 for proved, 1 for probable and 3 for possible.

(iii) Geological Axis:

The area has been systematically and scientifically explored by adopting different steps so defined and specified. The Company has surveyed the area and drilled 3 holes of 91.8 meterage by core drilling. All the samples so far generated through various stages of exploration qualify that the iron ore is of sponge iron and steel grade. Thus, the deposit has higher confidence level due to the initial exploration carried out for bringing reserves under proved, probable and possible. Hence the deposit gets rating of axis 1 for proven, 2 for probable and 3 for possible reserves.

Conclusion:

The mineable reserve in proved category which includes 2.007 million tone proved insitu ore, 0.470 million tones of float ore making it to be 2.477 million tones. Apart from the above, probable reserves in the area is 0.975 million tones. **Thus, the total mineable reserves in the area work out to be 3.452 million tones.** The quantum of prospecting done in the area is sufficient to plan the deposit for economic exploitation by open cast mechanized method of mining. A combination of medium class HEMM may be deployed meeting the targeted quantity of production from the deposit.

(Geologist in charge)

(Mining Engineer in charge)