Proposal for Ramghad Iron and Manganese block, near Ramghad Village, Bellary District, Karnataka State for G3 stage mineral exploration under NMET.

Commodity: Iron and Manganese

BY

M/s Ecomen Laboratories Pvt. Ltd.

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Place: Bangalore

Date: 21.02.2024

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Summary of the Block for G3 stage exploration

	Feature	Details
	Block ID	Ramghad Iron and Manganese block
	Current Exploration Agency	M/s Ecomen Laboratories Pvt. Ltd.
	Previous Exploration Agency	Geological Survey of India (GSI)
	G4 stage Geological Report (Previous stage Geological Report)	1. Report on Ramandurg Iron Ore Deposit, Bellary district of Mysore State by Geological Survey of India (GSI) FS: 1964-66 2. Regional assessment of the manganese ore deposits of Sandur Schist belt Bellary district, Karnataka (SRO_GSI_7751) FS: 1976-77.
	Commodity	Iron and Manganese ore
	Mineral Belt	Sandur Schist Belt
	Completion period with entire Time schedule to complete the project	17 Months considering 10 moths for forest clearance.
	Objectives	Objectives of the proposal as follows; 1. To Carry out G3 stage of mineral exploration as per Mineral (Evidence of Mineral Content) Rule, 2015 and MMDR Act, 1957. 2. To delineate the strike continuity and depth persistence of the Iron and Manganese mineralization and to demarcate the mineralization within the proposed block. 3. To carry out Structural and Mineralogical studies including estimation of resources as per UNFC norms and to carve out potential resources within the proposed block.
	Whether the work will be carried out by the proposed agency or through outsourcing and details thereof. Components to be outsourced and name of the outsource agency	Geological Mapping, topographical survey, BRS sampling, channel and pit sampling, resource modeling and geological report work will be carried out by the M/s Ecomen Laboratories Pvt. Ltd. Core drilling, core logging, core sampling and chemical analysis will be undertaken through outsourced agency.
	Name/ Number of Geoscientists	02 Geologists
	Expected field days (Geology, Geophysics, surveyor)	Geological party days: 90 days Topographical Survey: 90 days
1.	**Location**	
	Latitude	15°8'34.78" N to 15°7'43.64" N
	Longitude	76°27'04.0" E to 76°28'14.00" E
	Villages	Ramghad, Siddapur, SushilNagar, Garga and Emmihatti villages.
	Tehsil/Taluk	Sandur

	District	Bellary
	State	Karnataka
2.	**Area (hectares/ square kilometers)**	
	Block Area	108.28 Ha / 1.0828 Sq. Km.
	Forest Area	108.28 Ha
	Government Land Area	Nil
	Private Land Area	Nil
3.	**Accessibility**	
	Nearest Rail Head	Hospet Railway (Junction) station
	Road	Hospet – Sandur State highway
	Airport	Jindal Vijayanagar Airport
4.	**Hydrogeography**	
	Local Surface Drainage Pattern (Channels)	Proposed block area and the adjacent terrain possess dendritic drainage pattern comprised of seasonal nallahs which will be active only during rainy days.
	Rivers/Streams	No perennial river or stream situated in the proposed block area.
5.	**Climate**	
	Mean Annual Rainfall	452 mm (Directorate of Economics and Statistics, GoK data 2018)
	Temperature (December) (Minimum) Temperature (June) Maximum	Minimum temperature recorded in the month of December is 18°C. Maximum temperature recorded in the month of June is 36°C
6.	**Topography**	
	Toposheet Number	57 A/08 (D43E8)
	Morphology of the Area	Project area forms part of the undulated hilly terrain. Occupies plateau top and slopes.
7.	**Availability of baseline geoscience data**	
	Geological Map (1:50K/25K)	1. Mineral belt map of Iron Ore deposits in Donimalai, Kumarswamy, Ramgad and Ramandurg areas of Sandur schist belt, Bellary district, Karnataka compiled by GSI in 1:50,000 scale is available. 2. Mineral belt map of Manganese deposits in Devagiri, Subrayanahalli and Ramgad areas of Bellary district, Karnataka, indicates the occurrence of Manganese deposit in the proposed block.
	Geochemical Map	Stream sediment sampling data obtained from Bhukosh portal shows the assay value of 58.53% Fe2O3 within the proposed block. Map depicting the same enclosed as **Annexure-1A.**

	Geophysical Map (Aerogeophysical, Ground geophysical, Regional as well as local scale GP maps)	Geophysical data obtained from Bhukosh portal as given below; Gravity survey Bouguer anomalies: 1. (-)60 in the western part of the proposed block. 2. (-)54 in the in NE part of the proposed area. Enclosed as **Annexure-1B** Magnetic anomalies: 1. (-)984 in the western part of the proposed block. 2. (+)2845 in the in NE part of the proposed area. Enclosed as **Annexure-1C.**
8.	**Justification for taking up G3 stage mineral exploration**	1. Sandur schist belt is known for its rich concentration of Iron and Manganese ore deposits and the proposed block falls within Sandur schist belt. 2. During the field season 1964-66, exploration division of IBM followed by GSI carried out exploration including drilling of 102 nos. of boreholes, adits and deep pits within Ramandurg range by dividing it into NW and SE blocks. Copy of the GSI report enclosed as **Annexure-2.** However, none of the borehole, adit and pit locations are available to correlate with proposed block. However, Geological map available with the above said report shows that the proposed block partly falls over the iron mineralization marked in the NW block. A copy of the georeferenced map of GSI with proposed block superimposed enclosed as **Plate-3.** 3. FS:1976-77 GSI report on regional assessment of the manganese deposits of Sandur schist belt, Bellary district, Karnataka recommends that "The ore blocks namely Swamihalli, Deogeri, Subbarayanahalli, Ramagad, Sunderbench and Seshageri are recommended for detailed exploration in the order of priority mentioned above. The proving of the

		individual ore zones, identified in each blocks, can be taken up systematically, by drilling, deep pitting and aditing, in the escarpment slopes of plateau". A copy of the report enclosed as **Annexure-3** and Map compiled by GSI in 1:63,360 scale with proposed block superimposed on it enclosed as **Plate-4.** 4. Mineral belt map of Iron Ore deposits in Donimalai, Kumarswamy, Ramgad and Ramandurg areas of Sandur schist belt, Bellary district, Karnataka, indicates the presence of BHQ in the proposed block. A copy of the map with proposed block superimposed enclosed as **Plate-1.** 5. Mineral belt map of Manganese deposits in Devagiri, Subrayanahalli and Ramgad areas of Bellary district, Karnataka, indicates the occurrence of Manganese deposit in the proposed block. A copy of the map with proposed block superimposed enclosed as **Plate-2.** 6. Three iron ore mines situated adjacent to the proposed block in the northern part namely Dharmapura iron ore mine and two other mines are of M/s ZTC and one manganese mine of M/s SMIORE situated in the western part. The iron ore and manganese mineralization and associated formations were well exposed in the adjacent mine workings. Exploratory borehole data of Dharmapura iron ore mine adjacent to the proposed block also studied to determine the depth of the proposed boreholes. 7. During preliminary studies, 24 Nos. of outcrop chip samples collected by the exploration agency M/s Ecomen Laboratories Pvt. Ltd. and the summary of analysis results as given below;

		Assay data of samples ranges from 17.35% to 64.52% Fe. Out of 24 samples collected 18 samples indicates Fe% more than 35% (Iron mineralization with +35% to 45% Fe considered as siliceous ore as per IBM threshold value). 8. GSI Opinion: "It is the outcome of GSI G4 stage exploration work. However, GSI does not have any plan in taking up G3 stage exploration for Iron and Manganese in the proposed area. Hence, it is recommended the proposed block can be taken up for G3 stage Exploration for Iron and Manganese ore in Ramgad area subject to approval from competent authority". Based on the above data it is proposed to undertake G3 stage of exploration in the proposed block area of 1.0828 Sq. Km.

Introduction:

Proposed "Ramghad Iron and Manganese block" situated in the Ramghad range of Sandur schist belt towards north of Ramghad village. Ecomen Laboratories Pvt Ltd is an accredited exploration agency proposed to undertake the G3 stage exploration within the subject block area for Iron and Manganese mineralisation.

Ecomen Laboratories Pvt Ltd is an accredited Category- 'A' Exploration Agency by NABET for non-coal minerals under NMET funded exploration programme. Ecomen Laboratories Pvt. Ltd. has submitted an application to the Department of Mines and Geology (DMG), Karnataka for taking up G-3 stage exploration for Iron and Manganese mineralization in Ramghad area of Sandur schist belt Bellary district, Karnataka. After thorough review and revisions of the application DMG, Karnataka has accorded In-Principle Approval for G-3 stage exploration for Iron and Manganese mineralization with the opinion of GSI State unit. With the evidence of geological reports, maps published by GSI and preliminary field studies M/s. Ecomen Laboratories Pvt. Ltd. is proposing for G-3 stage exploration in Ramghad Area for approval of TCC, NMET.

In-Principle Approval letter issued by the DMG, Karnataka on 9th June 2023 and opinion of GSI state unit (Karnataka) enclosed as **Annexure-4A & 4B** respectively.

1. Block Summary:

1.1 Physiography:

Proposed block situated within rugged and undulating terrain which comprises of hills and valleys. The block area occupies hill top and slopes partially. The ridge is sloping on either side eastwards and westwards. The general strike of the hill range is NNW-SSE. Proposed block represents highest and least contour levels of 990 m and 780 m MSL respectively. Terrain represents dendritic drainage pattern. Some first order and second order streams situated within the block area which are seasonal and will be active during rainy days only.

1.2. Background Geology (Regional Geology, Geology of the block)

Regional Geology

The Sandur schist belt is important for its economic deposits of iron and Manganese ore. The Sandur Schist Belt lies within the Archaean Dharwar craton of southern India. The belt occurs within the late Archaean high temperature metamorphic terrain of the craton in the eastern part of Karnataka. Schist belt is characterized by a substantial accumulation of volcanic rocks and meta-sediments, enclosed within the Peninsular Gneissic Complex (PGC) and intruded by granite. The Bellary- Hospet iron ore province is sub divided into eight ranges, viz. (i) NEB, (ii) Ramghad, (iii) Donimalai, (iv) Ettinhatti, (v) Dabevadi, (vi) Kumaraswamy, (vii)Timmappanagudi and (viii) Copper Mountain Range extending about 45 km long and 15 km wide.

Oldest formations occur on the southwest of the schist belt and the formations progressively become younger towards northeast. Rocks of the schist belt forms a heterogeneous assemblage predominantly metavolcanics and subordinate metasedimentary units.

The stratigraphic sequence of this belt is as follows;

Vibhuti Gudda Formation (Youngest) Talur Formation Donimalai Formation Raman mala formation Deogiri formation Yeshwanthnagar Formation (Oldest)	SANDUR Group

Geology of the Block:

The block area occupies portion of the Ramghad hill range. The predominant lithological composition of the block comprises Laterite, Metabasalt, Shale/Phyllite, BIF (Banded Iron Formation), BHQ (Banded Hematite Quartzite) and Manganiferous Phyllite. Notably, this terrain is renowned for its abundant deposits of iron ore and manganese. Structurally beds are extending in NNW-SSE direction and dipping eastwards with dip angles of around 60°.

There are 4 mines situated in the surrounding areas of proposed block namely Dharmapura iron ore mine, two iron ore mines of M/s ZTC and one manganese mine of M/s SMIORE. Also, some abandoned mine

workings situated in the northern part of the proposed block. Among 4 mines, data of one mine (Dharmapur Iron Ore) has been studied while preparing the proposal. The Dharmapur Iron Ore mine of M/s JSW Steels Limited situated adjacent to the proposed block in the northern direction and the proposed block for exploration is located in the strike extension of the adjacent mine. Geological cross-sections and the borehole data of the Dharmapur Iron Ore mine has been studied while making the proposals. Copy of the borehole sections and available exploration data enclosed as **Plate-5** and **Annexure – 5** respectively.

1.3. Mineral potentiality based on geology, geophysics, ground geo-chemistry etc. Scope for proposed exploration

Geology:

Banded Hematite Quartzite (BHQ): This formation associates with higher altitudes of ridge/hill tops with parallel to the trend of hill range. BHQ formation is well exposed in the proposed exploration block and major Iron Ore mineralization occurs in association with this formation within enriched zones which is dipping at 60° towards east.

Laterite: Ferruginous laterite capping occupies upper portion of the BIF formations which is well exposed within and surrounding areas of the proposed block.

Manganiferous Phyllite: Manganese mineralization occur as dissemination, veinlets, pockets etc. within the shale, near its boundary with the chlorite phyllites.

Geophysics:

Ground geophysical data (Gravity and Magnetic survey) obtained from Bhukosh portal for the proposed block as given below;

Bouguer anomalies:

a. (-)60 in the western part of the proposed block.
b. (-)54 in the in NE part of the proposed area.

Magnetic anomalies:

a. (-)984 in the western part of the proposed block.
b. (+)2845 in the in NE part of the proposed area.

Geochemistry:

Stream sediment sampling data obtained from Bhukosh portal shows the assay value of 58.53% Fe2O3 within the proposed block.

Scope for proposed exploration

Based on regional geology, local geology, GSI data and geology of the adjacent mines, it is proposed to undertake G3 stage of exploration within the proposed block area.

The G3 stage of exploration program envisaged with Geological mapping in 1:2000 scale, Trenching, Pitting, Bedrock sampling, chemical analysis, diamond drilling, core logging, core sampling and Detail Geological report preparation to derive the followings;

- To demarcate the mineralized zone of Iron and Manganese within the proposed block.
- To delineate the strike extension and depth persistence of the mineralization by drilling.
- To establish thickness, grade and quality of Iron and Manganese mineralization zones.
- Assessment of resources in accordance with MEMC Rule, 2015.
- To carve out the potential resource within the block area for Auctioning as ML.

1.4. Recommendations of G4 Stage Mineral Exploration Report:

FS:1964-66: Exploration wing of IBM followed by GSI carried out exploration which includes drilling of 102 Nos. of boreholes, adits and deep pits in the Ramandurg area in two blocks namely NW block and SE block. Majority portion of the proposed block for exploration falls within the NW block. However, none of the borehole or sample locations available to establish the correlation with the proposed block. Hence, it is proposed to undertake the G3 stage exploration within the block area.

Conclusion and recommendations of this report mainly focused on the economic viability of the deposit in view of the market conditions prevailing at the time of exploration as well as technology available.

FS:1976-77: GSI has also carried out regional assessment of manganese deposits in the Sandur schist belt and maps compiled during these studies partially overlaps proposed block. Copy of the map with proposed block super imposed enclosed as **Plate-2.**

This report recommended for further detailed exploration in the order of priority for the block namely Swamihalli, Deogiri, Subbrayanahalli, Ramagad, Sunderbench and Seshageri areas.

1.5. Objectives:

The main objective of the proposal is to carve out the potential Iron and manganese resources within the proposed block to get the attention of bidders during the auction as ML.

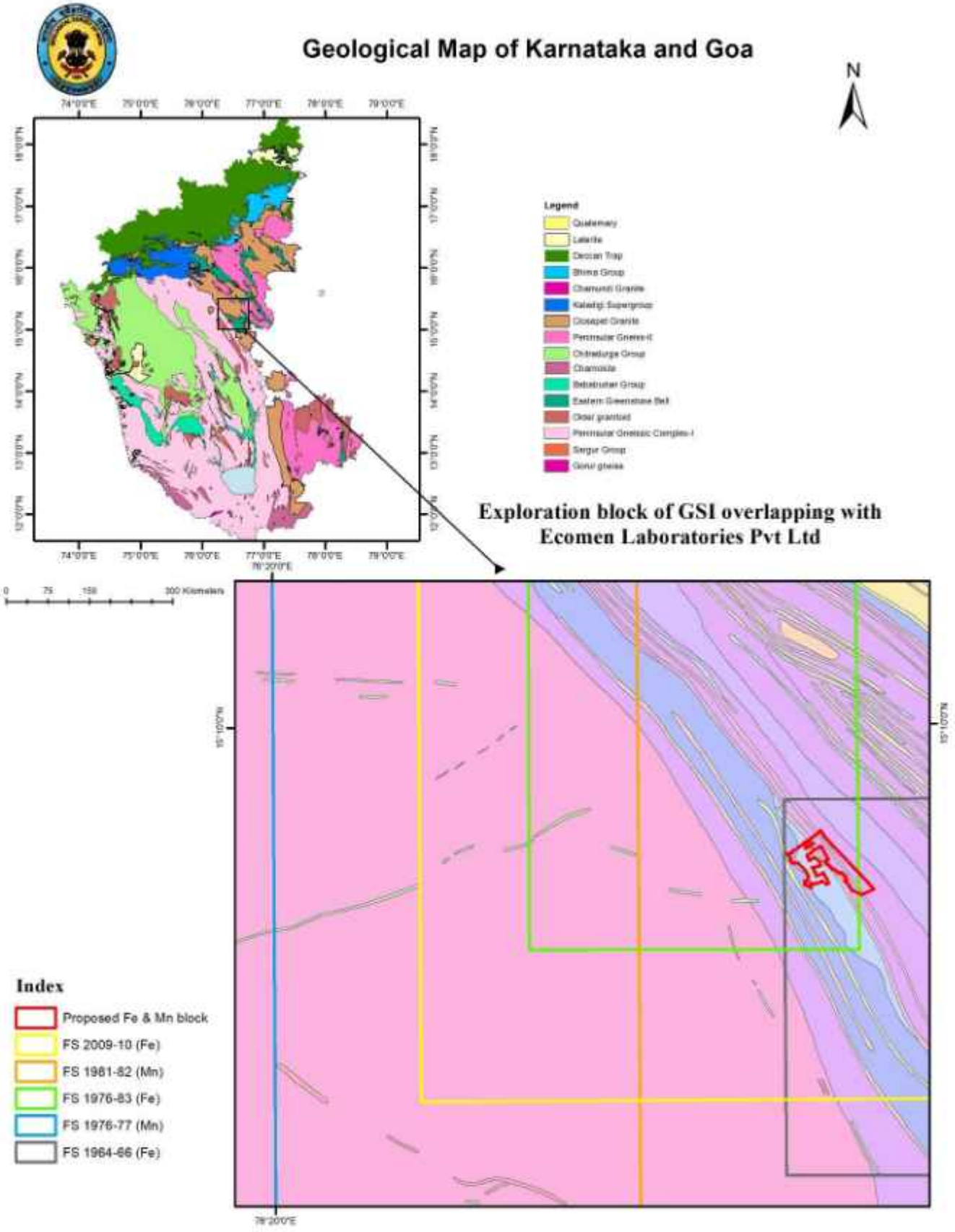
2. Previous work

2.1 Attach complete Previous Geological Report G4 stage for G3 stage projects:

As per the overlapping details provided by the GSI, multiple G4 level studies conducted during FS: 1964-66 (Fe), 1976-77(Mn), 1976-83(Fe), 1981-82 (Mn) and 2009-10 (Fe) overlapping the proposed block. However, geological maps compiled during FS:1964-66 (Fe) and 1976-77 (Mn) only showing the overlap with the proposed block area and remaining studies occupies different parts of the Sandur schist belt. Hence, the reports of two field seasons i.e. FS:1964-66 (Fe) and 1976-77 (Mn) were considered while preparing the exploration proposal and same have been attached with this document.

1. Geological survey of India report on "Ramandurg Iron Ore Deposit, Bellary District, Mysore State" FS: 1964-66 enclosed as **Annexure– 2.**

2. GSI report on "Regional assessment of the Manganese ore deposits of Sandur Schist Belt, Bellary district, Karnataka" FS:1976-77 enclosed as **Annexure – 3.**



GSI field studies overlapping the proposed block for exploration.

Previous exploration in the Adjoining area (Regional Area):

FS:1964-66: Exploration wing of IBM followed by GSI carried out exploration including drilling of 102 Nos. boreholes, adits and deep pits in the Ramandurg area by distributing area into two blocks NW and SE. Proposed exploration block falls within the NW block which partly occupies the iron mineralization marked within the block. However, none of the borehole or sample locations available to establish the correlation with the proposed block. In view of the above, it is proposed to undertake the G3 level exploration within the proposed block area. The map available with the report showing the iron ore deposit within the proposed block enclosed as **Plate-3.**

FS:1976-77: GSI has also carried out regional assessment of manganese deposits in the Sandur schist belt and maps compiled during these studies partially overlaps proposed block. Copy of the map with proposed block super imposed enclosed as **Plate-4.**

Previous Exploration details in the proposed block area

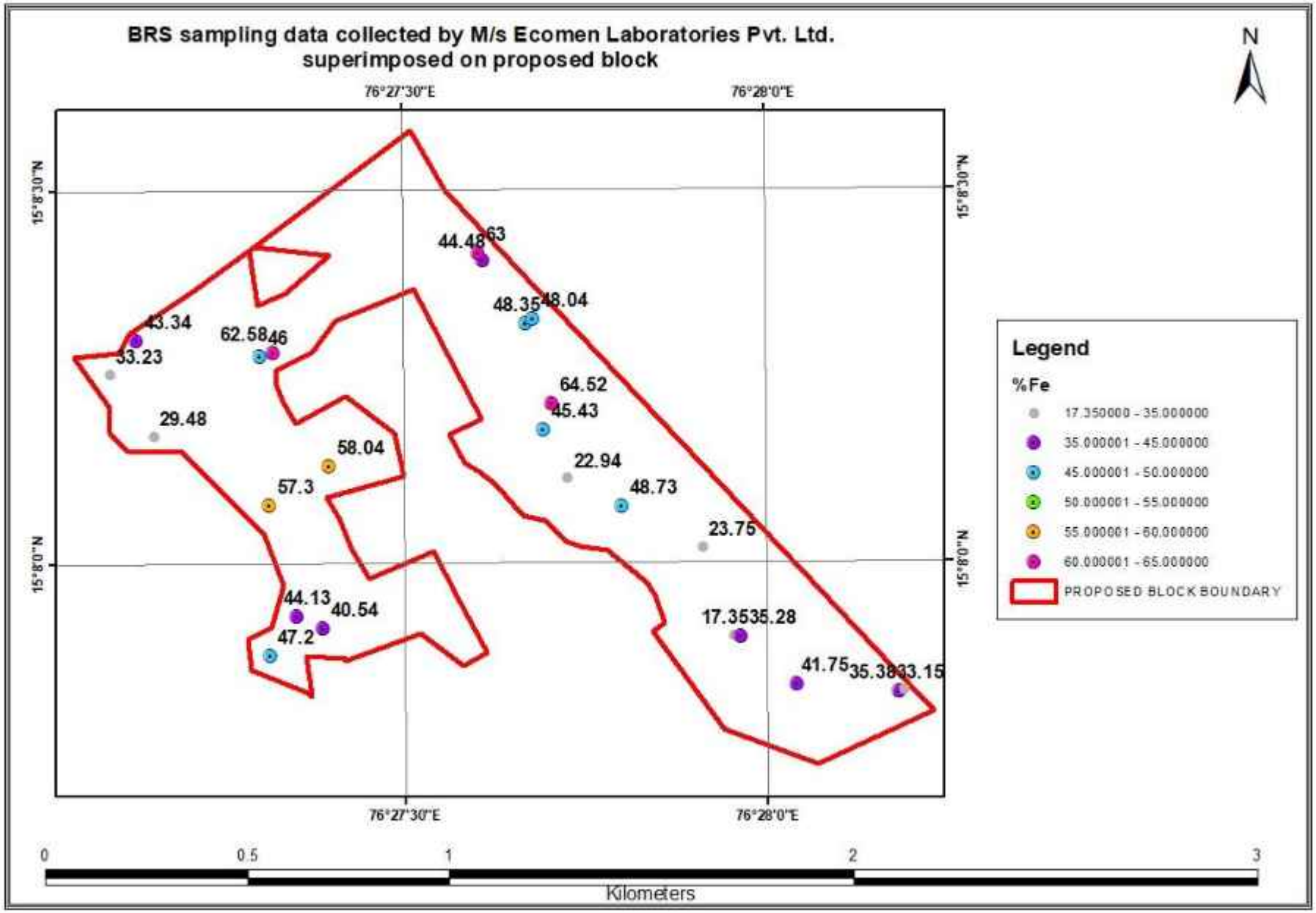
Previous exploration in the proposed block area involves preliminary Geological studies done by the GSI and reports of the same have been enclosed.

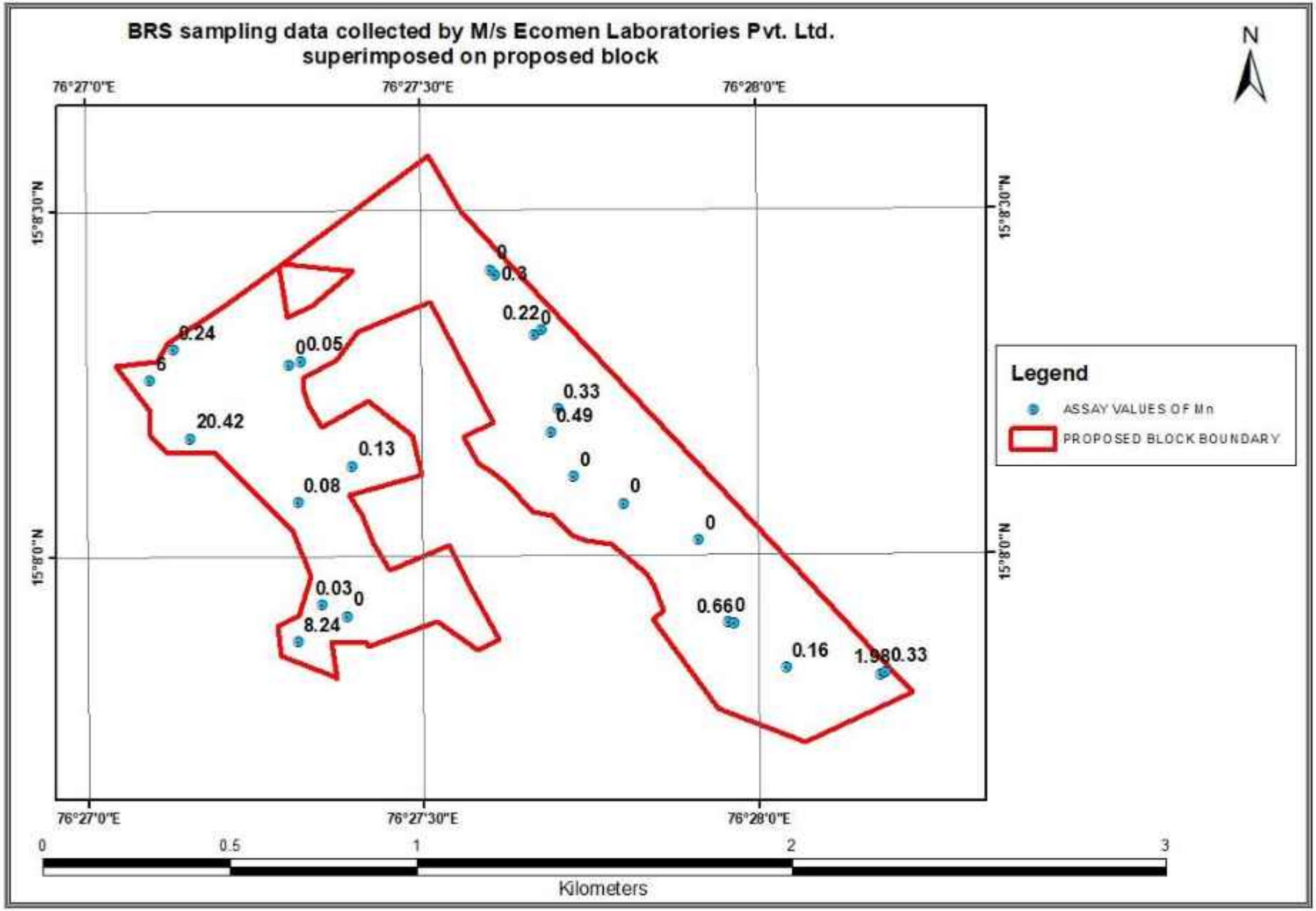
During preliminary field studies Ecomen Laboratories Pvt. Ltd. has collected 24 Nos. of BRS samples. Analysis results of the samples ranges from 17.35% to 64.52% Fe. Out of 24 samples drawn 18 samples assayed Fe% more than +35% (iron *mineralization with +35% Fe to 45% Fe considered as siliceous ore as per IBM threshold value*). One sample analyzed with Mn value of 20.42%. Analysis results of the samples as tabulated below;

Sample ID	%Fe	%Mn
S-1	43.34	0.24
S-2	29.48	20.42
S-3	57.30	0.08
S-4	44.13	0.03
S-5	40.54	BDL
S-6	47.20	8.24
S-7	46.00	BDL
S-8	62.58	0.05

Sample ID	%Fe	%Mn
S-9	58.04	0.13
S-10	44.48	0.30
S-11	63.00	BDL
S-12	48.35	BDL
S-13	48.04	0.22
S-14	64.52	0.33
S-15	45.43	0.49
S-16	48.73	BDL

Sample ID	%Fe	%Mn
S-17	22.94	BDL
S-18	23.75	BDL
S-19	17.35	BDL
S-20	41.75	0.16
S-21	35.38	1.98
S-22	33.15	0.33
S-23	33.23	6.00
S-24	35.28	0.66


BRS sampling data collected by M/s Ecomen Laboratories Pvt. Ltd.
superimposed on proposed block
N
76°27'30"E
76°28'0"E
15°8'30"N
15°8'0"N
44.48
63
48.35
48.04
43.34
62.58
46
33.23
64.52
45.43
29.48
58.04
22.94
57.3
48.73
23.75
44.13
40.54
47.2
17.35
35.28
41.75
35.38
33.15
Legend
%Fe
17.350000 - 35.000000
35.000001 - 45.000000
45.000001 - 50.000000
50.000001 - 55.000000
55.000001 - 60.000000
60.000001 - 65.000000
PROPOSED BLOCK BOUNDARY
0
0.5
1
2
3
Kilometers


BRS sampling data collected by M/s Ecomen Laboratories Pvt. Ltd.
superimposed on proposed block
N
76°27'0"E
76°27'30"E
76°28'0"E
15°8'30"N
15°8'0"N
0
0.3
0.220
0.24
6
00.05
0.33
0.49
20.42
0.13
0
0.08
0
0
0.030
8.24
0.660
0.16
1.980.33
Legend
ASSAY VALUES OF Mn
PROPOSED BLOCK BOUNDARY
0
0.5
1
2
3
Kilometers

Field photograph showing the sample collection within ferruginous laterite

Photograph showing the laterite

Photograph Showing the BHQ exposure

3. Block description

Block corner points/ cardinal points	Latitude	Longitude
1	76° 27' 56.2526" E	15° 07' 46.5249" N
2	76° 27' 50.3986" E	15° 07' 54.3858" N
3	76° 27' 51.3759" E	15° 07' 55.0410" N
4	76° 27' 50.5771" E	15° 07' 57.2765" N
5	76° 27' 49.9207" E	15° 07' 58.3437" N
6	76° 27' 46.6936" E	15° 08' 00.9641" N
7	76° 27' 44.4463" E	15° 08' 01.2156" N
8	76° 27' 43.3366" E	15° 08' 01.6707" N
9	76° 27' 41.4759" E	15° 08' 03.4040" N
10	76° 27' 39.6619" E	15° 08' 03.7845" N
11	76° 27' 37.4134" E	15° 08' 06.2959" N
12	76° 27' 36.0131" E	15° 08' 07.3126" N
13	76° 27' 34.8197" E	15° 08' 08.0394" N
14	76° 27' 33.5567" E	15° 08' 10.2877" N
15	76° 27' 36.2886" E	15° 08' 11.5200" N
16	76° 27' 30.7076" E	15° 08' 22.0426" N
17	76° 27' 29.3205" E	15° 08' 21.4970" N
18	76° 27' 24.1423" E	15° 08' 19.4668" N
19	76° 27' 22.2478" E	15° 08' 16.9901" N

20	76° 27' 19.3274" E	15° 08' 15.6197" N
21	76° 27' 19.3593" E	15° 08' 14.3844" N
22	76° 27' 19.7851" E	15° 08' 13.1419" N
23	76° 27' 20.8714" E	15° 08' 11.2406" N
24	76° 27' 25.0339" E	15° 08' 13.4484" N
25	76° 27' 29.0091" E	15° 08' 10.4429" N
26	76° 27' 29.8519" E	15° 08' 06.9886" N
27	76° 27' 23.3559" E	15° 08' 05.2953" N
28	76° 27' 24.4295" E	15° 08' 03.5465" N
29	76° 27' 25.4182" E	15° 08' 01.1406" N
30	76° 27' 26.8893" E	15° 07' 58.7627" N
31	76° 27' 32.2441" E	15° 08' 00.9126" N
32	76° 27' 34.0485" E	15° 07' 57.4247" N
33	76° 27' 36.6164" E	15° 07' 52.7394" N
34	76° 27' 34.6847" E	15° 07' 51.7426" N
35	76° 27' 31.0908" E	15° 07' 54.3016" N
36	76° 27' 24.8832" E	15° 07' 52.1462" N
37	76° 27' 24.8520" E	15° 07' 52.4157" N
38	76° 27' 21.6178" E	15° 07' 52.6212" N
39	76° 27' 22.1283" E	15° 07' 49.3556" N
40	76° 27' 21.8424" E	15° 07' 49.6263" N
41	76° 27' 17.0902" E	15° 07' 51.4248" N
42	76° 27' 16.8213" E	15° 07' 53.9918" N
43	76° 27' 18.8001" E	15° 07' 54.8817" N
44	76° 27' 19.8403" E	15° 07' 58.2564" N
45	76° 27' 18.2182" E	15° 08' 02.2895" N
46	76° 27' 11.4530" E	15° 08' 08.9910" N
47	76° 27' 06.9729" E	15° 08' 09.1718" N
48	76° 27' 05.5215" E	15° 08' 10.6397" N
49	76° 27' 05.5161" E	15° 08' 12.6187" N
50	76° 27' 02.5224" E	15° 08' 16.6468" N
51	76° 27' 06.2736" E	15° 08' 16.9877" N
52	76° 27' 07.0692" E	15° 08' 18.5956" N
53	76° 27' 12.4756" E	15° 08' 21.9583" N
54	76° 27' 17.4783" E	15° 08' 25.4732" N
55	76° 27' 17.1378" E	15° 08' 25.1051" N
56	76° 27' 17.8231" E	15° 08' 20.7969" N
57	76° 27' 20.1010" E	15° 08' 21.7396" N
58	76° 27' 23.7220" E	15° 08' 24.7303" N
59	76° 27' 17.4783" E	15° 08' 25.4732" N
60	76° 27' 30.5288" E	15° 08' 34.7804" N
61	76° 27' 33.3380" E	15° 08' 29.9767" N
62	76° 27' 40.1355" E	15° 08' 22.8469" N
63	76° 27' 56.9636" E	15° 08' 05.3350" N

64	76° 28' 03.5473" E	15° 07' 58.4554" N
65	76° 28' 09.4957" E	15° 07' 52.2185" N
66	76° 28' 13.5965" E	15° 07' 47.9045" N
67	76° 28' 03.9431" E	15° 07' 43.6469" N

4. Planned Methodology

In order to achieve the objectives, scheme of exploration for the Ramghad iron and manganese block is proposed to be undertaken at G3 stage based on the earlier studies of GSI. The exploration shall be carried out as per Minerals (Evidence of Mineral Content) Rules 2015.

The details of activities proposed under scheme of exploration as follows;

4.1 Geological Mapping:

The geological mapping of block area shall be under taken in 1:2000 scale to demarcate the boundaries of all the lithounits along with their structural information. Geological traverses over the entire block area shall be carried out with the help of Brunton compass, GPS and tape.

4.2 Topographic Survey:

Topographic survey shall be undertaken with reference to the triangulation network established by the authorized agencies. Topographic survey shall be carried out in 1:5000 scale and contours shall be generated with 2 m interval. All the surface features such as roads, pits, trenches, borehole collars, streams, village boundaries, etc. shall be brought up on to the map using Electronic Total Station/DGPS survey.

Coordinates and collar RLs of the proposed boreholes and boundary corner points shall be surveyed using DGPS.

4.3 BRS sampling:

BRS samples shall be collected within the potential zones of mineralization throughout its strike length. Also, few samples shall be collected in other associated lihounits. It is planned to collect 65 Nos. of BRS samples over the entire block area and samples shall be analyzed for 6 radicals viz. Fe, Mn, SiO_2, Al_2O_3, P and S.

4.4 Trenching/ Pitting:

In the proposed block it is planned to formulate a total of 10 nos. of

exploratory trenches to demarcate the contacts within soil cover area. Dimension of the trenches will be maintained at 4 m length X 1 m width X 1 m depth. A total quantum of 40 m^3 material will be excavated to expose the contacts of mineralized zone. It is also planned to excavate 20 pits with dimensions of 1 m X 1 m X 1 m with total quantum of 20 m^3 material. Location of the pits and trenches shall be finalized based on detailed geological mapping.

4.5 Core drilling:

Based on the outcome of the Geological mapping and analysis results of the BRS samples, 6 Nos. of bore holes (NQ size) with a total quantum of 618 m shall be executed within the proposed block area to delineate the ore body along with its quality, quantity and other mineralogical information. Diamond core drill holes have been planned with 400 m interval along the strike of the iron ore mineralization.

Based on the outcome of the detailed Geological mapping followed by pitting and trenching, proposed depth and location of the boreholes may vary. 4 Nos. inclined boreholes were planned to intersect the mineralization at a vertical depth of 60 m from the surface and one inclined borehole planned to intersect the iron ore mineralization at 90 m depth from surface.

The present exploration proposal is prepared based on the 1:50K scale geological data obtained from Bhukosh portal of GSI and based on the preliminary field studies carried out by Ecomen Laboratories Pvt. Ltd.

4.6 Core Logging:

Geological logging of the entire drill core samples shall be carried out to record the geological information viz. rock type, grain size, colour, nature, type of mineralization, structural features along with recovery and RQD. The details of nature of ore as hard, soft, blue dust, flaky, lateritic, limonitic, etc. will be recorded in detail.

4.7 Core Sampling:

The drill core will be split into two equal halves and one part would be preserved in the core box. The other half will be powdered to (-) 100 mesh size and the same would be divided into four parts through coning and

quartering. One part of 100 gm sample will be sent to chemical laboratory for analysis, second part will be preserved in the camp as duplicate sample, third part will be utilized for preparing composite sample for individual ore bands and the fourth part would be kept as umpire sample either check sample or sample to be used for any other specific purpose.
1 m sampling interval will be maintained within the mineralized zone. The primary core samples will be analyzed for six elements i.e., Fe, Mn, SiO2, Al2O3, P and S.

- Around 391 nos. of samples will be generated from the 6 Nos of boreholes cores. Around 60 nos. samples from pits and trenches and 65 nos. of BRS samples will be collected from the outcrops. All together primary samples will be 516 nos. will be prepared for chemical analysis.
- 10% primary samples will be drawn as composite samples for analysis which are total together 52 nos.
- Around 10% check samples in total 57 samples will be prepared for analysis.
- The mineralized drill core will be sampled with 1 m interval and one sample each from the footwall and hanging wall shall be collected for 5 m length on either side.

4.8 Petrographic and Mineragraphic studies:

Thin section of the out-crop samples and the core samples will be studied for detailed petrographic and mineragraphic characteristics. These samples will be drawn from ore zones and associated rocks. A provision of 5 nos. of specimens for petrographic and mineragraphic studies has been kept for the proposed area.

4.9 Bulk density:

It is planned to determine the bulk density for 5 Nos of drill core samples which is required to estimate the tonnage. These samples will be collected from the mineralized zone.

5. Nature Quantum and Target

Quantum of Work for Ramghad Iron Ore and Manganese block

Sl. No.	Component	Unit	Quantity
A	**Detailed Geological Mapping**		
1	In 1:2000 Scale	Sq. Km.	1.0828
2	Trenching (4m length X 1 m width X 1 m depth) 10 Nos.	cu.m.	40
3	Pitting (1m length X 1m width X 1 m depth) 20Nos.	Cu.m.	20
B	**Survey work**		
1	Demarcation of block boundary, Fixation of Borehole and determination of co-ordinates & Reduced Level (RL) of the borehole by DGPS	Per Point of observation	73
2	Topographic survey and contouring	Sq. Km.	1.0828
C	**Approach road (to access the drill hole locations)**	Km	3
D	**Drilling**		
1	Core Drilling 400 m strike interval – 6 Nos. boreholes	m	618
2	Borehole Pillaring (12"X12"X30")	Nos.	6
E	**Laboratory studies Chemical Analysis**		
1	Primary drill core samples	Nos.	391
2	Pit and Trench Samples	Nos.	60
3	BRS samples	Nos.	65
4	Composite samples (10% of primary samples)	Nos.	52
5	Check samples (10% of total samples)	Nos.	57
	TOTAL NUMBER OF SAMPLES		625
6	Sample preparation	Nos.	625
7	Chemical Analysis for six radicals (Fe, Mn, SiO_2, Al_2O_3, P and S)	Nos.	625
	Laboratory studies Physical analysis		
8	Preparation of standard thin section of rock	Nos.	5
9	Study of thin section	Nos.	5
10	Bulk density determination	Nos.	5
F	**Orebody modeling**	Nos.	1
G	**Geological Report preparation (as per MEMC Rules 2015 and subsequent amendments)**	Nos.	1

Borehole Spacing:

The proposal is for G3 level of exploration, and the nature of the deposit is "bedded stratiform and tabular deposit of irregular habit". It is proposed to undertake exploration in 400 m interval along the strike of the iron mineralization.

Geophysical Studies

No, Geophysical studies proposed.

6. Exploratory drilling

It is proposed to undertake the exploration by diamond core drilling with 400m strike interval within iron mineralization. In totality 06 nos. of boreholes were proposed with total quantum of 618 m drilling. The Minimum and maximum depth of the boreholes is 63 m and 158m respectively. Details of the proposed boreholes were tabulated below;

Proposed Borehole Collar details

BH ID	Easting	Northing	Collar RL (m)	Azimuth	Inclination	Depth (m)
PBH-1	656580	1674311	980	0°	-90°	158
PBH-2	656807	1674493	857	231°	-60°	90
PBH-3	657053	1674177	834	231°	-60°	79
PBH-4	657303	1673865	796	231°	-60°	99
PBH-5	657528	1673533	815	231°	-60°	63
PBH-6	657783	1673225	828	231°	-60°	129
TOTAL						**618**

Note: Proposed borehole coordinates and RL may change after detailed Geological mapping and collar survey with DGPS survey

7. Manpower deployment: proposed timeline for the G3 stage exploration as follows

Manpower Deployment & Time Schedule																	
Sl. No.	Activities	Months															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Drill Camp Setup																	
2	Survey Party days (1 Party)																	
3	Geologist Party Days field (1 Party)																	
4	Pitting and Trenching																	
5	Forest Clearance																	
6	Core Drilling																	
7	Sampling party days, Coresampling (1 Party)																	
8	Laboratory studies																	
9	Camp Winding																	
10	Geologist Party Days HQ (1 Party)																	
11	Geological Report preparation																	
Note: 1. Commencement of project may be reckoned from the day the exploration agency is available along with all necessary clearances.																		
2. Time loss on account of monsoon/Forest Clearance/ local law & order problems may be addition to the above time line																		

8. Break-up of the expenditure

Estimated Cost for Preliminary Exploration (G3 stage of exploration) for Iron and Manganese mineralization in Ramghad Block, Bellary district, Karnataka [Block Area: 1.0828 sq.km, Nos. of Borehole: 6 Nos., Borehole Depth Range:63 to 158 mtr, Time Schedule: 17 Months]							
SI No.	Item of work	Unit	Rate as per NMET SOC 2020-21		Estimated Cost of Proposal		Remarks
			SoC item SI. No.	Rate as per SoC in Rs	Quantum of Work	Total Amount (in Rs)	
A	Geological Work						
	Charges for one geologist per day at field	Per day	1.3	11000	90	9,90,000.00	
	Labour (2 Nos.) per party	Per day	5.7	504	180	90,720.00	Amount will be reimbursed as per the notified rates by Central Labour Commission or state government whichever is higher
	Charges for one geologist per day at HQ	Per day	1.3	9000	30	2,70,000.00	
	Charges for one sampler per day	Per day	1.5.2	5100	90	4,59,000.00	
	Labour (4 Nos.) per party	Per day	5.7	504	360	1,81,440.00	
	Excavation of trenches up to 2 m depth	per cu.m.	2.1.1	3330	40	1,33,200.00	
	Excavation of pits up to 2 m depth	per cu.m.	2.1.2	3800	20	76,000.00	

B	**Survey work**						
	Charges for one surveyor per day (topographic survey)	Per day	1.6.1a	8300	90	7,47,000.00	
	Labour (2 Nos.) per party	Per day	5.7	504	180	90,720.00	
	Demarcation of block boundary, Fixation of Borehole and determination of co-ordinates & Reduced Level (RL) of the borehole by DGPS	Per Point of observation	1.6.2	19200	73	14,01,600.00	
	Sub Total (A+B)					**44,39,680.00**	
C	**Drilling work (Outsource)**						
	Drilling - Hard rock (NQ size)	Per m	2.2.1.4a	11500	618	71,07,000.00	
	Drill core preservation	Per m	5.3	1590	618	9,82,620.00	
D	**Laboratory Studies (outsource)**						
1	**Chemical Analysis by wet chemical method for 6 determinations (Fe, Mn, Si, Al, P, S)**						
i)	Primary drill core samples	Nos.	4.1.1	4078	391	15,94,498.00	
ii)	Pit and Trench samples		4.1.1	4078	60	2,44,680.00	
iii)	BRS samples		4.1.1	4078	65	2,65,070.00	
iv)	Composite samples (10% of primary samples) chemical analysis	Nos.	4.1.1	4078	52	2,12,056.00	
v)	Check samples (10% of total samples) chemical analysis	Nos.	4.1.1	4078	57	2,32,446.00	
2	**Physical Analysis**						
i)	Preparation of standard thin section	Nos.	4.3.1	2353	5	11,765.00	
ii)	Complete Petrographic studies	Nos.	4.3.4	4232	5	21,160.00	
iii)	Digital photomicrograph of thin sections	Nos.	4.3.7	280	5	1,400.00	

3	**Bulk density determination 5 samples**	Per Nos.	4.10	3540	5	17,700.00	
	Total Outsourced (C+D)					**1,06,90,395.00**	
	Sub Total (A+B+C+D)					**1,51,30,075.00**	
E	**Tender process cost**	One time	2.3	2% of the approved project cost or 5 Lakh whichhever is lower	1	3,02,601.00	
F	**3D ore body modeling using Surpac software**	One number	5.4	As per actuals/ implementing agency to put the cost based on market survey	1	2,10,000.00	
G	**Geological Report Preparation**	Cost per 5 Hard copies of report along with soft copy	5.2 (iii)	Project ₹150 lakh to ₹300 lakh: Minimum of ₹7.5 Lakh or 3% of the work whichever is more	1	7,50,000.00	
H	**Peer review**	Per review	--	--	--	20,000.00	

I	**Preparation of Exploration Proposal**	One Number (5 Hard copies) along with soft copy	5.1	2% of approved project cost or 3.8 lakh whichever is lower	1	3,02,601.00	
J	**Operational charges towards outsourced work**	8.75 Lakh plus 5% on the balance amount of outsourced cost in excess of Rs. 1 crore.	6.0 (iii)	8.75 Lakh plus 5% on the balance amount of outsourced cost in excess of Rs. 1 crore.	--	9,09,519.00	
	Sub Total (E+F+G+H+I+J)					**24,94,721.00**	
	Total Estimated Cost (Excluding GST)					**1,76,24,796.00**	
	GST @ 18%					**31,72,463.00**	
	Grand Total					**2,07,97,259.00**	

Note:

A. Time lines

Total period for execution of G3 stage exploration is 17 months inclusive of 10 months proposed for forest clearance. In case, forest clearance gets delayed the timeline will undergo change accordingly.

B. Breakup of expenditure

Total estimated cost is **Rs. 2,07,97,259** including GST.

C. Terms of payment

M/s Ecomen Laboratories Pvt. Ltd. will rise the invoice for the quantum of work completed in accordance with the approval as per NMET.

D. Forest Clearance

The subject block falls in Ramghad range forest. DMG, Govt. of Karnataka shall pay the applicable statutory fees under Forest (Conservation) Act 1980 to state forest department.

9. References

1. Report on Ramandurg Iron Ore Deposit, Bellary district of Mysore State by Geological Survey of India (GSI) (FS: 1964-1966).

2. Regional assessment of the manganese ore deposits of Sandur Schist belt Bellary district, Karnataka (SRO_GSI_7751) (FS:1976-77).

3. 1:50,000 scale Geological Data obtained from Bhukosh portal (https://bhukosh.gsi.gov.in) of Geological Survey of India.

Submitted by

Ecomen Laboratories Pvt. Ltd.

Authorized Signatory

GEOLOGICAL SURVEY OF INDIA

MINERAL BELT MAP OF IRON ORE DEPOSITS IN DONIMALAI, KUMARSWAMY, RAMGAD AND RAMANDURG AREAS OF SANDUR SCHIST BELT, BELLARY DISTRICT, KARNATAKA

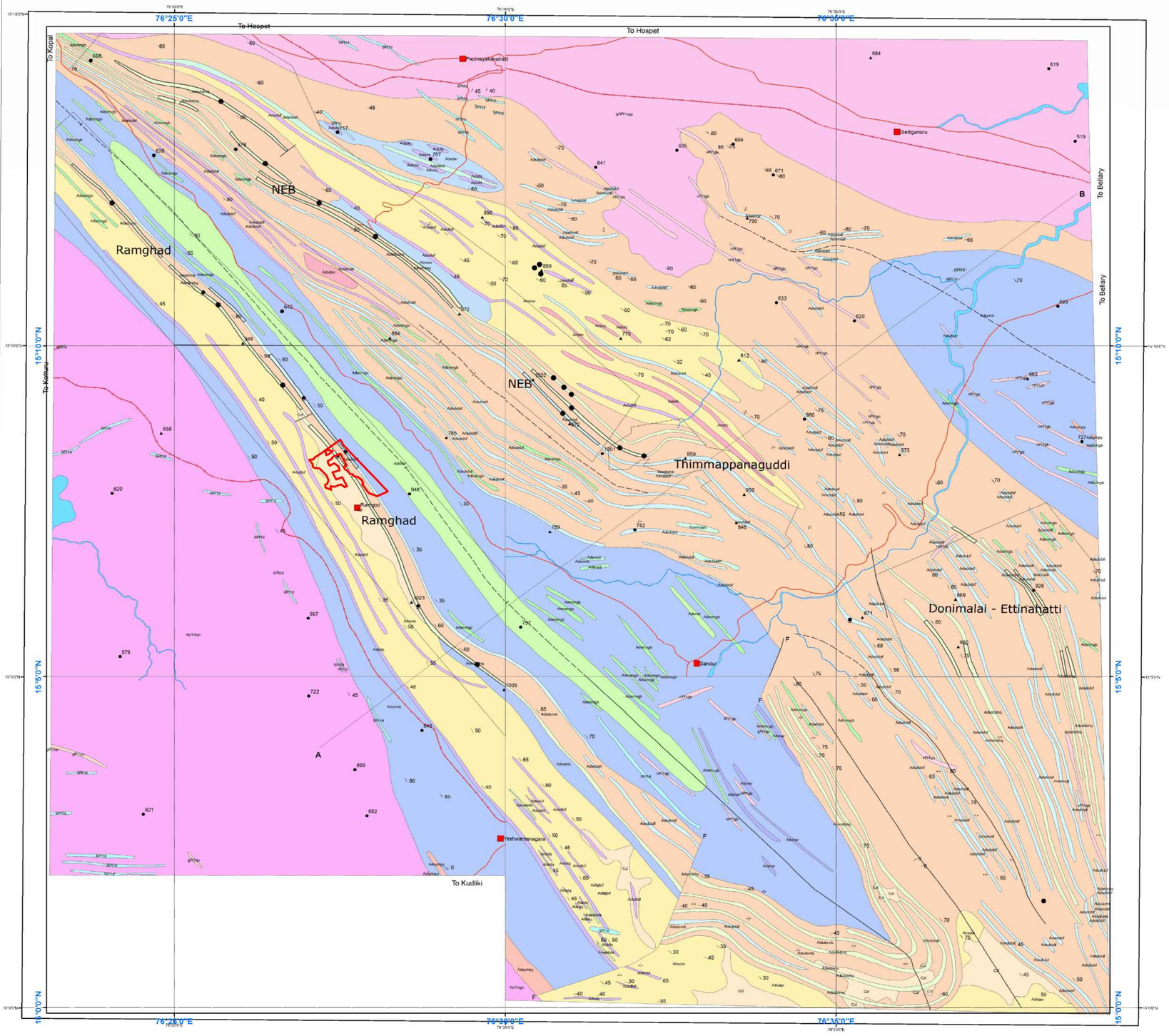
(PARTS OF TOPOSHEET NO. 57A/7, 8, 12, 16 & 57B/9)

1:50,000

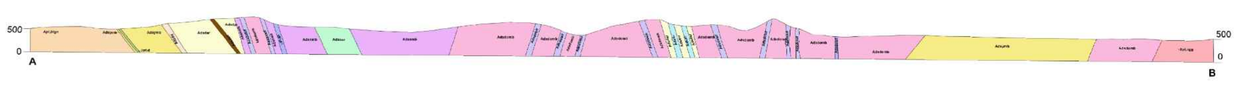
1 0.5 0 1 2 3

Kilometers

RAMGAD - DONIMALAI BLOCK



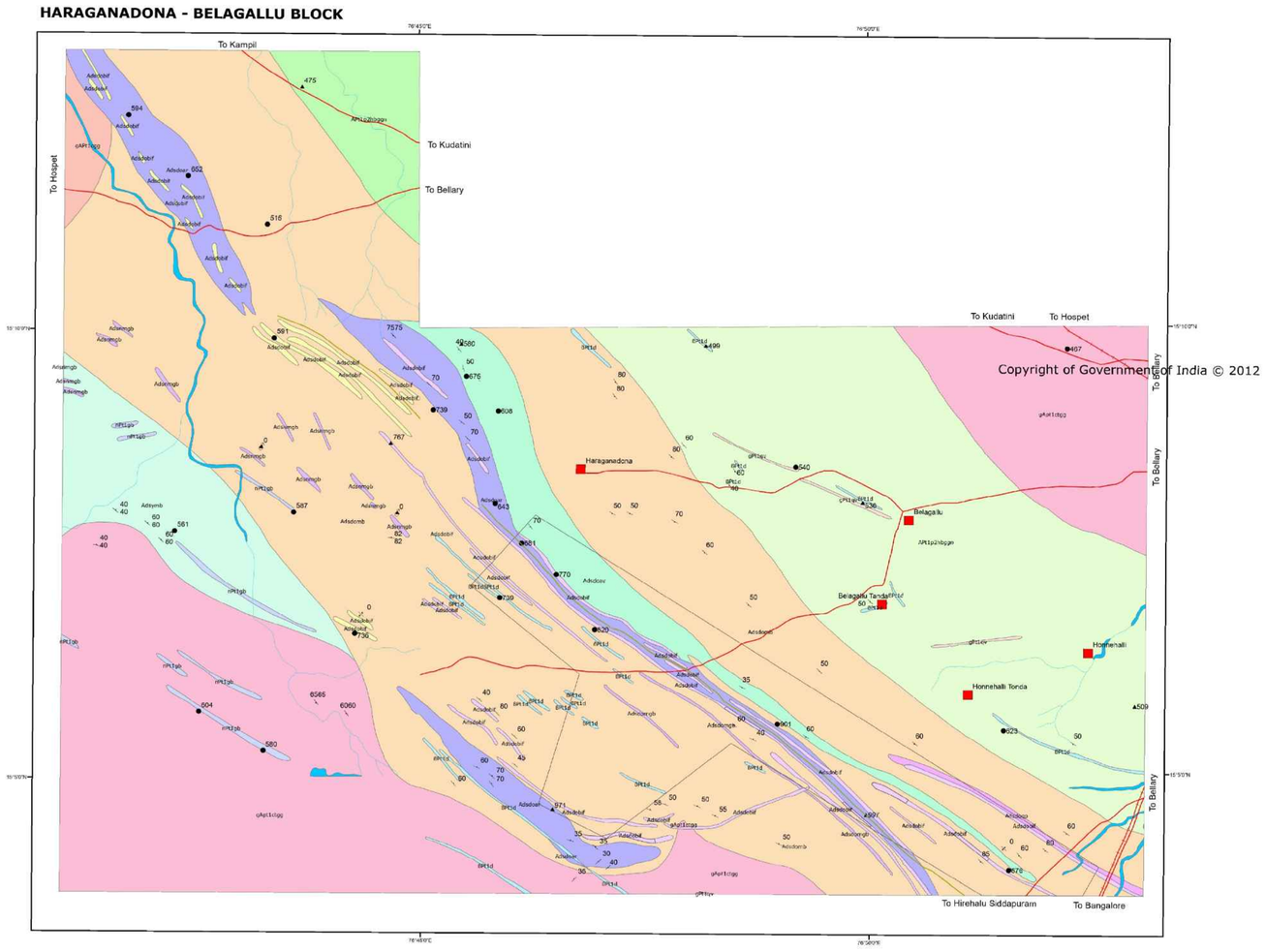
GEOLOGICAL CROSS - SECTION ALONG A-B



Legend

ProposedBlockBoundary

HARAGANADONA - BELAGALLU BLOCK



LEGEND

LITHOLOGY	FORMATION	GROUP	SUPERGROUP	AGE
Laterite				Cenozoic
Quartz Vein				
Dolerite	Intrusives			Palaeoproterozoic
Gabbro				
Pink granite				
Porphyritic grey granite		Closepet Granite		Archaean
Grey granite				to Palaeoproterozoic
Hornblende biotite gneiss		Peninsular Gneiss - II	Peninsular Gneissic Complex	
Metagabbro				
Greywacke argillite	Nandihalli			
Andesite				
Metabasalt				
Metagabbro				
Andalusite schist				
Conglomerate				
Fuchsite quartzite				
Greywacke argillite	Donimalai			
Banded haematite quartzite				
Rhyolite / Quartz porphyry				
Acid volcanics		Sandur	Dharwar	
Metabasalt				Archaean
Meta ultramfite				
Banded iron formation				
Dolomitic limestone				
Greywacke argillite - Mn				
Conglmerate	Deogiri			
Quartzite				
Metabasalt				
Metabasalt	Yashwantnagar			
Metapyroxenite				
Metabasalt	Ilka	Hungund Kushtagi		
Biotite gneiss		Peninsular Gneiss - I	Peninsular Gneissic Complex	

MINERAL SYMBOLS

- Iron ore deposit
- Iron ore occurance
- Explored block

STRUCTURAL SYMBOLS

- Bedding (Inclined)
- Foliation(Inclined)
- Joint (Inclined)
- Joint (Vertical)
- Antiform
- Antiformal Axis
- Synformal Axis
- Fault

OTHER SYMBOLS

- Triangulation height
- Spot height
- Settlement
- Road
- Rail
- River / water body

GEOLOGY AND MINERALISATION

The area forms part of Sandur Schist belt in parts of Yeshwantnagar, Ramgad, Subbrayanahalli and Swaminahalli, Bellary districts. It is bounded by Latitude $14^0$57' to $15^0$10'N and Longitudes $76^0$25' to $76^0$40'E .The area is well connected by metalled and all weathered roads. The South Central Railway (Hosepet Kotturu section) passes through the western parts of the area. The area exhibits rugged terrain with moderately high hills.The maximum elevation is 1029m and the minimum being 553m above MSL. The drainage pattern is radial to subdendritic in nature and constitutes a part of Tungabhadra basin.

The area is represented by rocks of Peninsular Gneissic Complex(PG-I & II), Dharwar Supergroup in the form of Sandur Group of Archaean age, Closepet granite of Archaean to Paleoproterozoic age. This lithoassemblage is traversed by younger intrusives with lateritic capping.

PG-I of Peninsular Gneissic Complex consists of biotites gneiss (at places migmatitic) mostly occurs as enclaves within Granite gneisses. It is medium to coarse grained melanocratic rock comprising quartz, plagioclase, hornblende and biotite with migmatitic structures i.e. banding and scheleron.

Sandur Group consists of Yeshwantnagar, Deogiri, Donimalai and Nandihalli Formations.The Yeshwantnagar Formation is made up of metabasalt and metapyroxenite. Deogiri Formation comprises quartzite, metabasalt, greywacke/argillite with manganese ore, dolomitic limestone, metaultramafite and banded iron formation. The overlying Donimalai Formation is made up of metabasalt, rhyolite/quartz porphory, BIF, greywacke argillite, fuchsite quartzite, conglomerate, andalusite schist, metagabbro, banded iron formation / banded hematite quartzite and iron ore. Metabasalt, andesite, greywacke argillite (phyllitic) and metagabbro represent the Nandihalli Formation whereas the alternate layers of haematite/magnetite/jasper and chert/quartz constitute the Banded Ferruginous Chert.

PG-II represented by hornblende biotite gneiss occupying the eastern margin of Sandur schist belt and closepet granite is represented by grey granite, porphyritic grey granite and pink granite. Younger intrusives in this area are acidic veins and basic dykes. Basic intrusives comprise gabbro and dolerite dykes while acid intrusives are represented by quartz veins. Laterite occurs over manganiferrous argillite of Deogiri Formation.

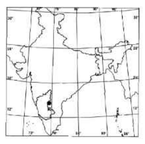
Bedding planes in shale, greywacke / argillite, manganophyllite and BFQ are discernible by variations in colour, composition and grain size. Bedding varies from NNW-SSE-SE with dips varying from 40^o to 90^o towards NE and SW. The bedding in southern segment of schist belt shows varying trends i.e. NW, E-W and NE directions. The major axial trace passes through Donimalai Formation and corresponding antiform in the eastern side of the synform. Major NE-SW trending faults have been observed NE and SW of Sandur town.

Sandur schist belt is well known for iron and manganese occurrences. The hill tops of Ramgad and Gunda Reserve Forest are occupied by ferruginous quartzite. The selective leaching of silica has formed workable iron ore deposits. The physical properties of the ore show wide variation ranging from hard and massive steel grey to soft unconsolidated blue dust as well as laminated and foliated types. Rich deposits are reported from Donimalai range, Kumaraswamy range, Ramandurg and NEB range.

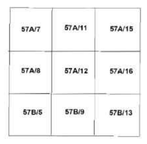
Minor occurrences of iron ore are also reported from 5Km and 1Km NW of Δ820 (15^o06'40" : $76^0$47'00") and Δ971 Timmappanagudda (15^o04'40" : 76^o46'30") and 2.5Km NW of Appayanahalli (14^o59'40" : 76^o39'50"). Numerous persistent iron bands throughout are indicative of iron ore occurrences.

Sl. No	Deposit / Occurrence	Location	Grade (%)
1	Kumaraswamy Range	15° 00' 23.2" ; 76° 35' 39.1"	57.8
2	2.5 miles SSW of Belagallu	15 ° 08' ; 76 ° 50'	67- 68
3	Ramanadurg Ore zone I	NW tip of Ramandug range	63.96
4	Ramandurg Ore zone II	15 ° 10'2.8"; 76 ° 21'1.7" NW of Ore Zone I. S of Madarahali village.	61.41
5	Ramandurg Ore zone III	300 m NW of Ore zone II	63.10
6	Ramandurg Ore zone IV	3.4 km NW of Ore zone III in between Kalahalli (east) & Vyasankare (west) villages	66.8
7	NEB Range Ore zone V Jambunathakonda hill	15°12'36.3" ; 76°25'46.4"	65.31
8	N.E.B Range Orez one VA	1 km SE of OZ V	67.51
9	Ramandurg SE Block	15°4'– 15°09' ; 76°27'-76°31'	60.7
10	Donimalai range	SSE of Sandur SB	65.2
11	Timmappanagudda	15° 04' 40" ; 76° 46'30"	-
12	2.5 km NW of Appayanahalli	14°59' 40" ; 76° 39'50"	-
13	Mallammakonda	15°04' 20" ; 76° 47'20"	-
14	W of Vibhuthigudda	15° 05'35" ; 76°49'00"	-
15	East of Sugulammadevi Konda	15° 04' 55" ; 76° 50'00"	-
16	Rajpura and Taranagar blocks	15°05'00" - 15°13'30" 76°22'00" - 76°35'00"	+60
17	Jibilammagudda	15°07'00" - 15°13'30" 76°41'00" - 76°47'00"	+60
18	West of Donimalai	15°01'40" - 15°03'45" 76°34'00" - 76°36'30"	61.4

LOCATION MAP



INDEX MAP



STATUS OF MAPPING

SOURCE OF COMPILATION

	Author	Scale	F S
1	M Krishnamurthy	1:63360	1951-52
2	SK Hans	1:63360	1976-77
3	Abhinabha Roy & SK Hans	1:63360	1976-77
4	SK Biswas & Abhinabha Roy	1:63360	1975-77
5	PH Babu	1:63360	1976-77
6	SK Biswas, Abhinabha Roy & SK Hans	1:63360	1976-77
7	SK Hans & A Roy	1:63360	1976-77
8	HSM Prakash	1:50000	1999-2000

Compiled by : MCPI Division,SU: K&G, Bangalore
Digitised by : Geodata Division,SU: K&G, Bangalore
Scrutinised & Finalized by : M & C Division,SR, Hyderabad

MAP SHOWING THE PROPOSED BLOCK FOR G3 LEVEL EXPLORATION SUPER IMPOSED ON MINERAL BELT MAP OF GSI

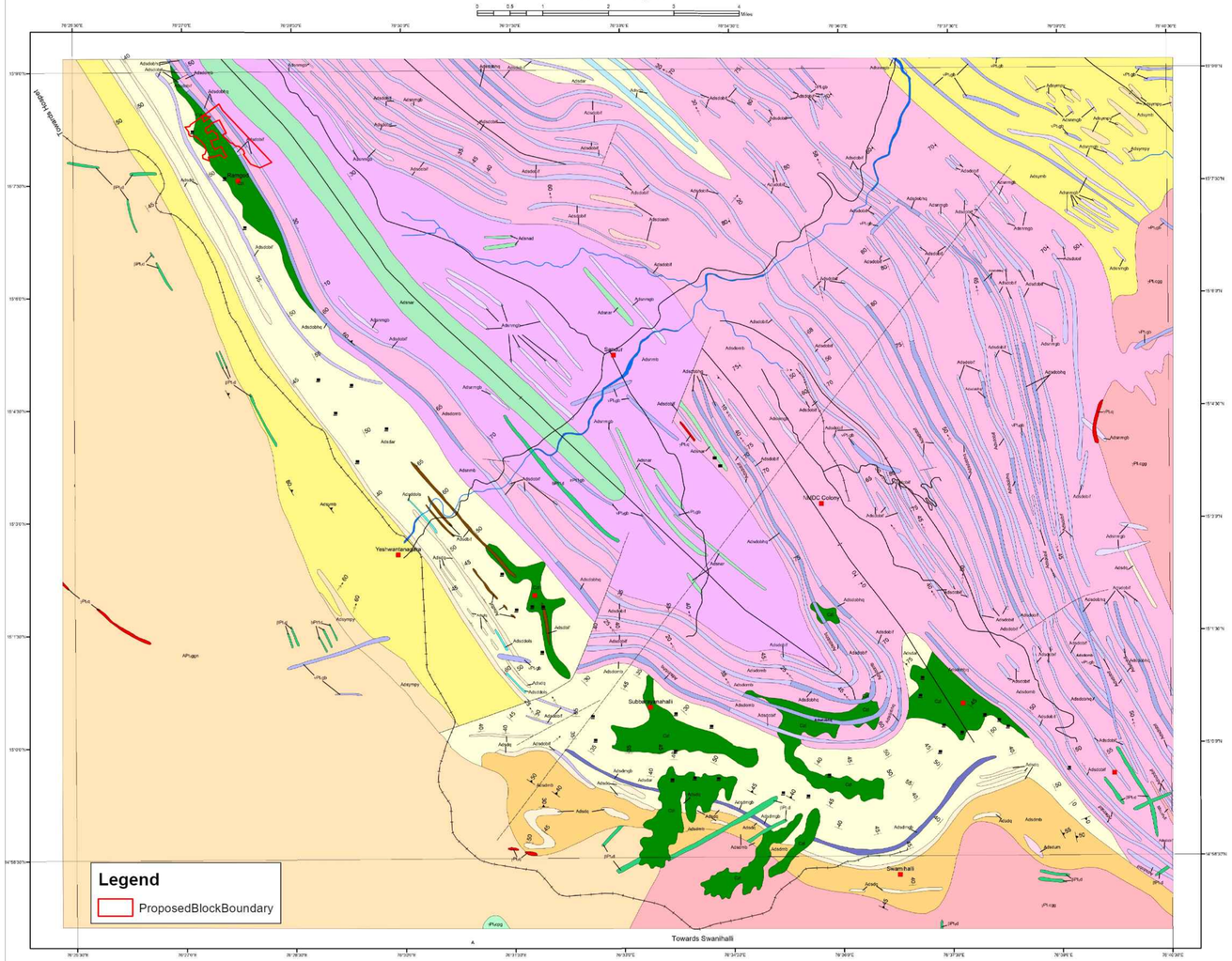
AGENCY: M/s ECOMEN LABORATORIES PVT. LTD.

GEOLOGICAL SURVEY OF INDIA

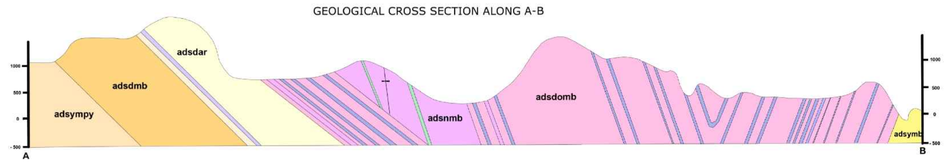
MINERAL BELT MAP OF MANGANESE DEPOSITS IN DEVAGIRI, SUBRAYANHALLI AND RAMGAD AREAS OF BELLARY DISTRICT, KARNATAKA

(Parts of toposheet No. 57A\08, 12 & 57B/05, 09)

SCALE 1: 50,000



GEOLOGICAL CROSS SECTION ALONG A-B



LOCATION MAP

INDEX TO SHEETS

57A/7	57A/11	57A/15
57A/8	57A/12	57A/16
57B/5	57B/9	57B/13

STATUS OF MAPPING

57A/7	57A/11	57A/15
57A/8	57A/12	57A/16
	1 2,3 1	
57B/5	57B/9	57B/13

Source of Compilation			
S. No.	Author	Scale	F.S.
1.	Abhinab Roy, S.K. Hans	1:63360	1976-77
2.	S.K. Biswas, Abhinab Roy	1:63360	1975-76
3.	P.H. Babu	1:63360	1976-77

MAP SHOWING THE PROPOSED BLOCK FOR G3 LEVEL EXPLORATION SUPER IMPOSED ON MINERAL BELT MAP OF GSI

AGENCY: M/s ECOMEN LABORATORIES PVT. LTD.

LEGEND

Lithology		Formation	Group	Supergroup	Age
Czl	Laterite				Cainozoic
qPt-qz	Quartz vein	Intrusives			Paleoproterozoic
bPt-d	Dolerite				
nPt-gb	Gabbro				
gPt-cpg	Pink granite		Closepet Granite		
gPt-cgg	Grey granite				
Adsnmgb	Metagabbro	Nandihalli	Sandur	Dharwar	Archaean
Adsnar	Greywacke / Argillite				
Adsnad	Andesite				
Adsnmb	Metabasalt				
Adsdbif	Banded iron formation / Banded hematite quartzite	Donimalai			
Adsdoash	Andalusite schist				
Adsdomb	Metabasalt				
Adsdum	Ultramafic	Devagiri			
Adsdmgb	Metagabbro				
Adsdbif	Banded iron formation				
Adsddols	Dolomitic limestone				
Adsdar	Greywacke /Argillite Mangano Phyllite				
Adsdqtc	Quartzite / Conglomerate				
Adsdmb	Metabasalt				
Adsymb	Metabasalt	Yeshwanthnagar			
Adsympy	Metapyroxenite				
AP-ggn	Granite gneiss		PGC - I	Peninsular gneisses complex	

MINERAL SYMBOLS

- Manganese deposit
- Manganese occurence

STRUCTURAL SYMBOLS

- Bedding
- Foliation
- Antiform
- Fault
- Antiformal axis
- Synformal axis

OTHER SYMBOLS

- Railway
- Road
- River
- Water bodies
- Settlement
- Cross section (A–B)

GEOLOGY AND MINERALIZATION

The area forms a part of Sandur Schist belt and covers parts of Yeshwantnagar, Ramgod, Subbrayanahalli and Swaminahalli, Bellary district bounded by north Latitude $14^0 57' : 15^0 10'$ and east Longitudes $76^0 25' : 76^0 40'$. The area is well connected by metalled and weathered roads. The southern Central Railway (Hosepet Kotturu branch) passes through the western part of the area. The area exhibits rugged terrain with moderate to high hills. The maximum elevation is 1029m and the minimum being 553m. The drainage forms a part of Tungabhadra basin displaying radial to subdendritic pattern.

The area exposes rocks belonging to Peninsular Gneissic Complex, Sandur Group equivalent to Dharwar Supergroup of Archean age, Closepet granite of Archean to Paleoproterozoic age and Laterites of Cainozoic age.

Peninsular Gneissic Complex is represented by granite gneisses. It is medium to coarse grained melanocratic, comprising quartz, plagioclase hornblende and biotite with migmatitic features like banding, schelleron. Grey granite, gneisses bordering the schist belt on either side with younger intrusive granite equivalent to Closepet event.

Sandur Group comprises of Yeshwantnagar, Devagiri, Donimalai and Nandihalli Formations. Yeshwantnagar Formation comprises meta-pyroxenites and metabasalts, exposed in the western margin of the schist belt. Devagiri Formation which is also called Manganese Ore Formation is exposed in the southern part of the area. This formation consists of metabasalt, quartzite, greywacke /argillite (mangano phyllite) with thin bands of dolomitic limestone, BIF, metagabbro and thin lensoid bodies of ultramafics. Donimalli Formation is represented by Metabasalt, followed by andulusite schist, BIF and BHQ occupying the major portions in the central part. Nandinahalli Formation is composed of metabasalt, greywacke / Argillite and occupies the core of the major F_2 synform.

Closepet Granite is represented by Grey and Pink granites. Younger Intrusive are represented by both Acid and Basic varieties. Basic intrusives comprise gabbro, and dolerite sills. Acid intrusives are mostly by quartz vein. Laterite occurs over Manganese deposits of Devagiri Formation.

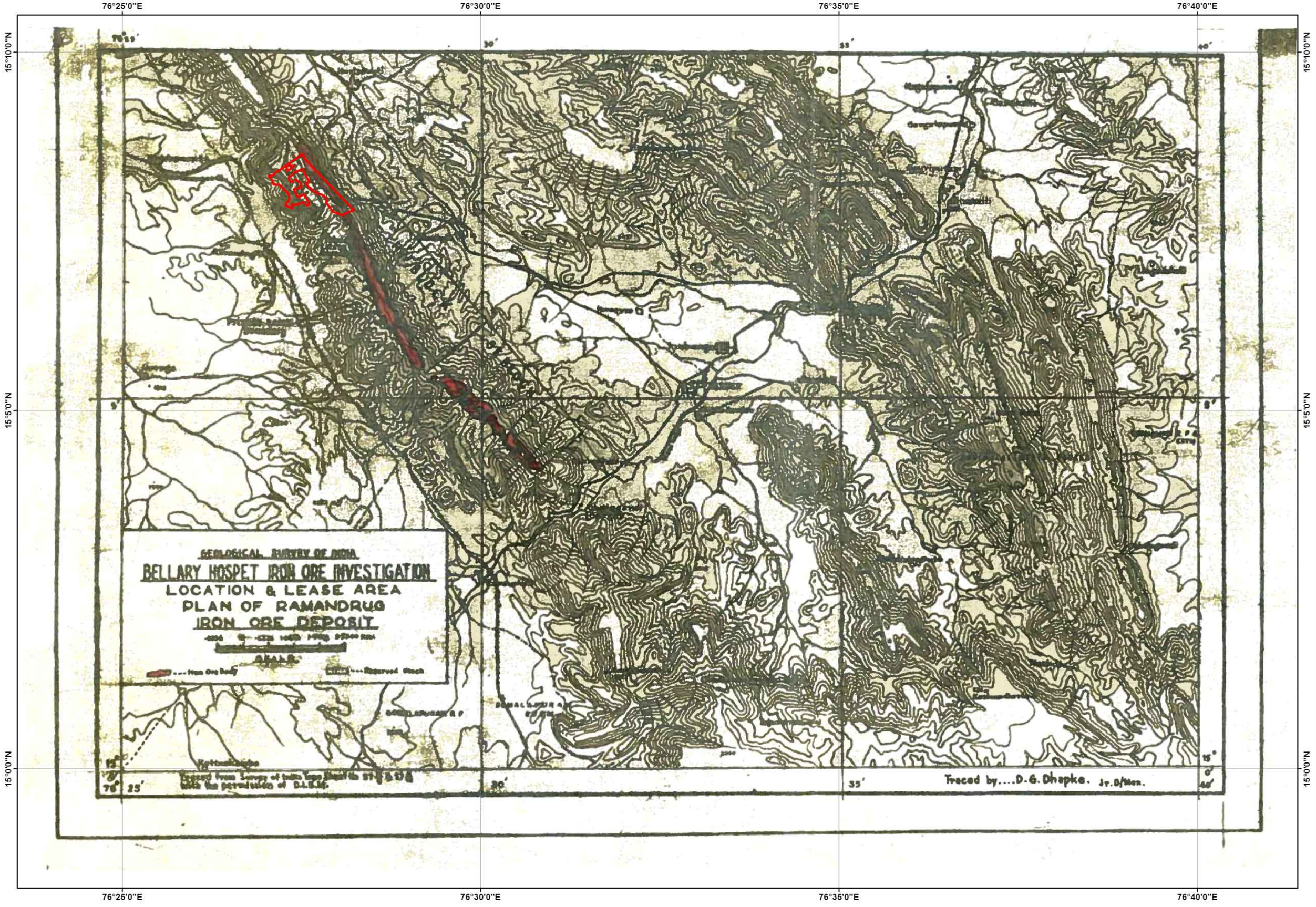
Bedding in shale, greywacke/argillite, manganophyllite and BFQ is marked by variations in colour, composition and grain size. Bedding trends varies from NNW-SSE to NW—SE with 40^0 to 90^0 dips towards NE and SW. The litho units in southern segment display varying trend from NW, E-W and NE directions. The major axial trace of regional F_2 passes through Nandihalli Formation and corresponding antiform in the eastern side of the synform i.e. in Donomalai Formation. Major NE-SW trending faults have been identified NE and SW of Sandur.

The Major Manganese deposits of the area have been tabulated as given below:

Sl No.	Location	Co-ordinates		Occurrence/ Deposit	Grade (%)	Remarks
		Latitude	Longitude			
1	1.2km south, 500m NE, 1.5km west and SW, 2.0km south, SE and 2.3km SE of Subbarayanahalli Block	15° 00' 00?	76 ° 34' 00?	Lateritised	23	Include Chennangi , SK mines, KMK, Kapat swamy-Navalswamy sectors
				Reef type	23	
				Clay mixed	19.75	
2	3.0km NW of Swamihalli Block	14° 58' 00?	76° 37' 00?	Lateritised	24.25	Includes GT mines and CBG mines
				Reef type	22.33	
				Clay mixed	19.75	
3	1.0km west, NW, 500m and 1.0km SE,1.0km south and 1.5km SW of Deogiri Block	15° 01' 00?	76° 37' 30?	Lateritised	23.74	Include CMB ND Sonibanda mines
				Reef type	23.54	
				Clay mixed	28.66	
4	K.V.H Block	NW of Subbarayanahalli and SE of Sheshagiri block		Lateritised	22.25	Includes Sunderbencha, Boothanagunda, Manikymo Mines, Konadahejje mines.
				Reef type	17.50	
				Clay mixed	33.33	
5	Ramgad Block	15° 07 '30?	76° 29' 00?	Lateritised	22.25	Includes Governor's point,Barracks and Masjid Sector
				Reef type	29.25	
				Clay mixed	30	
6	Sheshagiri block	Toposheet no. 57 A/12 and B/9		Deposit	Not available	Includes Sink a Shaft deposit,Central deposit, A4 deposit, K.K deposit
7	3.0km SW of Sandur	15° 05' 00?	76° 33' 00?	Occurrence	27.5	

Compiled by: MCPI Division,SU: K&G, Bangalore
Digitised by: Geodata Division,SU: K&G, Bangalore
Scrutiny & Finalisation by : Map & Cartography Division,SR, Hyderabad

Proposed Iron and Manganese block superimposed on Bellary, Hospet iron ore investigation map compiled by GSI (FS:1964-66)
Location: Ramandurg Iron Ore Deposit



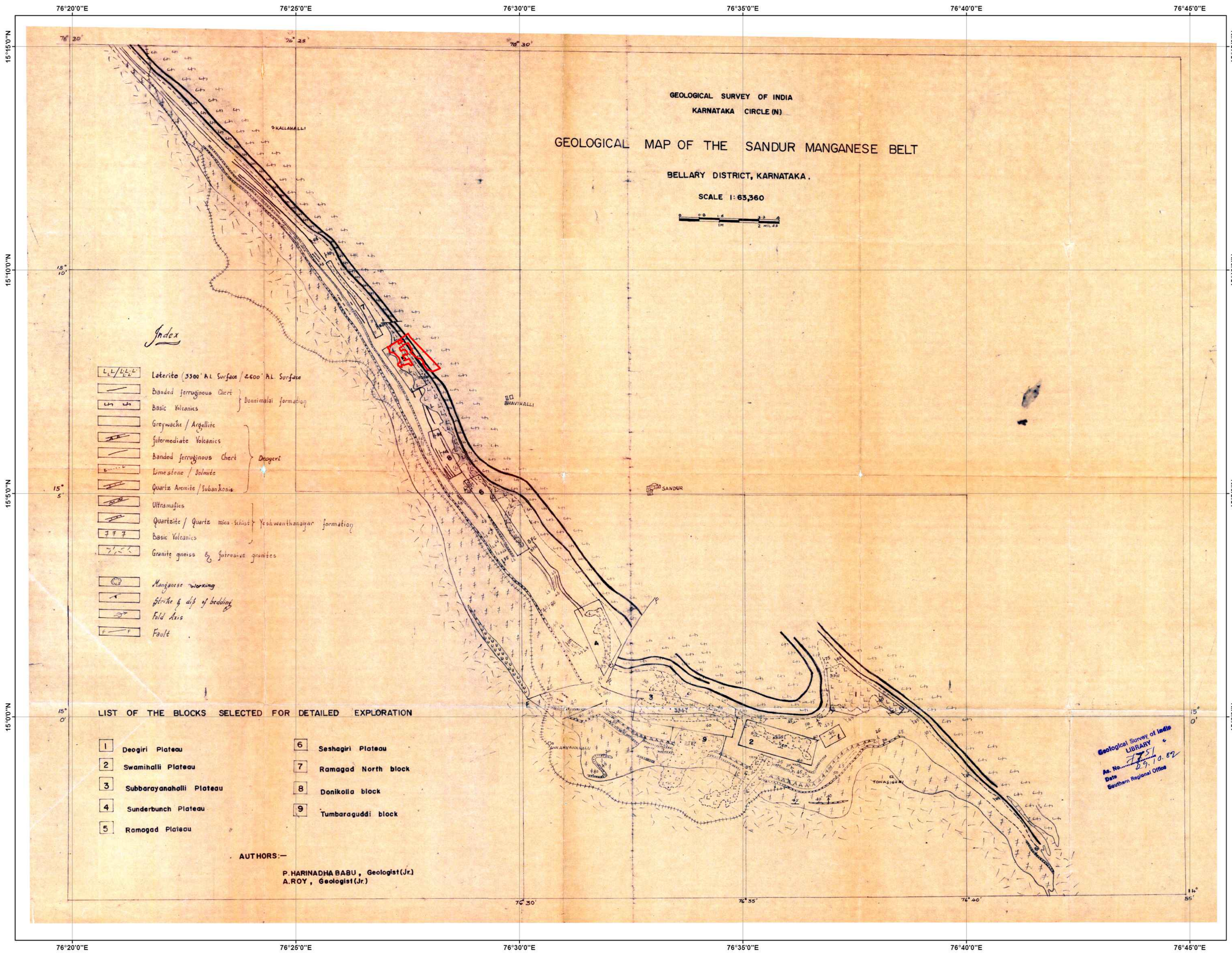
Legend

PROPOSED BLOCK BOUNDARY

0 0.5 1 2 3 4 5
Miles

Submitted by:
NPEA: Ecomen Laboratories Pvt. Ltd.

Proposed Block superimposed on Geological map of the Sandur Manganese belt compiled by GSI



Legend

PROPOSED EXPLORATION BLOCK BOUNDARY

Submitted by:
NPEA: Ecomen Laboratories Pvt. Ltd.

N

W E

S

Mining Area of ZTC ML No. 2309

Mining Area of ZTC ML No. 2309

Mining Area of ZTC ML No. 2309

Mining Area of M/s. S.A Tawab and Co. (ML No. 2488)

ML Area of M. Vrushabendraiyya

TO HOSPET

TO SUSHILA NAGAR

TO RAMGD VILLAGE

AD-1 AD-2 ID-1 ID-2 ID-3 ID-4 ID-5

TW-1 TW-5 TW-6

GD-1 GD-2 GD-5 GD-6

G1 G2 G3

G1 Level of Exploration (Area - 11.29 Ha)

G2 Level of Exploration (Area - 0.23 Ha)

G3 Level of Exploration (Area - 3.86 Ha)

UNEXPLORED NON MINERALISED AREA (Area - 28.21 Ha)

GENERAL INDEX

MINE LEASE BOUNDARY	TOE WALL (TW-1)
SAFETY ZONE	GARLAND DRAIN (GD-1)
BOUNDARY PILLAR	MINE ROAD
MINE WORKINGS	PUBLIC ROAD
ACTIVE DUMP (AD-1)	PUBLIC ROAD BUFFER ZONE (50 M ON EITHER SIDE)
INACTIVE DUMPS (ID-1)	CONTOURS
SUB- GRADE STACK	SPOT R.L
TEMPORARY SHEDS / STATUTORY BUILDINGS	DRILLED CORE BORE HOLE
CHECK DAM (CD-1)	DRILLED DTH BORE HOLE
GULLY PLUG (GP-1)	UTM GRID
RETAINING WALL (RW-1)	

GEOLOGICAL INDEX

IRON ORE ZONE
B H Q.
SHALE/PHYLLITE
DIP & STRIKE
ULTIMATE PIT LIMIT
SECTION LINE
PROPOSED BOREHOLES

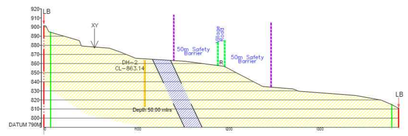
0 20 40 60 80 100 M 200 M 300 M 400 M 500 M

SCALE : 1 CM = 20 M

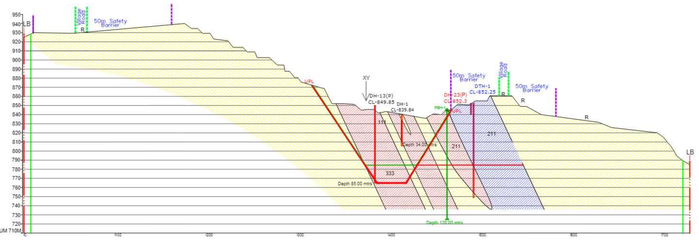
Plate No:-5A

TITLE	GEOLOGICAL PLAN	
MINE NAME :	DHARMAPUR IRON ORE MINE	
ML No : 2239	Area as per CEC sketch : 43.58 Ha.	SCALE :- 1 : 2000
VILLAGE :- RAMGAD		TALUK :- SANDUR
DISTRICT :- BELLARY		STATE :- KARNATAKA

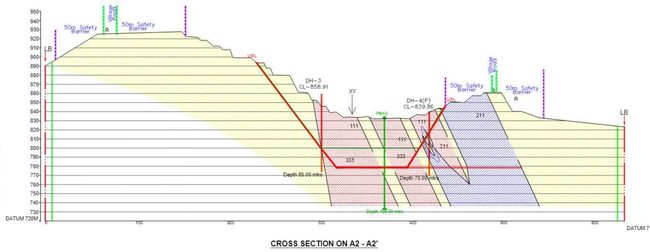
EXPLORATION AGENCY: ECOMEN LABORATORIES PVT. LTD.



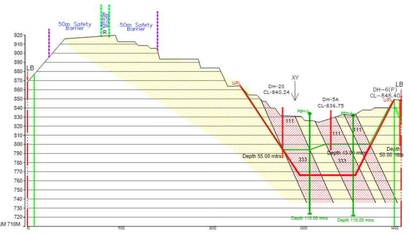
CROSS SECTION ON A - A'



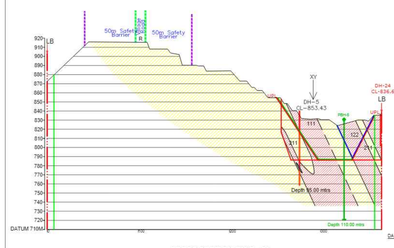
CROSS SECTION ON A1 - A1'



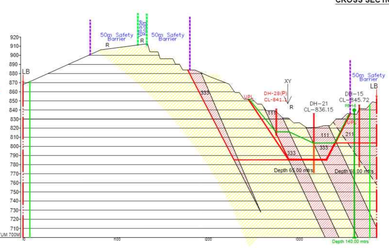
CROSS SECTION ON A2 - A2'



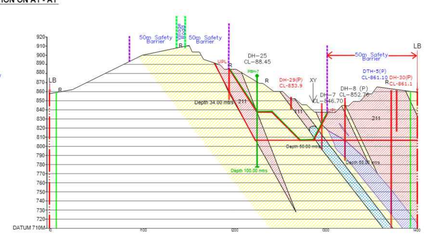
CROSS SECTION ON B - B'



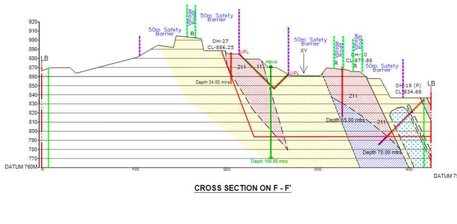
CROSS SECTION ON C - C'



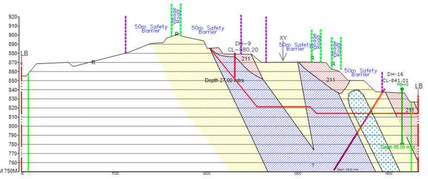
CROSS SECTION ON D - D'



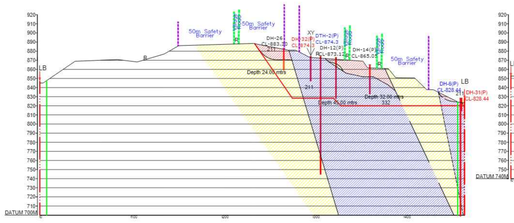
CROSS SECTION ON E - E'



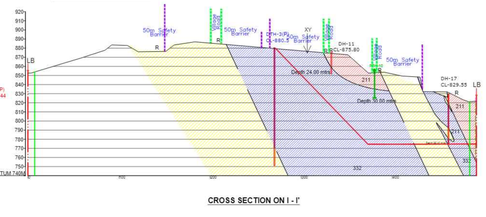
CROSS SECTION ON F - F'



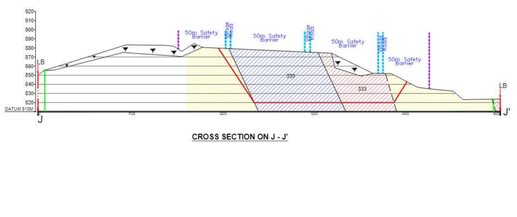
CROSS SECTION ON G - G'



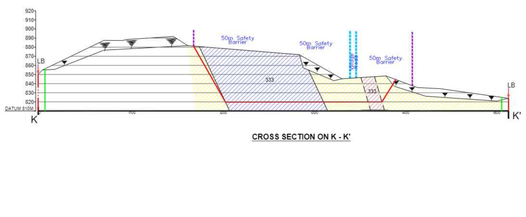
CROSS SECTION ON H - H'



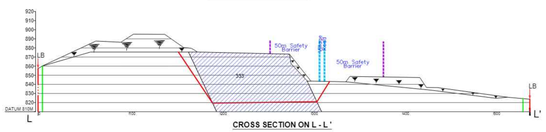
CROSS SECTION ON I - I'



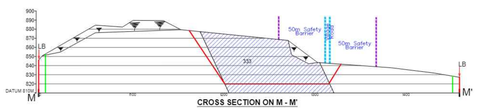
CROSS SECTION ON J - J'



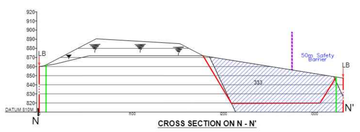
CROSS SECTION ON K - K'



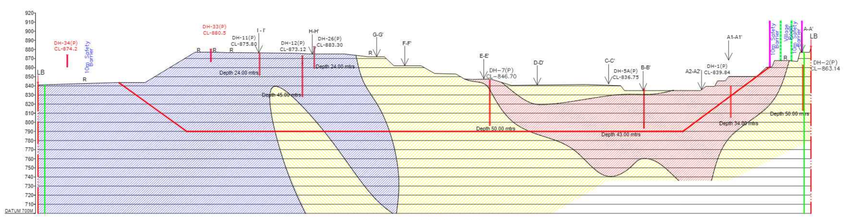
CROSS SECTION ON L - L'



CROSS SECTION ON M - M'



CROSS SECTION ON N - N'



LONGITUDINAL SECTION ALONG X - Y

INDEX FOR CATEGORY OF IRON ORE RESERVE/RESOURCE

- 111 - PROVED MINERAL RESERVE
- 122 - PROBABLE MINERAL RESERVE
- 211 - FEASIBILITY MINERAL RESOURCE
- 333 - INDICATED MINERAL RESOURCE

GENERAL INDEX

- LEASE BOUNDARY
- IRON ORE ZONE
- SHALE / PHYLLITE
- BANDED HEMATITE QUARTZITE (BHQ)
- METABASIC ROCK (SCHISTOSE)
- ULTIMATE PIT SLOPES
- 7.5M SAFETY ZONE
- PROPOSED BORE HOLES
- PUBLIC ROAD
- PUBLIC ROAD BUFFER ZONE (50m SAFETY ZONE)

Plate No:-3B

TITLE	GEOLOGICAL CROSS SECTION & LONGITUDINAL SECTION
MINE NAME :	DHARMAPUR IRON ORE MINE (Adjacent Mine)
ML No : 2239	Area as per CEC sketch : 43.58 Ha. SCALE :- 1 : 2000
VILLAGE :- RAMGAD	TALUK :- SANDUR
DISTRICT :- BELLARY	STATE :- KARNATAKA

EXPLORATION AGENCY: ECOMEN LABORATORIES PVT. LTD.

Map Showing the Proposed Block for G3 Level exploration Marked on Survey of India toposheet

MAP

No. D43E8

Scale 1:50,000

D43E3 (57A/3) Koppal KARNĀTAKA	D43E7 (57A/7)	D43E11 (57A/11)
D43E4 (57A/4)	D43E8 (57A/8) Bellary KARNĀTAKA	D43E12 (57A/12)
D43K1 (57B/1)	D43K5 (57B/5)	D43K9 (57B/9)

1 Chitradurga, KARNĀTAKA. 2 Dāveangere, KARNĀTAKA.

भारतीय सर्वेक्षण विभाग SURVEY OF INDIA

1st Edition 2009. Price : Rs. 50/-

CONVENTIONAL SYMBOLS

Express highway: with toll; with bridge; with distance stone
Roads, metalled: according to importance
Roads, double carriageway: according to importance
Unmetalled road. Cart-track. Pack-track with pass. Foot-path
Streams: with track in bed: undefined. Canal
Dams: masonry or rock-filled; earthwork. Weir
River: dry with water channel; with island & rocks. Tidal river
Submerged rocks. Shoal. Swamp. Reeds
Wells: lined; unlined. Tube-well. Spring. Tanks: perennial; dry
Embankments: road or rail. tank. Broken ground
Railways, broad gauge: double; single with station; under construction
Railways, other gauges: double; single with distance stone; dc
Mineral line or tramway. Kiln. Cutting with tunnel
Contours with sub-features. Rocky slopes. Cliffs
Sand features (1)flat. (2)sand-hills(permanent). (3)dunes(shifting)
Towns or Villages: inhabited: deserted. Fort
Huts: permanent; temporary. Tower. Antiquities
Temple: Dhōshti. Church. Mosque. Idgāh. Tomb. Graves
Lighthouse. Lightship. Buoys: lighted; unlighted. Anchorage
Mine. Vine on trellis. Grass. Scrub
Palms; palmyra; other. Plantain. Conifer. Bamboo. Other trees
Areas: cultivated; wooded. Surveyed tree
Boundary, international
" state: demarcated; undemarcated
" district; subdivision: tahsil or taluk; forest
Boundary pillars: surveyed; unlocated
Heights, triangulated: station; point; approximate
Bench-mark: geodetic; tertiary; canal
Post office. Telegraph office. Overhead tank
Rest house or Inspection bungalow. Circuit house. Police station
Camping ground. Forest: reserved; protected
Spaced names: administrative; locality or tribal
Hospital. Dispensary. Veterinary: Hospital / Dispensary
Aerodrome. Helipad. Tourist site
Power line: with pylons surveyed; with poles unsurveyed

REFERENCES

NH 13 National Highway No. 13. Chy Chymney.

NOTES :-

Heights are in metres and above Indian mean sea level.
Contours are approximate.
A relative height, e.g. ...ge, represents the approximate height, in metres, between the top and bottom of a steep slope.
Unmetalled roads are motorable and most of the cart-tracks are passable in dry season.
The kilometre stone numbers along roads, railways and canals are shown in stunt type, e.g., '5', whereas milestone numbers are shown in upright type, e.g., '5'.
Tanks shown dry, in this area usually contain water from October to March.
Wells and tube-wells are numerous in the cultivated portion of this sheet; some have been omitted.
Power lines are numerous some of them connecting tube-wells have been omitted.
Temples with gopurams are shown thus:

COMPILATION INDEX

A. Surveyed during 1974-75. Updated for major details during 2005-06.

Projection - UTM Datum - WGS 84

Magnetic Variation from True North about 1¾ West in 2005.
(Decreasing by about 1' annually)

1:50,000

500 m to 1 cm 2 cm to 1 km

Metres 1000 500 0 1 2 3 Kilometres

CONTOUR INTERVAL 20 METRES

For further details about this map, please contact

Director
Karnātaka Geo-Spatial Data Centre
Survey of India, Koramangala II Block
Bangalore.

PROPOSED BLOCK CORNER POINT COORDINATES

PID	EASTING	NORTHING	LONGITUDE	LATITUDE	PID	EASTING	NORTHING	LONGITUDE	LATITUDE
1	657485.352	1673185.139	76° 27' 56.2526" E	15° 07' 46.5249" N	35	656732.593	1673419.129	76° 27' 31.0908" E	15° 07' 54.3016" N
2	657308.977	1673425.555	76° 27' 50.3986" E	15° 07' 54.3858" N	36	656547.717	1673351.659	76° 27' 24.8832" E	15° 07' 52.1462" N
3	657338.019	1673445.887	76° 27' 51.3759" E	15° 07' 55.0410" N	37	656546.730	1673359.934	76° 27' 24.8520" E	15° 07' 52.4157" N
4	657313.713	1673514.432	76° 27' 50.5771" E	15° 07' 57.2765" N	38	656450.136	1673365.609	76° 27' 21.6178" E	15° 07' 52.6212" N
5	657293.898	1673547.098	76° 27' 49.9207" E	15° 07' 58.3437" N	39	656466.043	1673265.351	76° 27' 22.1283" E	15° 07' 49.3556" N
6	657197.023	1673626.988	76° 27' 46.6936" E	15° 08' 00.9641" N	40	656457.450	1673273.613	76° 27' 21.8424" E	15° 07' 49.6263" N
7	657129.883	1673634.270	76° 27' 44.4463" E	15° 08' 01.2156" N	41	656315.217	1673327.945	76° 27' 17.0902" E	15° 07' 51.4248" N
8	657096.661	1673648.035	76° 27' 43.3366" E	15° 08' 01.6707" N	42	656306.666	1673406.781	76° 27' 16.8213" E	15° 07' 53.9918" N
9	657040.759	1673700.931	76° 27' 41.4759" E	15° 08' 03.4040" N	43	656365.559	1673434.520	76° 27' 18.8001" E	15° 07' 54.8817" N
10	656986.528	1673712.266	76° 27' 39.6619" E	15° 08' 03.7845" N	44	656395.923	1673538.441	76° 27' 19.8403" E	15° 07' 58.2564" N
11	656918.891	1673789.001	76° 27' 37.4154" E	15° 08' 06.2959" N	45	656346.676	1673662.068	76° 27' 18.2182" E	15° 08' 02.2895" N
12	656876.878	1673819.969	76° 27' 36.0131" E	15° 08' 07.3126" N	46	656143.352	1673866.681	76° 27' 11.4530" E	15° 08' 08.9910" N
13	656841.103	1673842.068	76° 27' 34.8197" E	15° 08' 08.0394" N	47	656009.571	1673871.353	76° 27' 06.9729" E	15° 08' 09.1718" N
14	656802.940	1673910.913	76° 27' 33.5567" E	15° 08' 10.2877" N	48	655965.947	1673916.178	76° 27' 05.5215" E	15° 08' 10.6397" N
15	656884.243	1673949.328	76° 27' 36.2886" E	15° 08' 11.5200" N	49	655965.382	1673976.995	76° 27' 05.5161" E	15° 08' 12.6187" N
16	656715.487	1674271.602	76° 27' 30.7076" E	15° 08' 22.0426" N	50	655875.195	1674100.198	76° 27' 02.5224" E	15° 08' 16.6468" N
17	656674.189	1674254.561	76° 27' 29.3205" E	15° 08' 21.4970" N	51	655987.108	1674111.417	76° 27' 06.2736" E	15° 08' 16.9877" N
18	656520.022	1674191.139	76° 27' 24.1423" E	15° 08' 19.4668" N	52	656010.531	1674160.986	76° 27' 07.0692" E	15° 08' 18.5956" N
19	656463.973	1674114.650	76° 27' 22.2478" E	15° 08' 16.9901" N	53	656171.238	1674265.399	76° 27' 12.4756" E	15° 08' 21.9583" N
20	656377.073	1674071.956	76° 27' 19.3274" E	15° 08' 15.6197" N	54	656319.865	1674374.413	76° 27' 17.4783" E	15° 08' 25.4732" N
21	656378.276	1674033.998	76° 27' 19.3593" E	15° 08' 14.3844" N	55	656309.773	1674363.031	76° 27' 17.1378" E	15° 08' 25.1051" N
22	656391.242	1673995.897	76° 27' 19.7851" E	15° 08' 13.1419" N	56	656331.109	1674230.767	76° 27' 17.8231" E	15° 08' 20.7969" N
23	656424.058	1673937.681	76° 27' 20.8714" E	15° 08' 11.2406" N	57	656398.917	1674260.189	76° 27' 20.1010" E	15° 08' 21.7396" N
24	656547.869	1674006.357	76° 27' 25.0339" E	15° 08' 13.4484" N	58	656506.403	1674352.818	76° 27' 23.7220" E	15° 08' 24.7938" N
25	656667.152	1673914.779	76° 27' 29.0091" E	15° 08' 10.4429" N	59	656319.865	1674374.413	76° 27' 17.4783" E	15° 08' 25.4732" N
26	656693.016	1673808.789	76° 27' 29.8519" E	15° 08' 06.9886" N	60	656707.543	1674663.034	76° 27' 30.5288" E	15° 08' 34.7804" N
27	656499.437	1673735.461	76° 27' 23.3559" E	15° 08' 05.2953" N	61	656792.386	1674515.960	76° 27' 33.3380" E	15° 08' 29.9767" N
28	656531.846	1673701.929	76° 27' 24.4295" E	15° 08' 05.5465" N	62	656996.764	1674298.197	76° 27' 40.1355" E	15° 08' 22.8469" N
29	656561.853	1673628.184	76° 27' 25.4182" E	15° 08' 01.1406" N	63	657502.715	1673763.360	76° 27' 56.9636" E	15° 08' 05.3350" N
30	656606.253	1673555.396	76° 27' 26.8893" E	15° 07' 58.7627" N	64	657700.674	1673553.248	76° 28' 03.5473" E	15° 07' 58.4554" N
31	656765.671	1673622.533	76° 27' 32.2441" E	15° 08' 00.9126" N	65	657879.536	1673362.759	76° 28' 09.4957" E	15° 07' 52.2185" N
32	656820.252	1673515.697	76° 27' 34.0485" E	15° 07' 57.4247" N	66	658002.847	1673231.000	76° 28' 13.5965" E	15° 07' 47.9045" N
33	656897.868	1673572.217	76° 27' 36.6164" E	15° 07' 52.7394" N	67	657715.531	1673098.224	76° 28' 03.9431" E	15° 07' 43.6469" N
34	656840.406	1673541.199	76° 27' 34.6847" E	15° 07' 51.7426" N					

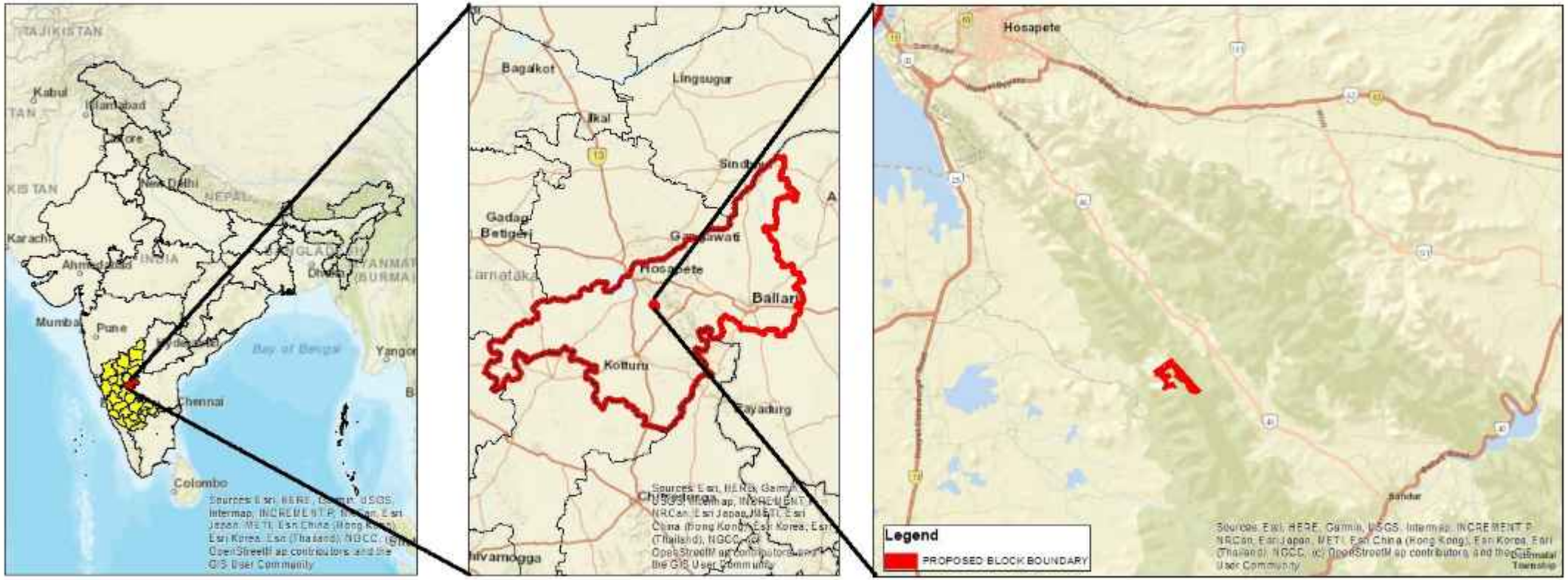
Legend

- CORNER POINTS OF PROPOSED BLOCK
- PROPOSED BLOCK BOUNDARY

76°15'0"E 76°20'0"E 76°25'0"E 76°30'0"E

15°10'0"N 15°5'0"N

Location Map of the Proposed Block area



GEOLOGICAL MAP (Bhukosh data) OF THE EXPLORATION BLOCK AREA SHOWING THE PROPOSED BOREHOLES

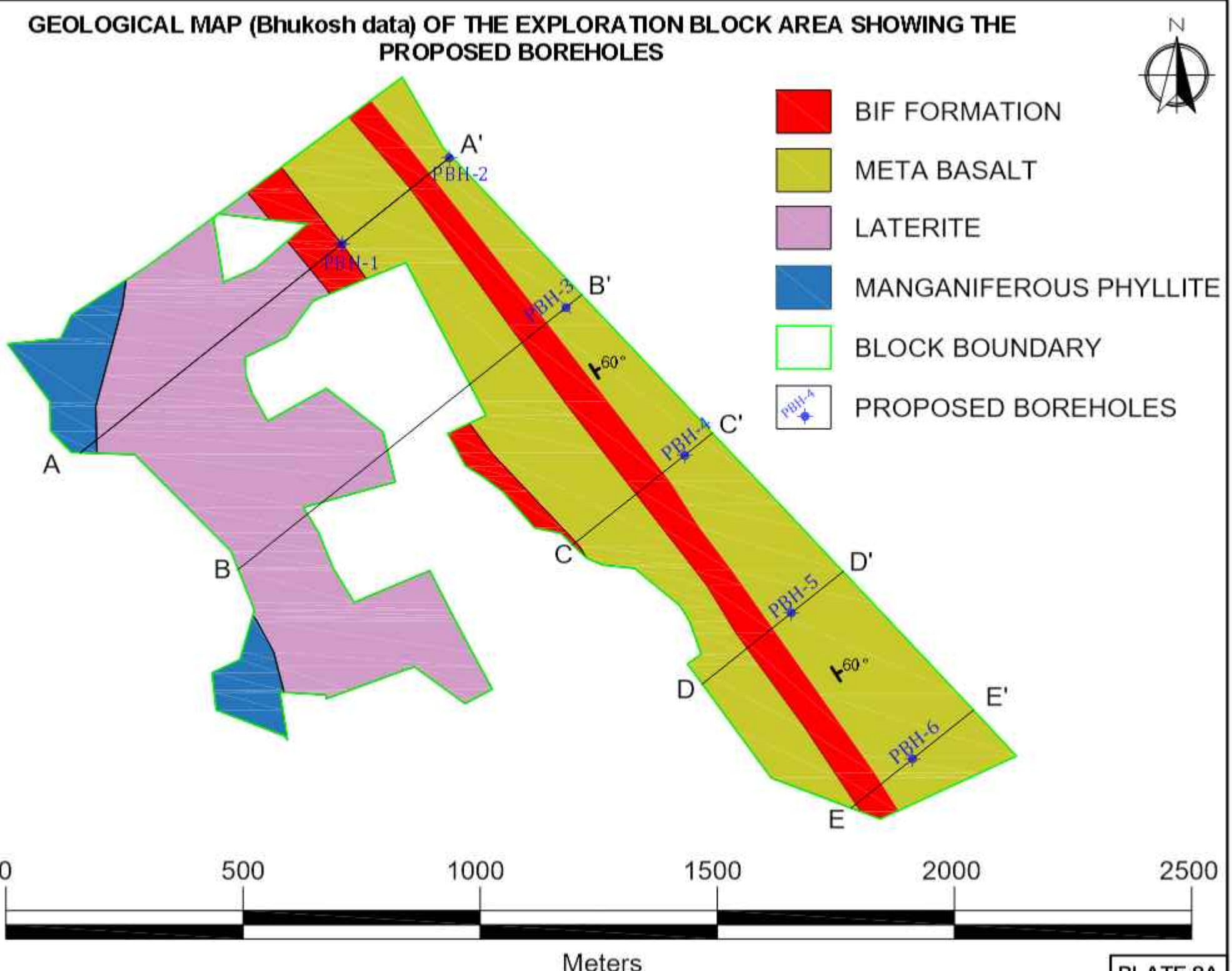
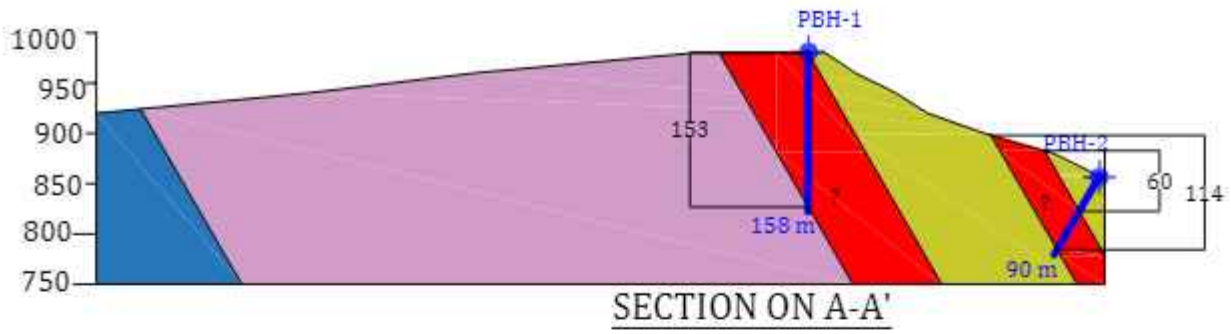
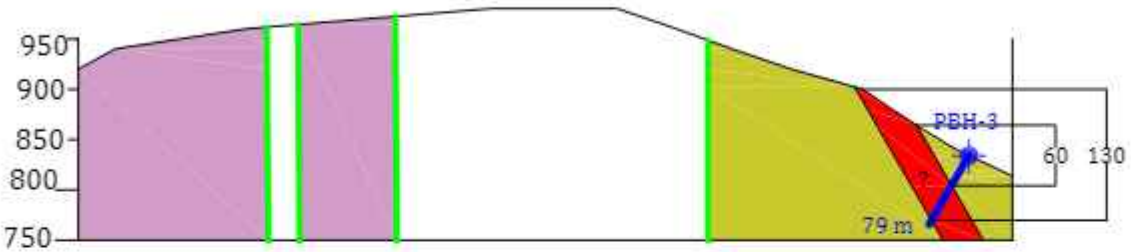


PLATE-8A

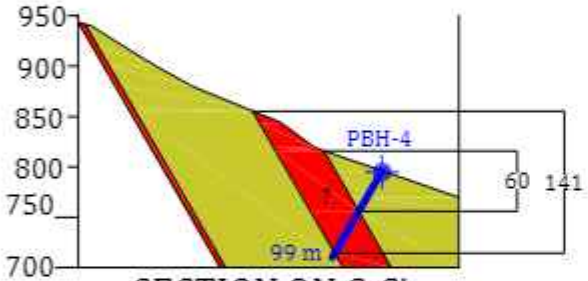
GEOLOGICAL CROSSSECTIONS SHOWING THE PROPOSED BOREHOLES



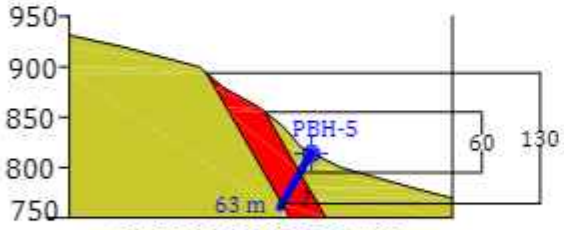
SECTION ON A-A'



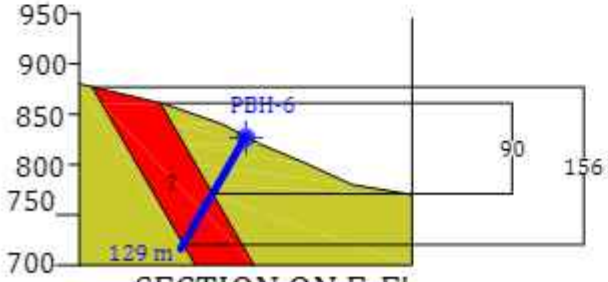
SECTION ON B-B'



SECTION ON C-C'



SECTION ON D-D'



SECTION ON E-E'

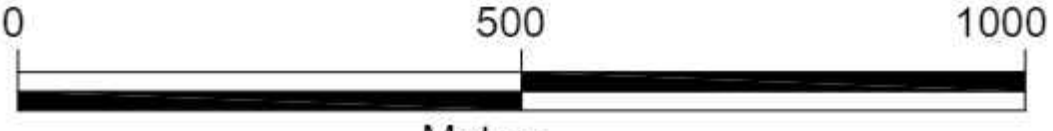
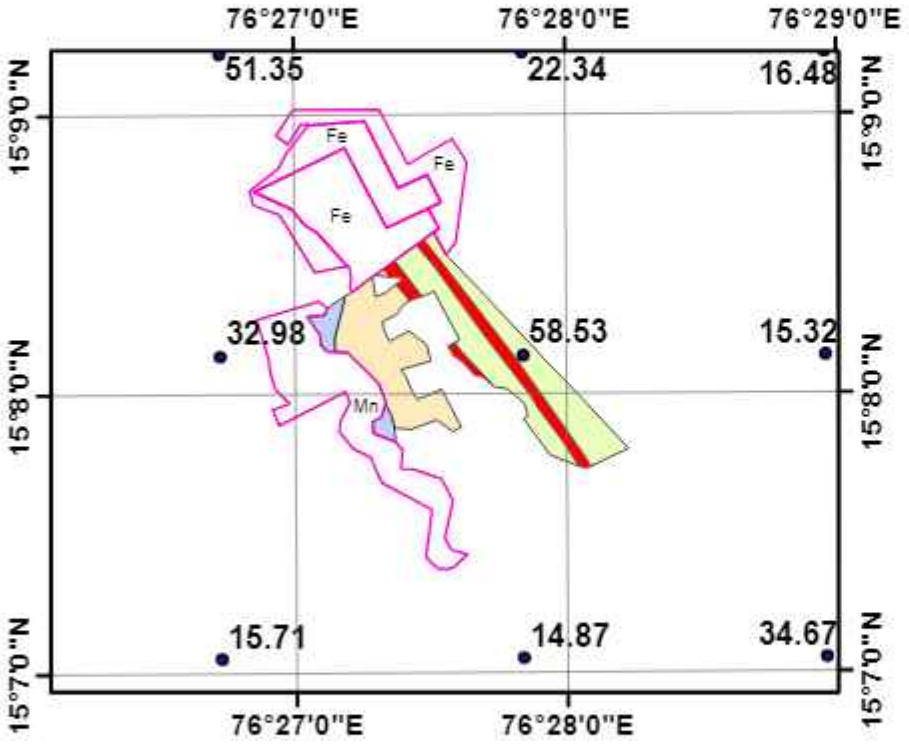


PLATE-8B

Annexure-1A

Stream sediment sample data obtained from Bhukosh portal showing anomalies of Fe_2O_3 superimposed on proposed block



N

Scale- 1:50,000

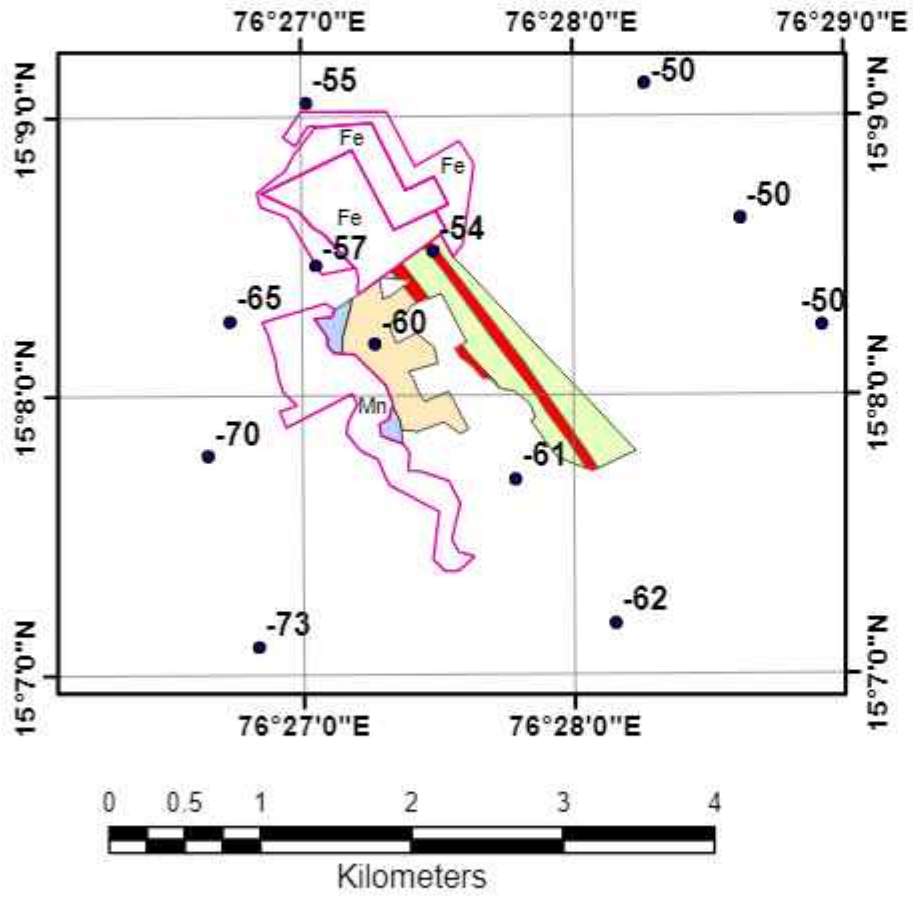
Legend

- STREAM SEDIMENT SAMPLE
- PROPOSED BLOCK BOUNDARY
- ADJACENT LEASES
- BANDED IRON FORMATION
- LATERITE
- MANGANIFEROUS PHYLLITE
- META-BASALT

NPEA:
ECOMEN LABORATORIES PVT. LTD.

Annexure-1B

Geophysical Gravity anomaly data obtained from Bhukosh portal superimposed on proposed block



N

Scale- 1:50,000

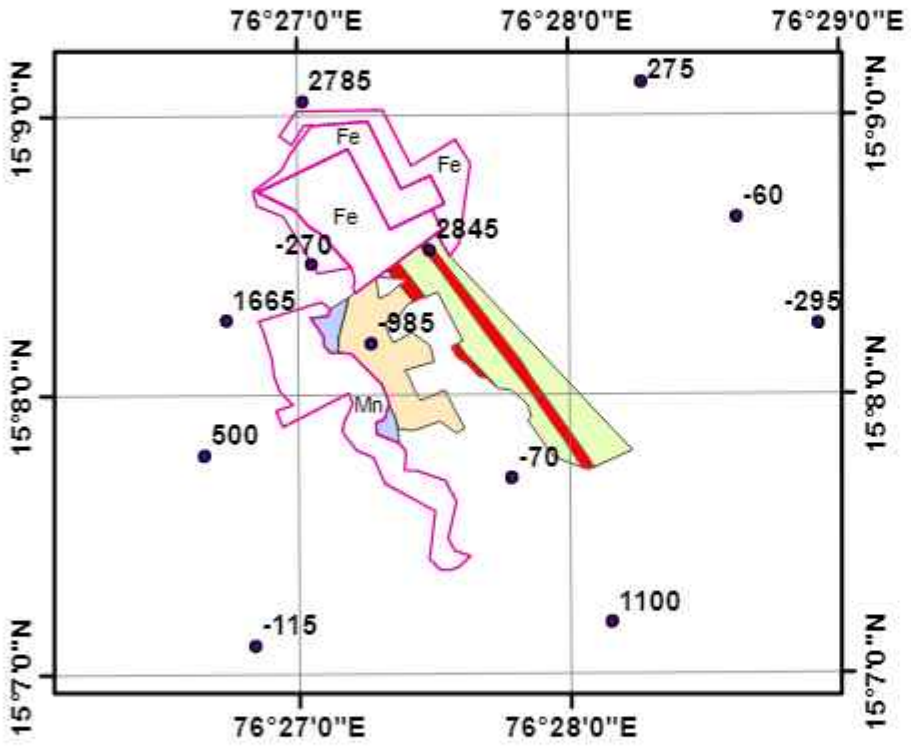
Legend

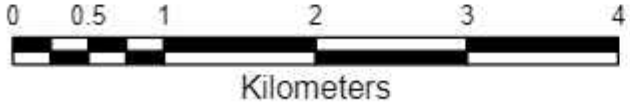
- BOUGUER ANOMALY
- PROPOSED BLOCK BOUNDARY
- ADJACENT LEASES
- BANDED IRON FORMATION
- LATERITE
- MANGANIFEROUS PHYLLITE
- META-BASALT

NPEA:
ECOMEN LABORATORIES PVT. LTD.

Geophysical Magnetic anomaly data obtained from Bhukosh portal superimposed on proposed block

Annexure-1C





N

Scale- 1:50,000

Legend

- MAGNETIC ANOMALY
- PROPOSED BLOCK BOUNDARY
- ADJACENT LEASES
- BANDED IRON FORMATION
- LATERITE
- MANGANIFEROUS PHYLLITE
- META-BASALT

NPEA:
ECOMEN LABORATORIES PVT. LTD.

Government of Karnataka

No: DMG/Plan/858331/2023-24

1900

Office of the Director,
Department of Mines and Geology,
No.49, Khanija Bhavan, R.C. Road,
Bengaluru-01. Dated:07.06.2023.

- 9 JUN 2023

To,

M/s.Ecomen Laboratories Pvt.Ltd
First Floor, Sy No 91/A, Ward No 7,
MCHS Jakkur Layout, Bangalore
560064-Karnataka

Sir,

Sub: **'In-principle approval'** for taking up G3 level exploration of Iron and Manganese ore ore in ramghad, siddapur,sushilNagar,Garga, emmihatti villages of Bellary District, Karnataka- reg. over an extent of 1.0828 Sq.km.

Ref:
1. M/s Ecomen Laboratories Pvt.Ltd Application dated:24.04.2023.
2. Scheme for enagagment of Notified Private Exploration Agencies in mineral exploration dated:10.05.2022.
3. Geological Survey of India, Bengaluru, e-Mail dated:06.06.2023.

******

With reference to the above subject your proposal at reference (1) seeking **'In-principle approval'** for taking up G3 level exploration of Iron and Manganese ore in ramghad, siddapur, SushilNagar, Garga, emmihatti villages of Bellary District, over an extent of 1.0828 Sq.km under NMET fund through Mode-A as explained in the Scheme at reference (2) has been examined in this office.

Further, your proposal was forwarded to GSI for their opinion and overlapping issues, if any. Inturn, GSI has offered its opinion through email at reference (3) which is enclosed to this letter.

After examining the available information in this office and considering the opinion of GSI, Bengaluru. Department of Mines & Geology do hereby convey the **'In-principle approval'** to take up G3 level exploration of Iron and Manganese Ore in ramghad, siddapur,SushilNagar, Garga, emmihatti villages of Bellary District, Karnataka- reg. over an extent of 1.0828 Sq.km. under the NMET funding.

Further, you are requested to submit the detailed proposal in the prescribed format as per the guidelines of the NMET to the Department by including the opinion of GSI document as part of the proposal. The same will be verified by the Technical Committee (Exploration) of the department and forwarded to TCC-NMET.

However, it is the bounded duty of your organization to defend your proposal before the TCC-NMET and also follow the instructions issued by NMET from time to time.

Yours faithfully,

Director
Department of Mines and Geology

Gmail Deputy Director PM <ddpmdmg1@gmail.com>

Requesting your comment on Ramgad Iron and Manganese ore block of Bellary District.

dydirectorgeneral opkg <dydirectorgeneralopkg@gmail.com> Tue, Jun 6, 2023 at 11:13 AM
To: Deputy Director PM <ddpmdmg1@gmail.com>, Director Mines <dir-mines@karnataka.gov.in>
Cc: parthasarathic1977@gmail.com, "RAMACHANDRAN G." <ganesh.ramu12@gmail.com>, rmh2.sr@gsi.gov.in

Sir,

As desired please find attached the details of overlapping in respect of Ramgad, Siddapura, Sushil Nagar, Garga, Emmihatti area submitted by Ecomen Laboratories Pvt. Ltd for Iron and Manganese exploration. It is the outcome of GSI G4 stage exploration work.
However, GSI does not have any plan in taking up G3 stage exploration for Iron and Manganese in the proposed area. Hence it is recommended the proposed block can be taken up for G3 level Exploration for Iron and Manganese ore in Ramgad area subject to approval from competent authority.

This is for your kind perusal and further necessary action.

Yours faithfully,

Director,
Technical Co-ordination,
State Unit:Karnataka & Goa,
Bengaluru - 560 078.

[Quoted text hidden]

3. Ramgad Fe_Mn.docx
502K

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 11
Hole Depth : 24 Mtrs
Date of Starting : 13.04.2017
Date of Closing : 14.04.2017

Collar Level : 875.80
Angle of Hole : Vertical
Location of Hole: N 1674959
E 656097
Section : I-I'

Reduced Levels(Mtrs)	Meterage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO_2%	Al_2O_3%	P%
875.80	0.00	1.00	1.00	1	Iron ore showing reddish coloured,Iron ore chips & pieces are present, reddish streak.	55.82	14.77	2.44	0.071
874.80	1.00	2.00	1.00	2	Iron ore showing reddish coloured,Iron ore chips & pieces are present, reddish streak.	49.25	20.22	2.77	0.077
873.80	2.00	3.00	1.00	3	Iron ore showing reddish coloured,Iron ore chips & pieces are present, reddish streak.	56.71	12.55	3.02	0.055
872.80	3.00	4.00	1.00	4	Iron ore showing reddish coloured,Iron ore chips & pieces are present, reddish streak.	50.15	21.05	3.01	0.055
871.80	4.00	5.00	1.00	5	Iron ore showing reddish coloured,Iron ore chips & pieces are present, reddish streak.	52.22	17.78	3.12	0.055
870.80	5.00	6.00	1.00	6	Iron ore showing pale brownish white coloured, fractured, medium hard, more silica.	48.14	23.22	2.65	0.053
869.80	6.00	7.00	1.00	7	Iron ore showing pale brownish white coloured, fractured, medium hard, more silica.	64.97	2.99	1.78	0.055
868.80	7.00	8.00	1.00	8	Iron ore showing pale brownish white coloured, fractured, medium hard, more silica.	47.64	25.32	2.88	0.066
867.80	8.00	9.00	1.00	9	Iron ore showing Pale Brownish white coloured, fractured, medium hard, more silica.	45.33	27.3	3.44	0.064
866.80	9.00	10.00	1.00	10	Iron ore showing pale brownish white coloured, fractured, medium hard, more silica.	52.75	18.56	2.55	0.073
865.80	10.00	11.00	1.00	11	Iron ore showing pale brownish white coloured, fractured, medium hard, more silica.	45.96	23.29	2.22	0.067
864.80	11.00	12.00	1.00	12	Iron ore showing pale brownish white coloured, fractured, medium hard, more silica.	46.11	25.55	3.15	0.065
863.80	12.00	13.00	1.00	13	Shale/Phyllite showing brownish white coloured, compact ore, medium hard.	41.02	22.22	3.77	0.059
862.80	13.00	14.00	1.00	14	Shale/Phyllite showing brownish white coloured, compact ore, medium hard.	38.62	29.55	3.25	0.093
861.80	14.00	15.00	1.00	15	Shale/Phyllite showing brownish white coloured, compact ore, medium hard.	40.28	21.77	2.99	0.074
860.80	15.00	16.00	1.00	16	Shale/Phyllite showing brownish white coloured, compact ore, medium hard.	35.60	37.77	3.87	0.088
859.80	16.00	17.00	1.00	17	Shale/Phyllite showing brownish white coloured, compact ore, medium hard.	34.70	36.98	3.25	0.087
858.80	17.00	19.00	2.00	18	BHQ showing pale bluish red coloured, hard, Alternative bands of Hematite and Quartzite are clear.	29.75	48.22	2.49	0.092
856.80	19.00	21.00	2.00	19	BHQ showing pale bluish red coloured, hard, Alternative bands of Hematite and Quartzite are clear.	31.03	40.74	2.77	0.088
854.80	21.00	24.00	3.00	20	BHQ showing pale bluish red coloured, hard, Alternative bands of Hematite and Quartzite are clear.	32.77	38.66	3.12	0.094

BORE HOLE CLOSED AT 24 METERS

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 13
Hole Depth : 85 Mtrs
Date of Starting : 23.03.2017
Date of Closing : 30.03.2017

Collar Level : 849.85
Angle of Hole : Vertical
Location of Hole: N 1674550
E 656452
Section : A1-A1'

Reduced Levels(Mtrs)	Meterage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO_2%	Al_2O_3%	P%
849.85	0.00	0.70	0.70	1	Iron ore showing pale bluish to brownish coloured,iron ore pieces are present, brownish streak, Medium hard.	50.90	18.55	2.38	0.088
849.15	0.70	2.10	1.40	2	Iron ore showing pale bluish to brownish coloured, hard compact ore, brownish streak, Medium hard.	65.53	3.26	1.06	0.045
847.75	2.10	3.60	1.50	3	Iron ore showing pale brownish grey coloured, high silica, clay intrusions are clearely visible, brownish streak.	61.28	7.98	2.11	0.051
846.25	3.60	5.00	1.40	4	Iron ore showing pale bluish coloured, Iron ore fines and chips, brownish streak, Medium hard.	62.36	6.73	1.97	0.049
844.85	5.00	7.00	2.00	5	Iron ore showing pale bluish to brownish coloured, hard compact ore, brownish streak, Medium hard.	61.49	7.45	1.86	0.05
842.85	7.00	8.00	1.00	6	Shale/ Phyllite showing Pale brownish white coloured, medium hard.	24.97	42.12	7.23	0.086
841.85	8.00	10.00	2.00	7	Iron ore showing pale bluish to brownish coloured, hard compact ore, brownish streak, Medium hard.	56.97	13.12	2.35	0.067
839.85	10.00	15.00	5.00	8	Iron ore showing pale bluish to brownish coloured, hard compact ore, brownish streak, Medium hard.	62.95	5.45	1.67	0.059
834.85	15.00	16.30	1.30	9	Iron ore showing pale bluish to brownish coloured, hard compact ore, brownish streak, Medium hard.	60.41	8.55	2.34	0.055
833.55	16.30	19.10	2.80	10	Iron ore showing pale bluish to brownish coloured, hard compact ore, brownish streak, Medium hard.	52.88	16.33	2.76	0.068
830.75	19.10	23.60	4.50	11	Shale/ Phyllite showing pale brownish white coloured, medium hard.	15.76	48.25	2.98	0.125
826.25	23.60	26.30	2.70	12	Iron ore showing brownish coloured, hard compact ore, brownish streak, Medium hard.	56.78	12.98	2.31	0.07
823.55	26.30	30.00	3.70	13	Iron ore showing pale bluish black coloured, compact ore, medium hard, cavities and clay intrusions are present, brownish streak.	64.94	3.11	1.26	0.054
819.85	30.00	37.30	7.30	14	Iron ore showing pale bluish black coloured, compact ore, medium hard, cavities and clay intrusions are present, brownish streak.	61.98	6.97	2.22	0.063

812.55	37.30	41.10	3.80	15	Iron ore showing pale bluish black coloured, compact ore, medium hard, cavities and clay intrusions are present, brownish streak.	67.28	1.31	0.92	0.034
808.75	41.10	42.50	1.40	16	Iron ore showing pale bluish black coloured, compact ore, medium hard, cavities and clay intrusions are present, brownish streak.	63.04	5.39	1.22	0.053
807.35	42.50	43.60	1.10	17	Iron ore showing pale bluish black coloured, compact ore, medium hard, cavities and clay intrusions are present, brownish streak.	61.78	8.36	1.67	0.048
806.25	43.60	45.50	1.90	18	Iron ore showing pale bluish black coloured, compact ore, medium hard, cavities and clay intrusions are present, brownish streak.	49.55	20.98	3.97	0.088
804.35	45.50	48.00	2.50	19	BHQ showing Pale Bluish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	47.17	22.54	3.55	0.092
801.85	48.00	55.00	7.00	20	Shale/ Phyllite showing Pale reddish white to grey coloured, soft, fine grained.	34.78	30.23	2.99	0.086
794.85	55.00	62.20	7.20	21	Shale/ Phyllite showing Pale reddish white to grey coloured, soft, fine grained.	15.98	55.85	4.44	0.089
787.65	62.20	65.00	2.80	22	Iron ore showing pale bluish brown coloured, medium hard, brownish streak.	67.82	1.10	0.62	0.042
784.85	65.00	70.00	5.00	23	Iron ore showing pale bluish brown coloured, medium hard, brownish streak.	67.04	1.35	0.98	0.05
779.85	70.00	74.00	4.00	24	Iron ore showing pale bluish brown coloured, medium hard, brownish streak.	67.12	1.54	1.15	0.048
775.85	74.00	75.20	1.20	25	Iron ore showing pale bluish brown coloured, medium hard, brownish streak.	65.88	3.15	1.55	0.039
774.65	75.20	77.50	2.30	26	Iron ore showing pale bluish brown coloured, medium hard, brownish streak.	63.88	3.96	1.99	0.055
772.35	77.50	78.50	1.00	27	Iron ore showing pale bluish brown coloured, medium hard, brownish streak.	62.24	5.87	2.32	0.055
771.35	78.50	85.00	6.50	28	Iron ore showing pale bluish brown coloured, medium hard, brownish streak.	51.35	15.77	3.96	0.09

BORE HOLE CLOSED AT 85 METERS

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 19
Hole Depth : 20 Mtrs
Date of Starting : 31.03.2017
Date of Closing : 31.03.2017

Collar Level : 843.72
Angle of Hole : Vertical
Location of Hole: N 1674589
E 656507
Section : A1-A1'

Reduced Levels(Mtrs)	Meterage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO2%	Al2O3%	P%
	0.00	2.60	2.60	1	Iron ore showing brownish white coloured, high silica, soft.	47.26	24.54	3.01	0.076
-2.60	2.60	5.00	2.40	2	Iron ore showing brownish white coloured, high silica, soft.	47.85	23.98	2.76	0.059
-5.50	5.00	8.00	3.00	3	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	44.35	18.11	3.55	0.063
-8.00	8.00	10.10	2.10	4	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	37.25	33.12	3.44	0.066
-10.10	10.10	13.00	2.90	5	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	33.52	42.33	1.99	0.076
-13.00	13.00	16.00	3.00	6	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	31.51	44.44	2.11	0.069
-16.00	16.00	18.00	2.00	7	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	32.13	43.23	3.43	0.08
-18.00	18.00	20.00	2.00	8	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	39.10	29.78	5.23	0.088

BORE HOLE CLOSED AT 20 METERS

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 20
Hole Depth : 55 Mtrs
Date of Starting : 01.04.2017
Date of Closing : 03.04.2017

Collar Level : 840.24
Angle of Hole : Vertical
Location of Hole: N 1674618
E 656354
Section : B-B'

Reduced Levels(Mtrs)	Meterage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO_2%	Al_2O_3%	P%
840.24	0.00	2.10	2.10	1	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	62.96	5.77	1.99	0.06
838.14	2.10	4.00	1.90	2	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.40	2.09	1.18	0.05
836.24	4.00	6.00	2.00	3	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.65	1.07	0.99	0.04
834.24	6.00	9.00	3.00	4	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.86	1.55	0.97	0.05
831.24	9.00	12.00	3.00	5	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	65.98	2.13	0.35	0.06
828.24	12.00	13.70	1.70	6	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.00	2.20	1.07	0.05
826.54	13.70	15.00	1.30	7	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.96	1.22	0.98	0.04
825.24	15.00	18.00	3.00	8	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.47	1.63	0.97	0.04
822.24	18.00	20.00	2.00	9	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.11	2.15	1.22	0.05
820.24	20.00	22.00	2.00	10	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.52	1.99	1.34	0.06
818.24	22.00	23.90	1.90	11	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.96	1.87	0.89	0.05
816.34	23.90	26.00	2.10	12	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	67.33	1.19	1.13	0.05
814.24	26.00	29.00	3.00	13	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	67.12	1.41	1.10	0.05
811.24	29.00	32.00	3.00	14	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	67.37	1.29	0.78	0.04
808.24	32.00	35.00	3.00	15	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	67.45	1.20	0.81	0.05
805.24	35.00	37.00	2.00	16	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.55	2.10	0.99	0.04
803.24	37.00	40.00	3.00	17	Iron ore showing pale bluish coloured,Iron ore chips & pieces are present, brownish streak, Medium hard.	66.76	1.83	1.04	0.05
800.24	40.00	41.10	1.10	18	Iron ore showing pale bluish brown coloured, compact ore, medium hard, brownish streak.	64.79	3.88	1.78	0.05
799.14	41.10	42.80	1.70	19	Iron ore showing pale bluish brown coloured, compact ore, medium hard, brownish streak.	62.36	5.98	2.11	0.07
797.44	42.80	45.00	2.20	20	Iron ore showing pale bluish brown coloured, compact ore, medium hard, brownish streak.	62.48	6.14	1.98	0.06
795.24	45.00	46.00	1.00	21	Shale/phyllite showing pale brownish white coloured, medium hard.	30.39	34.54	6.45	0.08
794.24	46.00	49.00	3.00	22	Shale/phyllite showing pale brownish white coloured, medium hard.	33.44	40.56	3.77	0.09
791.24	49.00	51.00	2.00	23	Shale/phyllite showing pale brownish white coloured, medium hard.	28.86	44.99	6.02	0.09
789.24	51.00	52.40	1.40	24	Shale/phyllite showing pale brownish white coloured, medium hard.	25.82	43.11	3.33	0.07
787.84	52.40	55.00	2.60	25	Shale/phyllite showing pale brownish white coloured, medium hard.	28.19	40.83	2.90	0.07

BORE HOLE CLOSED AT 55 METERS

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 21
Hole Depth : 65 Mtrs
Date of Starting : 07.04.2017
Date of Closing : 11.04.2017

Collar Level : 836.15
Angle of Hole : Vertical
Location of Hole : N 1674732
E 656304
Section : D-D'

Reduced Levels(Mtrs)	Meterage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO2%	Al2O3%	P%
836.15	0.00	1.00	1.00	1	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	66.02	2.46	1.72	0.055
835.15	1.00	2.00	1.00	2	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	65.99	2.88	1.09	0.057
834.15	2.00	3.00	1.00	3	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	65.28	3.27	1.22	0.049
833.15	3.00	4.00	1.00	4	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	66.34	2.45	1.33	0.049
832.15	4.00	5.00	1.00	5	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	60.85	8.23	1.87	0.061
831.15	5.00	6.00	1.00	6	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	34.83	36.78	3.22	0.065
830.15	6.00	7.00	1.00	7	Iron ore showing pale bluish black coloured, fines & chips are present, powdery, bluish streak.	64.88	3.96	1.56	0.063
829.15	7.00	8.00	1.00	8	Iron ore showing pale bluish black coloured, fines & chips are present, powdery, bluish streak.	65.17	3.25	1.54	0.049
828.15	8.00	9.00	1.00	9	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	65.65	3.89	1.16	0.055
827.15	9.00	10.00	1.00	10	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	67.22	1.35	0.83	0.05
826.15	10.00	11.00	1.00	11	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	67.17	1.41	0.95	0.058
825.15	11.00	12.00	1.00	12	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	66.99	1.55	1.06	0.05
824.15	12.00	13.00	1.00	13	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	66.58	1.88	1.20	0.044
823.15	13.00	14.00	1.00	14	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	66.83	1.85	0.98	0.051
822.15	14.00	15.00	1.00	15	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	65.66	2.65	0.89	0.061
821.15	15.00	16.00	1.00	16	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	65.76	3.20	0.98	0.058
820.15	16.00	17.00	1.00	17	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	65.04	3.44	1.78	0.044
819.15	17.00	18.00	1.00	18	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	66.24	2.11	1.34	0.06
818.15	18.00	19.00	1.00	19	Iron ore showing pale bluish black coloured, iron ore fines & chips are present, bluish streak.	66.55	2.20	1.07	0.048
817.15	19.00	20.00	1.00	20	Iron ore showing pale bluish black coloured, iron ore fines & chips are present, bluish streak.	67.22	1.28	1.01	0.051
816.15	20.00	21.00	1.00	21	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	67.11	1.58	1.00	0.048
815.15	21.00	22.00	1.00	22	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	67.05	1.44	1.17	0.046
814.15	22.00	23.00	1.00	23	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	66.06	2.48	1.22	0.053
813.15	23.00	24.00	1.00	24	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	62.19	6.07	2.06	0.055
812.15	24.00	25.00	1.00	25	Iron ore showing pale bluish black coloured, brownish streak, Medium hard.	48.77	19.84	2.55	0.078
811.15	25.00	26.00	1.00	26	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	32.26	40.33	3.55	0.059
810.15	26.00	28.00	2.00	27	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	38.67	32.21	3.07	0.082
808.15	28.00	30.00	2.00	28	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	36.14	48.25	3.33	0.076
806.15	30.00	31.00	1.00	29	BHQ showing pale brownish coloured, less hard, Alternative bands of Hematite and Quartzite are clear.	38.99	38.23	3.22	0.077
805.15	31.00	35.00	4.00	30	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	13.34	55.18	4.15	0.095
801.15	35.00	40.00	5.00	31	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	24.30	46.07	3.88	0.075
796.15	40.00	45.00	5.00	32	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	23.70	45.99	3.57	0.088
791.15	45.00	50.00	5.00	33	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	21.95	44.48	2.77	0.067
786.15	50.00	55.00	5.00	34	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	23.57	45.11	2.96	0.073
781.15	55.00	60.00	5.00	35	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	23.46	45.64	3.33	0.085
776.15	60.00	65.00	5.00	36	Shale/Phyllite showing pale whitish brown coloured, soft, fine grained.	20.94	49.19	4.77	0.082

BORE HOLE CLOSED AT 65 METERS

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 25
Hole Depth : 34 Mtrs
Date of Starting : 05.04.2017
Date of Closing : 06.04.2017

Collar Level : 885.45
Angle of Hole : Vertical
Location of Hole: N 1674676
E 656190
Section : D-D'

Reduced Levels(Mtrs)	Metcrage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO2%	Al2O3%	P%
885.45	0.00	3.00	3.00	1	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	65.24	3.23	1.66	0.06
882.45	3.00	6.70	3.70	2	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	66.14	2.31	1.33	0.054
878.75	6.70	8.00	1.30	3	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	65.67	2.88	1.67	0.053
877.45	8.00	9.00	1.00	4	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	65.08	3.4	1.55	0.055
876.45	9.00	10.00	1.00	5	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	62.05	6.55	2.2	0.057
875.45	10.00	12.50	2.50	6	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	60.15	7.83	2.25	0.06
872.95	12.50	15.00	2.50	7	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	57.89	12.96	1.94	0.065
870.45	15.00	16.50	1.50	8	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	43.68	22.38	3.54	0.072
868.95	16.50	17.50	1.00	9	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	38.5	27.31	3.55	0.073
867.95	17.50	20.20	2.70	10	Iron ore showing pale reddish brown coloured, brownish streak, Medium hard.	58.45	10.55	2.43	0.068
865.25	20.20	22.50	2.30	11	Iron ore showing pale reddish brown coloured, brownish streak, Medium hard.	56.09	13.11	2.55	0.064
862.95	22.50	23.30	0.80	12	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	36.37	29.23	4.75	0.099
862.15	23.30	25.40	2.10	13	Iron ore showing pale reddish brown coloured, brownish streak, Medium hard.	48.33	20.44	2.77	0.061
860.05	25.40	26.90	1.50	14	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	22.36	43.15	5.18	0.065
858.55	26.90	29.10	2.20	15	Iron ore showing pale reddish brown coloured, brownish streak, Medium hard.	48.2	19.97	4.46	0.057
856.35	29.10	30.10	1.00	16	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	26.3	38.72	3.83	0.113
855.35	30.10	32.10	2.00	17	Shale showing pale brownish white coloured, medium hard.	29.5	37.79	4.12	0.115
853.35	32.10	34.00	1.90	18	Shale showing pale brownish white coloured, medium hard.	24.66	43.22	3.28	0.102

BORE HOLE CLOSED AT 34 METERS

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 26
Hole Depth : 24 Mtrs
Date of Starting : 12.04.2017
Date of Closing : 13.04.2017

Collar Level : 883.30
Angle of Hole : Vertical
Location of Hole: N 1674869 E 656091
Section : H-H'

Reduced Levels(Mtrs)	Meterage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO_2%	Al_2O_3%	P%
883.30	0.00	1.00	1.00	1	Iron ore showing pale brownish black coloured, powdery form, Iron ore fines and chips are present brownish streak, Medium hard.	57.59	9.67	2.69	0.067
882.30	1.00	3.00	2.00	2	Iron ore showing pale brownish black coloured, powdery form, Iron ore fines and chips are present brownish streak, Medium hard.	57.76	9.99	3.23	0.09
880.30	3.00	4.60	1.60	3	Iron ore showing pale brownish black coloured, powdery form, Iron ore fines and chips are present brownish streak, Medium hard.	57.33	10.14	2.78	0.065
878.70	4.60	6.00	1.40	4	Iron ore showing pale brownish black coloured, powdery form, Iron ore fines and chips are present brownish streak, Medium hard.	57.37	8.93	2.55	0.059
877.30	6.00	8.00	2.00	5	Iron ore showing pale brownish black coloured, powdery form, Iron ore fines and chips are present brownish streak, Medium hard.	55.37	7.34	5.65	0.123
875.30	8.00	10.30	2.30	6	Iron ore showing pale brownish black coloured, powdery form, Iron ore fines and chips are present brownish streak, Medium hard.	54.72	10.25	4.34	0.098
873.00	10.30	12.00	1.70	7	Iron ore showing pale brownish black coloured, powdery form, Iron ore fines and chips are present brownish streak, Medium hard.	54.99	9.78	4.55	0.089
871.30	12.00	13.00	1.00	8	Iron ore showing pale brownish white coloured, lean hard, brownish streak, Medium hard, shale contaminations are clear visible.	55.60	11.33	3.65	0.099
870.30	13.00	14.00	1.00	9	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	40.37	20.43	2.65	0.067
869.30	14.00	15.00	1.00	10	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	44.51	24.24	3.44	0.075
868.30	15.00	16.00	1.00	11	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	41.78	23.61	3.21	0.074
867.30	16.00	19.00	3.00	12	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	43.73	21.21	2.88	0.061
864.30	19.00	22.00	3.00	13	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	42.39	24.16	3.09	0.082
861.30	22.00	24.00	2.00	14	BHQ showing pale brownish coloured,hard, Alternative bands of Hematite and Quartzite are clear.	38.81	30.99	3.09	0.065

BORE HOLE CLOSED AT 24 METERS

BORE HOLE LOG SHEET

Mines Name : Dharmapur Iron Ore Mine(M.L.No.2239)
Bore Hole No : 27
Hole Depth : 34 Mtrs
Date of Starting : 04.04.2017
Date of Closing : 04.04.2017

Collar Level : 886.25
Angle of Hole : Vertical
Location of Hole: N 1674751 E 656135
Section : F-F'

Reduced Levels(Mtrs)	Meterage(Mtrs) From	To	Run (Mtrs)	Sample No.	Lithology	Fe%	SiO_2%	Al_2O_3%	P%
886.25	0.00	3.60	3.60	1	Iron ore showing pale brownish blue coloured, brownish streak, Medium hard.	67.02	1.63	1.09	0.053
882.65	3.60	6.00	2.40	2	Iron ore showing pale brownish blue coloured, brownish streak, Medium hard.	65.33	3.29	1.76	0.051
880.25	6.00	8.00	2.00	3	Iron ore showing pale brownish blue coloured, brownish streak, Medium hard.	65.90	2.78	1.23	0.046
878.25	8.00	12.00	4.00	4	Iron ore showing pale brownish blue coloured, brownish streak, Medium hard.	66.29	1.91	1.19	0.067
874.25	12.00	14.00	2.00	5	Iron ore showing pale brownish blue coloured, brownish streak, Medium hard.	66.26	2.12	1.17	0.052
872.25	14.00	16.50	2.50	6	Iron ore showing pale brownish blue coloured, brownish streak, Medium hard.	65.48	3.59	0.98	0.044
869.75	16.50	18.40	1.90	7	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	63.73	4.12	2.13	0.058
867.85	18.40	21.20	2.80	8	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	62.18	7.22	1.68	0.06
865.05	21.20	23.00	1.80	9	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	59.27	9.59	2.35	0.049
863.25	23.00	25.00	2.00	10	Iron ore showing pale brownish coloured, brownish streak, Medium hard.	47.90	22.11	2.66	0.068
861.25	25.00	26.00	1.00	11	Shale showing pale brownish white coloured, medium hard.	42.67	25.25	2.99	0.066
860.25	26.00	28.30	2.30	12	Shale showing pale brownish white coloured, medium hard.	41.11	28.23	3.12	0.059
857.95	28.30	29.20	0.90	13	Shale showing pale brownish white coloured, medium hard.	27.14	40.49	3.15	0.088
857.05	29.20	32.00	2.80	14	Shale showing pale brownish white coloured, medium hard.	28.62	44.16	3.22	0.107
854.25	32.00	34.00	2.00	15	Shale showing pale brownish white coloured, medium hard.	27.60	39.29	4.32	0.089

BORE HOLE CLOSED AT 34 METERS