Proposal for Ranibandh Block, Bankura District, West Bengal State for Reconnaissance Survey (G4 Stage) under NMET.

(Basemetals/ Ferrous/ Non-Ferrous/ Industrial/Strategic & Critical/Precious metals etc.)

By

Maheswari Mining Pvt. Ltd.

Place:Kolkata
Date: 20.02.2024

Summary of the Block for Reconnaissance Survey (G4 Stage)
General information about the block

	Features	Details
	Block ID	Ranibandh Graphite Block
	Exploration Agency	Maheswari Mining Pvt. Ltd.
	Commodity	Graphite
	Mineral Belt	North Singhbhum Mobile Belt
	Completion period with entire time schedule to complete the project	One year
	Objectives	
	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	By proposed agency
	Name/Number of Geoscientists	Two geologists
	Expected field days (Geology) Geological Party Days	180 man days
1.	**Location**	
	Latitude	22° 51' 40" N to 22° 53' 31" N
	Longitude	86° 48' 34.015" E to 86° 45' 49.138" E
	Villages	Ranibandh and Budhkhila
	Tehsil/Taluk	
	District	Bankura
	State	West Bengal
2.	**Area (hectares / square kilo metres)**	
	Block Area	1600 Ha or 16 sq km
	Forest Area	**NA**
	Government Land Area	NA
	Private Land Area	NA
3.	**Accessibility**	
	Nearest Rail Head	Bankura Rly Stn., West Bengal
	Road	The distance of the block is 60 kms from the district headquarters Bankura.
	Airport	Kazi Nazrul Islam Airport, Andal at a distance of 121 km from Ranibandh.
4.	**Hydrography**	
	Local surface drainage pattern (channels)	Surface pattern is subdendritic
	Rivers/Streams	The drainage system of the area is controlled by Kasai River and its Right Bank Main Canal. All the nalas of the block are northeasterly flowing and joining with the canal.
5.	**Climate**	
	Mean Annual Rainfall	Annual rainfall ranges from 850mm to 1200mm
	Temperatures (December) (Minimum) Temperatures (June)(Maximum)	Area experiences extreme tropical climate with a maximum rise in temperatures 45^0C in summer and during severe cold in winter temperature goes down to less than 10^0C.
6.	**Topography**	

	Toposheet Number	73J/13
	Morphology of the Area	Maximum part of the area is gently undulating with range of ground level 150m to 160m. The highest point of elevation is above 251 m above Bamni Pahar, located to the northern margin. Three east-west trending ridges are there to the southwestern quadrant of the block.
7	**Availability of baseline geosciences data**	
	Geological Map (1:50K/25K)	1:25K map of GSI
	Geochemical Map	Not Available
	Geophysical Map (Aeromagnetic, ground geophysical,Regional as well as local scale GP maps)	Not Available
8.	Justification for taking up Reconnaissance Survey/ Regional Exploration	The area is located in Bankura district of West Bengal and the geological belt is between Dalma volcanics and Tamar-Porapahar Shear Zone. The lithological units mapped in this area by Lahiri and Singh (1991-92 to 1992-93) are prevalently quartz-sericite schist with occasional carbonaceous schist and garnetiferous micaschist. There are a number of elongated mappable lithounits of calc silicates occurring within low grade schistose rocks as enclaves. A few smaller bands of quartzite also been mapped. Enclaves of smaller dimensions of ultrabasics and amphibolites have also been reported by the workers. A general trend of all elongated enclaves and bands of different lithounits is ENE-WSW and those show some regional warps with trends of axial traces along NNW-SSE direction. Presently geologists of MMPL has reported a band of graphite for a strike length of 500m with the help of restricted outcrops. The analytical results of seven samples vary from 6.32% FC to 8.26% FC. In view of present work and the previous work a favorable geological set up is expected for graphite mineralisation and the area warrants a G4 stage exploration for graphite.

Detailed description

A. In view of the auction policy of the Government of India and demand of more explored blocks Govt. of India amended the MM (D&R), 1957 in 2021 allowing Private Agencies to be a stake holders in explorations of major minerals in a time bound manner in which the funds will be provided by the NMET instituted by Govt. of India (Notification, NPEA, 2021).

India is a major global producer of flaky graphite. The country has been ranked amongst the top five graphite producers by the USGS. Graphite occurrences are reported from different states including Jammu and Kashmir, Arunachal Pradesh, Gujarat, Jharkhand, Maharashtra, Karnataka, Kerala, Tamil Nadu, Odisha, Chattisgarh and Rajasthan. However, the deposits of economic importance are located in Andhra Pradesh, Chattisgarh and Arunachal Pradesh, which are yet to be exploited. As far as mining and processing of graphite is concerned, Jharkhand, Odisha and Tamil Nadu are the only states where operations are being conducted. The worldwide as well as in the country, demand for graphite is increasing with the development of non-carbon energy applications such as batteries used in electric vehicles, electric devices and energy storage devices that use graphite. To fulfil demand and to keep a balance between demand and production, it is essential to develop the resources of graphite in country.

In view of the auction policy of the Government and demand of graphite in the domestic industries, emphasis for assessment of graphite is warranted. To identify potential graphite bearing areas in T.S.No. 73J/13 M/s Maheswari Mining Private Ltd. performed some ground work with the background geology available and identified a potential graphite prospects which can developed through a G4 stage exploration.

Block Summary

Physiography and Drainage:

The area represents a gently undulated topography characterized by three mounds. One of which is located near the northern margin and other two are located in the southwest quadrant. Most of the seasonal streams flowing towards northeast and east and draining water into the Right Bank Main Canal of Kasai River. The mound with highest altitude occurs above 251m contour to the northern margin of the block named Bamni Pahar.

Climate: Area experiences extreme tropical climate with a maximum rise in temperatures 45^0C in summer and during severe cold in winter temperature goes down to less than 10^0C. Annual rainfall ranges from 850mm to 1200mm.

Background Geology

Regional Geology of the area:

The generalized stratigraphic succession of the Precambrian rocks to the north of Singhbhum Shear zone is as follows (Sarkar and Sana, 1977).

Soda Granite, Granophyre, Chakradharpur Granite Gneiss and Kuilapal Granite

Dalma Lava

UNCONFORMITY

Singhbhum Group: Chaibasa Formation

Dunn and Dey (1942) referred to the mica schists and hornblende schist of the 'central geoanticline' as the oldest members of the Iron-Ore Series in Singhbhum and named them as Chaibasa stage. Phyllites and fine tuffs varying to mica schists in Manbhum also belong to the upper part of this stage.
Singh and Banerji (1969-70) carried out geological mapping in parts of Toposheet No. 73J/9 and have reported quartz schist, quartz-chlorite schist and quartz-magnetite schist together with mica schist, phyllites and a number of bodies of epidiorite and hornblende schist.
Pyne et al (1991) gave an account of integrated geological, geochemical and petrotectonic study of rocks occurring along a transect which partly covers the present area of study.

Local Geology and Stratigraphy:

Calc-silicate rocks have been noted in Ranibandh area. Here calc- silicate rocks form interbanding with fine grained quartzite and the banding in these rocks generally conform to the regional trend of the enclosing country rock. The clac-silicate rocks are provisionally grouped with arenaceous and argillaceous lithounits. The basic and ultrabasic rocks occur in the form of elongated bands. In a few cases isolated rafts of cherty quartzite are seen to be caught up within tremolite schist. The granites of Kuilapal area are emplaced within the country rocks and form an elliptical outline with the long axis being oriented NE-SW: a small body of granite was recorded at the core of Uparkalutola synformal outcrop formed of basic & ultrabasic rocks. The granites of Kuilapal and Uparkalutola areas show intrusive relationship with basic and ultrabasic rocks. Streaks of quartzo-feldspathic composition are found to be locally developed within basic rocks, close to the granite bodies. Pegmatites are generally associated with granitic bodies. The general trend of foliation shows a swing from north-west (in the west), east-west to northeasterly in the east. This foliation may be related to an early generation of folding in the area, which is represented by tight synformal closure in basic rocks around Uparkalutola and in calc-silicate rocks, west of Ranibandh. The Ledapukur ridge section, through which the road connecting Ranibandh and Jhillmili passes, follows the axial trace of a major synformal fold. The litho assemblages occurring in this section include fine grained quartz-sericite schist, quartz feldspar sericite rock and coarse grained garnetiferous mica schist. The 100 km long Tamar-Poraphar shear zone extends in a east-west direction and has been traced towards east, upto Dhargram, about 10 km east of Khatra. The shear zone, first described by Dunn and Dey (1942), is marked by a series of discontinuous ridges which approximately define the limit of northern extension of the low grade metamorphics in eastern Purulia and Bankura districts.

Mineralisation details:

Graphite bearing sericite schist (or carbonaceous sericite schist) occurs as thin, impersistent unit with argillaceous group of rocks. This has been recorded from several areas. It is a fine grained, puckered sericite rich schist, containing carbon/graphite which gives a black colour to the rock. Chemical analysis of the rock shows titanium 1000 ppm, vanadium 200-500 ppm. and Barium 275 ppm. Presently geologists of MMPL has reported a band of graphite for a strike length of 500m with the help of restricted outcrops. The analytical results of seven samples vary from 6.32% FC to 8.26% FC.

Block description:

Block Corner Cardinal Points	Latitude	Longitude
A	**$22^0$51'40.25''N**	**86^0 45'49.138''E**
B	**$22^0$51'40.25''N**	**$86^0$48'34.015''E**
C	**$22^0$53'31.513''N**	**$86^0$48'34.015''E**
D	**$22^0$53'31.513''N**	**$86^0$45'49.138''E**

Planned Methodology: G4 stage guideline of MEMC Rule will be followed.

Nature Quantum and Target

Nature and Quantum of work proposed

Components	G4 Stage
Aerial reconnaissance	Nil
Geological Survey	i) 1: 12,500 scale for 16 sq km area. ii) Identification of lithology, structure, surface mineralization, borehole core studies and old history of mining, if any.
Geochemical Survey	Regional Grab / chip sampling from surface and escarpments: Pit samples:30nos, BRS: 50.
Trenching	100 cu m trenching (dimension of each trech: 10mx1mx1m). Sample length from each trench is 1m. Trench samples: 100 nos.
Scout drilling / Systematic drilling	5 boreholes with a total depth of 500m.
Grab and Chip sampling	(10 PS+10 PCS) representative samples from all bed rocks to carry out petrographic studies (PS) and petro chemistry (PCS).
Core sample	100 borehole core samples from graphite bearing zone.
Petrographic and mineragraphic studies	10 nos. Principal rock types, mineral assemblage, identification of minerals of interest
Synthesis of all available data	i) Integration of regional geological and geochemical data. Synthesis of all available data and Report writing

5 & 6. Manpower deployment and break up of expenditure for Ranibandh area (G4 stage)
Estimated cost of different work components of Graphite investigation of Ranibadh area (G4 Stage)
Total area: 16 sq km, Period of Completion: 12 months BH: 5 nos. review: after 6 months

Sl. Nos.	Item of work	Rates as per NMET SoC 2020-21			Estimated Cost of the Proposal	
		Unit	SoC-Item-Sl No	Quantity	Rates as per SoC	Total
1	**Geological Mapping (on 1:12,500) (16 sq km)**					
	(a) Charges for 2 Geologists in field (without labourer)	per day per Geologist	1.2. b	180	11,000	1980000
	(b) Charges for 2 Geologists at Headquarters	per day per Geologist	1.2. a	120	9,000	1080000
	(c) Wages for 2 labourers for geologist	per day	5.7	360	504	181440
2	**Land/Crop compensation (as per actual)**	per borehole	5.6	5	20000	100000
3	**Geochemical sampling (Bedrock sampling)**	100 nos				
4	**Geophysical survey (Magnetic survey and SP survey) (4 L.km)**	4 L.km				
	(a) Charges for 1 Geophysicist in field (without labourer)	per day	3.18b	0	11000	0
	(b) Charges for 1 Geophysicist at Headquarters	per day	3.18a	30	9000	270000
	(c) Wages for 4 labourers in field with geophysicist	per day	5.7	0	345	0
	(d) Charge for Gravity survey	per station	3.1a.i	0	3800	0
	(e) Charge for Magnetic survey	per station	3.2a.i	250	1800	450000
	(f) Charge for SP survey	per L.km	3.3a	4	29600	118400
5	**Survey work**					
	(a) Surveyor Charges (without labourer)	per day	1.6.1a	30	8300	249000
	(b) Labour (4nos) charges for survey work	per day	5.7	120	504	60480
6	**Technological Survey**					
	(a) Pitting (Where BRS are not available)	per cu m	2.1.2	30	3800	114000
	(b) Trenching	per cu m	2.1.1	100	3330	333000
	(c) Drilling	per m in soft rock	2.2.1.4a	500	11500	5750000
	(d) Borehole pillaring (construction of concrete pillar) 12 inches x12 inches x 30 inches	per borehole	2.2.7a	5	2000	10000
	(e) Transportation of Drill Rig and truck(to and from Headquarter s or Previous drill site)	7 per km	2.2.8	300	36	10800

	(f) Drilling camp setting cost	per drill	2.2.9a	1	250000	250000
	(g) Drilling camp winding cost	per drill	2.2.9a	1	250000	250000
	(h) Monthly accommodation charges for drilling camp	per month	2.2.9	2	50000	100000
	(i) Approach road making to drill site (as Per actual)	per km	2.2.10a	5	22020	110100
7	**Laboratory Studies**					
	(a) Proximate analysis for graphite	per sample	4.1.16	330	3000	990000
	(a) Proximate analysis for graphite(10% external Check)	per sample	4.1.16	33	3000	99000
	(c) Analysis for associated REE (ICPMS-14 elements)	per sample	4.1.13	150	5380	807000
	(d) Petrochemical studies (PCS)	per sample	4.1.15a	10	4200	42000
8	**Petrographic studies**					
	(a) Preparation of thin sections	per sample	4.3.1	10	2353	23530
	(b) Study of thin sections	per sample	4.3.4	10	4232	42320
9	**Bulk Density/specific gravity Determination**	per sample	4.8.1	3	1605	4815
10	**Drill core preservation (1 bh+ mineralised zone : as per actual)**	per m	5.3	250	1590	397500
	Sampler			45	5100	229500
	Labour			180	504	90720
	Total					14143605
11	**Geological Report preparation (5 hard copies with a soft copy)**	cost per 5 hard copies along with soft copy	5.2			707180
12	**Peer Review**	lumpsump	as per EC decision	1	30000	30000
13	**Preparation of exploration proposal (5 hard copies with a soft copy)**	one number (5 hard copies) along with soft copies	5.1	1	2% of approved project cost or 5 lakh, whichever is lower	282872.1
	Grand Total of estimated cost:					**₹ 1,51,63,657.35**
	Grand Total including 18%GST					**₹ 1,78,93,115.67**
Grand Total						

7. References:

Plates

Plate 1: Proposed block boundary over topographic map on 1:50,000.

Plate 2: Proposed block boundary over Geological map.

TOPOGRAPHIC MAP OF RANIBANDH GRAPHITE BLOCK IN 1:50000 SCALE(TOPOSHEET NO-73J/13)

Legend

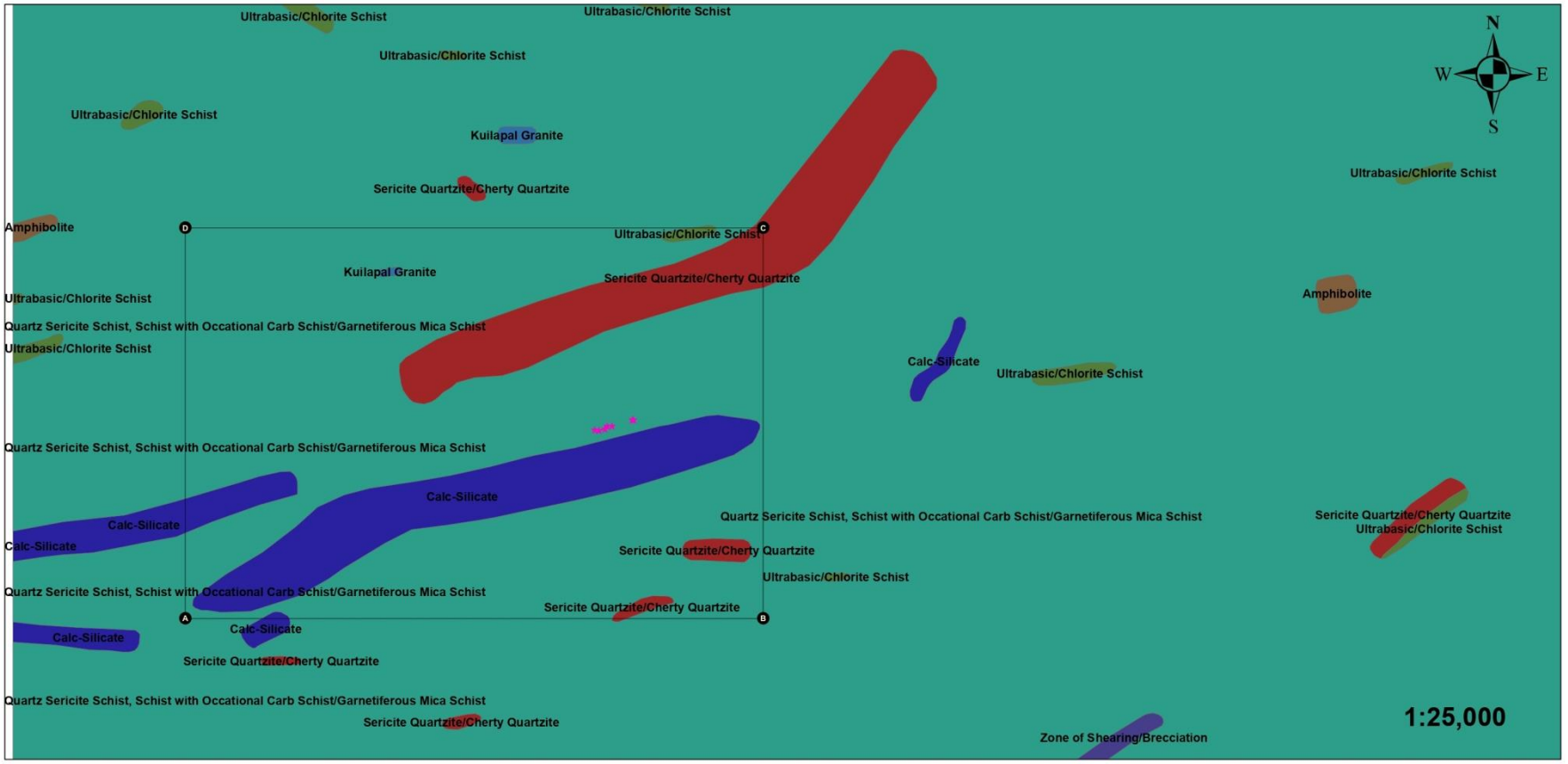
- BLOCK BOUNDARY
- ● CARDINAL POINTS
- ★ SAMPLE LOCATION

CARDINAL POINTS	Latitude	Longitude	Latitude	Longitude
A	22.8612	86.7636	22° 51' 40.25" N	86° 45' 49.138" E
B	22.8612	86.8094	22° 51' 40.25" N	86° 48' 34.015" E
C	22.8921	86.8094	22° 53' 31.513" N	86° 48' 34.015" E
D	22.8921	86.7636	22° 53' 31.513" N	86° 45' 49.138" E

0 0.75 1.5 3 4.5 6 Kilometers

1:50,000

GEOLOGICAL MAP OF RANIBANDH GRAPHITE BLOCK IN 1:25000 SCALE



Legend

BLOCK BOUNDARY

CARDINAL POINTS

SAMPLE LOCATION

LITHOLOGIC

- Amphibolite
- Calc-Silicate
- Kuilapal Granite
- Quartz Sericite Schist, Schist with Occational Carb Schist/Garnetiferous Mica Schist
- Schorl
- Sericite Quartzite/Cherty Quartzite
- Ultrabasic/Chlorite Schist
- Zone of Shearing/Brecciation

Proposed Timeline for different work components of Graphite investigation in Ranibadh Block, Bankura District, West Bengal State													
	Months												
Item of work	**1**	**2**	**3**	**4**	**5**	**6**		**7**	**8**	**9**	**10**	**11**	**12**
Large Scale Mapping (1:12,500)													
Bed rock sampling													
Geophysical survey by Geophysicist													
Laying of Geophysical survey lines & location of Boreholes by surveyors													
Trenching & Sampling													
Chemical analysis of surface samples													
Drilling													
Core Sampling & its preparation													
Chemical analysis of core samples													
Processing of Analytical data													
Preparation of Geological report													

REVIEW

Maheshwari Mining Private Limited

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To
The Director & HoD
National Mineral Exploration Trust (NMET)
Ministry of Mines
F-114, Shastri Bhavan
New Delhi-110001

It is certified that:

1. Project titled "Proposal for Ranibandh Block, Bankura District, West Bengal State for Reconnaissance Survey (G4 stage) under NMET." along with estimated cost Rs. 1.78 Crores is submitted for consideration of NMET funding.
2. The project proposal is prepared following the guidelines prescribed in Minerals (Evidence of Mineral Contents) Rules, 2015 in case of mineral exploration project proposals.
3. The proposal has been duly examined and concurred by associate finance in accordance with canons of financial propriety.
4. The same project proposal or project proposal with similar objectives has not been submitted to any other funding agency by this organisation and the project proposal bears no duplication with existing work/ ongoing project undertaken by this agency.

Yours faithfully,

MAHESHWARI MINING PVT. LTD. Kolkata

20/02/24

Signature

[Name & designation of Head of the Organisation]
[DG/Principal Secretary/Secretary (Geology & Mining)/CMD/CEO/MD]

AMBIKA PRASAD SAMANTARAY
President & CEO Exploration

Date... 20/02/24
Place... Kolkata...