Proposal for Korapara West, Bankura District, West Bengal State for Reconnaissance Survey (G4stage) under NMET.

Commodity: Graphite

By

Maheshwari Mining Pvt. Ltd.

Place: Kolkata

Date: 12-11-24

Summary of the Block for Reconnaissance Survey (G4 Stage)

GENERAL INFORMATION ABOUT THE BLOCK

	Features	Details
	BlockID	Korapara West Block
	ExplorationAgency	Maheshwari Mining Pvt. Ltd.
	Commodity	Graphite
	MineralBelt	North Singhbhum Mobile Belt (NSMB)
	Completion Period with entire Time schedule to complete the project	12 months
	Objectives	• Large scale (1:12500) mapping of the area. • To delineate mineralized zones • To develop a block or more for G3 level of exploration.
	Whether the work will be carried out by the proposed agency or through outsourcing and details there of. Components to be outsourced and name of the outsource agency	By proposed agency
	Name/Number of Geoscientists	2 geologists
	Expected Field days (Geology) Geological Party Days	150 field days
1.	**Location**	
	Latitude	22º49'22.47"N to 22° 52' 14.38" N
	Longitude	86° 37' 36.42" E to 86º39'45.42"E
	Villages	Korapara
	Tehsil/Taluk	Ranibandh
	District	Bankura
	State	West Bengal
2.	**Area(hectares/square kilometres)**	
	Block Area	16.252 sq km

	Forest Area	NA
	Government Land Area	NA
	Private Land Area	NA
3.	**Accessibility**	
	Nearest Rail Head	Bankura
	Road	The block is located at a distance of around 75 kms from Bankura.
	Airport	Birsa Munda International Airport, Ranchi is the nearest airport located 180 kms from the block area.
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	Surface pattern is subdendritic
	Rivers/Streams	The drainage system of the area is controlled by Kumari and Kangsabati River flowing from the north to south.
5.	**Climate**	
	Mean Annual Rainfall	1100mm
	Temperatures (December) (Minimum)	December:7^0C to 10^0C
	Temperatures (June) (Maximum)	May:45^0C
6.	**Topography**	
	ToposheetNumber	73J/09
	Morphologyof theArea	The area represents a flat topography withsmall hillocks in the northern part of the block.
7	**Availabilityofbaselinegeosciencesdata**	
	GeologicalMap(1:50K/25K)	1:50K map of GSI
	Regional structural set up map	1:12500 map of GSI
	DRM of Bankura District	Published by GSI
	Geochemical Map	Available
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as local	Available

	scale GP maps)	

8.	**Justification for taking up Reconnaissance Survey/Regional Exploration**	Graphite bodies of economic importance occur in different localities of North Singhbhum Mobile Belt (NSMB), which is composed of calc-granulite, mica schists and phyllites along with metabasics. The graphite zones are found to be associated with the mica schists and phyllites. Lodes of graphite are lithologically as well as structurally controlled and they occur along the contact zones of phyllites and calc-silicate rocks, and along the foliation planes. The richest lodes are found to occur within the litho packages of mica schists and phyllites. Most of the bodies of graphite are lenticular and show pinch and swell characters. During reconnoitary traverses,exposures of graphite bearing mica schists and calc-granulites have been noticed around Korapara village of variable dimensions in which graphite occurs as disseminations and minor veinlets. Analyses of a few grab samples collected during reconnoitary traverses by the geologists of Maheshwari Mining Private indicate FC content varying from Ltd. 2.01 to 6.93%. In order to assess the geospatial disposition and to study the grade and resource potential of the graphite incidences a G4 stage of exploration is proposed.

Detailed description

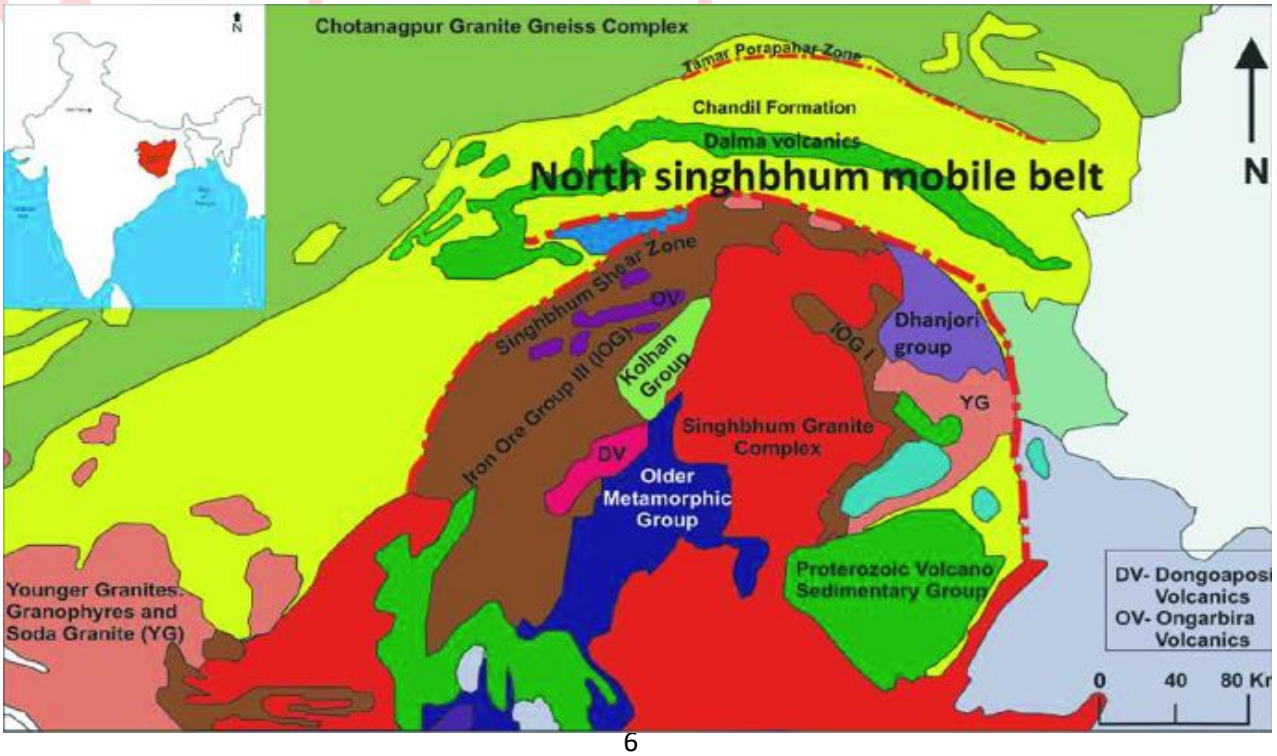
BlockSummary:

In view of the auction policy of the Government and demand of graphite in the domestic industries,emphasis for assessment of graphite is warranted. In order to carve out an auctionable block, A detailed proposal to undertake "Reconnaissance Survey to identify potential graphite bearing areas in T.S.No.F45I9 (73J/9)is being submitted, where the agency M/s Maheshwari Mining Private Ltd. recorded some observations with the help of limitedfield traverseswith the background geology available and identified potential graphite prospects which can be taken up for detailed assessment from reconnaissance to exploration at different levels so as to support the State Govt. for putting potential blocks for auction with our effort to contribute for mineral development of the State.

Background Geology (Regional Geology, Geology of the Block)

Regional Geology of the area:

The area of exploration forms a part of North Singhbhum Mobile Belt which is bounded by the Tamar-Porapahar Shear Zone to the north, and Singhbhum Shear Zone to the south. The general pattern of distribution of different lithounits of the area, indicates that arenaceous rocks are widespread in the western part, while the argillaceous rocks are more common in the eastern part of present area of study. 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 rocks. The clac-silicate rocks are provisionally grouped with arenaceous and argillaceous lithounits.

The basic and ultrabasic rocks occur in the form of elongated bands with the foliation in the rocks being parallel to regional trend of foliation in the enclosing country rocks. 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 NW-SE: a small body of granite was recorded at the core of Uparkalutola synformal outcrop formed of basic & ultrabasic rocks.

The granite rocks of Kuilapal and Uparkalutola areas show intrusive relationship with basic and ultrabasic rocks. Streaks of quartz-feldspathic composition are found to be locally developed within basic rocks, close to the granite bodies.

The broad stratigraphic frame work postulated by Sarkar & Saha (1962) is as follows:

After Sarkar and Saha (1962)	
Singhbhum Group	Dalma Lavas
	Dhalbhum Formation (Phyllite, Quartzite, Epidiorite Sills)
	Chaibasa Formation (Garnet-staurolite-kyanite mica schist, hornblende schist, quartzite)

Chaibasa Formation

The Chaibasa Formation is dominated by mica schists. Progressive metamorphic zonation of chlorite, biotite, garnet, staurolite, kyanite and sillimanite is seen towards the median axis of this domain. In central part, such as near Kandra and Sonepat, the metamorphism is of Barrovian type. Sedimentological studies of pelitic rocks interbedded with arenite bands have led to contrasting interpretation of depositional environments from various sectors of this domain. Cross stratification combined with penecontemporaneous deformational structures like convolute bedding and slump sheets have led to the interpretation of the psammo-pelitic sequence as turbidites characteristic of flysch.

Dhalbhum Formation

Important rock units of Dhalbhum Formation are chlorite-sericite phyllites rich in magnetite and containing large porphyroblasts of andalusite and staurolite associated with chloritoid. Basic Sills are interstratified with the phyllites. The lithological ensemble denotes an intertidal deposit having a provenance of low relief.

Three sets of folds and related fabrics of varying intensity, geometry and style are seen from different sectors of the Ghatsila domain.

Dalma Lavas

Dalma Lavas form a prominent belt of folded ultramafic-mafic volcanics and volcaniclastics associated with carbon phyllites overlying the Dhalbhum Formation. The lavas occur in an arcuate belt 200km long and 3-7 km wide along the spine of the North Singhbhum orogeny. The volcanics are folded into a large syncline with an axial (F2) surface trending E-W.

Dalma Group of volcanics is informally divided into lower and upper formations. The lower formation overlying the Chaibasa Formation of the Singhbhum Group, consists of carbon phyllite, tuff and quartzite interlayered with volcanics.

MineralisationDetails:

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.

The Reconnaitory traverses undertaken in the area and the chemical analysis results suggest that the area is potential for graphite. The Ranibandh Block to the east of the proposed block has also yielded encouraging results. Mica schists and phyllites are found abundantly in the area which act as the host rock for the graphite. The bands of graphite have been found to occur along the litho-contacts as well as the foliation planes (S1). It is inferred that numerous bands of graphite form a zone of graphite trending ENE-WSW extending from Ranibandh block to the proposed area.

SL NO	SAMPLE ID	MOISTURE (%) ARB	VM (%) DB	ASH (%) DB	S (%) DB	FC (%) DB
1	KRPG1A	0.29	3.14	89.78	0.15	6.93
2	KRPG1B	0.28	2.76	90.93	0.13	6.18
3	KRPG2	0.32	3.74	94.14	0.11	2.01
4	KRPG3	0.26	3.32	92.08	0.12	4.48
5	KRPG4	0.42	2.93	91.03	0.14	5.9

Observation and Recommendations of previous work.

Sudipta Lahiri, Geologist (Sr.) & **Bhupendra Singh**, S.T.A. (Geology) 1990-1993 of GSI had reported occurrence of rock types that have been recorded in the area are, fine grained arenaceous and argillaceous rocks and interbanded calc-silicate rocks, fine to medium grained basic and ultrabasic rocks, granite and granite gneisses, alkaline igneous rocks, quartz-reef and pegmatites.

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Previous Exploration in the proposed block area:

To the east of this block M/s Maheshwari Mining Pvt Ltd, has undertaken the Reconnaissance survey of graphite, in the Ranibandh Area. The graphite bodies have been identified as separate bands within the mica schists, which act as a host rock. Bedrock sampling (Grab & Groove both) has provided encouraging results leading to the identification of the graphite bearing zones. A total of around 1200m of strike length of graphite bearing zone with a number of bands of graphite with variable strike lengths has been identified with a total width of around 50m with individual thickness of the bands varying from 2 to 20 m in a single band. Drilling is yet to be carried out in the block.

A few trenches planned on the basis of interpretation of geophysical anomalies. The trenches also helped in tracing the continuity of the graphite mineralization in some locations. Area is yet to be studied by drilling.

Samples of graphite have been collected and analyzed from within the proposed block. The samples have shown encouraging results and the bands encountered are likely to be an extension of the bands in the adjoining Ranibandh Block.

Block Description

Block Corner points	Latitude	Longitude
A	22.86515627960	86.62732052130
B	22.87128119790	86.66263634740
C	22.84240309070	86.66878089850
D	22.82764445770	86.66499261050
E	22.82290766790	86.64025353340

The quantum of work proposed by the agency in Korapara West (G-4 Level of Exploration) is given in Table below.

Components	G4-stage
Aerial reconnaissance	Nil
Geological Survey	1:12,500 scale for16.25sq km area. Identification of lithology, structure, surface mineralization, borehole corestudiesandoldhistoryofmining, if any.
Geophysical Survey	Regional ground geophysical survey: 3Lkm, 300stns.(200m–400m traverse interval, 10-20m station interval) (i) Magnetic survey (ii) SP Survey
Geochemical Survey	Bedrock samples:100 nos Pit samples: 30nos Trench samples:100nos
Pitting/Trenching	30nos.Pits(1mX 1mX1m):30cu m 10nos. Trenches(10mX1mX1m):100cum
Scout drilling/Systematic drilling	Ten boreholes with a total of 500m of drilling target.
Grab and Chip sampling for Petrographic and Mineragraphic studies	(10PS+10PCS) representative samples from all bed rocks to carry out petrographic studies(PS) and petro-chemistry(PCS).
Core sample	200 borehole core samples from graphite bearing zones. Sample Length1m.
Analyses of samples	BRS+Pit samples+Trench samples+Core samples=100+30+100+100=330nos
Synthesis of all available data	Integration of regional geophysical, geological, and geochemical data. Synthesis of all available data and Report writing

References

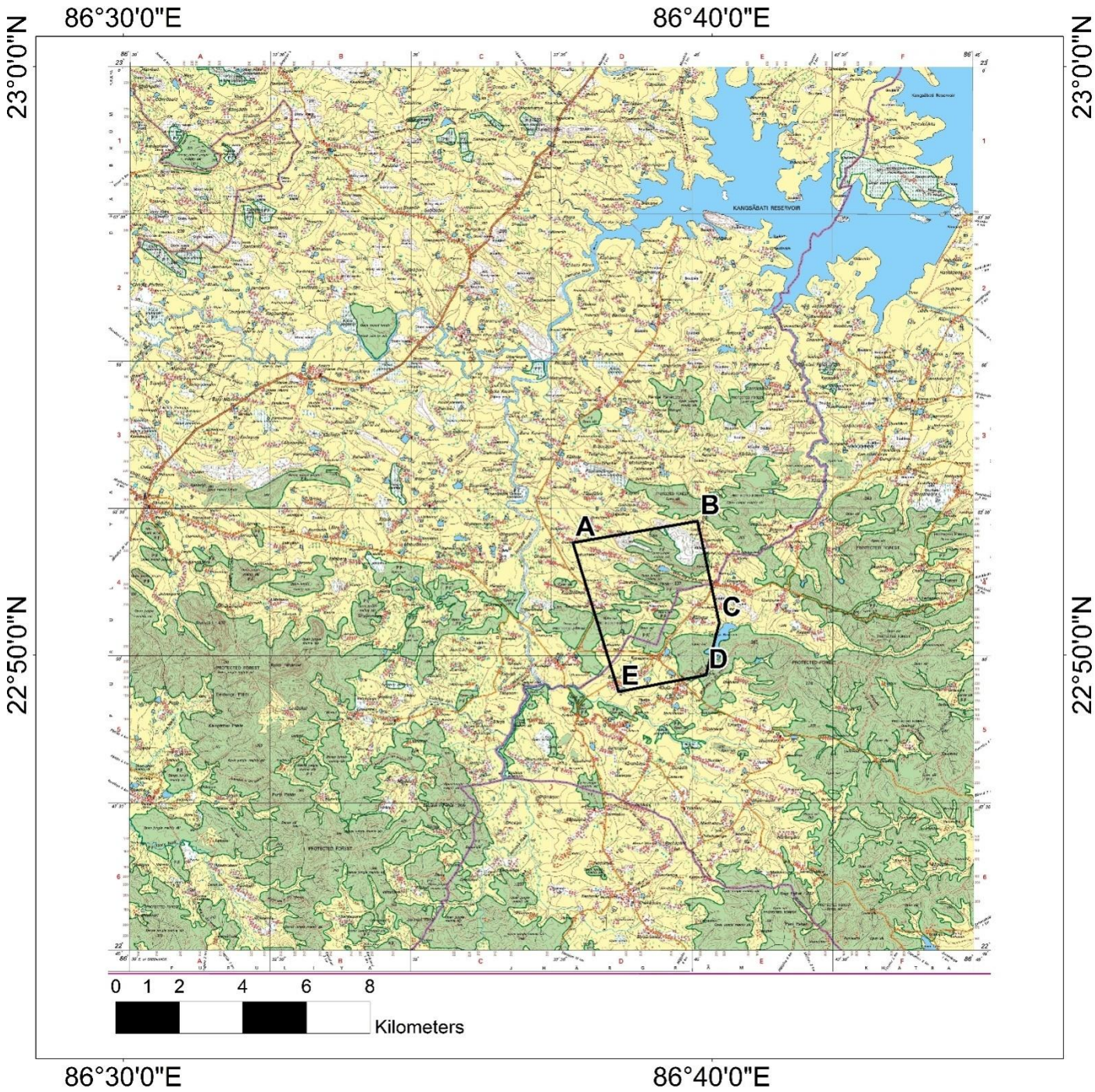
- **SudiptaLahiri**, &**Bhupendra Singh**, Final Report On Specialised Thematic Mapping Of The Area Between Dalma Volcanics And The Tamar Porapahar Shear Zone In Parts Of Medinipur, Purulia And Bankura Districts, West Bengal (1992-93)

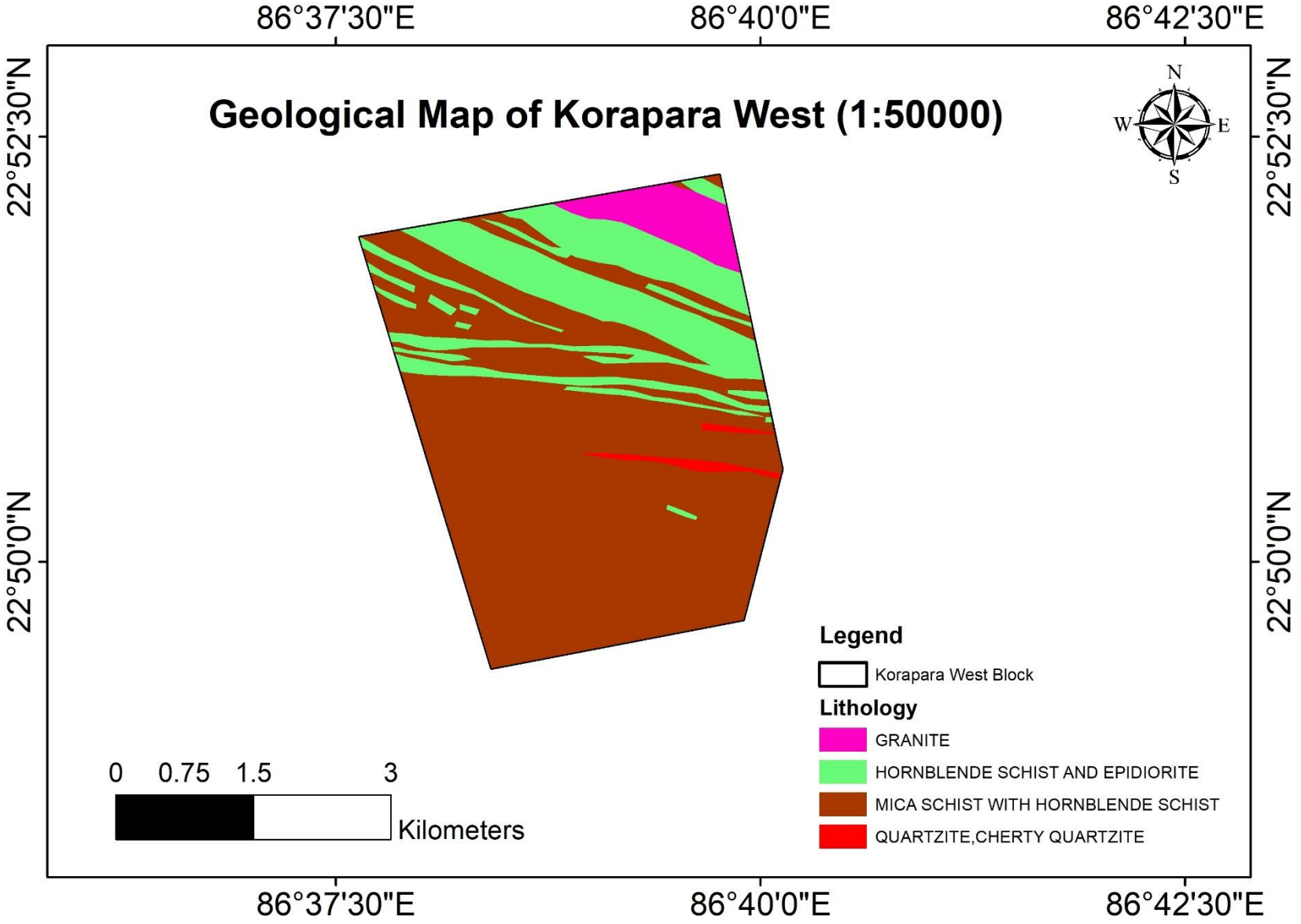
ListofPlates

Plate 1: Block Boundary on Survey of India Toposheet(1:50,000)

Plate2: Block Boundary on geologicalmap1:50,000 (Source: BHUKOSH Portal)

Proposed Timeline for different work components of Graphite investigation in Korapara West Block, Purulia-Bankura District, West Bengal													
	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							**REVIEW**						
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													


86°30'0"E
86°40'0"E
23°0'0"N
22°50'0"N
A
B
C
D
E
KANGSABATI RESERVOIR
PROTECTED FOREST
0 1 2 4 6 8
Kilometers


Geological Map of Korapara West (1:50000)
86°37'30"E
86°40'0"E
86°42'30"E
22°52'30"N
22°50'0"N
N
W
E
S
Legend
Korapara West Block
Lithology
GRANITE
HORNBLENDE SCHIST AND EPIDIORITE
MICA SCHIST WITH HORNBLENDE SCHIST
QUARTZITE,CHERTY QUARTZITE
0 0.75 1.5 3
Kilometers