सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
गोन्डवाना प्लेस, कांके रोड, राँची - 834 008, झारखंड (भारत)
Central Mine Planning & Design Institute Limited
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)
Gondwana Place, Kanke Road, Ranchi - 834 008, Jharkhand (INDIA)
CORPORATE IDENTITY NUMBER - U14292JH1975GOI001223

An ISO 9001: 2015 & ISO 37001: 2016 Certified Company

क्रमांक: सीएमपीडीआई/डीजी/893(ए)/ 578 दिनांक:31.07.2024

e-mail- nmet-mines@gov.in

सेवा में,
निदेशक एन.एम.ई.टी,
कमरा संख्या – 114, एफ विंग, शास्त्री भवन,
डॉ. राजेन्द्र प्रसाद रोड, नई दिल्ली-110001

विषय: Exploration Proposal for Funding through NMET

महाशय,

A proposal for Reconnaissance Survey (G4) for Copper ore and associated minerals in Kubri Kochipur area, Sidhi district, Madhya Pradesh is submitted for consideration and approval of Technical cum Cost Committee (TCC) of National Mineral Exploration Trust (NMET) for funding. The summary of the proposal is as follow-

Sl No	Name of Block	Area (Sq.Km)	Stage of Exploration	Project cost estimate as per SoC of NMET (In crores)
1`	Kubri Kochipur area	90	G4	1.31

The detail proposal along with plans and cost estimate is enclosed with this letter.

सधन्यवाद,

भवदीय,
राजीव सिंह
31/07/2024
महाप्रबन्धक (गवेषण)

Enclosures-

1. Project Proposal of Kubri Kochipur area.
2. Plans of proposed block (block location, litho- log, borehole location etc).
3. Project cost estimate of Kubri Kochipur area.

प्रतिलिपी:-

1. निदेशक (टी/ सी.आर.डी.), सी.एम.पी.डी.आई., राँची – सादर सूचनार्थ
2. श्री हिटलर सिंह , अंडर सेक्रेटरी,भारत सरकार, कोयला मंत्रालय, शास्त्री भवन, नई दिल्ली – 110 115

PROPOSAL FOR RECONNAISSANCE SURVEY FOR Copper Ore and Associated Mineralization (G-4 STAGE)

KUBRI-KOCHIPUR

DISTRICT– SIDHI, MADHYA PRADESH

NMET FUNDED PROJECT

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
गोन्दवाना प्लेस, कंके रोड, राँची - 834 031, झारखंड (भारत)
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Gondwana Place, Kanke Road, Ranchi - 834 031, Jharkhand (INDIA)
CORPORATE IDENTITY NUMBER – U14292JH1975GOI001223

August – 2024

Proposal for Reconnaissance Survey (G-4 level) for Copper Ore and Associated minerals in Kubri- Kochipur Area, District:Sidhi, State: Madhya Pradesh, India.

1.1. Introduction:

1 Copper has been identified as one of 30 critical minerals for India by The Ministry of Mines.

2 India is looking to ramp up its Cu (copper) exploration activities in order to meet the growing domestic demand for the metal. The country is currently a net importer of copper, and its reserves are limited.

3 Securing a stable and sufficient supply of copper is crucial for India's economic growth and its clean energy transition plans.

4 With depleting copper ore reserves, more impetus should be given for new copper exploration projects.

5 Initially considering earlier exploration data available in Bhukosh of GSI, CMPDI has identified an area 90 Sq. Km under the Topo sheet No – 63L/3 for taking up G4 stage of Exploration for Copper ore and associated minerals.

1.2. Location of the Block:

The exploration block is located in the east of Sidhi town, which is the district headquarter of Sidhi district of Madhya Pradesh. The exploration block is well connected with motorable/ metalled road. The Jhansi-Ranchi National Highway NH-39 passes through the block. Part of this Highway connects Rewa to Sidhi. Bargawan(55km, Beohari (75 Km), Rewa (90 Km), Satna (120 Km), of Jabalpur Division of West Central Railway are the nearby Railway stations. The nearest airport from the exploration block is Varanasi which is 190 Km away in NE direction from the block. Co-ordinates of the cardinal points are tabulated below.

Cardinal Point	Latitude	Longitude
1	24° 27' 10.605" N	82° 0' 0.000" E
2	24° 27' 11.692" N	82° 4' 55.513" E
3	24° 21' 24.980" N	82° 4' 55.373" E
4	24° 21' 24.964" N	82° 0' 0.000" E

1.3. Physiology and Drainage:

The general physiography of the area is flat low lying (peneplain) terrain except some isolated low rising hillocks and mostly northeast-southwest striking ridges in the southern part of the block. The altitude of the study area varies between 280m (west) and 500 m (east & North). The streams in this area form dendritic pattern. Nalas flowing in northern part of the area flow toward north and drain into Son River. Nalas flowing in southern part of the area flow toward south eastern direction and drain into Gopad River.

2.0 Previous work:

During the F.S. 1965-66, GSI has carried out the study of barytes occurrence of Sukwari and Bagwari area in Sidhi district of Madhya Pradesh. Together with baryte, preliminary investigation has also been carried out for copper mineralization in Sukwari area by pitting and trenching. Based on the malachite and azurite staining on baryte and limonitization on the surface.

During the F.S. 1966-67, GSI has carried out geochemical sampling to explore for copper, lead and zinc in Sukwari and Bagwari area, in Sidhi district of Madhya Pradesh. The soil cover in the area is of residual type. Geochemical soil samples were collected from the shear zone areas to find out the anomalous zones. Soil sampling was carried out on a grid pattern of 100m and 50m intervals in the shear zones and barytes areas respectively.

A total of 499 samples were collected from the areas, and analysed to for copper, lead

and zinc contents. For copper, the anomalous points coincide mainly with the barytes occurrences. Concentrations upto 700 ppm of copper were recorded in the barytes occurrences (Text Figure 8.2). The maximum copper concentrations were met with in the high grounds of the Bagwari (24°20':81°47'; 63H/15) village. The basic schistose rocks recorded copper values as much as 1000 ppm besides, 800, 600, 300 and 200 ppm concentrations were also noted in the spots. The Bagwari occurrences are similar to the Sukwari occurrences. In the western and north western parts of the Bagwari (24°20':81 47'; 63H/15) village, the copper contents touched the 800 ppm mark in the barytes zone. Besides, copper showing as much as 100 ppm are also scattered in the localities.

Geologist of GSI identified and demarcated the Bahera-Baharia shear zone based on extensive brecciation, ferruginization and large scale silicification within the carbonaceous phyllite of Agori Formation, Mahakoshal Group in the Sidhi District, Madhya Pradesh during their work of regional assessment of copper ore in the area in 1973. The shear zone trends ENE - WSW and extends over 8 km with a width of 50m and shows pervasive base metal mineralization upto 500 ppm in the form of disseminations of chalcopyrite and profuse encrustations of malachite and azurite along with limonitic stains and box works.

The presence of graphite based on softness and finger soiling within this shear zone was vaguely speculated. Choudhary et al., 1976 carried out drilling for copper mineralization in the Bahera-Baharia zone in Sidhi District, Madhya Pradesh and reported around 0.5% to 0.90% Cu.

Dutta, 1977 carried out base metal investigation along Bahera-Baharia shear zone in Sidhi District, Madhya Pradesh. They reported sulphide mineralization in carbonaceous phyllite to be a combination of euxinic syngenetic sulphide and exhalative sulphide with associated tuff deposits and suggested sulphide mineralization to be localized by later shearing and dislocation tectonics aided by subjacent magmatism. The mineralization is of epigenetic strata bound nature. Drilling has indicated a low to medium grade (0.56% to 1%) zone of copper mineralization.

Dutta, 1978 carried out preliminary base metal investigation along Bahera-Baharia shear zone in Sidhi District, Madhya Pradesh. They observed old working, shallow trenches, limonite, box works and malachite stains are the main surface indications for the mineralization. Geophysical surveys carried out delineated five subsurface conductors

and IP zones in the area. Based on surface indications and geophysical anomalies, nine nos. of boreholes were located for subsurface exploration. Drilling proved two ore bodies having 0.5% Cu. Two small ore lenses (0.8% Cu) identified ranges from 1m to 4m thickness and 50m to 100m in strike length.

Mathur, 1979 carried out preliminary base metal investigation along Bahera-Baharia shear zone in Sidhi District, Madhya Pradesh. A 468m of drilling was carried out during the year bringing a grand total of 2984.35m in 10 boreholes since August 1974 (i.e. Kanchan and Pandhare, 1973-74). Besides, six trenches were also carried out along the section line of boreholes no. BH-1, BH-6, BH-9, BH-10 and BH-11 and 210 trench samples collected and analysed for Cu, Pb, Zn, Co & Ni. Out of these ten boreholes, two boreholes namely SD/BH-1 and SD/BH-6, intersected copper zones of some significance (>0.50% of Cu) over thickness of 9m and 6.5m in BH-1 and 2.5m in BH-6. Remaining eight boreholes show less than 0.30% Cu.

Geochemical mapping of in toposheet nos. 63L/3 & 63L/7 covering parts of Mirzapur district of Uttar pradesh and sidhi districts of Madhya Pradesh was carried out by GSI in 2015-16. In toposheet nos. 63L/03 & 07, the Cu content in stream sediment/slope wash samples of the area ranges from 5ppm to 543ppm with mean of 50.84ppm and standard deviation of 45.21. The geochemical dispersion pattern of Cu) indicates local concentration towards the western margin of the toposheet no. 63L/3 near the margin of Semri Group with Sidhi Gneiss.

During the G4 stage of investigation, Sahu and Patel, 2021, documented the discontinuous graphite bearing lenses within carbonaceous phyllite intermittently along its strike length of ~10.3 km and ~40m avg. width from Sukhwari to Bahera village for the first time in the part of T.S. no. 63H15. The graphite lens shows Fixed carbon values upto 5.85% and copper content from 0.09% to 5.05%.

During FS 2021-22 and FS 2022-23, Patel and Singh carried out a total of 10 nos. of boreholes (MPSBG-1 to MPSBG-10) over a strike length of ~1895m with 200m borehole spacing, 776.2m were drilled in Bahera-Goriara block to assess the strike continuity and depth persistence of the graphitic and base metal mineralization. The inclined boreholes mainly with 45° angle were planned to intersect the mineralized zones at first level of intersection (30m). The investigation suggested cumulative dimension of graphitic rich lenses in the Bahera-Goriara block is ~1070m with ~15m average width and that of copper rich band is ~830m cumulative length and ~14m average width. The resources have been estimated under 333 category of UNFC. With the help of cross section method;

a cumulative tonnage for copper rich lodes was calculated to 1.12 MT, 0.57% average grade, and 9.15m average thickness and that of graphitic rich lodes was calculated to 1.22 MT, 5.16% average grade, and 7.54m average thickness. With the help of longitudinal vertical section method, a cumulative tonnage for copper rich lodes was calculated to 1.10 MT, 0.58% average grade, and 9.13m average thickness and that of graphitic rich lodes was calculated to 1.22 MT, 5.16% average grade, and 7.52m average thickness. The depth persistence of graphite in association with base metal mineralization with the help of drilling is documented for the first time in the Mahakoshal Group of rocks.

The graphite bearing lenses and its host rock showed potentiality for base metal (copper) and graphite mineralization near Sukhwari village, Sidhi District, Madhya Pradesh, a part of LSM area carried out by Sahu and Patel, during FS 2020-21.

MECL carried out G-4 level explotaion Bagwari-Sukwari G4 block for copper, lead, zinc, graphite and associated minerals. Kubri-kochipur area is situated in East adjacent to this block. Apart from large scale Geological Mapping in the block, MECL carried out a total of 454.50m of exploratory drilling in 6 boreholes. maximum thickness of the copper zone encountered is 1.00m. Due to the presence of very thin zones of copper in the boreholes, resource of copper was not advisable to be estimated in the block. Precisely, Copper mineralization has been confirmed in borehole no. MSB-01 and MSB-03 having cumulative strike length of 200m and 1.5m thickness at 0.5% Cu cut-off, while cumulative thickness of copper zone is 2.00m at 0.2% Cu cut-off. Gold and silver instances has also been noticed in borehole no. MSB-03.

3.0 Regional Geology and Structure of the Area.

The area falls near the northern boundary of the Central India Tectonic Zone (CITZ) in the close vicinity of Mahakoshal and Vindhyan Supergroup. Central Indian Tectonic Zone (CITZ) is trending in the E-W to ENE-WSW direction with about 20 to 40 km wide and 300 to 350km long. Regionally, the CITZ includes three Proterozoic supracrustal belts namely the Mahakoshal belt in the north, Betul belt in the central and Sausar belt in southern part set in largely undifferentiated gneisses and syn- to post tectonic granites. The northern part of the CITZ consists of an important litho-tectonic unit of Early Proterozoic Mahakoshal rift zone, confined between two Moho reaching faults, the SNNF and SNSF. The SNSF also marks the northern boundary of the Gondwana basins, whereas the SNNF marks the northern boundary of the Mahakoshal Belt and the southern boundary of the Meso-Neoproterozoic Vindhyan basin.

Archaean aged Older Metamorphics consist of talc-chlorite-schist, quartz sericite schist and granite gneiss etc. are the oldest rocks forming the basement rocks in the area. These basic schists have been intruded by basic, ultra-basic and acidic rocks. Over the older metamorphics lie with a faulted contact, members of the comparatively younger metasedimentary rock units to which the name Sidhi Series has been attributed (Narain Kedar,1956). The older schists have also been intruded by basic and ultrabasic rocks metamorphosed into metadolerites and amphibolites and it is also intruded by granite.

Archeans are overlain by Palaeo-Proterozoic Mahakoshal Group aged rocks comprising of meta arkose, conglomerate, phyllites, quartzites, metabasics, tuffs, BHJ and BHQ. Above them, few instances of basic dykes and Granites belonging to Mahakoshal Group are also found as intrusive. These Palaeo-Proterozoic rocks of Mahakoshal Group are overlain by Meso-Proterozoic aged rocks of Jungel Goup comprising Upper Sandstone, Lower sandstone & conglomerate and Semri Series of Vindhyan Super Group which includes Deoland sandstone, Arangi/Kanwari shale, Kajrahat limestone and Deonar porcellanite.

The proposed area mostly exposes lithounits belonging to Archaen granite gneisses and schists represented by the older Metamorphics comprising talc-chlorite-schist, quartz-sericite schist etc, mafics and granites.

The generalized stratigraphic succession of the Kubri-Kochipur G-4 area is given below:

Block Litho-stratigraphic sequence of the area (After GSI)

Group	Litho-units
Semri Group	Deonar Porcellanite
	Kajrahat Limestone
	Arangi/Kanwari Shale
	Deoland Sansdstone
Mahakoshal Group	BHQ/BHJ
	Cherty Quartzite
	Phyllite
Faulted Contact	
Older Metamoerphics (Archaeans)	Granite, Granite-Gneiss and quartz veins
	Mafic and ultramafic rocks
	Quartz-sericite-schist
	Amphibolites, Basic schists-hornblende-chlorite-schist-talc-chlorite-schist, hornblende-schist with lenses of hornblende, magnetite, epidote, quartzite and epidosite

4.0. Objective of the proposed exploration program:

Available basic Geoscience data of GSI & MECL reports have been studied and evaluated. Based on the evaluation the present exploration programme has been formulated to fulfil the following objectives:

- To carry out geological mapping on 1:12,500 scale and demarcate the rock types of hosting mineralization with structural features to identify the surface manifestations and lateral disposition of ore body.
- To check the mineralisation including Copper, Graphite and associated minerals.
- To facilitate the state govt. for auctioning of the block.

5.0 Justification:

- The proposed area is located at North-eastren limit of the Bahera –Baharia Shear Zone. Several occurrences of copper and Graphite mineralization have been reported within the Bahera –Baharia Shear Zone
- Previous exploration works in nearby areas have revealed the presence of old workings and favorable geological setting of copper ore & graphite mineralization. Proposes area also have similar type of Geological setup.
- Geochemical mapping of topo-sheet no 63L/3 & 63L/7 under NGCM has been carried out by GSI during FSP 2015-16 which covers the proposed area. During the geochemical mapping it has been found the Cu concentration in stream sediments varies from 5ppm to 543ppm with mean of 50.84ppm and standard deviation of 45. 21.

  The threshold concentration value of Cu in stream sediments of TS no 63L/3 & L/7 will be 180ppm (mean + 2SD). The concertation copper in UCC is 25ppm (Taylor and McLennan).

  The geochemical dispersion pattern of Cu in the proposed area indicates elevated Cu concertation zone in north & south-central part of the area. In Zone I which is situated in north part of the proposed area, Cu concentration varies from 132ppm to 543ppm. Within Zone II which is situated in south-central part of the proposed area, Cu concentration varies from 106ppm to 220ppm

6.0 Proposed scheme of Exploration:

The Govt. of India enacted the MMDR Amendment Act-2015 duly introducing the system of auction for allocation of Mineral Concessions. In view of the MMDR Amendment Act-2015, Minerals (Evidence of Mineral Contents) Rule-2015 and Mineral Auction Rule-2015, Ministry of Mines, Government of India has directed State Governments for exploration through NMET funding to facilitate the auctioning of blocks. Accordingly, to expedite mineral exploration and make more blocks available for auction through mining lease or composite license.

Accordingly, being an NEA CMPDI has formulated the following scheme of exploration order to achieve the objectives. The details of different activities to be carried out are presented in subsequent paragraphs.

6.1 Geological mapping:

Geological Mapping will be done in the total area of 90 Sq. Km. on 1:12,500 scale. Rock types, their contact, structural features will be mapped. Surface manifestations of the ore bodies available along with their surface disposition will be marked on map. Surface samples of various litho-units for petrological studies and from ore bodies with accessory minerals will be taken during the course of geological mapping.

6.2 Geochemical Sampling

6.3 Surface sampling (Bed Rock Samples, Soil Sample & Stream Sediment Samples)

During the course of Geological mapping the Bed rock shall be collected from the out crops. A total of 100 no's bed rock samples shall be collected, prepared and analyzed.

It is proposed to collect & analyze 30 nos. of soil sample and 30 nos. of stream sediment samples during course of exploration.

6.4 Surveying:

Survey party will be associated with Bed rock sample collection by taking up the points and plotting its location on map for proper interpretation of the sample data. Survey

party will also be associated with Geological Mapping & Magnetic Survey. Rock types, their contact, structural features etc. will be observed during Geological mapping and the Litho-contacts will be plotted for finalization of Geological map on 1:12,500 scale.

6.5 Trenching/Pitting:

Since most of the block is expected to be under cover of soil cover. Thus to expose the underneath rock type for understanding ad collection of suitable samples, 100 Cu.M of Pitting/Trenching may be required.

6.6 Core Drilling:

Based on the positive outcome of the Geological mapping, Pitting/Trenching & Geochemical Analyses the potential ore zone will be demarcated. To find out the potentially and extension of the ore body 5 number of inclined scout boreholes involving 400m of drilling will be carried out for upper level of intersection of mineralized zone.

6.7 Chemical Analysis:

Samples collected (BRS, Soil Samples, Stream sediment samples, PTS & borehole cores) shall be subjected to elemental analyses to check their variation in chemical composition. Proximate analyses of Graphite sample will be carried out to ascertain the FC% in the samples. Few samples are also proposed for whole rock (major oxide using XRF) & trace elements analyses. ICPMS study shall also be carried out for few samples for REE. Fire assay is also proposed for Au.

6.8 Petrological & Minerographic study Studies:

During the course of Geological mapping, 20 samples from various litho-units from surface will be studied for petrography and 15 samples from mineralized zones will be studied for the ore mineral assemblages and their distribution, alteration, enrichment etc in polished sections. 5 sample have been proposed for SEM studies.

Annexure-A

Proposed Quantum of Works

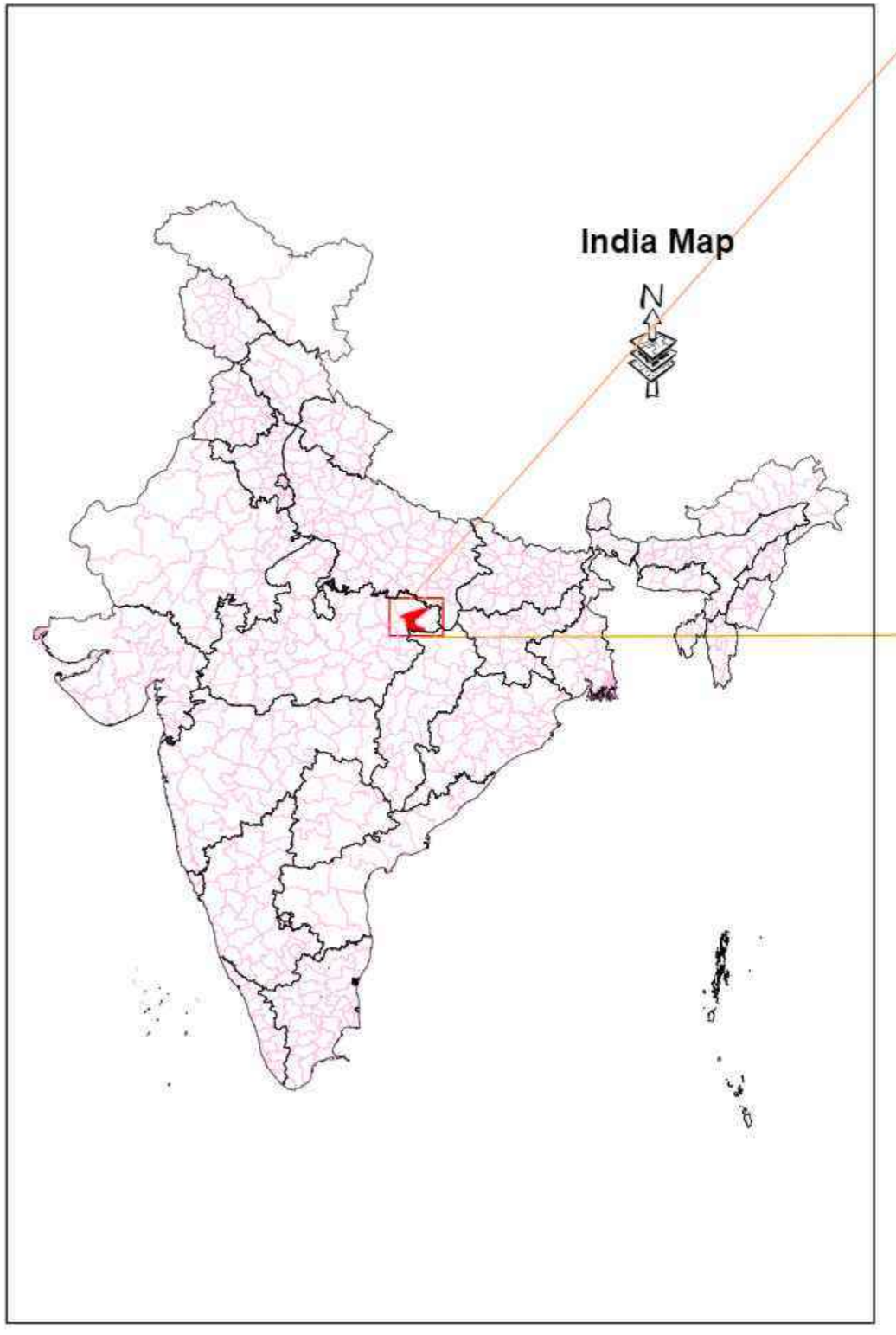
Sl no.			Particularas	Unit	Proposed Quantity
1			***Geological Mapping (on 1:12,500 Scale).***	Sq. Km	90
2			***Trenching and Pitting***		
			Trenches/Pit	Cu.Meter	100
3.			Core Drilling (5 scout boreholes)	m	400
4			***Sample Preparation and Laboratory Studies***		
	A.		**BRS samples**		
		i.	Chemical analysis For 5 radicals (Base Metals)	No	100
		ii.	Internal Check samples (5% of Primary samples)	No	5
		iii.	External Check samples (10% of Primary samples)	No	10
		iv.	Whole Rock Analysis for Major Oxides	No	15
		v.	ICPMS for Trace Elements/REE (34 Element)	No	15
		vi.	Fire Assay for Gold	No.	15
		vii.	Proximate Analyses for Graphite	No.	25
	B		**Pit/Trench Samples**		
		i.	Chemical analysis For Five Radicals (Base Metals)	No	100
		ii.	Internal Check samples (5% of Primary samples)	No	5
		iii.	External Check samples (10% of Primary samples)	No	10
		iv.	Whole Rock Analysis for Major Oxides	No	10
		vi.	Fire Assay for Gold	No.	15
		vii.	Proximate Analyses for Graphite	No.	25
	C		**Soil & Stream Sediment Samples**		
		i.	Chemical analysis For Five Radicals (Base Metals)	No	60
		ii.	Internal Check samples (5% of Primary samples)	No	3
		iii.	External Check samples (10% of Primary samples)	No	6
	D		**Borehole Core Samples**		
		i.	Chemical analysis For 5 radicals (Base Metals)	No	50
		ii.	Internal Check samples (5% of Primary samples)	No	3
		iii.	External Check samples (10% of Primary samples)	No	5
		vi.	Fire Assay for Gold	No.	10
		vii.	Proximate Analyses for Graphite	No.	25
5			***Petrographic Studies***		
	A.		Preparation of Thin Section	No	20
	B.		Study of Thin Section	No	20
6			***Mineragraphic Studies***		
	A.		Preparation of Polished Section	No	15
	B.		Study of Polished Section	No	15
7			***SEM/EDX***	No	5
8			***Geological Report Preparation***	No	1
9			***Exploration Scheme Preparation***	No	1

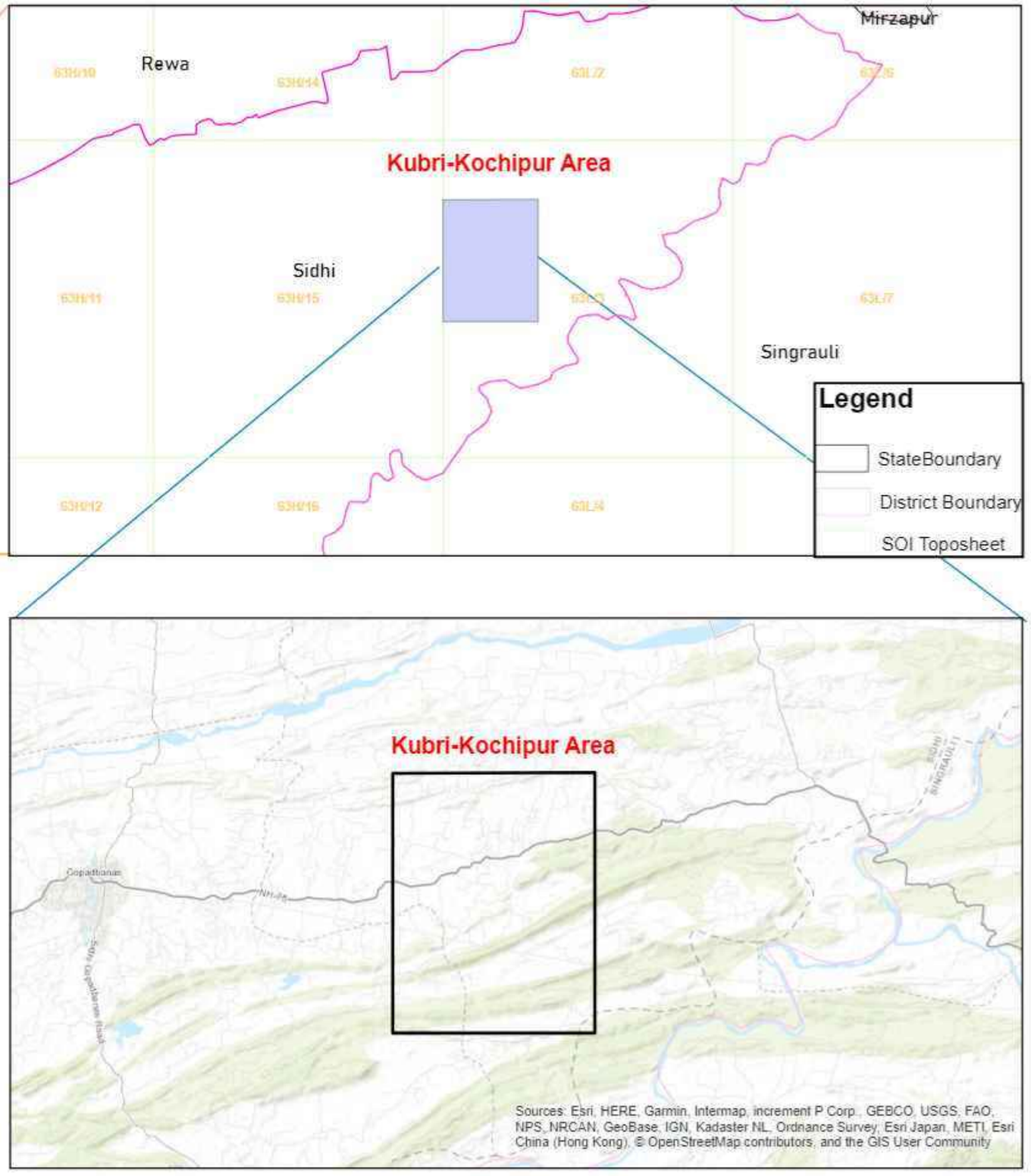
Plates:

1. Location Map
2. Topographical Map
3. Geological Map (1:50000)
4. Geochemical map showing Cu concentration (in ppm) distribution in stream sediments.

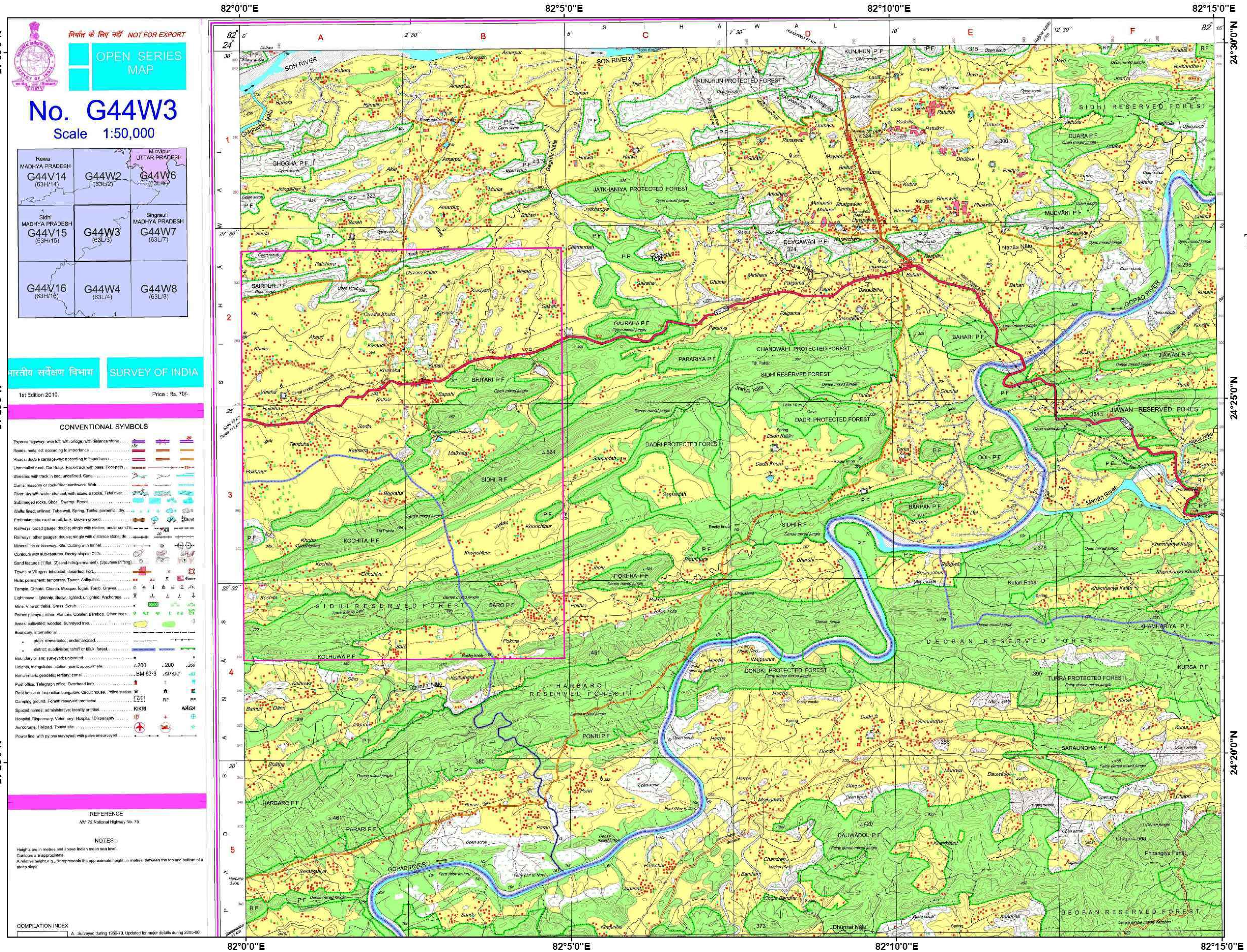
Time Schedule/ for Reconnaisance Survey (G4) , Kubri Kochipur , Sidhi District , Madhya Pradesh														
S. No	Activities													Remarks
		Months	1	2	3	4	5	6	7	8	9	10	11	12	
1	Mobilising	Months													1 months
2	Geologist Party days, Field (1 Party)	Days													150 Days
3	Survey Party days (1 Party)	Days													60 Days
4	Sampling (1Party)	Days													60 Days
5	Laboratory Studies	Nos.													512 sample
6	Geologist Party days, HQ (1 Party)	Days													90 Days
7	Report Writing & Peer Review	Months													3 Months

Location Map,Kubri-Kochipur Area, District ; Sidhi, Madhya Pradesh





All Maps Not to Scale



Topographical Map Kubri-Kochipur Area, Sidhi District, Madhya Pradesh
Part of SOI TS No.63L/3

N

0 1 2 4 6 8
Kilometers

Legend

Kubri_Kochipur_Area

Geological Map of Area in and around Kubri-Kochipur Area, Sidhi District, Madhya Pradesh

81°45'0"E 81°50'0"E 81°55'0"E 82°0'0"E 82°5'0"E

24°25'0"N

24°20'0"N

Legend

Type

- S0
- S1
- NGCM_STREAM SEDIMENTS with Cu conc. in ppm
- Fault
- Kubri_Kochipur_Area_CMPDI_G4_Proposed
- GSI_Kunari_Baharia_G4
- GSI_Sukwari_–Bagwari-_Khirkhori_area_G4
- MECL_BAGWARI-SUKWARI_G4

Lithology

LITHOLOGIC

- BIOTITE SCHIST
- CONGLOMERATE
- DOLOMITE
- GRANITE
- GRANITE GNEISS
- LIMESTONE
- META BASALT
- PHYLLITE
- PORCELLANITE
- QUARTZITE
- SANDSTONE
- SHALE

Geological Map source : BHUKOSH (GSI)

N

0 1 2 4 6 8

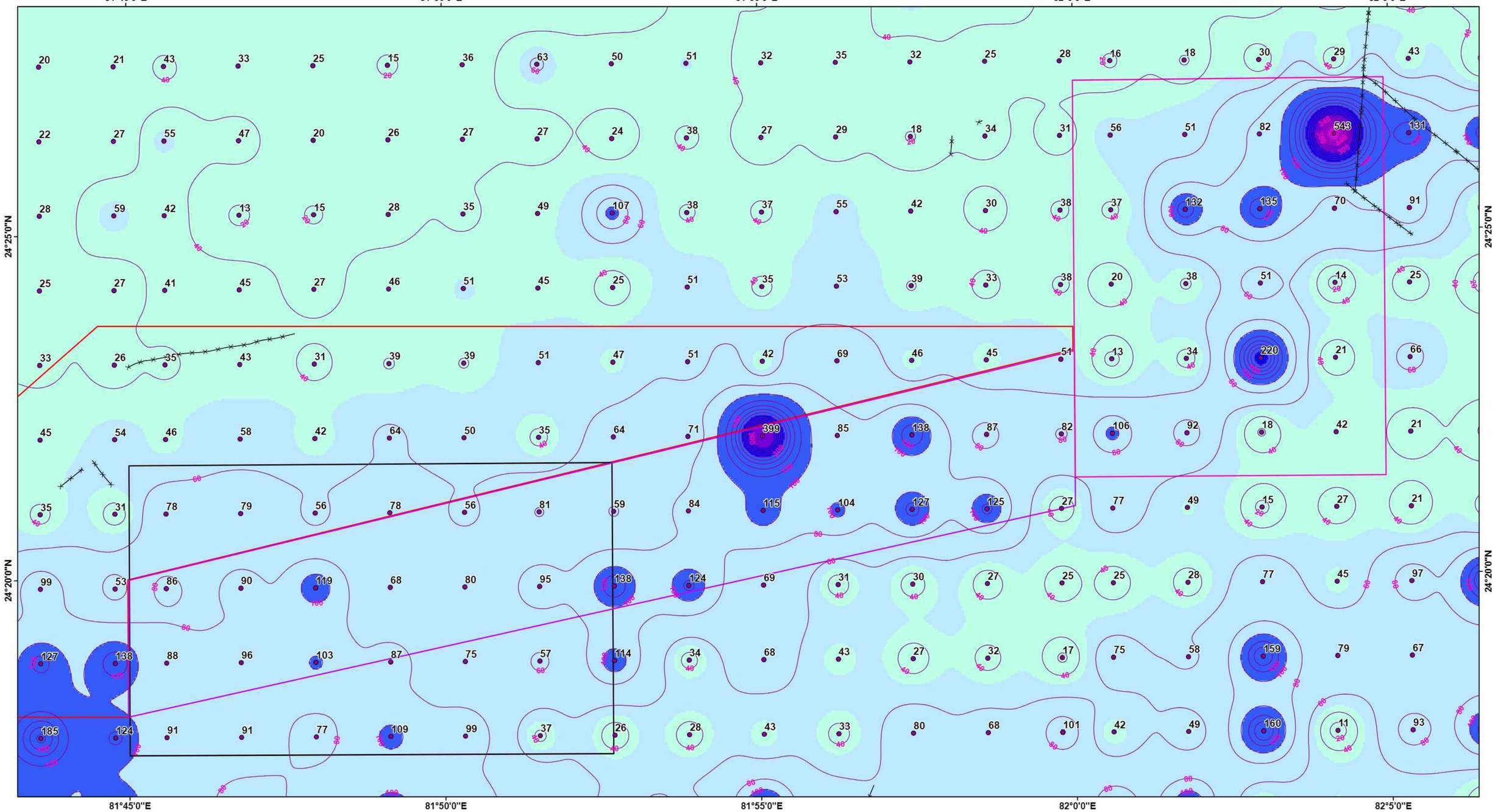
Kilometers

Cu concentration Dispersion map in Stream Sediments of Area in and around Kubri-Kochipur Area, Sidhi District, Madhya Pradesh

81°45'0"E 81°50'0"E 81°55'0"E 82°0'0"E 82°5'0"E

24°25'0"N

24°20'0"N



Legend

- NGCM_STREAM SEDIMENTS with Cu conc. in ppm
- Cu_Cont
- Fault
- Kubri_Kochipur_Area_CMPDI_G4_Proposed
- GSI_Kunari_Baharia_G4
- GSI_Sukwari_–Bagwari-_Khirkhori_area_G4
- MECL_BAGWARI-SUKWARI_G4

Cu_Dispersion in Stream Sediments

ppm
9-50
50 - 100
100 - 200
200 - 300
300 - 400
400 - 500
500- 550

Geological Map source : BHUKOSH (GSI)

N

0 1 2 4 6 8

Kilometers

Project Cost Estimate for Reconnaisance Survey (G4) for Copper & associated minerals in Kubri Kuchipur area, Sidhi District, Madhya Pradesh (Total Block area 90 sq.km (approx); completion time- 12 months)						
						Total
Sl. No	Item Work	Item no in SoC	Unit	Rates as per SoC of NMET	Qty.	Amount (Rs) in Lakh
A	**GEOLOGICAL WORK**					
1a	Geological Party days (1 party) Field	1.2	Day	11000	150	1650000
1b	Geological Party days (1 party)HQ	1.2	Day	9000	60	540000
1c	4 labours/ party (Rs 522/day/labour), As per rates of Central labour Commission)	5.7	Day	2088	150	313200
	Sub Total A					**2503200**
B	**Drilling & Sampling**					
2a	Core drilling	2.2.1.4a	per meter	11500	400	4600000
2b	Sampling - 1 sampler without Labour	1.5.2	Day	5100	60	306000
2c	4 labours/ party (Rs 522/day/labour, As per rates of Central labour Commission)	5.7	Day	2088	40	83520
	Sub Total B					**4989520**
C	**SURVEY WORK**					
3a	Survey Party days (1 party) without Labour for contouring of mineralized zone	1.6.1a	Day	8300	60	498000
3b	4 labours/ party (Rs 522/day/labour), As per rates of Central labour Commission	5.7	Day	2088	30	62640
3c	Fixation of block boundary by DGPS	1.6.2	Per point	19200	12	230400
	Sub Total C					**791040**
D	**PITTING- TRENCHING**					
4a	Pitting (1mx 1m x1m)- 50 no	2.1.2	Cu m	3800	50	190000
4b	Trenching (1mx 1m x5m)- 10 no	2.1.1	Cu m	3350	50	166500
	Sub Total D					**356500**
E	**Laboratory Studies**					
	Chemical Analysis/ ICPS Studies					
I	***BRS Samples***					
7a	Primary Sample for 5 radicals (Cu, Pb, Zn, Cr & Ni)	4.1.7a	Per sample	2506	100	250600
7b	Internal (5%) & External (10%) Check samples of 5 radicals	4.1.7a	Per sample	2506	15	37590
7c	Analysis of Gold by Fire assay	4.1.5a	Per sample	2380	15	35700
7d	Whole rock analysis of Major Oxides	4.1.15a	Per sample	4200	15	63000
7e	ICP-MS studies for REE (34 element)- i.e. (Mn, Co REE etc)	4.1.14	Per sample	7731	15	115965
7f	Proximate Analysis for Graphite	4.1.16	Per sample	3000	25	75000
II	***Pit/Trench Sample***					
7g	Primary Sample for 5 radicals (Cu, Pb, Zn, Cr & Ni)	4.1.7a	Per sample	2506	100	250600
7h	Internal (5%) & External (10%) Check samples of 5 radicals	4.1.7a	Per sample	2506	15	37590
7i	Analysis of Gold by Fire assay	4.1.5a	Per sample	2380	15	35700
7j	Whole rock analysis of Major Oxides	4.1.15a	Per sample	4200	10	42000
7k	Proximate Analysis for Graphite	4.1.16	Per sample	3000	25	75000
III	**Soil/Stream Sediment**					
7h	Primary Sample for 5 radicals (Cu, Pb, Zn, Cr & Ni)	4.1.7a	Per sample	2506	60	150360
7i	Internal (5%) & External (10%) Check samples of 5 radicals	4.1.7a	Per sample	2506	9	22554
IV	***Borehole Sample***					
7g	Primary Sample for 5 radicals (Cu, Pb, Zn, Cr & Ni)	4.1.7a	Per sample	2506	50	125300
7h	Internal (5%) & External (10%) Check samples of 5 radicals	4.1.7a	Per sample	2506	8	20048
7i	Analysis of Gold by Fire assay	4.1.5a	Per sample	2380	10	23800
7k	Proximate Analysis for Graphite	4.1.16	Per sample	3000	25	75000
	Sub Total E					**1435807**
F	***Physical & Petrological Studies***					
8a	Preparation of thin section	4.5.1	per sample	2353	20	47060

8b	Complete Petrographic studies	4.3.4	per sample	4232	20	84640
8c	Preparation of polished section	4.3.2	per sample	1549	15	23235
8d	Complete mineragraphic study report	4.3.4	per sample	4232	15	63480
8e	SEM Studies	4.4.2	Per hour	2940	5	14700
	Sub Total F					**233115**
G	**Miscellaneous Charges**					
9a	Preparation of Exploration Proposal (2% of approved Project cost or 3.8 lakh whichever is lower)	5.1	lump sum	380000	1	217123
9b	Geological Report Preparation (1.5 lakh or 5% of total work value whichever is more)	5.2			1	516959
9c	Peer Review Charges			30000	1	30000
	Sub Total G					**764082**
	Sub Total (A+B+C+D+E+F+G)					**11073264**
	GST (@18%)					**1993188**
	Grand Total					**13066451**