PRELIMINARY EXPLORATION FOR ESTABLISHING ZONES OF COPPER AND ASSOCIATED MINERALISATION IN GOVINDPUR BLOCK, CHANDRAPUR DISTRICT, MAHARASHTRA. (UNFC: G-3)

COMMODITY: COPPER

BY

KARTIKAY EXPLORATION AND MINING SERVICES PRIVATE LIMITED

PLACE: NAGPUR

DATE: 13.04.2024

Summary of the Block for Preliminary Survey (G3 Stage)

GENERAL/BASIC INFORMATION ABOUT THE PROPOSED BLOCK

	Features	**Details**
	Block Name	Govindpur
	Exploration Agency	Kartikay Exploration and Mining Services Pvt. Ltd, Nagpur
	Commodity	Copper and Associated Minerals
	Mineral Belt	The proposed Govindpur Copper Prospect " is located in the western part of Bastar craton and exposes basement gneisses belonging to the Bengpal Group with enclaves of older metapelites and zones of silicification. The gneisses are overlain by sandstone and quartzite equated to Penganga Group.
	Completion period with entire Time Schedule to complete the project	6 Months
	Objectives	The block area occupied by prominent old working and pits and a forest area to the east. This is a northern extension of Thanewasna Shear zones (TSZ). The TSZ were explored by Geological Survey of India (GSI) since 1959 followed by DGM, Maharashtra (1971-74) and recently by GSI in 2009. The following objectives to be taken up during UNFC G3 stage. 1. The block to be explored by Trenching and drilling component. 2. If, above Exploration strategy is successful then further coarse of action will be proposed. 3. To estimate inferred resources (333) along with associated elements as per UNFC norms and Minerals (Evidence of Mineral Content) Rules-2015atG-3level.

	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	Work will be carried out by the proposed agency (Kartikay Exploration and Mining Services Pvt. Ltd).
	Number of Geoscientists	Nos. of Geoscientists:4 (2Field+2HQ)
	Expected Field days (Geology, Surveyor)	Geologist Party days:60 field + 90HQ
		Survey Party days:25

1.	**Location**	
	Longitude-Latitude	79°37'38.00"E 20°28'45.00"N 79°37'38.09"E 20°28'23.58"N 79°36'55.00"E 20°28'23.00"N 79°36'55.22"E 20°28'45.37"N
	Villages	Govindpur
	Tehsil/Taluk	Nagbhir
	District	Chandrapur
	State	Maharashtra
2.	**Area (hectares/square kilometres)**	
	Block Area	0.83sq.km
	Forest Area	Pendhri Reserve Forest Falls in the Block area
	Government Land Area	Data not available
	Charagaha	Data not available
	Private Land Area	Cultivated land
3.	**Accessibility**	
	Nearest Rail Head	The nearest railway station is Nagbhir. Nagpur – Nagbhir-Chandrapur extension line of Southeastern railway (0.76m narrow gauge) passes through Talodi road and Sindewahi road railway stations.
	Road	The area in Nagbhir Tahsil of Chandrapur district is about 120 km from Nagpur. It is approachable by State Highway No. 9B to Talodi from where 9 km metalled road join to Govindpur Prospect area.

4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	Physiographically, the area exhibits a pediment zone/peneplain in major part while minor structural hills and valleys are also seen. Southerly flowing Upasanala and Gondrinadi form the tributaries of Wainganga River.
	Rivers/Streams	Ghodazhari canal system irrigates the paddy field in this area. The area is drained by Gondri Nadi, east of Bothli and also by number of southeasterly nalas. Water level in the wells range from 3 to 9m in depth from surface.
5.	**Climate**	
	Mean Annual Rainfall	In summer temperature ranges from 38^0 to 45^0C while during winter it drops to a minimum of 12^0C. The average rainfall in the area is about 125 cm, much of which precipitated between July and August.
	Temperatures (December)(Minimum) Temperatures (May-June) (Maximum)	Minimum temperatures12°C Maximum temperatures up to45°C
6.	**Topography**	
	Topo sheet Number	55P/11
	Morphology of the Area	The topography is mostly pediplain/pediment except eastern occupied by forest open, bushy, mixed open forest.
7.	**Availability of base line geoscience data**	
	Geological Map (1:50K/25K)	GSI portal (available map 1:50,000 scale, detailed mapping on 1:2000 scale)
	Geochemical Map	GSI collected samples in FS 2008-09
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well Also cal scale maps)	GSI completed geophysical survey like Magnetic, resistivity, SP etc. in FS 2008-09

8.	**Justification for taking up Preliminary Survey**	i) The Govt. of India enacted the MMDR AmendmentAct-2015 duly introducing the system of auction for allocation of Mineral Concessions including copper in order to boost exploration of critical and deep seated minerals. The justification of taking item in G3 stage is mentioned hereunder • Prospecting for copper ore deposits in **Govindpur and Bothli areas** of toposheet no. 55P11 resulted in identification of malachite bearing quartz veins (Pitale et al., 1974. DGM-MH). Chavhan et al., (2010, GSI), reported 3.15% Cu in BRS. • Mahapatra and Dora, (**2009),** Nitnaware, (2011), **Kumaravel (2012)** established Thanewasna copper deposit. Barik **(2015)** carried out further exploration in neighboring area of Thanewasna has given the Ghanpur-Mudholi and Nai Dilli-Lal Heti blocks. • **Khuntia and Kumaravel, (2015),** carried out G4 stage investigation around Bahmni and Minjhari areas and reported quartz reef with copper mineralisation up to 0.37% and 0.6% respectively. Base metal exploration at **Minjhari resulted in copper resource of 1.13 million tons with 0.2%** (Khuntia, 2017). • **Kaushik C.S. &Aparajit N., (2021),** carried out a G-4 stage investigation in and around Shirpur - Motegaon Mendha areas, to establish copper and associated mineralization. They reported copper values ranging from 10 ppm to 2100 ppm **Cu (Av: 1055 ppm)** in the Motegaon quartz vein, and copper values ranging from 240 ppm to 1.10 % Cu (Av: 5620 ppm) **in the Aregaon** quartz vein. Recently GSI and DGM jointly explored the Bothli old working by means of drilling. • The proposed block area is northern extension of Thanewasna Shear zones within Bengpal gneisses of Archaean age. From aforesaid mentioned background information, it has been noticed, not only GSI, state DGM are also associated with exploratory program through mapping sampling and drilling. The proposed block was also investigated by GSI Nagpur office by Large scale mapping, detailed mapping, soil sampling etc, **except Trenching and drilling**.

PROPOSAL OF PRELIMINARY EXPLORATION FOR ESTABLISHING ZONES OF COPPER AND ASSOCIATED MINERALISATION IN GOVINDPUR BLOCK, CHANDRAPUR DISTRICT, MAHARASHTRA. (UNFC: G-3)

1.0.0 INTRODUCTION

1.1.0 Preamble

1.1.1 Copper is an important non-ferrous base metal having wide industrial applications, ranging from defence, space programme, railways, power cables, mint, telecommunication cables, etc. India is not self-sufficient in the production of copper ore. In addition to domestic production of ore and concentrates, India imports copper concentrates for its smelters. The domestic demand of copper and its alloys is met through domestic production, recycling of scrap and by imports.

1.1.2 Copper is a mineral and an element essential to our everyday lives. It is a major industrial metal because of its high ductility, malleability, thermal and electrical conductivity and resistance to corrosion. It is an essential nutrient in our daily diet. And, its antimicrobial property is becoming increasingly important to the prevention of infection. Copper metal does occur naturally, but by far the greatest source is in minerals such as chalcopyrite and bornite. Copper is obtained from these ores and minerals by smelting, leaching and electrolysis. The major copper-producing countries are Chile, Peru and China.

1.1.3 The total reserves/resources of copper ore as on 1.4.2015 as per NMI database based on UNFC system are estimated at 1.51 billion tonnes. Of these, 207.77 million tonnes (13.75%) fall under 'Reserves category' while the balance 1.30 billion tonnes (86.25%) are placed under 'Remaining resources' category. Grade wise there are no reserves with 1.85% or more copper grade. However, 203.83 million tonnes reserves fall under 1% to below 1.85% Cu grade. Of the total ore resources 8.28 million tonnes (0.55%) comprise ore containing 1.85% Cu or more and 657.92 million tonnes (43.53%) resources fall under 1% to below 1.85% Cu grade (Indian Minerals yearbook 2019)

1.1.4 The increasing demand of Copper in the country in recent years can be eased with the exploration of new Copper deposits of economic importance.

1.1.5 Major copper ore deposits can be found in the districts of Singhbhum (Jharkhand), Balaghat (Madhya Pradesh), and Jhunjhunu and Alwar (Jharkhand) (Rajasthan). India is a poor country in terms of copper reserves and production.

1.1.6 The Govt. of India enacted the MMDR Amendment Act, 2015 duly introducing thesystemofauctionforallocationofMineralConcessions.Copperhasbeencategorized in the Fifth Schedule which needs prospecting and exploration by the State Govt. before auctioning of blocks.

1.2.0 Previous work & Background

1.2.1 The area covering 55P/11 was mapped on 1:63,360 scale by Parimoo, M.C. and Nag, P (1959-60). Gneisses with migmatites, metasedimentary enclaves and younger sedimentary cover, equated to Vindhyans were mapped in the area.

- During the FS 1971-1974 Directorate of Geology and mining carried out prospecting for copper mineralisation about 1.8 km east of village Bothli. Directorate of Geology and mining open a large pit of 30mts length, width 25m and maximum depth of 6m near its western wall, filled with quartz and silicified sheared quartz mica schist enriched with malachite.
- Two underground openings are located in this silicified zone at the bottom of the western wall, are vertical and 2m in diameter. This silicified zone comprises of copper, cuprite and malachite.
- Two small circular shafts each about 4 mts in diameter and 6m depth was located to the east of the northeastern corner of the large pits in Govindpur old working.
- Prospecting for copper ore deposits in **Govindpur and Bothli areas** of toposheet no. 55P11 resulted in identification of malachite bearing quartz veins (Pitale et al., 1974. DGM-MH). Chavhan et al., (2010, GSI), reported 3.15% Cu in BRS.
- Mahapatra and Dora, (**2009),** Nitnaware, (2011), **Kumaravel (2012)** established Thanewasna copper deposit. Barik **(2015)** carried out further exploration in neighboring area of Thanewasna has given the Ghanpur-Mudholi and NaiDilli-Lal Heti blocks.
- **Khuntia and Kumaravel, (2015),** carried out G4 stage investigation around Bahmni and Minjhari areas and reported quartz reef with copper mineralisation up to 0.37% and 0.6% respectively. Base metal exploration at **Minjhari resulted in copper resource of 1.13 million tons with 0.2%** (Khuntia, 2017).
- **Kaushik C.S. &Aparajit N., (2021),** carried out a G-4 stage investigation in and around Shirpur - Motegaon Mendha areas, to establish copper and associated mineralization. They reported copper values ranging from 10 ppm to 2100 ppm **Cu (Av: 1055 ppm)** in the Motegaon quartz vein, and copper values ranging from 240 ppm to 1.10 % Cu (Av: 5620 ppm) **in the Aregaon** quartz vein.
- Recently GSI and DGM jointly explored the Bothli old working by means of drilling.
- The proposed block area is northern extension of Thanewasna Shear zones within Bengpal gneisses of Archaean age. The Govindpur block is explored by GSI and State DGM by mapping, sampling, detailed mapping etc **except drilling component.**

1.2.1 Some part proposed area is a free holdarea and east of the block occupied by open mixed jungle. Metapellite occurs as enclaves within granite gneisses and intruded by shear quartz vein.

Based on this information it is expected that deep seated/concealed deposits may intersect the copper zones in silicified quartz micaschist/chlroitemica schist in Govindpur proposed block. Govindpur old working area, having N-S trend and exposed for a strike length for 200m with 5m width and is located about 25m west of main pit at Govindpur. The mineralized quartz reef trending N-S is broadly folded with low plunge of 12^0 to 15^0 towards NE. However, No attempts have been made by any agencies to validate geophysical anamolies by survey methods like Resistivity, SP, chargeability etc. by means of drilling. The recommendations of geophysical report mentioned in FS 2008-2009 is as follows

1.3.0 Location and Accessibility

- The area in Nagbhir tehsil of Chandrapur district is about 120 km from Nagpur. It is approachable by State Highway No. 9B to Talodi from where 9 km metalled road join to Govindpur Prospect area. The road leads onward to Chimur via Neri. Bothli is accessible by jeepable road and is at a distance of 10 km from Govindpur area. The nearest railway station is Nagbhir. Nagpur – Nagbhir-Chandrapur extension line of Southeastern railway (0.76m narrow gauge) passes through Talodi road and Sindewahi road railway stations. The proposed Givindpur block falls in parts of Survey of India Toposheet No. 55P/11.

1.4.0 Physiography & Drainage

Physiographically, the area exhibits a pediment zone/peneplain in major part while minor structural hills and valleys are also seen. Southerly flowing Upasanala and Gondrinadi form the tributaries of Wainganga River. Ghodazhari canal system irrigates the paddy field in this area. The area around Bothli in general is a flat terrain except for two hills comprising younger sedimentary rocks (equivalent to Vindhyans) in the eastern and other in western parts of the area. The area is drained by GondriNadi, east of Bothli and also by number of southeasterly nalas. Water level in the wells range from 3 to 9m in depth from surface.

1.5.0 Climate and vegetations

The climatic conditions in the areas are extreme both in summer and winter. In summer temperature ranges from 380 to 450C while during winter it drops to a minimum of 120C. The average rainfall in the area is about 125 cm, much of which precipitated between July and August.

The area is thickly forested by open and bushy, mixed open forest comprises of Bhramapuri and Pendhri reserved forest to the west and north of Govindpur respectively. Teak, Bija, Tendu, Bamboo etc. are the most common trees noticed in the area.

%.7.0 Regional Geology and Structure

- The Proposed “Govindpur Copper Prospect” is located in the western part of of Bastar craton and exposes basement gneisses belonging to the Bengpal Group with enclaves of older metapelites and zones of silicification. The gneisses are overlain by sandstone and quartzite equated to Penganga Group. Penganga sandstone is best exposed at 2.5 km ENE of Bothli village. It occurs as outlier trending NNW-SSE with gentle dip of $10^0$to 35^0 towards NE. At some places strike varies E-W with northerly dip of 15^0 to 25^0. Penganga sandstone is hard, compact, medium to fine grained, brown whitish yellow or buff colored rock due to presence of ferruginous cementing material. It mainly comprises of grit and arkose.
- The area shows lineaments trending NW-SE and NNE-SSW direction. The mineralization is essentially controlled by NS and NNE-SSW trending lineaments with silicified sheared quartz veins/reef. The silicified sheared quartz vein occurred in the form of ridges at various places in the area, viz: the ridge 1.5 km north of

Sonoli, 2 km south of Motegaon and near Lawari village, are associated with copper mineralisation, malachite encrustation, pyrite, chalcopyrite and a few grains of covellite. The other sheared quartz veins which are devoid of any mineralisation have been noticed about 5 km southwest of Talodhi and about 4 km east of Nander village trending NW and at some places trend varies from NS to NE-SW with dip varying from 350 to 800 towards west.

- In Govindpur and Bothli blocks, malachite encrustation is seen in quartz veins with disseminated fine specks of pyrite and chalcopyrite.
- Bengpal Group of Archaean age occupies part of the investigation area. It comprises of granite gneisses and migmatite with enclaves of hornblende schist, amphibolites, ultramafic and quartz/pegmatite veins. Bailadila Group of Palaeoproterozoic age (2500-2200 m.y) comprising quartzite, banded haematite quartzite with lenses of iron ores occurs as isolated outcrops in the southern part of the area. Penganga Group (equivalent) of Neoproterozoic age occupies in the northern, northeastern and south western part of the area.
- Archaean gneiss forms the plain topography in the area while Penganga sandstone and quartzite forms small hillocks and ridges. Most of the area is covered by thick soil. Bengpal Gneissic Group forming the basement for all the overlying lithounits, consists of granite gneiss/pegmatite with enclaves of older metamorphics (metapelites). Bengpal Group of rocks have general NNW-SSE to NW-SE strike with a gentle dip towards NNE or NE direction. The foliations of Archaean gneisses and schists have NW-SE strike but NE-SW trend is also observed. The enclave of metapelites in basement gneisses trend in $N35^0W$- $S35^0E$ with 25^0 to 50^0 dip towards SW.
- The sedimentary rocks resting unconformably on the metamorphics, referable to Penganga Group, show NW-SE strike with a low dips (4^0 to 10^0) to NE. Sandstones are medium to fine grained, hard, compact, white to buff coloured having minor secondary quartz veins at places.

The regional set up of area is mentioned in table-1

Table: Regional Stratigraphy set up of the area.

<table>
<tr><td>Laterite</td><td></td><td>Cenozoic</td></tr>
<tr><td>Sandstone / Quartzite with shale and conglomerate</td><td>Penganga Group</td><td>Neoproterozoic</td></tr>
<tr><td>Quartz vein- silicified zone</td><td rowspan="3">Bengpal Group</td><td rowspan="3">Archaean</td></tr>
<tr><td>Amphibolite
Quartz monzonite</td></tr>
<tr><td>Granite gneiss- migmatite</td></tr>
</table>

Banded Iron Formation		
Quartzite		

1.9.0 Geology of the proposed Block

The basement rocks represented by Bengpal Gneiss with metapelites, which have been intruded by pegmatite, quartz, and epidote veins, are exposed in the area. Copper mineralisation is manifested by malachite encrustation in silicified zone confined to enclave of quartz chlorite schist within Bengpal gneisses which have been emplaced along N-S and NNE-SSW trending lineaments.

The area has scanty exposures around Govindpur old working as most of the area is covered by thick soil. Detailed mapping on 1:2000 was carried out in Govindpur area. Quartz vein with malachite intruding metapelites (Quartz mica schist) was mapped in Govindpur old working area (GSI unpublished FS 2008-09).

The main old copper mine exposed in southeast of Govindpur comprising encrustation of malachite, cuprite and chalcocite are observed in silicified shear zone intruded within Bengpal gneisses of archaean age. Apart from main old mine pit, two small circular shafts noticed northeast of the main pit, having 4m diameter and depth upto 6m, comprising of minor amount of malachite.

Govindpur old working area, having N-S trend and exposed for a strike length for 200m with 5m width and is located about 25m west of main pit at Govindpur. The mineralized quartz reef trending N-S is broadly folded with low plunge of 12^0 to 15^0 towards NE. A chain of small and isolated old working pits with a huge dump material were located at Govindpur and Bothli area.

Table:2 Local geology of Govindpur block

Laterite		Cenozoic
Sandstone / Quartzite with shale and conglomerate	Penganga Group	Neoproterozoic
Quartz vein- silicified zone	Bengpal Group	Archaean
Quartz mica /chlorite schist		
Granite gneiss- migmatite		

1.10.0 Mineral Potentiality based on geology and ground geochemistry etc.

- Mineralisation is noticed in general along the NNW-SSE trending shear zone, which consists of both metallic and non-metallic minerals. The sulphide mineralization is associated with silicified quartz reef/veins and essentially consists of chalcopyrite, pyrite, chalcocite, covellite and malachite.
- The sulphide mineralisation occur mainly in the form of dissemination, fracture fillings and specks in highly fractured and silicified quartz veins, at places also occur as discrete grains in host rock.
- The mineralisation is essentially structurally controlled confined to shear opening and fracture. The mineralisation appears to be hydrothermal in origin as indicated by wall rock alteration and nature of its occurrences within the host rock.
- The mineralisation in the area may be attributed to hydrothermal origin related to the younger granite intrusives into the basement in the vicinity, which is evidenced by numerous pink felspar and quartz veins within the metapelites.
- The Cu mineralisation in this area displays a distinct structural (fracture planes) and lithological control (altered metapelites) suggesting an epigenetic origin.
- The sulphide crustification and comb structures noticed along fracture planes of silicified quartz veins and metapelites rock also suggests an epithermal type of mineralisation.

3.0.0Block description

3.1.0 The proposed G-3 block for Copper and associated minerals falls in Survey of India Toposheet No. 55P/11 and covers an area of 0.83 sq. km in and around Govindpur village The block locationis given in **PLATE-I.** The Co-ordinates of the corner points of the block area both geodetic and UTM are given in **TableNo.-3**

Table-III.A

Coordinates of cardinal points of Govindpur Block Area (0.83 Sq.Km)

Sl. No.	Corner Points	DDMMSS(WGS84)		UTM44N	
		LONGITUDE	LATITUDE	Easting(X)	Northing(Y)
1	A	79°37'38.00"E	20°28'45.00"N	356829.37	2265107.49
2	B	79°37'38.09"E	20°28'23.58"N	356826.45	2264448.86
3	C	79°36'55.00"E	20°28'23.00"N	355577.75	2264441.54
4	D	79°36'55.22"E	20°28'45.37"N	355589.94	2265129.30

4.0.0 Planned Methodology

In accordance to the objective set for preliminary survey (G-3) of the block, the drilling and is proposed. The Exploration shall be carried out as per Minerals (Evidence of Mineral Contents) Rule-2015.Initially 5 trenches at 100m interval and four boreholes at 50m interval we propose of cumulative down depth of 75m intersecting the mineralized concealed ore body. If proposed Exploration is successful furthermore, drilling proposal may be submitted to know strike continuity of ore body on the either side.

. 4.1.0Drill Core Logging:

4.11.1. The borehole cores would be logged systematically. Details of the litho units, colour, structural feature, texture, mineralization, % recovery of core, rock quality designation (RQD) etc. would be recorded.

4.12.0 Drill Core Sampling:

4.12.1. The cores recover while drilling will be sampled as Primary sample. The length of each sample will be kept 1.00m. Depending upon the thickness of particular type of copper ore and its physical character the length of the sample may vary. The primary core samples for copper mineralization will be analysed for 8 elements 'mainly Cu, Pb, Zn, Co, Ni, Ag, As and Au.

4.12.2. A total of 300 (± 10%) no of core samples shall be generated in the drilling process. Samples will be analyse for Copper mineralization (Cu, Pb, Zn, Co, Ni, Ag, As and Au)

4.12.3. All primary and Check samples (5% of Primary samples) and all will be analyzed in NABL Chemical Laboratory for analysis of Cu, Pb, Zn, Co, Ni, Ag, As and Au

4.12.4. Total 30 Nos of composite samples will be analysed for Cu, Pb, Zn, Co, Ni, Ag, As and Au

4.13.0 Whole Rock Analysis:

4.13.1.Whole Rock analysis for Cu, Pb, Zn, Co, Ni, Ag, As and Au radicals will be carried out on 10 Nos samples to check the rock types, their variation in chemical composition.

4.14.0Petrological & Mineralogical Studies:

4.14.1. During the course of Tenching and core drilling 20 samples from various litho units intersected in boreholes 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.

4.15.0 Justification :

The Govt. of India enacted the MMDR Amendment Act-2015 duly introducing the system of auction for allocation of Mineral Concessions. Copper has been categorized in the Fourth

Schedule which need prospecting and exploration by the State Govt. before auctioning of blocks. The area contains the continuation of Thanewasna shear zone. Based on the evaluation of previous work and the Copper occurrences identified during the filed visit and also the recommendation from GSI. Hence exploration program at G-3 level hasbeenpreparedinordertofindoutsurfaceanddepthcontinuityofcopper mineralization.

4.16.0NatureQuantumandTarget

4.16.1. Details of the particular, Quantum and the targets are tabulated in **Table No.-IV.A**

Table No-IV.A

Envisaged Quantum of proposed work in Govindpur area, Chandrapur District of Maharashtra G3 Block

Sl. No.	Item of Work	Unit	Proposed Quantum of work
	Topographic survey	Sq Km	0.83
	DGPS Survey for trench and borehole locations	Point	9
1	Trenches (8 x 2 x 3) each (Total 5 propose)	Cu. M	240
2	Core Drilling (4 Scout Boreholes)	m.	300.00
3	Sample Preparation & Chemical Analysis	nos	345
A.	Primary samples for Copper (Core)		
	i)Primary samples for 8 radicals i.e. Cu, Pb, Zn, Co, Ni, Ag, As and Au	Nos.	300
	ii)Internal Check samples (5%ofPrimary samples) for 6 radicals	Nos.	15
	iii)External Check sample (10% of Primary samples) for 6 radicals	Nos.	0
B.	Composite Samples for Mineralised (Core) for 8 radicals i.e. Cu, Pb, Zn, Co, Ni, Ag, As and Au	Nos.	30
C.	Whole Rock Analysis		
Sl. No.	**Item of Work**	**Unit**	**Proposed Quantum of work**
	Cu, Pb, Zn, Co, Ni, Ag, As and Au	Nos	10
4	Petrographic Studies	Nos	20
5	Mineragraphic Studies	Nos	15
6	Report Preparation (Digital format)	Nos.	1

5.0.0 Man power Deployment

5.1.0 Man power deployment List will be provided later.

6.0.0 Break-up of Expenditure

6.1.0 Tentative Cost has been estimated based on Schedule of Charges (SoC) of projects funded by National Mineral Exploration Trust (NMET) w.e.f. 01/04/2020. The total estimated cost is Rs. **101.64 Lakh**. The summary of tentative cost estimates for Exploration work (G-3Level) is given in **Table No.-VI. A** and details of tentative cost estimates is given in **Table No.–VI.B**. Tentative Time schedule/action plan for proposed Exploration work (G-3) isgiveninTableNo.VI-C.

Table No-VI.A

Summary of Tentative Cost Estimates for Exploration Work (G-2Level) Exploration

Sl.No.	Item	Total
1	Survey work	**3,09,480**
2	Geological Work	**30,00,480**
3	Sampling work	**2,13,480**
4	Drilling 11,500	**51,60,410**
5	Laboratory Studies	**15,38,232**
	Subtotal	**1,02,22,082**
6	Report	**2,62,000**
7	Per Review	**10,000**
8	Proposal Preparation	**1,68,900**
	Total	**1,06,62,982.00**
9	GST (18%)	**19,19,336.76**
Totalcostincluding18%GST		**1,25,82,318.76**
SAY, in Lakhs		**125.82**

Estimated cost for Exploration Work (G3) for Copper & Associated ore in Govindpur area Chandrapur District of Maharashtra. [Blockarea-0.83sq.km; Nos. of Borehole-2; Borehole depth range-250m;Schedule timeline-6 months]

S.No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC-Item-Sl No.	Rates as per SoC	Qty.	Amount (Rs)	
1	**SURVEY WORK**						
	Surveyor	Day	1.6.1a	8300	30	2,49,000	
	Labour (4 labour)	Day	5.7	504	120	60,,480	
	GEOLOGICALWORK						
i	Charges for one Geologist per-HQ	day	1.5.1a	9,000	90	8,10,000	
	Charges for one Geologist per-HQ	day	1.5.1a	9,000	90	8,10,000	
i	Charges for one Geologist-Field	day	1.5.1a	11,000	60	6,60,000	
ii	Charges for one Geologist-Field	day	1.5.1a	11,000	60	6,60,000	
iii	1 labours / party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	60	30,240	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt whichever is higher
iii	1 labours / party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	60	30,240	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt whichever is higher
iv	CoreSampling-1Samplers Labour charge not included	day	1.5.2	5,100	30	1,53,000	
v	4 labours/ party (Rs 504/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	504	120	60,480	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt.whichever is higher
					SubTotal-A	**35,23,440**	
D	**DRILLING**						
i	Drillingupto300m (Hard Rock)(1rigs)	m	2.2.1.4a	11,500	300	34,50,000	
iii	Land/Crop Compensation	Per BH	5.6	20,000	4	80,000	Amount will be reimbursed as per actuals or max.Rs.20000perBHwithcertificationfromlocalauthorities
iv	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	4	8,000	

v	Transportation of Drill Rig & Truck associated per Drill	Km	2.2.8	36	500	18,000	Certification in this regard is required to be provided
vi	Monthly Accommodation Charges for drilling Camp (upto 2Rigs)	month	2.2.9	50,000	4	2,00,000	
vii	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	1	2,50,000	
viii	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	1	2,50,000	
	Borehole plugging by Concrete	Meters		30	300	9,000	
	Core Boxes	Meters		1590	300	4,77,000	
	Core Boxes Transportation	Km		36	300	10,800	
	Trenching (2x2x3) x 5	Cum		5330	60	3,19,800	
ix	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	0.5	11,010	Road Making will be considered as per the requirement and Road Making Charges will be reimbursedformax.4km.
x	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes and By DGPS	Nos	1.6.2	19,200	4	76,800	*8Boreholesand 2 base station
					SubTotal-B	**51,60,410**	
E	**LABORATORYSTUDIES**						
1	**ChemicalAnalysis**						
i	**Primary &Check samples for Copper**						
	a.Primary Samplesfor8 radical(Co, Pb. Zn, Co, Ni, Ag, As & Au)	Nos	4.1.7a+7b	3511	300	10,53,300	
	b-Internal (5%) Checksamplesfor8radical (Co, Pb. Zn, Co, Ni, Ag, As & Au)	Nos	4.1.7a+7b	3511	15	52,665	
ii	**Composite samples for Copper**						
	a.Composite Samplesfor8 radical (Co, Pb. Zn, Co, Ni, Ag, As & Au)	Nos	4.1.7a+7b	3511	30	1,05,330	
2	**Physical & Petrological Studies**						
i	Preparathion of thin section	Nos	4.3.1	2,353	35	82355	

ii	Complete petrographic study report	Nos	4.3.4	4,232	20	84640	
iii	Preparation of polished section	Nos	4.3.2	1,549	8	12392	
iv	Complete mineragraphic study report	Nos	4.3.4	4,232	15	63480	
v	Digital Photographs	Nos	4.3.7	280	45	12600	
vi	Whole Rock Analysis (Major oxide and8 Additional trace elements)	Nos	4.1.15a& b	7147	10	71,470	
					SubTotal-C	**15,38,232**	
F					**Total A to C**	**1,02,22,082**	
G	**Geological Report Preparation**		**5.2**	For the projects having cost exceeding Rs.50lakhs and less than Rs.150lakhs-Aminimum of Rs.2.5lakhs or 5% o the value of work Whichever is more		**2,62,000**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
H	**Peer review Charges**		**Asper EC decision**			**10,000**	
I	**Preparation of Exploration Proposal (5Hard copies with a soft copy)**	**5 Hardcopies with a soft copy**	**5.1**	2% of the Cost or Rs.3.8Lakhs which ever is lower		**1,68,900**	EA has to submit the Hard Copies and the soft copy of the final proposal along with Maps and Plan a suggested by the TCC-NMET in its meeting while Clearing the proposal.
K	**Total Estimated Cost without GST**					**1,06,62,982**	
J	**Provision for GST (18%ofl)**					**19,19,336.76**	GST will be reimburse as per actual and as per Notified prescribed rate
K	**Total Estimated Cost with GST**					**1,25,82,318.76**	
					Or Say Rs. In Lakhs	**125.82**	
Note:							
1	If any part of the project is out sourced,the amount will be reimbursed as per the Paragraph3 ofNMETSoCandItemno.6ofNMETSoC.Incaseofexecusionofthe project by NEA on its own,a Certifiate regarding non out sourcing of any component/project is required.						

Estimated cost for Exploration work for Govindpur Copper Block, District: Chandrapur, Maharashtra. [Blockarea-0.83sq. km; Nos .of Borehole- 2;Boreholedepth range-260m;Schedule timeline- 6months

S.No.		Months/Days	1		2	3	4	5	6
1	Camp Setting	months							
3	Survey days	days							
6	Drilling(1rig)	m							
7	Geologist days	days							
8	Sampling days	days							
9	Camp winding	months							
10	Laboratory Studies	months							
11	Geologist days, HQ	days							
12	Report Writing with Review	months							

	
Photograph showing eastern part of Govindpur old working area, Chandrapur District (55P/11).	Photograph showing shaft in northern part of Govindpur old working area, Chandrapur District (55P/11).
	
Photograph showing dumped material covering main old working of Govindpur,	Photograph showing a close view of main old working area near

Chandrapur District (55P/11).	Govindpur village, Chandrapur District (55P/11).
	
Photograph showing malachite encrustation in silicified zones confined to enclaves of metapelites within Bengpal gneisses.	Photograph showing shaft in Western part of Govindpur old working area, Chandrapur District(55P/11).