Proposal for Mailar Base Metal - Gold Prospect Block in Mailar Area, Lalitpur District, Uttar Pradesh State for Reconnaissance Survey (G4 Stage) under NMET

(Cu-Mo-Au-tellurides)

By

Geovale Services Private Limited

Place: Kolkata
Date: 17th January 2024

Contents

Summary of the Block for Reconnaissance Survey (G4 Stage)

GENERAL INFORMATION ABOUT THE BLOCK

	Features	Details
	Block ID	GSPL/NMET/UP/2023/BLOCK B
	Exploration Agency	Geovale Services Private Limited
	Commodity	Cu, Mo, Au (+ Tellurides)
	Mineral Belt	Bundelkhand craton
	Completion Period with entire Time schedule to complete the project	12 months
	Objectives	(i) To explore for mineralization potential for Cu, Mo, Au, tellurides in and around Mailar area (ii) Identify Cu, Mo, Au, tellurides mineralization targets for Geological Resource (G3) assessment
	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	The exploration will primarily be carried out by the proposed agency. Some elements of the exploration program like sample assay, drilling etc. will be outsourced (the details given in the exploration plan). The name of outsourced agencies and the components to be outsourced will be decided based upon the results from early stages of exploration.
	Name/ Number of Geoscientists	7 geoscientists

	Features	Details
	Expected Field days (Geology) Geological Party Days	Total field man-days (Geologist): approximately 270 man-days No of field days- approximately 120 days
1.	Location	
	Latitude (N)	24.764° to 25.0°
	Longitude (E)	78.25° to 78.4°
	Villages	Mailar, Lagaon, Jakhora, Bhadra and Budero
	Tehsil/ Taluk	Lalitpur
	District	Lalitpur
	State	Uttar Pradesh
2.	Area (hectares/ square kilometers)	
	Block Area	206 square kilometers
	Forest Area	Approximately 45 sq km (Plate 3)
	Government Land Area	Not known
	Private Land Area	Not known
3.	Accessibility	
	Nearest Rail Head	Lalitpur Junction
	Road	NH 3, NH 86
	Airport	Gwalior Airport, Raja Bhoj International Airport
4.	Hydrography	
	Local Surface Drainage Pattern (Channels)	Dendritic
	Rivers/ Streams	Betwa, Jamni, Shahzad
5.	Climate	
	Mean Annual Rainfall	170 cm/yr in hilly areas to 84 cm/yr in Western U.P.

	Features	Details
	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	Minimum- 3 to 4 °C Maximum- 43 to 45 °C
6.	**Topography**	
	Toposheet Number	54L/5 (Plate 2)
	Morphology of the Area	This area is generally undulatory with inselbergs and long serrated ridges.
7	**Availability of baseline geoscience data**	
	Geological Map (1:50K/ 25K)	Available
	Geochemical Map	Available
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as local scale GP maps)	Not Available in GSI Portal
8.	**Justification for taking up reconnaissance survey / Regional Exploration**	**A. Regional Geology and mineralization potential of the south-west part of the Bundelkhand craton:** Bundelkhand craton spans over 29,000 sq. Km in central India (Pati, 2020). It mainly comprises of younger granite-granodiorite rock suites and older supracrustals of ages ranging from ~3.4 Ga to 2.5 Ga. Older granitoids belong to both sodic and potassic TTG clans and are restricted in large swaths along the E-W trending Bundelkhand Tectonic Zone in the central part of the craton (Fig.1). Younger granitic rocks belong to I-type and some S-type granites. These granites cover majority areas of the craton. These granites span a period of ~700 My between 1.9 Ga and 2.58 Ga (Pati et

Features	Details
	al., 2020). Two very conspicuous features of southern and western part of the Bundelkhand craton are: i. Extensive presence of advance argillic alteration represented by many pyrophyllite-diaspore deposits ii. Presence of many NNE-SSW and NW-SE trending Giant Quartz Veins (GQVs) that continue for few tens of kilometers with a width of few tens of meters (Basu, 1986; Bhattacharya and Singh, 2013) (Fig.1). Commonly, GQVs and the locales of advanced argillic alteration are spatially associated. Neither the advanced argillic alteration zones nor the GQVs are studied or characterized well to understand their genetic relationship, relations with the host granitoids, the fluids responsible for the extensive alterations. There is a strong possibility that such large tracts of advanced argillic alteration represent either high sulphidic alteration (commonly associated with porphyry Cu-Mo-Au deposits), or chloride-dominated acidic alteration (commonly associated with Iron Oxide Cupper Gold/IOCG type of deposits). The GQVs on the other hand, are related to extensive hydrothermal activity associated with some epigenetic mineralization. **B. Geology and Mineralization potential of the neighboring areas:** i. Some previous reports with Au, Mo and Cu mineralization incidences in the nearby region of the proposed block exist (Pati et al., 2014; Pati et al., 1997; Singh and Singh, 1986). Few of these reports are later followed up by geophysical surveys and detailed geochemical analyses.

	Features	Details
		ii. Few test drillings were also carried out in the Palar area located about 65 km northeast of the present block (Absar et al., 1999). The test drillings were not successful in locating any substantial base-metal or gold mineralization. However, the drilling data indicated a strong possibility of finding base metal and gold mineralization at depths beyond the drilled depth. As such Absar et al (1999) recommended continuing further exploration in the area. iii. A detailed geochemical survey was carried out by GSI around a GQV located (18 km) east of the proposed block. A consistent Cu anomaly ranging 100 to 450 ppm was noted. The authors recommended follow up geophysical and detailed geochemistry to locate possible Cu source. **C. Local geology and its mineralization potential:** i. The area is covered by different phases of granites related by magma differentiation, which is a favorable condition for mineralization. ii. The area includes a number of GQVs which can be classified into two groups. One, NNE-SSW trending major GQVs and the other NW-SE trending minor GQVs. These minor GQVs represent lower order shear zones that are usually favorable for gold mineralization. iii. GSI's NGCM data show high positive anomaly (i.e >5 times crustal abundance) for elements like Ag, Hg, Sb, As, Bi in different parts of the block (Fig.2). These anomalies are indicative of possible porphyry type Cu-Mo-Au deposit in the area. iv. About 30 sq km area in the southern part of the

	Features	Details
		proposed block has recently been studied by the NCEGR, GSI Faridabad, in detail for its alteration zonations and mineralization potential using trace element data of different diagonistic minerals. The work recommended follow up exploration in the area for porphyry type of Cu-Mo-Au deposit. (Banerjee and Shrivastava, GSI F.S.P: 2019-21) In view of positive leads as noted above, the area seems prospective for Cu-Mo-Au deposits. A summary of the prospectivity analyses of the area in a Mineral System Analyses (MSA) framework is given in section II (page 11).

DETAILED DESCRIPTION OF THE BLOCK

I. Block Summary

Physiography

The area under report falls in the Survey of India toposheet No. 54L/5, lying between the parallels of latitudes 24.76 and 25.0°N and longitudes 78.25 and 78.4°E. The area is a gently undulating country with a general slope towards north. Occasionally the granitic rocks form low hillocks and tors. Some of the hillocks attain considerable heights and form prominent landmarks. The striking feature of this part of Bundelkhand terrain, like other parts, is the presence of narrow ridges of quartz reefs running for few kilometers, almost continuously, and at times with intervening gaps. These quartz reefs, attaining variable heights, break the monotony of the surrounding country and draw the immediate attention of the observer. The general contour level of the area varies between 1050 ft. and 1150 ft. above mean sea level.

The Betwa is the major river, draining this area and it flows through the country lying in the northwestern corner of the sheet No. 54L/5, with a more or less S.W.-N.E. trend. This forms the natural boundary between Uttar Pradesh and Madhya Pradesh. It is fed by numerous nalas, at many points, the most important of which is Kherar Nala which has its origin in the south central part of

the sheet. Shahzad nadi, having a northerly flow drains the southeastern part of the area. Kharkhari nala is its main tributary.

Boundary Coordinates:

Corner Points	Latitude	Longitude	Corner Points	Latitude	Longitude
A	24.7464	78.2506	E	24.9997	78.4038
B	24.8901	78.2501	F	24.9448	78.4027
C	24.9676	78.3613	G	24.8324	78.3489
D	24.9997	78.3904	H	24.7694	78.2848

Background Geology (Regional Geology, Geology of the Block)

Regional geology:

The study area is an integral part of the Bundelkhand Craton also known as Bundelkhand Granitoid Complex (BGC). The BGC covers 29,000 km^2, lying between 24°11' to 26°27' N and 78°10' to 81°24' E, represents a semicircular outcrop (Fig.1). Broadly, it is delimited by Great Boundary Fault (GBF) in the west and the Son-Narmada lineament in the south. The low-grade metamorphic rocks of the Bijawar Group (Paleoproterozoic) occur to the south, southeast, and the Vindhyan Supergroup (Meso-to Neoproterozoic) occur to the southeast, south, southwest, and west.

The granitic rocks of the BGC mainly comprise of granite-granodiorite rock suites and supracrustals of different ages ranging from ~3.4 Ga to 2.5 Ga. The older granitic suites and supracrustals are concentrated as large swaths along the central part of the craton marking the Bundelkhand Tectonic Zone (BTZ). They are characteristically well foliated and are dominated by TTG gneisses with minor supracrustal represented by amphibolite, BIF, meta-ultramafics, calc-silicate rocks etc.

The younger granitic rocks mostly span a period of ~700 My between 1.9 Ga and 2.58 Ga (Pati et al., 2020). These younger granitic rocks cover the majority of the areas of the Bundelkhand craton. They are represented by different varieties of granite like mozogranite, syenogranite, high potash anatectic granite, granodiorite etc.

There are over 15 major quartz reefs spaced at 12.5 km to 19 km apart with width of 50 to 60 m and average length of 35 to 40 km are seen in BGC. Dolerite /gabbro dykes intrude all the granitic rocks representing the last phase of granitic activity. They predominantly trend in NW – SE direction. These quartz reefs are the most prominent litho units in the area as these form linear hills/ridges rising sharply above the ground. They are generally white to buff in colour and generally show pinching and swelling nature.

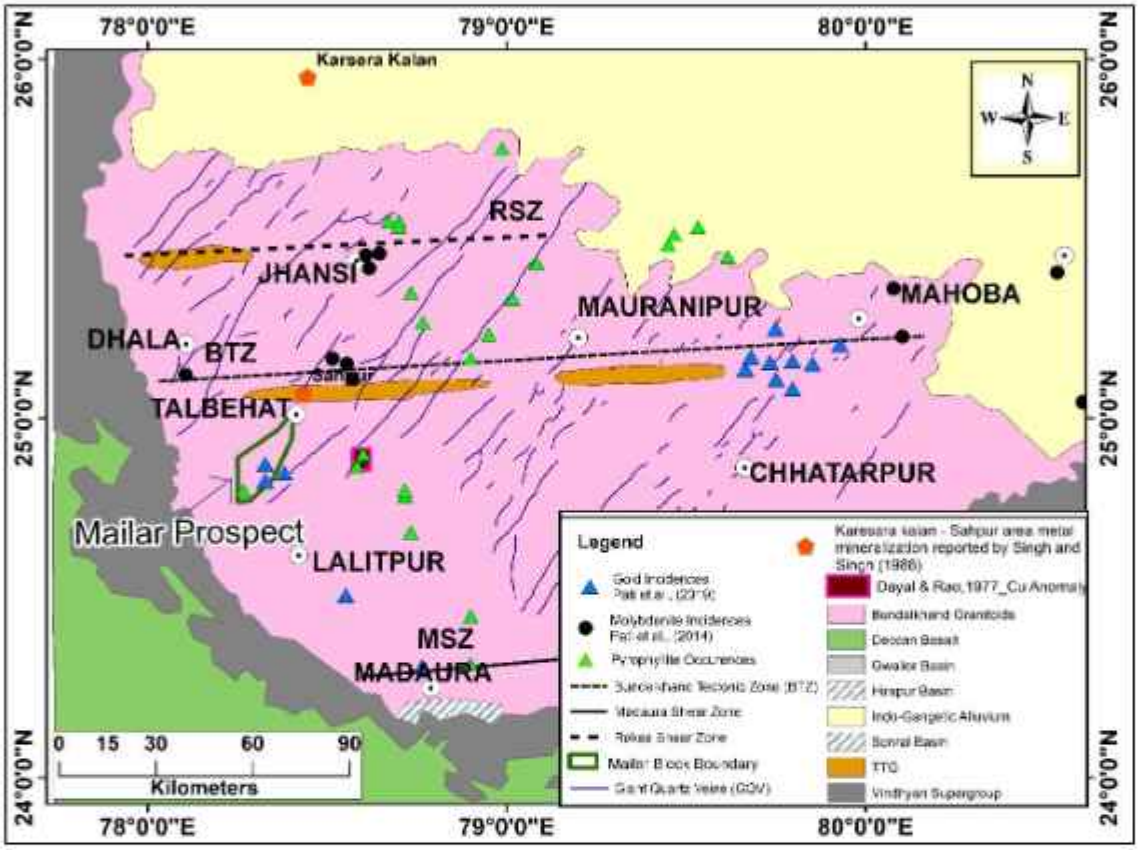

Figure 1. Geological map of Bundelkhand craton (by Basu, 1986; Geological survey of India). Note dense array of Giant Quartz Veins (GQV) shown in blue lines. Outline of the proposed Mailar block is marked by green polygon.

Geology of the proposed block:

The proposed block is largely occupied by massive (non-foliated) granites of different modal composition (Plate 4). They include the following:

i. Fine to medium grained pink granite.
ii. Fine to medium grained grey granite.
iii. Coarse grained porphyritic pink granite.
iv. Porphyritic grey granite
v. Quartz veins and reefs
vi. Pegmatite dykes and amphibolites.

Apart from one or two small patches, these granites are largely devoid of supracrustal enclaves. Of a number of GQVs in the area, the most prominent one being the one that intermittently continuous from the Mailar area in the southern part of the block and another one is around Jakhora area in the central part of the block (Plate 4). Total combined length of these GQV would be about 50 km. Besides there are many smaller GQVs that mostly trend NNE-SSW but also present as NW-SE trending veins in the eastern part of the proposed block.

II. Observation and Recommendations of previous work

Previous reports of mineralization in the area:

a. Lensoidal bodies of pyrophyllite-diaspore closely associated with quartz reef (GQV) have been reported from Mailar (Absar et al, 1999). Absar et al, 1999 carried out exploration including drilling in the Palar area which is located about 65 km to the NNE of the present block and in in strike continuation of the the GQV exposed in the Mailar area and recommended porphyry copper system at depth.

b. Pati et al., (2014) reported molybdenite mineralization in granitic pegmatites, coarse grained pink porphyritic granite, medium grained grey granites and medium grained pink granites, predominantly associated with Bundelkhand Tectonic Zone in the southern part of Babina situated at 28 km north of the proposed block.

c. Incidences of gold from Talbehat area situated at 6 km north of the proposed block by Pati et al., 1997 is another important report of mineralization in this block.

d. A detailed geochemical survey was carried out by GSI (Dayal & Rao, 1977) around a GQV located (18 km) east of the proposed block. A consistent Cu anomaly ranging from 100 to 450 ppm was noted.

e. Singh and Singh (1986) reported base metal mineralization along the Karesara Kakan–Sahpur–Talbehat Shear Zone carried out during the field season 1982-83 and 83-84. The results of grab samples collected from various rock types did not show encouraging values of Cu, Pb, and Zn. Mineralization in form specks of pyrite, specularite and rare specks of chalcopyrite is seen at Sahpur, Bamorisar and Jamalpur (central part of the proposed block). Specks of primary sulphides (mostly pyrite) have been reported from the fine grinned granite and porphyroblastic medium grained granite of this area.

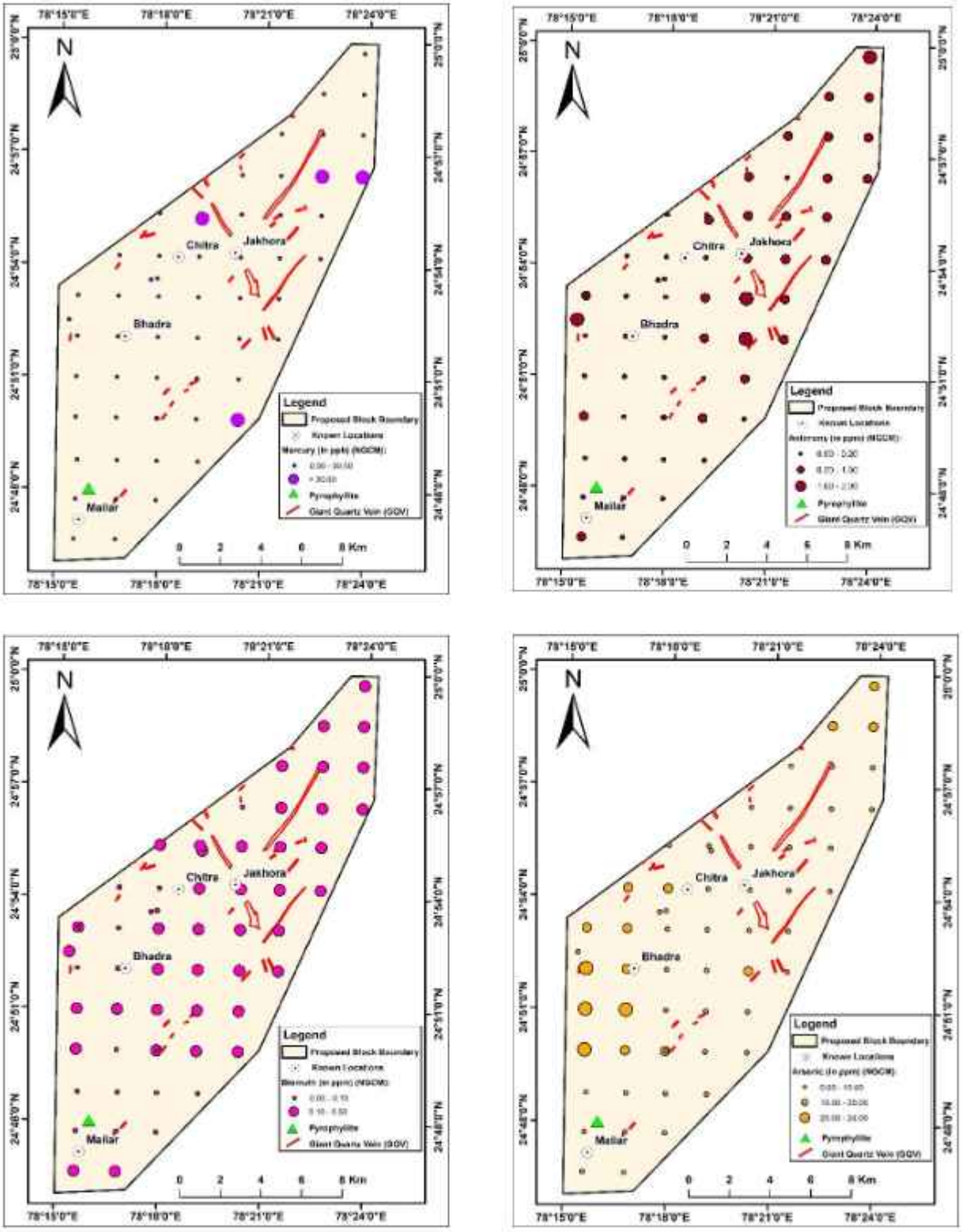

Figure 2: Highlights of NGCM data (Hg, As, Sb and Bi) for the Mailar block.

Note the NGCM data reveal high mercury (>30ppb), high arsenic (>20 ppm) and high antimony (>1ppm) in a large area in the southern part of the proposed block. Anomalous bismuth (upto 0.5 ppm) are also present in some areas of the toposheet no 54L/5.

GSI's NGCM mapping in this area:

The proposed area is covered by GSI's NGCM survey. The reported Cu (max- 489 ppm) -Mo (max-8000 ppm) show high values along with the high values for Co (upto 8855 ppm), Cr (upto 2602 ppm), Ni (upto 1038ppm), Pb (upto 313 ppm), Sr (upto 1183 ppm), iii Th (upto 474ppm), V (upto 1167ppm), Zn (upto 556ppm), As (upto 982ppm), F (upto 1060 ppm), Hg (4 upto 22 ppm), W (upto 444 ppm) U (upto 61ppm) and B(upto 467ppm) Analysis of NGCM data reveal high mercury (>30ppb), high arsenic (>20 ppm), high antimony (>1ppm) and high bismuth (upto 0.5 ppm) in the proposed block. (Fig. 2)

GSI's NGPM mapping in this area:

Regional gravity-magnetic surveys over the proposed area have been carried out to configure subsurface geological structures and provide data input for National Geophysical Mapping Programme (NGPM). Broad gravity and magnetic low zones are aligned to the direction of older enclave rocks in the area. High gradient zone in gravity anomalies indicate the boundaries between lithologies of coarse grained granite, granite gneisses, medium grained granites, fine grained granites, porphyritic granite and older metamorphic rocks (Singh et al. 2016). High variation in Bouguer gravity data is indicative of a significant change in the composition of rock types in the area.

Mineralization incidences in the nearby areas of the block and previous exploration:

1. The presence of several modal varieties of massive granites in the small area of the large Bundelkhand batholith indicates fractional crystallization in this area, making it potentially fertile (Plate 4).

2. The presence of extensive quartz veins including GQV in extensional tectonic regimes and their association with pyrophyllite deposits in this area indicate large scale advanced argillic alteration. Such large-scale alteration of the area might be caused by high sulphidation alteration associated with porphyry Cu-Mo-Au type of deposits or chloride dominated alterations usually associated with IOCG type of Cu-Au-U-Fe deposits.

3. The proposed block has high anomaly for path finder elements like As, Sb, Bi, Hg that are usually associated with gold and base-metal. In fact, Incidences of gold mineralization have been reported from Talbehat area situated 6 km north of the proposed block (Pati et

al., 1997).

4. Molybdenum mineralization has been reported at a number of places from south of Babina situated at 28 km north of the proposed block (Pati et al., 2014).

The above points indicate good potentiality for porphyry type of Cu-Mo-Au mineralization in the area. In view of mineralization potential of the area for porphyry copper/IOCG/vein-type gold deposits as indicated above, the area needs to be studied for its fertility and mineral deposits in a Mineral System Analysis Framework.

Previous Exploration in adjoining area (Regional area):

I. GSI's exploration in 1990s

In late 1990s GSI pursued the possibility of tracking down a porphyry copper deposit by drilling down few of the GQVs of the Palar-Gaurari area (about 65 km north-east of the present block) that are associated with advanced argilllic pyrophyllite-diaspore alteration (Absar et al., 1999). They conducted total 8 boreholes totalling 1849 m, the deepest one being 632 m. A significant finding of the work had been identification of systematic alteration zones usually associated with porphyry copper system. In one of the deep boreholes, the advanced argillic alteration was followed down the depth by chloritic alteration, sericitic alteration and potassic alteration. Another significant finding is the increase in copper concentration down the depth of the boreholes. The authors made a strong recommendation for pursuing exploration to target a possible porphyry copper deposit further down the depth. Back in 1990 s such effort of tracking down the porphyry copper deposit in Bundelkhand craton by following alteration zones was an incredible effort.

A scrutiny of the report brings out following deficiency in the approach:

i. The authors assumed that porphyry copper would be associated with quartz reefs associated with advanced argillic alteration. The risk of such assumption could have been minimized has there been a proper alteration zonation study prior to borehole planning.This assumption is not well founded. Porphyry copper are commonly associated with potassic and sericitic alteration that formed at hydrothermal temperature range of ~550°C. A drilling plan should target to intersect such zones. The zones of advanced argillic alteration and associated quartz reef that was targeted in the drilling plan represent an alteration temperature range of ~250°C and are unlikely the host for porphyry copper deposits in them.

ii. The quartz reefs on which most of the drilling was conducted represent a hydrothermal alteration at ~250°C that are likely locales for gold-telluride deposition associated with porphyry copper systems. However, gold and telluride assay were not conducted in the borehole core samples.

II. MECL exploration effort in 2022:

In January 2022, MECL carried out a G4 level exploration programme in 45 sq. km area within the proposed block for copper, lead, zinc and gold in the Laron area using NMET fund. The area is ~** km ENE of the present proposed block . This project included geological mapping, geophysical survey (gravity and magnetic), geochemical sampling, trenching and drilling (5 nos. boreholes of maximum 100m depth each) within a GQV. However, initial results of this exploration program by the MECL were not encouraging for Cu, Pb, Zn and Gold (Au) and the program was stopped mid-way.

A scrutiny of the MECL's work brings out the following:

i. The exploration programme was based on the assumption that GQVs would host the copper, lead, zinc and gold mineralization. This assumption is fundamentally weak. Usually, in the case of a porphyry system, the zones at the boundaries between the potassic and sericitic alteration host copper mineralization. An alteration mineralogy and alteration geochemistry mapping should have guided the drill site selection so as to intersect boundaries between potassic and sericitic alteration zone.

ii. On the other hand, parts of the quartz vein might be important for gold mineralization but, here also a prior phase mapping of the GQVs were necessary. Phase mapping would indicate zones of physiochemical breaks during the emplacement of quartz veins that usually host gold mineralization.

iii. Only 5 samples were analysed for fire assay gold analysis. This is too little data for an assessment of gold mineralization potential of the area.

iv Alteration zone mapping and phase mapping of quartz veins are to be made pre-requisite study to guide drill site selection.

The above two sections indicate that even though geologically the local geology is favorable and there are ominous indications of extensive hydrothermal alteration in the area, two incidences of exploration (one by GSI and another by the MECL) could not intersect substantial mineralization.

As analyzed above none of the two exploration efforts was based on systematic alteration zone mapping and so chances of encountering mineralization were minimized. In any case GSI's work indicated increase in copper assay at depth and a strong recommendation was made for exploring deeper parts with further drilling.

III. Prospectivity analyses of the Mailar exploration block in a Mineral System Analyses framework:

The importance of analysing mineral prospectivity of an area in a Mineral System Analyses (MSA) framework can not be overemphasised, especially in cases of porphyry copper deposits. One of the great successes of exploration in a MSA framework is the discovery of the Resolution porphyry Cu-Mo deposit (a JV between Rio Tinto and BHP) in the southwestern North American Cu province with a whopping 1624 billion tonnes high-grade Cu-Mo deposit (Manske and Paul, 2002). This gigantic high-grade porphyry Cu-Mo deposit was discoverd beneath a barren volcanic sequence where there was no geochemical or geophysical anomaly even though geological setup pointed good potentiality of the area.

Similarly, the proposed Mailar Block has many strong indications for a potential large porphyry Cu-Mo-Au deposit that are listed below:

i. Extensive hydrous arc-related magma with significant differentiation
ii. Very extensive advanced argillic alteration with many GQVs
iii. Systematic alteration zonation recorded in some areas
iv. Sporadic occurrences of Cu, Mo and Au in the area.

An analysis of the mineral prospectivity of the area in a MSA framework is given in ***Annexure-I***

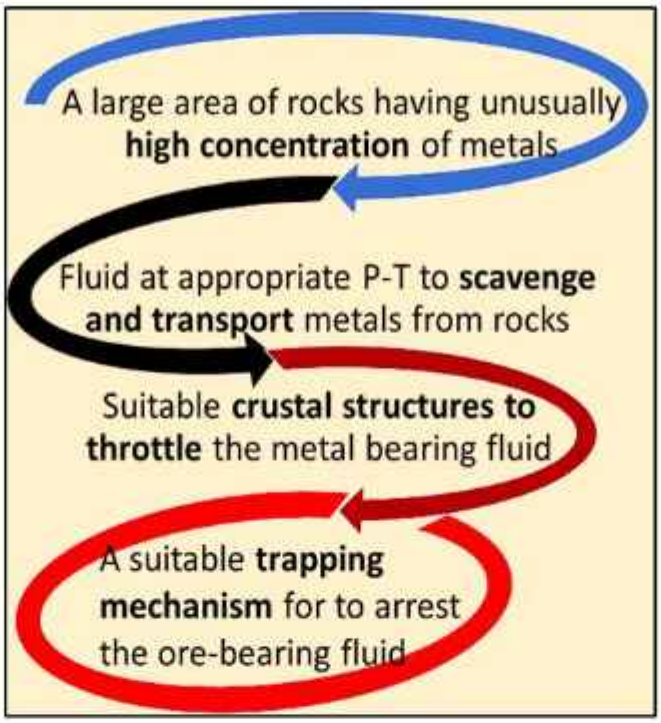

Figure 3. Principal components of Mineral System Analysis (MSA) and their relationship

i. Even though extensive occurrences of advanced argillic alteration and GQVs are reported for long time, there is no work to characterize such alteration in terms of their alteration temperature, depth of alteration and fluids responsible for such alteration. It is important to understand the fluid composition for such advanced argillic alteration, whether sulphidic, chloritic or carbonic fluids. Such fluid environment is commonly associated with distinctive mineralization styles. Thus, a sulphidic alteration is commonly associated with porphyry mineral system, a chloridic alteration is commonly related to IOCG type of mineralization etc.

ii. Banerjee and Shrivastava (2022) mapped out the alteration zonation based on minerology and mineral chemistry of diagnostic minerals like magnetite, epidote etc. They have marked out systematic alteration, zonations in the southern part of the block (Fig.1). However, in their map, they have mapped out a syenite in this area which have been earlier observed by a GSI team who interpreted the area to be potassic alteration zone.

iii. Timing is GQV is interpreted to be between 2.0 Ga to 1.5 Ga in age based on some conjectural arguments (Sukla and Pati, 1997). It is necessary to date the alteration and GQVs by some robust techniques (hydrothermal zircon etc.). A porphyry system can only be a plausible explanation if the timing of alteration matches with some major intrusion.

iv. Much of the present area is covered (~80%), which presumably holds much information on fertility vector and alteration. Such areas need to be probed (by shallow drilling, pitting etc.) regionally for proper area selection.

v. Granitoids need to be analysed for fertility vectoring.

vi. A high-resolution magnetic survey would be necessary for aid to mineralization potential analyses.

IV. Broad exploration approach as proposed:

Our present knowledge of hydrothermal activity in the area is based on the study of the exposed areas that constitute only about one-fourth of the area. Such areas would be studied for alteration minerology and alteration geochemistry for vectoring to possible mineralization.

The three-fourth of the area that is regolith covered might as well host significant hydrothermal mineralization. The proposed exploration approach would give due weightage to this possibility. The work strategy is designed to study the regolith evolution and probe the in-situ regolith horizons by surface and subsurface regolith sampling. The decisions for detailed geophysical survey and drilling to track down mineralization would be based on geological and geochemical data and vectoring analyses carried out both in exposed areas as well as in regolith covered areas. Main aspects of exploration program would include the following and is illustrated in Fig.4.

i. Regional geochemical fertility, alteration analyses and physicochemical conditions of emplacement of granitic rocks and GQVs. As much of the area is under alluvial cover, it is proposed to carry out short auger drilling to assess bedrock samples for fertility vectoring.

ii. Alteration study would include both alteration mineralogy to understand physicochemical conditions of alteration as well as alteration geochemistry for understanding of mass balance related to mineralization.

iii. GQVs would be mapped in detail in terms of their textures (field and petrography) to understand physicochemical breaks during their emplacement as such breaks are likely locales for gold-telluride mineralization.

iv. Existing NGCM data as well as mineral system analyses strongly suggest possibility of porphyry style Cu-Mo-(Au) mineralization in granitoids as well as epigenetic gold-molybdenum-telluride mineralization associated with GQVs. However, since epigenetic golds are generally very fine grained and readily forms alloys, presence of gold-tellurides would be assessed by analysing clay-fractions (<2μm) of samples rather than bulk analyses or panning analyse.

v. Once a target zone for favourable alteration system is identified, detailed mineral chemistry variation would be used as a vectoring tool for mineral deposit.

vi. Exploratory drilling would be carried out after intensive mineralization vector analyses.

Innovative components of the proposed exploration:

Geovale proposes to carry out a G4 exploration in the area by exploring both the granitoid rocks and the GQVs. Exploration workflow for the Mailar basemetal-gold prospect block would incorporate four modern and innovative components: (i) area reduction based on understanding of physicochemical conditions of hydrothermal fluids (alteration mineralogy and alteration geochemistry), (ii) understanding of physicochemical conditions of emplacement of quartz veins (phase mapping of quartz veins), (iii) Separation and analyses of soil-clay (<2μm) fractions for gold assay, (iv) bedrock/ saprock sampling in anomalous covered areas.

Exploration task flow:

As discussed above the prospective mineral system of the project area include two mineralization styles:

i. Porphyry Cu-Mo-Au (alternatively, IOCG related) mineral system and
ii. Epigenetic gold-molybdenite-telluride mineral system

Modern understanding is that these two types of mineral systems could spatially and genetically related. Two broad task flow are designed: one for targeting gold-telluride mineralization associated with GQVs and the other for targeting porphyry copper/IOCG mineral system.

A flow diagram for the exploration plan is given in Fig. 4.

Scope for proposed exploration:

The exploration task flow is proposed to be done in two phases, each having distinct tasks and milestone. A summary of activities and milestones in both phases of the proposed exploration is given below:

Phase I (Approximately 6 months):

[*Annexure-II*]

For the total block area, fertility assessment will be performed by geochemical analyses of granites and by identifying mineralogical phase variations with intensity of alteration and marking out the intense alteration zones. Regional geological mapping at 1:25,000 scale and petrography and geochemistry of the exposed rocks will be done in order to determine the fertility vectors with special emphasis on the extensive alteration studies in the area. The area of exploration will also be

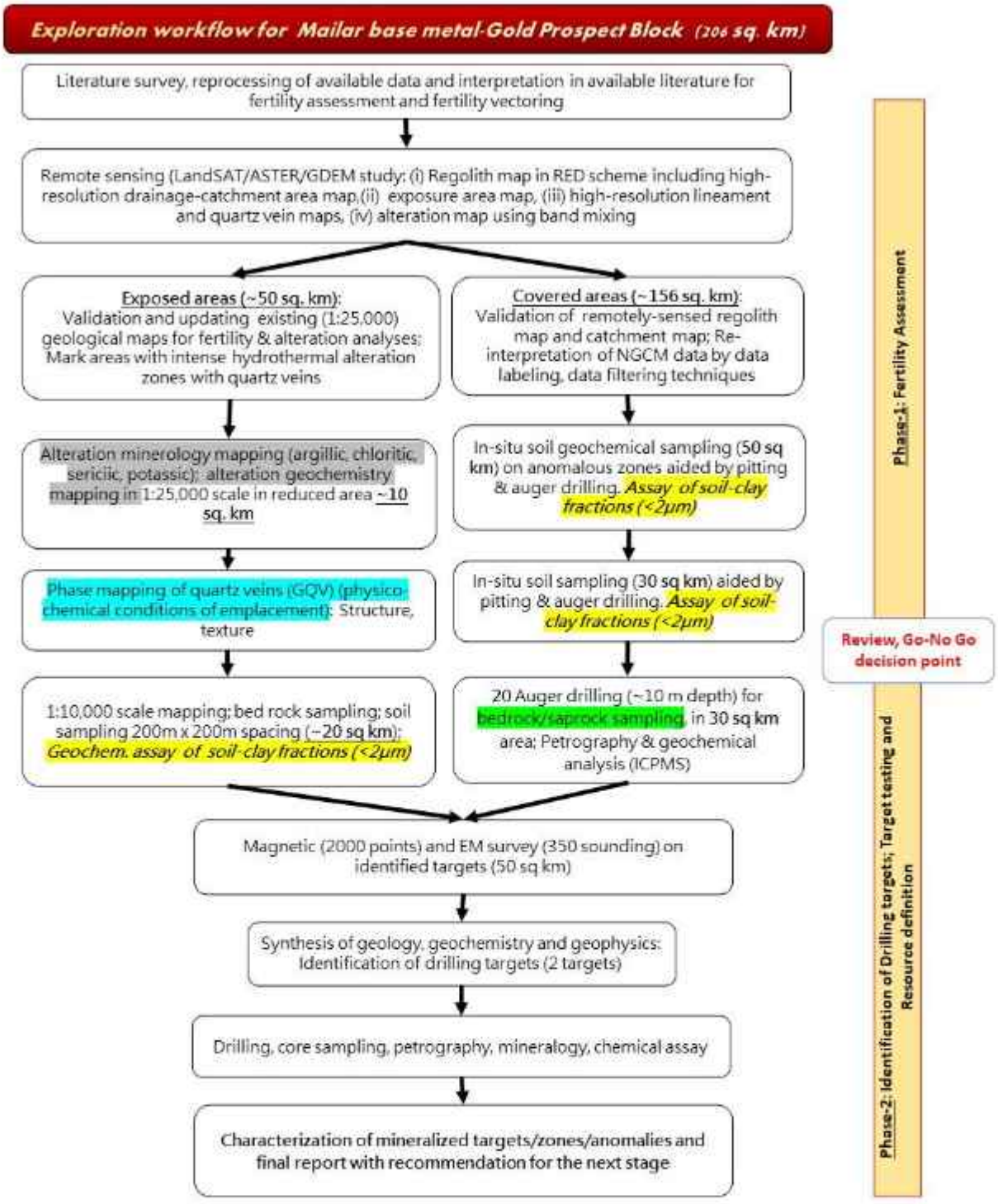

Figure 4 Exploration work flow

reduced from this mapping stage. Regolith mapping will also be done in the covered areas to reinterpret NGCM data and also to prepare the with weighted geochemical anomaly maps.

After reducing the area of exploration, detailed exploration (mapping in 1:25,000 scale, petrography and geochemistry) within the prospective/fertile areas to identify to identify anomalous mineralised targets.

Phase II (Approximately 6 months):

This phase will be starting by narrowing down the anomalous area for geochemical mapping at 1:10,000 scale followed by petrography and geochemistry. Magnetic survey and EM survey will be performed in the identified anomalous mineralized targets for detection of drilling targets.

Core drilling will be done for litho-geochemical characterisation to identify and characterise potential mineralized zones/ore bodies. This would further lead to prioritize the targets and recommend it for Geological Resource assessment (G3).

Decision points:

The exploration strategy incorporates the GO- NO GO milestones to be collaboratively decided between the Geovale Services, State of Uttar Pradesh and the NMET based on the results of the ongoing phases. Total duration of the work plan is 12 months. The exploration plan incorporates one decision point.

Progressing from one phase to another would be an internal/external decision point for the exploration program based on the results of the ongoing phase. Geovale Services would engage the State of Uttar Pradesh and the NMET to collaboratively decide about progressing through different phases of exploration program.

V. Nature Quantum and Target

A table containing the NQT table is given in *Annexure II*.

Borehole spacing (As per MEMC, 2015)

Type of deposit	Bedded Stratiform and Tabular deposit of regular habit minerals to be identified	Bedded stratiform and tabular deposits of irregular habit (Minerals to be identified)	Lenticular bodies occurring en echelon Lenses, pockets. (Different minerals)
G4 Stage	Not Applicable	Not Applicable	2 core drilling with an average of 400 m depth in an area of approximately 20 sq. km.
(Vertical depth of intersection of mineralized zone should be specified (first level), number of boreholes, approximate borehole spacing, approximate length of boreholes may be specified)			

Geophysical Studies

Geophysical studies may be introduced at a later stage based on reconnitory studies carried out in the area and on an understanding of the structural/ lithological control of the mineralization. Magnetic survey (2000 points) and EM survey (350 sounding) will be done on identified targets for drilling target generation.

VI. Manpower deployment:

A table containing the manpower deployment table is given in *Annexure III*.

VII. Summary Expenditure

The summary expenditure for each phase is given in *Annexure IV*.

VII. Breakup of Expenditure

The breakup expenditure for each phase is given in *Annexure V*.

VII. Timeline

Time Schedule /Action Plan For Reconnaisance Survey (G4) for Mailar Gold Prospect Block, Uttar Pradesh

Sl. No.	Activities	Unit	MONTHS												Total (Days)
			1	2	3	4	5	6	Review	7	8	9	10	11	12	
1	Geologist Party days	day														90
2	Sampling Party days	day														90
3	Geologist Party days, HQ	day														30
4	Laboratory Studies	Nos.														60
5	Petrographic Studies	Nos.														60
6	Geophysical Survey	day														60
7	Geological Work (after review) (drilling)	m.														30
8	Report Writing	day														30
9	Peer Review	day														30

NOTE	
1	**Commencement of project may be reckoned from the day the exploration acreage is available along with all statutory clearances.**
2	**Time loss on account of monsoon/agricultural activity/forest clearance / local law & order problem/ lockdown etc will be additional to above time line.**

VIII. References

Absar, A., Bodas, M.S. and Nath, S., 1999. Final report on a test study to establish diaspore – pyrophyllite - quartz reef association as a path finder to porphyry sulphide / epithermal gold mineralisation in Bundelkhand Granitoid Complex in Parts of Jhansi and Lalitpur Districts, Uttar Pradesh (Field Season: 1995-96 TO 1998-99), Unpublished Reports. Geological Survey of India, Lucknow, pp. 1-158.

Basu, A.K., 1986. Geology of parts of the Bundelkhand Granite Massif, Central India. Records Geological Survey of India, 117(2), pp. 61-124.

Bhattacharya, A.R. and Singh, S.P., 2013. Proterozoic Crustal Scale Shearing in the Bundelkhand Massif with Special Reference to Quartz Reefs. Journal Geological Society of India, 82, pp.474-484.

Ram Mohan, M., Singh, S.P., Santosh, M., Siddiqui, M.A. and Balaram, V., 2012. TTG suite from the Bundelkhand Craton, Central India: Geochemistry, petrogenesis and implications for Archean crustal evolution. Journal of Asian Earth Sciences, 58. pp. 38-50.

Hedenquist, J.W., Arribas, A., Jr. and Reynolds, T.J., 1998. Evolution of an intrusion-centered hydrothermal system: Far Southeast-Lepanto porphyry and epithermal Au-Cu deposits, Phillippines. Economic Geology, 93: 373-404.

Joshi, K.B., Bhattacharjee, J., Rai, G., Halla, J., Ahmad, T., Kurhila, M.I., Heilimo, E. and Choudhary, A.K., 2017. The diversification of granitoids and plate tectonic implications at the Archaean-Proterozoic boundary in the Bundelkhand craton, Central India. In: J. Halla, M.J. Whitehouse, T. Ahmad and Z. Bagai (Editors), Crust-Mantle Interactions and Granitoid Diversification: Insights from Archaean Cratons. Special Publications 449, Geological Society of London, London, pp. 123-157.

Pati, J.K., 2020. Evolution of Bundelkhand Craton. Episodes, 43(1): 69-83.

Ramiz, M.M. and Mondal, M.E.A., 2017. Petrogenesis of mafic magmatic enclaves of the Bundelkhand granitoids near Orchha, Central Indian shield: evidence or rapid crystallization. In: J.J. Halla, W. M.J., T. Ahmad and Z. Bagai (Editors), Crust-Mantle Interactions and Granitoid Diversification: Insights from Archaean Cratons. Geological Society of London, Special Publications, London, pp. 123-157.

Singh, P. N. and Singh, B. K., 1886, Report on basemetal investigation in Talbehat area District Lalitpur, Uttar Pradesh (progress report for the field seasons 1982-83 and 1983-84), Geological Survey of India

Singh, P.K., Verma, S.K., Singh, V.K., Moreno, J.A., Oliveira, E.P. and Mehta, P., 2019. Geochemistry and petrogenesis of sanukitoids and high-K anatectic granites from the Bundelkhand Craton, India: Implications for late-Archean crustal evolution. Journal of Asian Earth Sciences., 174: 263-282.

Shukla, R., and Pati, J.K., Final report on specialised thematic study of older enclaves (migmatites, gneisses and supracrustals) within the Bundelkhand Granitoid Complex in Southern U.P. Field season 1997-98 and 1998-99, Geological Survey of India

White, N.C. and Hedenquist, J.W., 1995. Epithermal gold deposits: styles, characteristics and exploration. Society of Economic Geologist Newsteller, 23(1): 9-13.

Dayal & Rao, 1977., Report on geochemical surveys for basemetal mineralization in Garhmau area, Jhansi district and Karesrakalan and Bar areas, Lalitpur District.

Madhumita Banerjee & Surabhi Srivastava, 2022.; Final report on characterization of Hydrothermal alteration mineralogy and trace element variations in index minerals around pyrophyllite deposit in the Mailar village, Lalitpur district, Uttar Pradesh.

IX List of Plates

Plate 1: Accessibility map on 1:50,000 scale

Plate 2: Proposed block boundary over topographic map on 1: 50,000

Plate 3: Proposed block boundary over Land Use Land Cover

Plate 4: Geological map with block boundary on 1:50,000 with location index.

Annexure I

Mineral System Analysis in the Mailar Block.

A mineral system analyses revolves round four important components (Fig. 1)

i. A fertile host rock terrain,
ii. Fluids to scavenge metals from fertile host rocks,
iii. Tectonic force and architecture to channelize the metal bearing fluids, and
iv. Suitable structural or lithological traps.

i. Host rock fertility of the area:

The host rock for a possible mineralization in the area include both Archean older foliated TTG granitioids and supracrustals as well as the younger and more extensive non-foliated granites. The older TTG suite of rocks show modal variation from dioritic to granitic composition. Both sodic and potassic variety of TTE are present and have moderate to high $(La/Yb)_{CN}$ and Sr/Y values (14.7-33.50 and 4.85-98.7, respectively) (Ram Mohan et al., 2017) indicating their derivation from partial melting of hydrous basaltic mantle rocks. They are potentially fertile for Cu-Mo-Au. Younger granitic rocks mostly span a period of ~700 My between 1.9 Ga and 2.58 Ga (Pati et al., 2020). They are represented by different varieties of granite like mozogranite, syenogranite, high-potash anatectic granite, granodiorite etc. Of late there has been several publications mainly dealing with geochemical evolution of the granitoids of the Bundelkhand craton (Ram Mohan et al., 2012; Joshi et al., 2017; Singh et al., 2019). They are interpreted to have formed in a sub-arc subduction setting (Ramiz and Mondal, 2017). However, much published works browse through the generalities of evolution of the granitiods of the Bundelkhand craton and lack treatment of granites of different time separately in their spatial evolutionary framework. As such, such data are of not much use for a fertility analysis of granitiods of different times. However, a large modal variation of younger granitoids, their general lack of enclaves and derivation in a supra-subduction setting are favourable for a Cu-Mo-Au host environment.

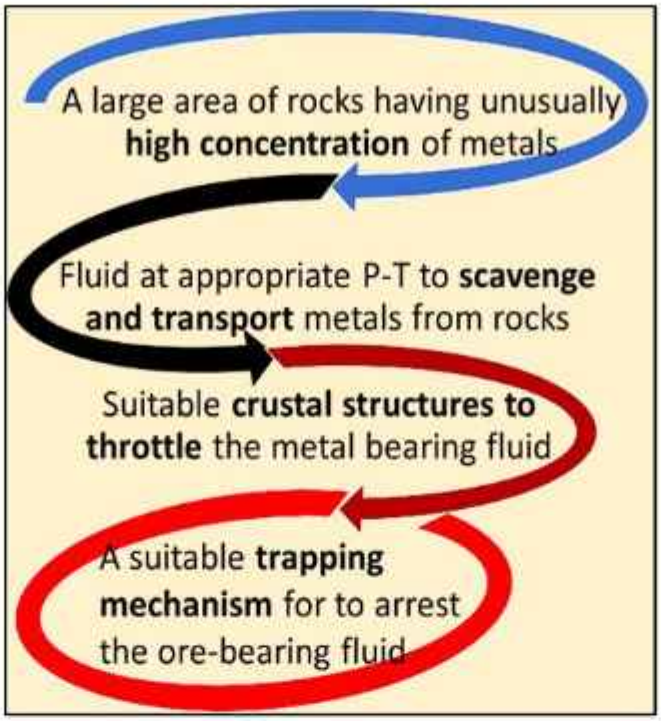

Figure 1. Principal components of Mineral System Analysis (MSA) and their relationship

ii. **Fluids to scavenge metals:**

The principal mover for considering the Mailar block as potentially mineralized is the large-scale presence of pyrophyllite-diaspore alteration and spatially associated Giant Quartz Veins (GQVs). Pyrophyllite-diaspore association ominously indicate advanced argillic alteration due to passage of highly acidic hydrothermal fluids through the area. Advanced argillic alteration is typically found in high-sulfidation (or high-chloride dominated) epithermal systems at shallow depths where K^+/H^+ and Na^+/H^+ activity ratios as well as temperatures of aqueous hydrothermal fluids are very low, resulting in the formation of minerals such as alunite (in case of high sulphidic fluid) or scapolite (in high hydrogen chloride dominated fluid) along with pyrophyllite at the higher temperature ends, and kaolinite, dickite, etc at lower temperatures. The formation of acidic hydrothermal fluids responsible for advanced argillic alteration assemblages can occur through several processes. At depth, a degassing magma releases aqueous fluid rich in SO_2, H_2S, or HCl that can remain as a single fluid phase or may undergo exsolution to produce a liquid brine and low-salinity vapor phase if the pressure decreases. Ascending magmatic vapor may condense where it encounters cooler, shallow meteoric water to form low-pH, moderate-temperature fluids that produce acid-sulphate high-sulfidation alteration characterized by

alunite, quartz, pyrophyllite, and dickite (Al). Ascending dilute, nearly neutral, low-temperature (200-300°C) fluids typical of low-sulfidation environments can boil upon ascension. Vapors produced by such boiling condensation at 100°C to produce steam-heated acid-sulphate alteration typified by alunite, kaolinite, and chalcedonic or opaline silica.

Current models of porphyry copper deposits propose that a shallow, epithermal ore environment may lie above a porphyry copper system that servers as the discharge area for deep-seated ore-bearing fluids (White and Hedenquist, 1995; Hedenquist et al., 1998). Thus, possibility exists for a whole range of mineral system from porphyry copper (in case the fluid is high sulphidic fluid) or IOCG type deposits (in case the fluid is hydrogen chloride dominated) at depth (1-5km) to epithermal deposits of gold-tellurides might exists along with low-sulphidation or advanced argillic alteration (at depths 0-3km). Usually, high-sulphidic alteration exists close to and above the porphyry copper alteration system. The low-sulphidic alteration, on the other hand, are developed away from porphyry copper alteration system, usually within a spatial distance of 5-10 km from the epicentre of porphyry system.

Presence of large tracts of pyrophyllite-diaspore alteration, kaolinite-cherts alteration, and large tracts of Giant Quartz Veins (GQVs) presents an excellent opportunity to work out different alteration styles associated with different hydrothermal fluid regime and temperature regime. Reconstruction of such alteration zones and systems could be used as a vector to the porphyry copper system or IOCG system. The work would involve characterizing the distribution and mineralogy of advanced argillic, sericitic, kaolinitic alteration in the area to deduce physiochemical conditions of hydrothermal alteration and attempt to link the timing and origins of the causative fluids and their relationship with the deeper porphyry copper or IOCG environment.

iii. **Crustal architecture to throttle mineralizing fluids:**

The strong NNE-SSW trending orientation bias of the GQVs and associated advanced argillic alteration is a favorable indication that the mineralizing fluids might have moved in response to some crustal extensional regime. This is a positive factor for localizing mineralization.

Annexure II

S.N	Nature of work	Quantum	Target	Remarks
1	**Geological Work**			
A	**Geological Mapping (1:25000) & sampling**			
a	Geologists (HQ) days (1 No)	50	Identification of anomalous mineralized zones for detailed characterization	
b	Geologists (HQ) days (1 No) [Multispectral and DEM data analysis]	20		
c	Geologist field-days (2 No. geologists for 60 days)	270		206 sq.km
d	Labor (Field days) (2 workers per geologist, i.e Total 4 No.)	540		Amount will be reimburse as per the notified rates by the Central Labor Commission or respective State Govt. whichever is higher
B	**Auger Drilling and pitting**			
a	Pitting	25		No of samples 50 samples
b	Auger Drilling for soft strata up to 30m depth (5 BH) (Outsource)	200		1 sample per meter
3	**Laboratory Studies**			
A	**Geochemical Analysis for regional and detail survey**			100 BS; 200 Auger drilling sample; 50 pitting samples
a	XRF (major oxides)	300		10% of total sample

S.N	Nature of work	Quantum	Target	Remarks
b	Check samples for XRF	30	Fertility assessment and target selection	
c	ICPMS (34 elements)	200		10% of total sample
d	Check samples for ICPMS	20		
e	AAS	20		10% of total sample
f	Check samples for AAS	100		
g	XRD	200		10% of total samples
h	Check samples for XRD	20		
4	**Petrological studies**			
a	Thin section preparation	100	Fertility assessment and target selection	
b	Microscopic study	100		
c	Sampler man-days	38		
d	Labor (Field days) (4 workers per sampler)	150		Amount will be reimburse as per the notified rates by the Central Labor Comission or respective State Govt. whichever is higher
5	**Geophysical Survey (after review)**			
a	Magnetic (30 sq km, 2000 points)	2000	To identify drilling targets	
b	EM survey (25 sq km, 350 sounding)	350		
c	Expert Charges for Geophysicist (Field)	20		
6	**Geological Work (after review)**			

S.N	Nature of work	Quantum	Target	Remarks
a	Core drilling up to 400m depth (2 BH) (Outsource)	800		No of samples 100 samples
3	**Laboratory Studies**			
7	**Geochemical Analysis (after review)**			(40 Pit Sample, 60Trench Sample, 100BHS)
a	XRF (major oxides)	100	Characterization and prioritization of mineralized targets/zones/anomalies	10% of total sample
b	Check samples for XRF	10		
c	ICPMS (34 elements)	200		
d	Check samples for ICPMS	20		
e	AAS	100		10% of total sample
f	Check samples for AAS	10		
g	XRD	100		10% of total samples
h	Check samples for XRD	100		
i	Sampler man-days	25		
j	Labor (Field days) (4 workers per sampler)	100		Amount will be reimburse as per the notified rates by the Central Labor Commission or respective State Govt. whichever is higher

S.N	Nature of work	Quantum	Target	Remarks
7	Preparation of Exploration Proposal (5 Hard copies with a soft copy)	1		This amount will be reimbursed after submission of the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCCNMET in its meeting while clearing the proposal.
8	Final report preparation	1		Final report submission, peer review and project conclusion
9	Report Peer Review	1		

Annexure III

Manpower Deployment

Activity	Type of Job	Geologist HQ (mandays)	Geologist (mandays)	Labour(mandays)	Sampler (mandays)		M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9	M 10	M 11	M 12
Remote sensing, multispectral and DEM data analysis	Desktop	10	0															
Geological Mapping and auger drilling	Field	10	210	572	38													
Laboratory Studies	Field+desktop	10																
Petrographic Studies	Desktop	30																

Review

Ground Magnetic Survey	Field		15																		
Electro Magnetic Survey	Field		15																		
Core drilling, minerology and chemical assay	Field	10	30	100	25																
Report Preparation and Recommendation	Desktop																				
Discussion with State authorities and NMET	Desktop																				

Annexure IV

Summary Expenditure

Sl. No	Item	Estimated Cost in INR
2	Geological Work	49,52,010
3	Laboratory Studies	41,53,660
4	Petrological Studies	9,23,850
5	Geophysical Survey (after review)	1,12,38,950
6	Geological Work (after review)	38,08,000
7	Laboratory Studies (after review)	33,10,990
8	Exploration Proposal preparation	5,67,749
9	Report preparation	7,50,000
10	Peer review charges	30,000
11	GST (18%)	53,52,338
	Grand Total	**3,50,87,547**

Annexure V

Title of Project - Mailar Base Metal - Gold Prospect Block
Name of the Exploration Agency - Geovale Services Pvt. Ltd.
Total Area - 206 sq. km; **Nos. of Borehole - Auger drilling: 20, Core drilling: 2; Completion Time -**12 Months

S.N	Item of work	Unit	Rates as per NMET SoC		Estimated Cost of the Proposal		Remarks
			SoC-Item - Sl No.	Rates as per SOC	Quantum	Total Amount (Rs)	
1	**Geological Work**						
A	**Geological Mapping (1:25000) & sampling**	206 sq km					
a	Geologists (HQ) days (1 No)	one geologist per day	1.2	9,000.00	50	4,50,000.00	
b	Geologists (HQ) days (1 No) [Multispectral and DEM data analysis]	one geologist per day	1.2	9,000.00	20	1,80,000.00	
c	Geologist field-days (2 No. geologists for 60 days)	one geologist per day	1.2	11,000.00	270	29,70,000.00	206 sq.km

d	Labor (Field days) (2 workers per geologist, i.e Total 4 No.)	per labor day	5.7	494.00	540	2,66,760.00	Amount will be reimburse as per the notified rates by the Central Labor Comission or respective State Govt. whichever is higher
B	**Auger Drilling and pitting**						
a	Pitting	per cu.m	2.1.3	5,330.00	25	1,33,250.00	No of samples 50 samples
b	Auger Drilling for soft strata up to 30m depth (5 BH) (Outsource)	per m	2.2.2	4,760.00	200	9,52,000.00	1 sample per meter
	Sub-Total 1					**49,52,010.00**	
3	**Laboratory Studies**						
A	**Geochemical Analysis for regional and detail survey**						100 BS; 200 Auger drilling sample; 50 pitting samples
a	XRF (major oxides)	per sample	4.1.15a	4,200.00	300	12,60,000.00	10% of total sample
b	Check samples for XRF	per sample		4,200.00	30	1,26,000.00	
c	ICPMS (34 elements)	per sample	4.1.14	7,731.00	200	15,46,200.00	10% of total sample
d	Check samples for ICPMS	per sample		7,731.00	20	1,54,620.00	
e	AAS	per sample	4.1.6	1,557.00	20	31,140.00	10% of total sample

f	Check samples for AAS	per sample		1,557.00	100	1,55,700.00	
g	XRD	per sample	4.5.1	4,000.00	200	8,00,000.00	10% of total samples
h	Check samples for XRD	per sample		4,000.00	20	80,000.00	
	Sub-Total 2					**41,53,660.00**	
4	**Petrological studies**						
a	Thin section preparation	per sample	4.3.1	2,353.00	100	2,35,300.00	
b	Microscopic study	per sample	4.3.4	4,232.00	100	4,23,200.00	
e	Sampler man-days	one sampler per day	1.5.2	5,100.00	38	1,91,250.00	
f	Labor (Field days) (4 workers per sampler)	per labor day	5.7	494.00	150	74,100.00	Amount will be reimburse as per the notified rates by the Central Labor Comission or respective State Govt. whichever is higher
	Sub-Total 3					**9,23,850.00**	
5	**Geophysical Survey (after review)**						
a	Magnetic (30 sq km, 2000 points)	per station	3.2a	1,800.00	2000	36,00,000.00	
b	EM survey (25 sq km, 350 sounding)	per sounding	3.7a	21,197.00	350	74,18,950.00	

b	Expert Charges for Geophysicist (Field)	Geophysicist per day	3.18	11,000.00	20	2,20,000.00	
	Sub-Total 4					**1,12,38,950.00**	
6	**Geological Work (after review)**						
c	Core drilling up to 400m depth (2 BH) (Outsource)	per meter	2.2.2	4,760.00	800	38,08,000.00	No of samples 100 samples
	Sub-Total 5					**38,08,000.00**	
3	**Laboratory Studies**						
7	**Geochemical Analysis (after review)**						(40 Pit Sample, 60Trench Sample, 100BHS)
a	XRF (major oxides)	per sample	4.1.15a	4,200.00	100	4,20,000.00	10% of total sample
b	Check samples for XRF	per sample		4,200.00	10	42,000.00	
a	ICPMS (34 elements)	per sample	4.1.14	7,731.00	200	15,46,200.00	
b	Check samples for ICPMS	per sample		7,731.00	20	1,54,620.00	
e	AAS	per sample	4.1.6	1,557.00	100	1,55,700.00	10% of total sample
f	Check samples for AAS	per sample		1,557.00	10	15,570.00	
g	XRD	per sample	4.5.1	4,000.00	100	4,00,000.00	10% of total samples

h	Check samples for XRD	per sample		4,000.00	100	4,00,000.00	
c	Sampler man-days	per day	1.5.2	5,100.00	25	1,27,500.00	
d	Labor (Field days) (4 workers per sampler)	per labor day	5.7	494.00	100	49,400.00	Amount will be reimburse as per the notified rates by the Central Labor Comission or respective State Govt. whichever is higher
	Sub-Total 6					**33,10,990.00**	
	Total (Sub-Total 1-6)					**2,83,87,460.00**	
7	Preparation of Exploration Proposal (5 Hard copies with a soft copy)	Lumpsum	5.1	2% of the cost subject to a maximum of 5 lakhs	1	5,67,749.20	This amount will be reimbursed after submission of the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCCNMET in its meeting while clearing the proposal.

8	Final report preparation	3% of project cost or 7.5 lakh whichever is higher	5.2	For the projects having cost exceeding 150 lakhs but less than 300 lakhs-A minimum of 7.5 lakhs or 3% of the value of work whichever is more	1	7,50,000.00	Final report submission, peer review and project conclusion
9	Report Peer Review	Lump sum	As per EC	30,000.00	1	30,000.00	
					Project Cost without GST	**2,97,35,209.20**	
					18% GST	**53,52,337.66**	GST will be reimbursed as per actual and as per the applicable notified rate
					Total Project Cost	**3,50,87,546.86**	

ACCESSIBILITY MAP OF THE PROPOSED G4 MAILAR GOLD PROSPECT BLOCK

PLATE 1

78°10'0"E 78°15'0"E 78°20'0"E 78°25'0"E 78°30'0"E

25°0'0"N

24°55'0"N

24°50'0"N

24°45'0"N

MADHYA PRADESH

UTTAR PRADESH

A B C D E F G H

Chitra

Jakhora

Bhadra

Mailar

N

W E

S

SCALE

1:50,000

0 4 8 12

Kilometers

Legend

- Mailar Gold Prospect Block Boundary
- Boundary Corner Points
- Known Locations
- Roadways
- Railway Tracks

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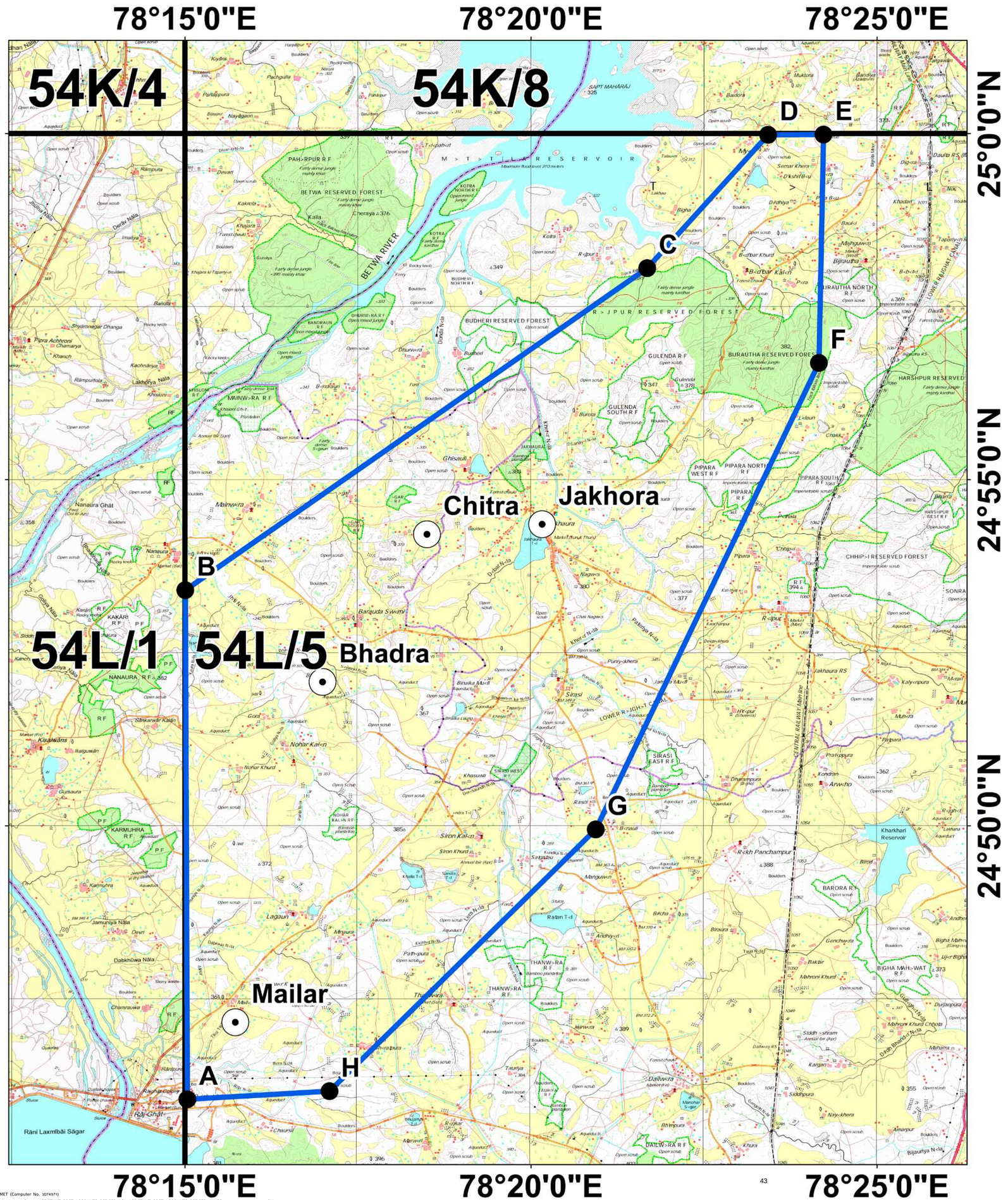
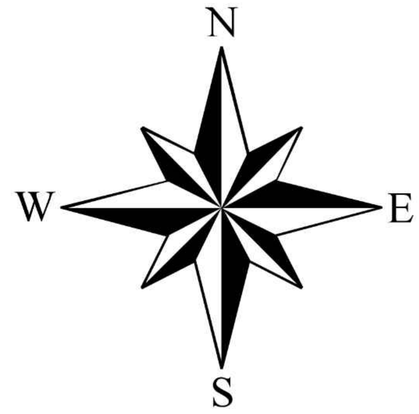
PROPOSED MAILAR GOLD PROSPECTBLOCK OVER TOPOGRAPHIC MAP

Plate 2





SCALE

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0 4 8 12

Kilometers

Legend

- MAILAR GOLD PROSPECT BLOCK BOUNDARY
- BOUNDARY CORNER POINTS
- KNOWN LOCATIONS

GEOVALE SERVICES
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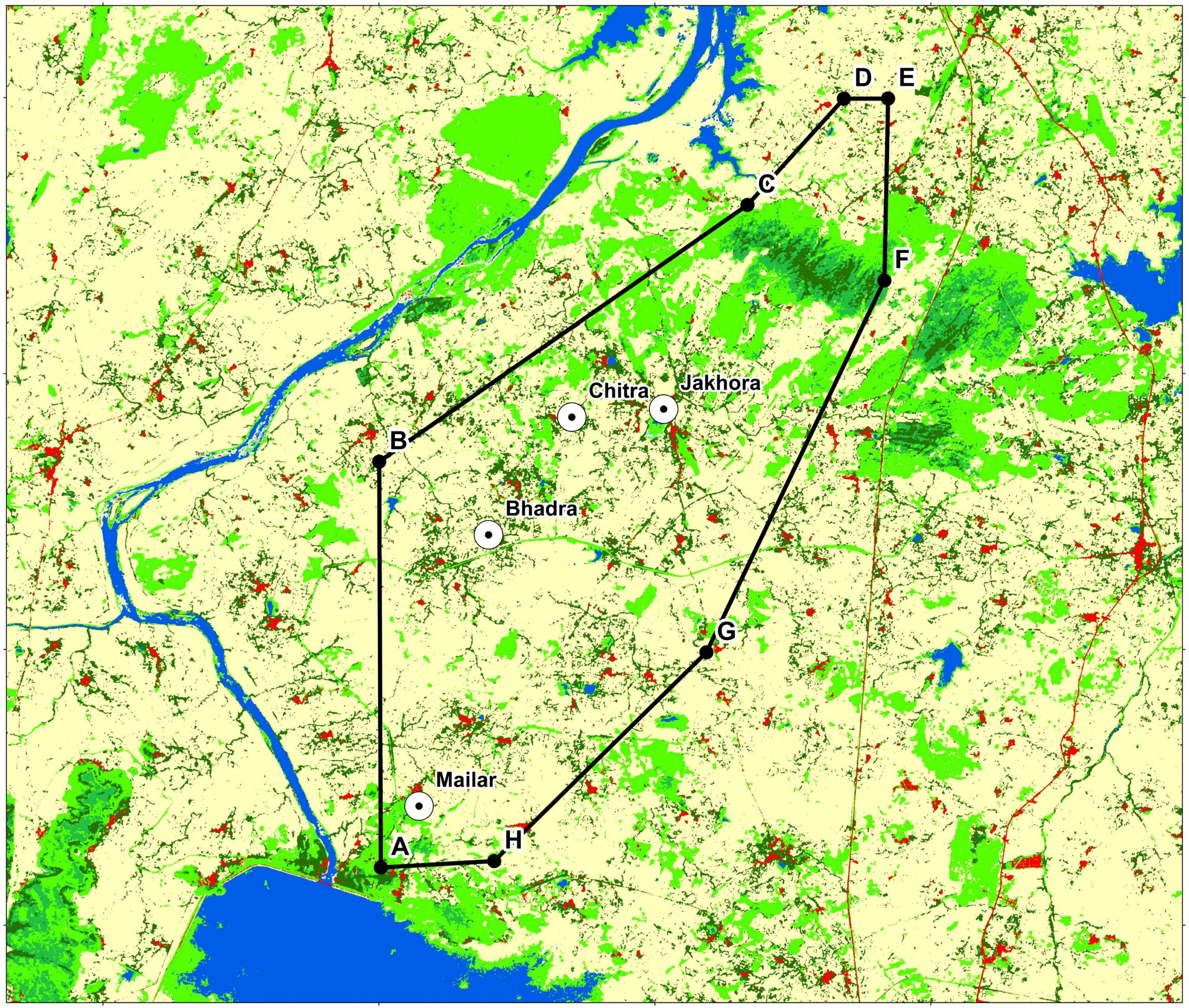
LAND USE LAND COVER MAP OF THE PROPOSED G4 MAILAR GOLD PROSPECT BLOCK

PLATE 3

78°10'0"E 78°15'0"E 78°20'0"E 78°25'0"E

25°0'0"N 24°55'0"N 24°50'0"N 24°45'0"N



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SCALE

1:50,000

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Kilometers

Legend

- Mailar Gold Prospect Block Boundary
- Boundary Corner Points
- Known Locations
- Tree Cover
- Shurbland
- Grassland
- Cropland
- Built-Up
- Bare/Sparse Vegetation
- Permanent Waterbodies
- Herbaceous wetland

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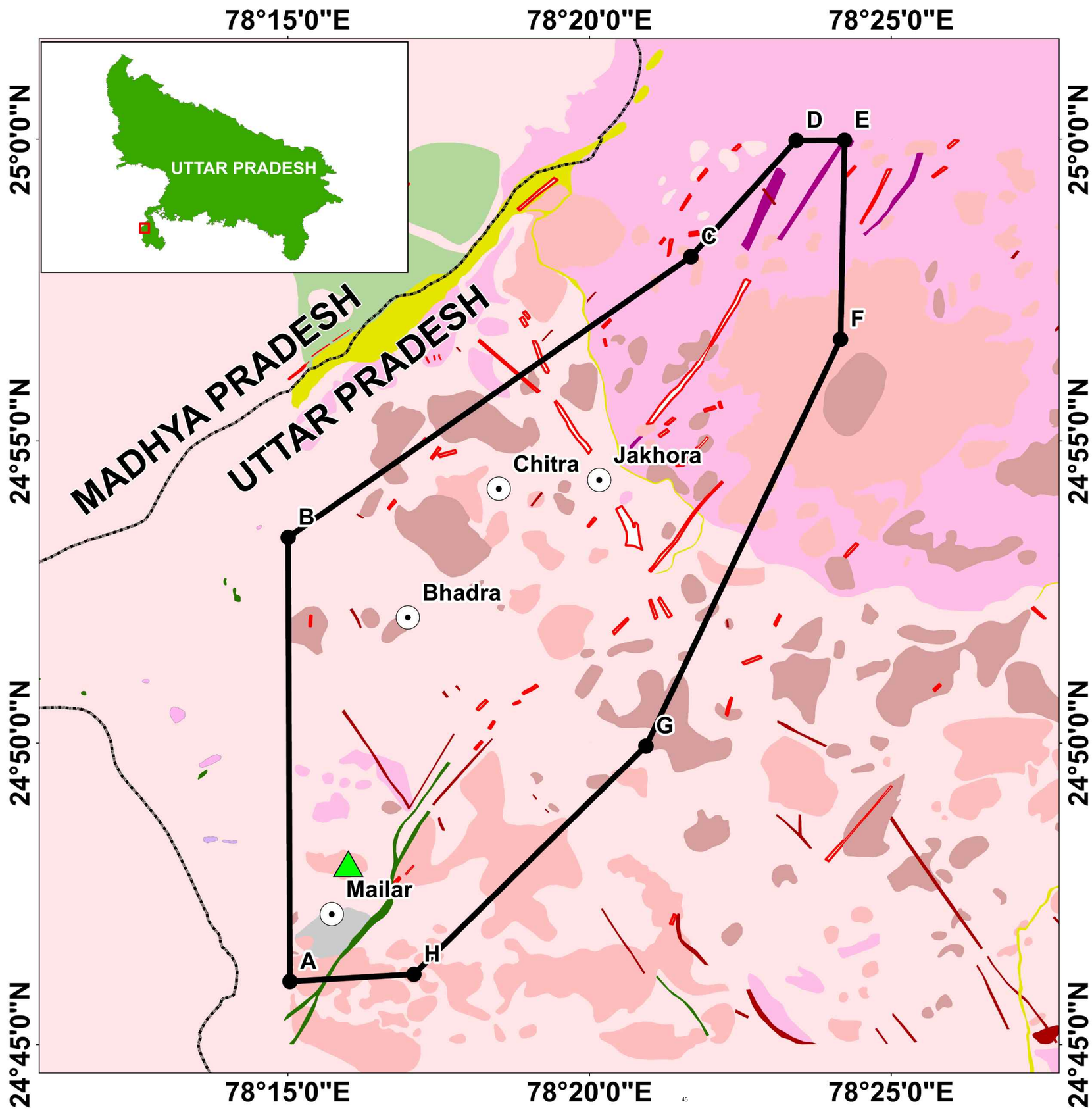
GEOLOGICAL MAP OF THE PROPOSED G4 MAILAR GOLD PROSPECT BLOCK WITH LOCATION INDEX

PLATE 4



N

W E

S

SCALE

1:50,000

0 3 6 9

Kilometers

Legend

- MAILAR GOLD PROSPECT BLOCK BOUNDARY
- BOUNDARY CORNER POINTS
- KNOWN LOCATIONS
- GIANT QUARTZ VEIN (GQV)
- PYROPHYLLITE

LITHOLOGY

- ALLUVIUM
- AMPHIBOLITE
- FINE/ MEDIUM GRAINED PINK GRANITE
- FINE GRAINED GRANITE
- MEDIUM GRAINED GRANITE
- PORPHYRITIC GRANITE
- PORPHYRITIC GRANITE GNEISS
- DOLERITE
- RHYOLITE
- QUARTZ-BIOTITE SCHIST

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