PROPOSAL FOR PRELIMINARY EXPLORATION (G3 LEVEL) FOR GOLD IN KAKOL BLOCK, HAVERI DISTRICT, KARNATAKA
(29.06 sq.km Area)

COMMODITY: GOLD

BY

MINERAL EXPLORATION AND CONSULTANCY LIMITED

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SEMINARY HILLS

PLACE: NAGPUR

DATE: 10th JULY 2023

Summary of the Block for G3 stage exploration

	Features	**Details**
	BlockID	SR_KA_01-Block-1-Kakol
	CurrentExploration Agency	Mineral Exploration and Consultancy Limited, Nagpur
	PreviousExploration Agency	Geological Survey of India – G4 Level
	G4stageGeological Report (Previous stage Geological Report)	Geological report for the memorandum on gold in Kakol and adjoining areas, Haveri district, Karnataka (August 2021)
	Commodity	Gold
	Mineral Belt	Dharwar-Shimoga schist belt
	Completion Period with entire Time schedule to complete the program	12months
	Objectives	The exploration scheme of Kakol block formulated with the following objectives: 1. Geological mapping and topographical survey. 2. Geophysical Survey 3. Exploratory drilling as per G3 level of exploration. 4. To check the Gold ore occurrence up to the vertical depth of 50m. 5. To estimate resources as per UNFC norms Minerals (Evidence of Mineral Contents) Amendment Rules 2021. 6. To facilitate the state govt. for auctioning of the block.
	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 work will be carried out by the exploration agency (MECL).
	Name/Number of Geoscientists	Three (2 Field + 1 HQ). Names will be provided later.
	Expected Field days(Geology,Geophysics,Surveyor)	Geology – 450 days (360 Field + 90 HQ),Survey – 120 days
1.	**Location**	
	Villages	Kakol, Chetra and Timmapana Gudda villages
	Tehsil	-
	District	Haveri
	State	Karnataka

2.	**Area (hectares/square kilometers)**	
	Block Area	29.06Sq.km. or 2906Ha.
	Forest Area	Portions of the area fall in Motebennur Reserve Forest.
	GovernmentLand Area	No data available
	PrivateLand Area	No data available
3.	**Accessibility**	
	NearestRail Head	Rannibennur (~15km)
	Road	The NH-4 between Bangalore and Pune and the Bangalore-Miraj section
	Airport	Hubli
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	The Tungabhadra River system and its tributaries drain the area. The drainage pattern of the area is dendritic in nature.
	Rivers/Streams	The Tungabadra tributaries such as Savalahalla, KerekudiHalla and DoddaHalla are the major rivers flows through nearby areas.
5.	**Climate**	
	Mean Annual Rainfall	Avg. 630 cm
	Temperatures (Minimum) Temperatures(Average)	14 Degrees 24-25 Degrees
6.	**Topography**	
	ToposheetNumber	48N/10
	Morphology of the Area	The highest elevation in the area is 706 m above MSL near Bhardi and the general ground level is 580 m above MSL.
7	**Availabilityof baseline geoscience data**	
	Geological Map (1:50K/25K)	**Available in 1:12500**
	Geochemical Map	Geological Survey of India under National Geochemical Mapping program systematic stream sediment sampling was carried out in the study area in 1X1 km interval in gridded pattern during 2016-17. A total of 196 composite stream sediment samples were generated in toposheet no: 48N/10. The survey brought out the Gold anomalous values of 3 ppb (Composite cell no.127), 2 ppb (Composite cell no.143) & 1 ppb (Composite cell no.155 & 56) in Toposheet no. 48 N/10.

	Geophysical Map (Aero-geophysical, Ground geophysical,Regional as well as local scale GP-maps)	National Geophysical mapping in Toposheet no. 48 N/10 carried out during 2017-18 by GSI with an objective to prepare Bouguer gravity and magnetic (Total Field) maps on 1:50,000 scale in station density of one GM observation in 2.5 sq. km area to delineate the subsurface geological structures, to collect and determine the density and susceptibility of rock samples of geological importance in the study area. The gravity high is attributed as presence of high-density Banded Iron Formation (BIF) trends of Shimoga Belt, Dolerite & Gabbroic dykes of Younger intrusive at shallow crustal depth in toposheet no.48N/10.
8.	**Justification for taking up G3 stage mineral exploration**	I. From the previous studies of GSI, it is observed that the gold mineralization is hosted in highly sheared and brecciated BIF bands with box works, void limonitisation and a defined wall rock alteration scheme in the form of chloritisation, silicification, sericitisation and carbonitisation. At places, it is sheared, brecciated containing specks of sulphides occasionally. Pyrite, pyrrohtite and arsenopyrite in veins, stringers and clusters within highly sheared brecciated quartz-carbonate veins (cutting at a low angel with BIF) have altered the BIF. II. GSI has recommended this block in their Geological Memorandum as "Based on the geological setup and mineral prospecting carried out, block may be potential for further exploration." III. The block has been discussed in the state JWG meeting and recommended for further exploration to increase the confidence level. IV. Therefore, 52 boreholes of 5850m drilling along with other activities have been planned.

PROPOSAL FOR PRELIMINARY EXPLORATION (G3 LEVEL) FOR GOLD IN KAKOL BLOCK, HAVERI DISTRICT, KARNATAKA.

1.1.0 Preamble:

1.1.1 India ranked 6th in the world gold production in the year 1905, whereas, presently it produces gold from three mines namely Hutti, Uti, Hirabuddni of HGML in Karnataka and from one private mine in Prorjana Mine (Kundarkocha) in Jharkhand besides as by-product from the copper mines of HCL.

1.1.2 Now the production of gold in India is a meagre one to two tonnes per annum only. But the fascination for the yellow metal in our country never dies; with the spiraling demand for the metal, makes more thrust for exploration in strategic mineral, precious metal, PGE and Cobalt by Government of India.

1.1.3 In the preceding two decades there has been no deposits of any sizeable dimension found in our country.

1.2.0 Background information

1.2.1 At the back drop of amendment of MMDR Act, 2021 by Government of India, an impetus is being given for funding, if not large deposits, but a cluster of small deposits. Consequent upon, if such cluster falls within the working mines, with the technological advancement and opencast mining preposition.

1.2.2 Investigation for gold in Kakol and adjoining area of Shimoga Schist Belt, Haveri District, Karnataka was carried out by GSI during FS 2012-13 by large scale mapping on a scale of 1:12,500 (G4 stage investigation) with an objective to assessing the potentiality of gold mineralization and for characterizing the associated alteration pattern. The main rock types in the area are a thick sequence of meta-argillite-greywacke suite, Banded Iron Formation, gabbro, dolerite and quartz veins.

1.2.2 In Kakol block a total of ten (nos.) BIF bands were traced. The BIF bands range in thickness from 1m to 14m with a strike length of 2.4 km. Sampling was done for this band systematically at an approximate interval of 150m (BRS and PTS) up to Byadgi crossing to establish the mineralized zone.

1.2.3 The mineralization is hosted in sheared and brecciated BIF bands. Box works, void limonitisation and wall rock alteration in the form of chloritisation, silicification, sericitisation and carbonitisation are recorded in the area. At places, specks of pyrite, pyrrohtite and arsenopyrite forms minute veins, stringers and clusters in brecciated parts of quartz-carbonate veins (cutting at a low angle with BIF).

1.2.4 The analytical results for bed rock samples in the area show Au values ranges from 0.03g/t/1m to 1.78g/t/1m in BIF and average assay value for Au in trenches are 0.11g/t/1.5m & 0.15/8m, 0.06 g/t /06m, 0.11 g/t /1m & 0.10 g/t /3m, 0.21 g/t /3m, 0.05 g/t /1m, 0.09 g/t /0.5m, 0.03 g/t /0.5m, 0.03 g/t /1.5m.

1.2.5 Based on the geological setup and mineral prospecting carried out by GSI, the block was recommended for further exploration.

1.2.6 The block was handed over to State Govt. as a GM block for auction. State Govt. put the block on auction. However, it was annulled.

1.2.7 Then the block was discussed in 6th Joint Working Group (JWG) after annulment of the auction process for the 1st time and decided to explore the block through NMET funding. Subsequently, a consent (No: DMG/Plan/53695/VOL-III/2022-23/508 dated 02nd August 2022) was granted by DMG – Karnataka to MECL to carry out G3 level exploration for Gold in the Kakol Block (29.06 Sq.km) through NMET funding.

1.2.8 Proposal for further exploration in the Kakol block was put up for discussion in the 44th TCC, NMET meeting held on 25th and 26th Augist, 2022. However, it was not discussed because of the block has not been attempted for auction for the 2nd time in case of geological memorandum blocks.

1.2.9 Recently, the block was annulled for the 2nd time on the auction platform. Also it was discussed in the 10th JWG, Karnataka where it was decided to explore the block further and increase the confidence level. Consequently Department of Mines and Geology vide letter no. DMG/Plan/53695/VOL-IV/2023-24/2065 dated 04-07-2023 conveyed the consent to take up G-3 level exploration after annulment of the block in the second attempt of auction.

1.3.0 Location and Approach

1.3.1 The proposed area is located in Kakol village of Haveri District, Kartanata in parts of TS No. 48N/10. The block contains Majority of private lands (agriculture), settlements, forest land and government land.

1.3.2 The NH-4 between Bangalore and Pune and the Bangalore-Miraj section of Southern railway passes through the area. The nearest railway station is Ranibennur which is ~15 km away from the study area. The interior parts of the villages are well connected by all-weather metalled, unmetalled and cart tracts.

1.4.0 Physiography & Drainage

1.4.1 The highest elevation in the area is 706 m above MSL near Bhardi and the general ground level is 580 m above MSL. The Tungabhadra River system and its tributaries drains the area. The drainage pattern of the area is dendritic in nature.

1.5.0 Climate

1.5.1 Climatic conditions:

a) Temperature (annual) min: 14°C max: Avg; 24.1°C.

b) Rain fall (annual) min: NA max: NA Avg: 630mm.

c) Humidity (annual) min: 12.9 % max: 99.9 % Avg: 71.3 %.

1.6.0 Infrastructure

1.6.1 The NH-4 between Bangalore and Pune and the Bangalore-Miraj section of Southern railway passes near the area. The nearest railway station is Rannibennur which is ~15 km away from the study area. The interior parts of the villages are well connected by all-weather metalled, unmetalled and cart tracts. Ranibennur taluk has experienced varying climatic conditions with years of no drought to severe drought conditions. There are no major industries around the area.

1.7.0 Flora and Fauna

1.7.1 Portions of the area fall in Motebennur Reserve Forest. The main flora observed in the area are Eucalyptus, Acacia and Neem and most of the rising grounds in the area are occupied with thorny bushes and grass. Ragi, paddy, sunflower, onion, chilly, tomatoe, cotton, jowar and oil seeds are the main crops of the area. The fauna consists of wild boar, small herds of spotted deer, fox, jackal, peacock, rodents, hare and poisonous and nonpoisonous snakes and black bucks.

1.8.0 Socio-Demographic profile

1.8.1 According to census 2011, the total area of Kakol village is 880.32 hectares with population of 4,998 peoples. There are about 1,044 houses in Kakol village. The total geographical area of Chetra village is 773.71 hectares with a total population of 1,631 peoples (https://villageinfo.in/karnataka).

1.8.2 Ranibennur is the nearest town which governed by municipal corporation. According to 2011 census of India, total population of taluk is 335,281 of which 172,010 are male and 163,271 are female. Total workers are 152,081 depends on multi skills out of which 102,070 are men and 50,011 are women. Total 30,882 Cultivators are depended on agriculture farming out of 25,645 are cultivated by men and 5,237 are women. 40,177 people works in agricultural land as a labour in Ranibennur, men are 21,541 and 18,636 are women. Literacy percentage is 69.56 percent, out of these 38.77 percent is male literates and 30.79 percent is female literates. (https://www.indiagrowing.com).

2.0.0. Geology of the area

2.0.1 The area forms the northern part of Dharwar-Shimoga schist belt. The NW-SE trending Shimoga schist belt covers an area of 25,000 Km^2, extending from Tarikere Valley to Goa and beyond Ratnagiri in Maharashtra. Older schist belts of Bababudan and Western Ghat Belts rests over Trondjhemite-Tonalite-Granite gneiss basement. The rocks of the Chitradurga Group occupy the major area with few rocks of Bababudan Group overlying the basement gneissic domes of Londa, Chandragutti, Kumbharwada, Shimoga, Honnali, Saulanga, Tarikere and Chennagiri (Ramakrishnan and Vaidyanadhan, 2010). The belt has a highly irregular configuration caused by numerous, broadly acute folded structures, most of them being related to island like, domal masses of gneisses and granitoids. (Harinadha Babu et. al, 1981).

2.0.2 The Sargur Group occurs as concordant supracrustal remnants within the Peninsular Gneiss. The lithology is diverse but consist mainly of ultramafic and mafic rocks, iron stone and aluminous to Mg-Al rich sediments. The Bababudan Group is not well represented in the Shimoga district, being restricted to the area around Sakrebail in the extreme south and Halalkere in the east. The Chitradurga Group can be subdivided in to Jhandimatti, Joldhal, Medur and Ranibennur Formations. The Jhandimatti Formation is dominated by polymict conglomerates, chlorite-quartz schists interbedded with quartzite and rare volcanic rocks. The Joldhal Formation is a predominant chemogenic sedimentary unit consisting of limestone and dolomite, manganiferous and ferruginous cherts and phyllites, all closely interleaved with thin units of volcanic and chlorite schist. The Medur Formation is represented by a thick pile of basic, intermediate and acid volcanic rocks, with subordinate chemical and detrital sediments (A manual of Geology of India, 2006).

2.0.3 The General Stratigraphic succession is given below in Table-I.

Table-I

	Group	**Formation**
DHARWAR SUPERGROUP		*Laterite* *Basic and ultrabasic intrusive Granite, pegmatite and quartz vein*
	Chitradurga Group	*Ranibennur Formation* *Medur Formation* *Joldhal Formation* *Jhandimatti Formation*
	----------Unconformity----------	

	Bababudan Group?	*Amphibolite, garnet-mica schist, quartzite (unclassified)*
	----------Unconformity----------	
	Peninsular Gneiss	*Gneissic complex (unclassified)*
	Sargur Group (Ancient supracrustals)	*Amphibolite, garnet-amphibolite, epidote amphibolites, kyanite- staurolite-mica schist, fuchsite quartzite, cordierite-anthophyllite rocks, ironstone and ultramafites*

2.0.4 The Shimoga schist belt is characterized by broad open folds on regional scale. Bedding (S_0) in sedimentary rocks varies widely from N-S to E-W dipping moderately to steeply towards NE. Schistosity (S_1) in the schistose rocks is parallel to bedding. Crenulation cleavages (S_2) trending in NNE-SSW direction with steep dips towards NNW. The S3 represents fracture cleavage is in the NW-SE. Minor folds are very common in the banded ferruginous quartzites which are plunging 200-300 towards north and south. Mainly two sets of joints are noticed in this area which is trending in NW-SE and ENE-WSW directions.

2.1.0 Block Geology

2.1.1 The study area comes in Toposheet No. 48N/10 is a part of Chitradurga (Shimoga) Dharwar Supergroup and exposes the rocks of Archaean and Proterozoic ages. Basically, the rock types exposed in the area belong to the Ranibennur Formation of Chitradurga Group of Dharwar Supergroup. The argillite unit composed of microgranular quartz and chlorite, biotite, muscovite, pyrite, carbonate as mosaic. The greywacke is typically of the same mineralogy except that detrital quartz, feldspar and lithic fragments are more conspicuous and rock is more arenaceous.

2.1.2 The acidic and basic intrusive of Palaeo-proterozoic age are the quartz veins and gabbro, dolerite respectively. The quartz veins of two generations are noticed in this area. The earlier generation is thick reefs whereas the later one is thin and irregular. These veins are white to grayish blue in colour. A number of basic dykes of gabbro and dolerite are seen mostly on NW-SE direction and a few in almost E-W direction. It comprises of pyroxenes and plagioclase feldspars.

2.1.3 The stratigraphic sequence of the area is below in Table-II.

Table-II

Recent	*Alluvium and Gravel bed*
Younger Intrusive	*Quartz veins, Basic intrusive*
Ranibennur Formation (≈Hiriyur Formation)	*Meta-Argillite- Greywacke/ Banded Iron Formations*

2.1.4 The meta-argillite/meta-greywacke is the major lithounit in the area. They are commonly interbanded and occupy the low-lying areas. The lithounit is generally occur in schistose form, sometimes it is massive forming hillock at places as noticed in West of Kakol, SW of Chetra and North of Kakol Tanda. The meta-greywacke rock is greenish to grayish in colour, medium-coarse grained, hard and compact, consists of quartz, feldspars, mica and chloritic minerals often disseminated pyrite crystals are also present. The meta-argillite unit comprises of slate and phyllitic rocks occurring as intercalations. This unit exhibits typical khaki greenish grey color and fine grained. With increase in the grade of metamorphism the unit is more phyllitic and re-crystallized into coarse grained rock. The argillite units in contact with BIF are more ferruginised compared to the units away from it. The meta-greywacke unit is much coarser compared to the fine meta-argillites. At places pyrite grains and/or siderite, ankerite imparts a spotted look to the rock. The well foliated meta-sedimentary units' trend varies from N10°W-S10°E to N20°W-S20°E with vertical to sub-vertical dips towards north. It is traversed by secondary quartz and carbonate veins.

2.1.5 The Banded Iron Formations occur as elongate linear bands within greywacke meta- argillite suite and are good structural marker horizons documenting the folds. The rock exhibits compositional banding of alternate ferruginous and siliceous layers. The BIF bands are associated with ferruginised meta-argillite. They are prominently seen in Kakol and often show tuffaceous matter at places in Chetra area.

2.1.6 In Kakol area ten (nos.) BIF bands are traced; thickness ranges from 1 to 14m with a maximum strike length of 2.4 km. There are two BIF bands exposed in the hill (.640) with thickness of 2m and about 10m. The western most 2m wide band is a brecciated, sheared limonotized smoky quartz veins with stringers of sulphides. The peak exposes a 14m wide folded BIF band that is profusely carbonated, silicified and limonitized. The BIF band show fold axis plunging 20° towards N70°W. At the limbs, this BIF band is approximately 3m wide and extends discontinuously for about 2.5 km strike length. Sampling was done for this band

systematically at an approximate interval of 150mts (BRS and PTS) up to Byadgi crossing including old workings to establish mineralized zones. The analytical results yielded Au content range from 0.04g/t to 1.78g/t in the BRS and PTS samples.

2.1.7 In Chetra area, four (nos.) BIF bands are traced from Timmapana Gudda up to the 669 peak (near 317 milestone NH4). These bands trend in NNW-SSE direction towards NW dip. The strike length of the BIF bands vary from 1km to 4km with width varies from 1m-5m. The rock is banded hematite quartzite, associated with pink phyllite and tuffs. It is sheared, brecciated at places containing specks of sulphides occasionally and formed open to very tight antiformal/ synformal plunging folds. The BIF band to the SW of Chetra village (699peak) exhibits a folding with fold axis plunging NW. BRS analyzed gold assay value of 0.69/1 g/t/m (Sample no TG14). The total cumulative length of the BIF bands is around 26 km with an average thickness of 3m. The Gold assay values range from 0.03g/t to 0.69g/t.

2.2.0 Structure

2.2.1 Bedding (S0) and lamination in BIF and meta-argillites/greywackes are observed. The diastrophic structures include foliation, schistosity, crenulation cleavage, joints and shears are also reported. Structures are grouped to primary and secondary and are briefed below.

2.2.2 Primary structure: Bedding (S0) in BIF is the only primary planar sedimentary structure well preserved in the area and is defined by colour banding. The thickness of the single ferruginous/siliceous band varies from a few mm to 2-3 cm. The bedding trends in N10°E-S10°W to E-W with steep dip at 60º to 80º towards North.

2.2.3 Secondary structures: Foliation is the most pervasive planar structure. Schistosity (S1) is well developed in the meta-argillites and is defined by parallel to sub-parallel alignment of chlorite and sericite in N25°W-S25°E/75° northeasterly direction. The second Schistosity (S2) is represented by crenulation cleavage trending in N10°E- S10°W direction transecting the So and S1. Development of broad cleavage (S3) in N30°E-S30°W to N-S directions transecting So, S1 and S2 is recorded.

2.2.4 Folds: The area has undergone three phases of deformation. The strike and dip of axial plane of F1 deformation is variable due to later deformation and it varies from N15°E-S15°W to N20°W-S20°E. The axial plane of the major antiformal and synformal folding structure in the area trending in NWSE directions, represents the first phase of folding (F1). The F1 folds have been tightened by F2 folding. The tight F1 folds have been affected by a later phase folding (F2) is trending in NNE-SSW direction and is almost close to open type. The F1 and F2 folds are at the most coaxial. The fold axis plunges from low to moderate towards NW-

WNW. The village Devargudda is presided over a regional F2 synformal folds plunging 250NW. Most of the folds in the area are generally sinistral; only few places, dextral folding is observed. The F3 deformation is in the form of broad warps and it strikes N60°E to N70°E dipping 75°S.

2.2.5 **Faults:** Oblique faults occasionally displace Banded Iron Formation; these movement planes are manifested by dolerite and gabbro dykes. The east-west strike slip fault near Byadgi crossing has displaced the BIF bands. The faults in general trends NW-SE, ENE-WSW and E-W in the area.

2.2.6 **Joints:** Argillites and greywacke are highly joined at places and is trending mainly in NE-SW with sub vertical to vertical dips.

2.2.7 **Shears:** Minor shear zones are occupied by quartz carbonate veins/veinlets with pyrite, pyrrhotite, chalcopyrite, arsenopyrite, ±Au mineralization. Shear zone exhibits characteristics of wall rock alteration features such as sericitisation, muscovitisation, carbonatisation and chloritization. A 30m wide shear zone has been marked north of Kajjari which is ~1.5 km east near to the eastern block boundary. This zone is marked by intense shearing, silicification and rotated porphyroblasts. The zone exhibits sulphide mineralization, represented by in shear zones.

2.3.0 Mineralization

2.3.1 Gold mineralization in the area is confined to Banded Iron Formation. In Kakol area, quartzite bands of BIF show limonitisation, carbonitisation and silicification with finely developed box works. At places it is gossanised. In Chetra area, folded BIF band are limonitized, sericitized with quartz veins with goethite characterized by finely disseminated pyrite recorded in fracture planes. Gold mineralization is associated with quartz carbonate and sulphide facies of the BIF; pyrrhotite, pyrite, arsenopyrite and occasionally chalcopyrite occur along bedding plane at the contact of chert and magnetite layers.

2.4.0 PREVIOUS WORK

2.4.1 *Following geologists from GSI explored this block at various time frames;*

- Basavaraja K. (Geological Survey of India) for the F.S. 1992-93.
- Venkataramana and Ramachandra (Geological Survey of India) for the F.S. 1994-95.
- Ramesh and Venkataramana (Geological Survey of India) for the F.S. 1996-97.

2.4.2 S.Shivanna and K.Basavaraja (1993) reported the cross-cutting sulphide-bearing quartz-carbonate veins in BIF bands and envisaged epigenetic type of gold mineralization. They also stated that nearly 90% of the BIF bands mapped in the area is auriferous with gold value ranging from 0.1 to 31.15 g/t. The work has brought out that a cumulative strike length of

62-line kms of BIF bands mapped in an area of about 330 sq km have been found hosting gold mineralization.

2.4.3 Subsequently, investigation for gold by detailed mapping of 0.66 sq km, and 0.60 sq km in Kalledevar-Hosahonatti block and Devargudda block was carried out by Venkataramana and Ramachandra (1994-95) and Ramesh and Venkataramana (1996-97) respectively.

2.4.4 Geological Survey of India under National Geochemical Mapping program systematic stream sediment sampling was carried out in the study area in 1X1 km interval in gridded pattern during 2016-17. A total of 196 composite stream sediment samples were generated in toposheet no: 48N/10. The survey brought out the Gold anomalous values of 3 ppb (Composite cell no.127), 2 ppb (Composite cell no.143) & 1 ppb (Composite cell no.155 & 56) in Toposheet no. 48 N/10.

2.4.5 National Geophysical mapping in Toposheet no. 48 N/10 carried out during 2017-18 by Geological Survey of India with an objective to prepare Bouguer gravity and magnetic (Total Field) maps on 1:50,000 scale in station density of one GM observation in 2.5 sq. km area to delineate the subsurface geological structures, to collect and determine the density and susceptibility of rock samples of geological importance in the study area. The gravity high is attributed as presence of high-density Banded Iron Formation (BIF) trends of Shimoga Belt, Dolerite & Gabbroic dykes of Younger intrusive at shallow crustal depth in toposheet no.48N/10.

2.4.6 In Kakol block (14°40'5" & 75°31'40", 2.25Km SW of Kakol), 11 trenches were excavated in BIF band of varying width from 0.6m to 10m extending from Kakol crossing up to Byadgi crossing and collected 115 samples for analysis to establish a mineralized zone of 250m. Sample interval varied from 0.6m to 2m based on visible mineralization/indications of mineralization.On the other hand, in Chetra Block (14°41'44.0" & 75°30'41.6", 1km west of Chatra Village), 4 trenches were excavated in BIF band of varying width from 1.3m to 2m extending from Timmapana Gudda to 317-mile stone along NH4. A total of 44 samples were collected representing a length of 4km. Sample interval varied from 0.5m to 1.5m based on visible mineralization/indications of mineralization.

2.4.7 GSI Reported that the mineralization is hosted in highly sheared and brecciated BIF bands with box works, void limonitisation and a defined wall rock alteration scheme in the form of chloritisation, silicification, sericitisation and carbonitisation. At places, it is sheared, brecciated containing specks of sulphides occasionally. Pyrite, pyrrohtite and arsenopyrite in

veins, stringers and clusters within highly sheared brecciated quartz-carbonate veins (cutting at a low angel with BIF) have altered the BIF. The analytical results for bed rock samples in the area shown Au values ranges from 0.03g/t/1m to 1.78g/t/1m in BIF and average assay value for Au in trenches of the trenches 0.11g/t/1.5m & 0.15/8m, 0.06 g/t /06m, 0.11 g/t /1m & 0.10 g/t /3m, 0.21 g/t /3m, 0.05 g/t /1m, 0.09 g/t /0.5m, 0.03 g/t /0.5m, 0.03 g/t /1.5m.

2.5.0 Location & Accessibility

The NH-4 between Bangalore and Pune and the Bangalore-Miraj section of Southern railway passes through the area. The nearest railway station is Ranibennur which is ~15 km away from the study area. The interior parts of the villages are well connected by all-weather metalled, unmetalled and cart tracts.

2.6.0 Block description

The proposed area (29.06 Sq.km) is located in Kakol village of Haveri District, Kartanata. Parts of TS No. 48N/10. The following are the DGPS coordinates of the block.

Table-III – Corner point co-ordinates for Kakol block

KAKOL DGPS CO-ORDINATES						
SI NO	**CODE**	**LATITUDE**	**LONGITUDE**	**NORTHING**	**EASTING**	**RL**
1	A	N14°41'39.59649"	E75°30'00.04554"	1624577.830	553831.294	623.779
2	B	N14°43'27.94824"	E75°30'00.17531"	1627906.806	553827.798	615.784
3	C	N14°43'27.85455"	E75°31'22.97614"	1627909.546	556303.725	631.743
4	D	N14°42'07.52943"	E75°31'39.35880"	1625442.792	556799.375	615.565
5	E	N14°42'07.19839"	E75°32'27.70285"	1625436.043	558245.141	620.578
6	F	N14°39'41.54130"	E75°34'08.82010"	1620968.319	561280.357	589.392
7	G	N14°39'40.98510"	E75°31'20.21424"	1620939.073	556237.255	620.759

3.0.0 Objectives:

The objectives of current exploration program would be;

1. Geological mapping and topographical survey.
2. Geophysical Survey
3. Exploratory drilling as per G3 level of exploration.
4. To check the Gold ore occurrence up to the vertical depth of 50m.
5. To estimate resources as per UNFC norms Minerals (Evidence of Mineral Contents) Amendment Rules 2021.
6. To facilitate the state govt. for auctioning of the block.

4.0.0. PROPOSED SCHEME OF EXPLORATION

4.1.0 In accordance to the objective set for Kakol block, the following scheme of exploration has been formulated. The details of different activities to be carried out are presented in subsequent paragraphs.

4.2.0 **Topographical Survey**

The proposed block area is tied up with GSI work with reference to surface and proposed borehole collars, thus topographical survey is essential in 1:5000 scale with 2 m contour interval. Borehole collars will be surveyed by DGPS & total station in WGS-84 Datum.

4.3.0 **Geological Mapping**

The existed geological map of the area done by GSI will be clubbed together and a combined map will be prepared by keeping intact the data and updating with the present data by few rapid geological traverses on 1:5000 scale.

4.4.0 **Geophysical Survey**

Though the area has been covered by NGPM (at 1:50000 scale) for Gravity and Magnetic survey in regional scale, an integrated Ground Magnetic, Resistivity, Self-Potential and Induced Polarization is planned to carry out in proposed area to identify the structural features and mineralization as detailed manner. The survey is planned in a grid pattern of 20m x 200m. Traverses were planned in N56°E direction with an interval of 200m and station interval of 20mts. A total 25 Line Km is planned for the survey.

4.5.0 **Core Drilling**

Total of 52 core bore holes with 5850 m of drilling (200m borehole spacing) have been planned, so that the area can be included in UNFC G3 resource. The borehole cores would be logged systematically. Details of the lithounit viz. colour, structural feature, texture, mineralization, besides the recovery and rock quality designation (RQD) would be recorded. Out of 52 boreholes 30 boreholes (3620m) have been planned for the mineralized areas where BIFs are exposed and have gold anomalies and the remaining 22 (2230m) boreholes are conditional. The conditional boreholes will be taken up based on the outcomes of the boreholes from the anomalous zones.

4.6.0 **Borehole deviation survey**

Borehole deviation survey has been proposed for boreholes having proposed depth of 100m and above as deeper the boreholes, the more it tends to deviate. So a total of 3145m for 18 out of 52 boreholes have been proposed.

4.7.0 **Sampling**

It is envisaged to collect 1448 samples of 0.50 meter each (from all 52 boreholes) for analyzing the gold and silver mineralization present in the proposed area.

The mineralized cores including the cores of immediate footwall and hanging wall rocks (3 m length each) would be sampled at 1 m interval, as far as possible, depending upon the intensity of mineralization, change in lithology and core recovery etc. It was envisaged that:

i. Around 1448 Nos of primary samples with 217 check (Internal & External) samples would be generated from the mineralized zone intersections & to be obtained from the drill holes of the proposed block. All the primary and check samples would be analyzed for Gold and Silver by Fire Assay method.

ii. Around 10% of Primary samples (145 Nos) will be sent to NABL External Labs as External Check Samples. Also, 5% of Primary samples (72 Nos) will be analyzed in MECL Labs as Internal Check Samples.

iii. A total of 60 samples would be analysed as composite samples for Gold and Silver by Fire Assay method.

iv. A total of 20 samples would be analysed by petrographic and mineragraphic studies to ascertain the presence of any uncommon minerals.

4.8.0 **Petrological Studies:**

Thin and polished section studies on drill cores as well as out-crop samples would be done for detailed petrographic and mineragraphic characteristics. These samples would be drawn from ore zones and host rocks. A provision of 10 specimens for petrographic and 10 specimens for mineragraphic studies has been kept for the purpose.

4.9.0 **Specific Gravity Determination:**

To derive the tonnage factors, 20 nos of samples are proposed for specific gravity determination. The samples are to be drawn from ore zones / mineralized zones.

5.0.0. Exploratory Drilling

5.0.1. The scheme of drilling would be 52 numbers of boreholes envisaging a total of 5850 meters of drilling are proposed in the block. All the holes are aimed to intersect at first level of intersection (50 meters from surface) of existing proven ore bodies of previous studies. The boreholes planned with 200 meters strike interval as per UNFC norms & Minerals (Evidence of Mineral Contents) Amendment Rules 2021.

Table-IV - The proposed boreholes for G3 level exploration

SL. NO.	CROSS SECTION	PBH ID	AZIMUTH	BEARING	PROPOSED DEPTH (m)
1	S-2	PBH-1	N56°E	60°	180.00
2	S-3	PBH-2			155.00

SL. NO.	CROSS SECTION	PBH ID	AZIMUTH	BEARING	PROPOSED DEPTH (m)
3	S-12	PBH-3			85.00
4	S-13	PBH-4			85.00
5	S-13	PBH-5			230.00
6	S-14	PBH-6			75.00
7	S-18	PBH-7			85.00
8	S-19	PBH-8			80.00
9		PBH-9			225.00
10	S-20	PBH-10			125.00
11		PBH-11			125.00
12	S-21	PBH-12			80.00
13		PBH-13			80.00
14	S-24	PBH-14			80.00
15	S-25	PBH-15			80.00
16		PBH-16			220.00
17		PBH-17			135.00
18	S-26	PBH-18			95.00
19		PBH-19			225.00
20		PBH-20			135.00
21		PBH-21			80.00
22		PBH-22			95.00
23	S-27	PBH-23			80.00
24		PBH-24			210.00
25		PBH-25			80.00
26		PBH-26			80.00
27	S-28	PBH-27			70.00
28		PBH-28			75.00
29		PBH-29			185.00
30		PBH-30			85.00
TOTAL (m)					**3620.00**

SL. NO.	CROSS SECTION	PBH ID	AZIMUTH	BEARING	PROPOSED DEPTH (m)
1	S-1	PBH-31	N56°E	60°	60.00
2	S-4	PBH-32			80.00
3	S-7	PBH-33			70.00
4		PBH-34			80.00
5	S-8	PBH-35			80.00
6		PBH-36			80.00
7	S-11	PBH-37			145.00
8		PBH-38			75.00
9	S-12	PBH-39			80.00
10	S-14	PBH-40			85.00
11	S-15	PBH-41			75.00
12		PBH-42			85.00

13	S-17	PBH-43			115.00
14	S-18	PBH-44			210.00
15	S-22	PBH-45			75.00
16		PBH-46			85.00
17	S-23	PBH-47			75.00
18		PBH-48			190.00
19	S-24	PBH-49			210.00
20		PBH-50			70.00
21	S-27	PBH-51			125.00
22	S-29	PBH-52			80.00
TOTAL (m)					**2230.00**

6.0.0. Quantum of work

The quantum of work proposed by MECL in Kakol block is given below:

Table-V – Proposed quantum of work for G3 level exploration at Kakol block, Haveri District, Karnataka

SL. No.	Description of Work	Unit	Quantity
I	a) Topographic Survey (1:5000 Scale)	Sq. Km	29.06
	b) Geological Mapping (1:5000 Scale)	Sq. Km	29.06
II	DGPS Survey Points	Nos	52
III	Geophysical Survey	Line Kms	25
IV	Drilling	m	5850 (52 Bhs)
V	Borehole deviation survey	m	3145 (18Bhs)
VI	Laboratory Studies		
	a) Primary Samples	Nos	1448
	c) Check Samples from External NABL Labs for 10% of Primary Samples.	Nos	145
	d) Check Samples from Internal Lab for 5 % of Primary Samples.	Nos	72
	e) Composite samples	Nos	60
	f) Petrographic Studies	Nos	20
	g) Mineragraphic Studies	Nos	20
	h) Specific gravity determinations	Nos	20
VII	Geological Report preparation (Digital Format)	Nos	1

7.0.0 Time schedule and cost estimates

7.1.0 Time schedule:

The proposed exploration program is planned in such a way that all the activities like camp setting, winding, drilling, survey and associated geological work and laboratory work will be completed within 10 months' time. Report writing will take another 2 months. Thus, the total duration of the project shall be completed in 12 months from the date of commencement of the project. The bar chart showing activities wise time schedule is placed in Table No. VII.

7.2.0 Cost estimates:

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. 1127.27 Lakhs.** The summary of cost estimates for Preliminary exploration (G-3 Level) is given in Table No.-VI and details of cost estimates are given in Table No. –VIII.

Table VI - Summary of Cost estimates

Sl. No	Item	Estimated Cost in INR
1	Drilling	73,879,550
2	Geological work	6,919,420
3	Geophysical Survey	3,621,733
4	Laboratory Studies	8,580,972
5	Exploration Proposal preparation	500,000
6	Report preparation	2,000,000
7	Peer review charges	30,000
8	GST (18%)	17,195,701
	Grand Total	**112,727,376**

****Or Say Rs. 1127.27 lakhs (Rs. 11.27 crores)**

8.0.0 Justification

8.0.1 From the previous studies of GSI, it is observed that the gold mineralization is hosted in highly sheared and brecciated BIF bands with box works, void limonitisation and a defined wall rock alteration scheme in the form of chloritisation, silicification, sericitisation and carbonitisation. At places, it is sheared, brecciated containing specks of sulphides occasionally. Pyrite, pyrrohtite and arsenopyrite in veins, stringers and clusters within highly sheared brecciated quartz-carbonate veins (cutting at a low angel with BIF) have altered the BIF. The analytical results for bed rock samples in the area showing Au values ranges from 0.03g/t/1m to 1.78g/t/1m in BIF and average assay value for Au in trenches of the trenches 0.11g/t/1.5m & 0.15/8m, 0.06 g/t /06m, 0.11 g/t /1m & 0.10 g/t /3m, 0.21 g/t /3m, 0.05 g/t /1m, 0.09 g/t /0.5m, 0.03 g/t /0.5m, 0.03 g/t /1.5m.

8.0.2 GSI has recommended this block in their Geological Memorandum as “Based on the geological setup and mineral prospecting carried out, block may be potential for further exploration.”

8.0.3 The block has been discussed in the state JWG meeting and recommended for further exploration to increase the confidence level.

8.0.3 Therefore, 52 boreholes of 5850 m drilling and along with other activities have been planned.

9.0.0. Manpower deployment

Tentative Time schedule/action plan for proposed Preliminary exploration (G-3) is given in Table-VII.

Table-VII

TIME SCHEDULE /ACTION PLAN FOR PRELIMINARY EXPLORATION OF GOLD (G-3) IN KAKOL BLOCK, HAVERI DISTRICT, KARNATAKA

Sl. No.	Activities	Unit	MONTHS												Total (Days)
			1	2	3	4	5	6	REVIEW	7	8	9	10	11	12	
1	Camp Setting	day	30													30
2	Geophysical Survey	day		30	30	30	30	30		30	30	30				240
3	Survey Party days	day		15	15	15	15	15		15	15	15				120
4	Geologist Party days (2 Party)	day					15	30		30	30	15				120
5	Sampling Party days, Core Sampling (1 party)	day					30	30		30	30	30				150
6	Core Drilling (4 rigs)	m.				30	30	30		30	30	30				180
7	Camp Winding	day											30			30
8	Laboratory Studies	Nos.											30	30	30	90
9	Geologist Party days (1 Party), HQ	day											30	30	30	90
10	Report Writing	day												30	30	60

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.**

10.0.0. Break-up of expenditure

The details of cost estimates are given in Table No. –VIII.

Table-VIII: Cost Estimate for Preliminary Exploration (G3) Proposal for Estimation of Gold in Kakol block, Haveri District, Karnataka

Cost Estimate for Preliminary Exploration (G3) Proposal for Estimation of Gold in Kakol block, Haveri, Karnataka Total Area - 29.06 sqkm; Nos. of Borehole - 52 ; Borehole depth range - 100-200m ; Completion Time - 12 Months						
S.N	**Item of Work**	**Unit**	**Rates as per NMET SoC 2020-21**		**Estimated Cost of the Proposal**	
			SoC-Item -Sl No.	**Rates as per SoC**	**Qty.**	**Total Amount (Rs)**
A	**Geophysical Survey**					
1	I.P cum-resistivity, SP., Magnetic (8-10 Line km)	10 Line km	3.4b	1,448,693	2.5	3,621,733
	Sub-Total A					**3,621,733**
B	**GEOLOGICAL WORK**					
1	**Geological mapping (1:5000), Borehole logging & sampling & report writing**					
a	Charges for one Geologist per day at HQ	day	1.3	9,000	90	810,000
b	Charges for one Geologist per day at field (2 Nos)	day	1.3	11,000	240	2,640,000
c	Labour (2 Nos/ geologist)	day	5.7	494	480	237,120
2	**Survey (on 1:5000 Scale)**					
a	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes by DGPS	Per Point of observation	1.6.2	19,200	52	998,400
b	Charges of one Surveyor (1 Party)	one surveyor per day	1.6.1a	8,300	90	747,000
c	Labours (4 Nos)	day	5.7	494	360	177,840
d	Charges for one Sampler per day (1 Party)	one sampler per day	1.5.2	5,100	185	943,500

e	Labours (4 Nos)	day	5.7	494	740	365,560
	Sub-Total B					**6,919,420**
C	**DRILLING**					
1	Drilling up to 300m (Hard Rock)	m	2.2.1.4a	11,500	5,850	67,275,000
2	Drilling 301 to 600 m (Hard Rock)	m	2.2.1.4b	12,420	-	-
3	BH deviation survey by multi-shot camera	per m	2.2.6	330	3,145	1,037,850
4	Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	20,000	52	1,040,000
5	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	52	104,000
6	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	8,400	302,400
7	Monthly Accommodation Charges for drilling Camp (up to 1 Rigs)	month	2.2.9	50,000	4	200,000
8	Drilling Camp Setting Cost	Nos	2.2.9a	250,000	4	1,000,000
9	Drilling Camp Winding up Cost	Nos	2.2.9b	250,000	4	1,000,000
10	Road Making (Flat Terrain)	Km	2.2.10a	22,020	15	330,300
11	Drill Core Preservation	per m	5.3	1,590	1,000	1,590,000
	Sub Total C					**73,879,550**
D	**LABORATORY STUDIES**					
1	**<u>Chemical Analysis</u>**					
i)	**Primary samples**					
	a. for Gold and Silver by fire assay	Nos	4.1.5a	4,760	1,448	6,892,480
ii)	**Check samples Internal (5%) and External(10%)**					
	a. for Gold and Silver by fire assay	Nos	4.1.5a	4,760	217	1,033,872
iii)	**Composite samples**					
	a. for Gold and Silver by fire assay	Nos	4.1.5a	4,760	60	285,600

	Sub-Total -D					**8,211,952**
E	**Estimation of major oxides by XRF technique (Whole rock analysis)**					
a	Major oxides	Nos	4.1.15a	4,200	20	84,000
	Sub-Total -E					**84,000**
F	**Petrological samples (Surface & Bh Core Samples)**					
i	Preparation of thin section	Nos	4.3.1	2,353	20	47,060
ii	Study of Thin Section	Nos	4.3.4	4,232	20	84,640
	Sub-Total -F					**131,700**
G	**Mineragraphic Studies (Surface & Bh Core Samples)**					
a	Preparation of polished section	Nos	4.3.2	1,549	20	30,980
b	Study of Polished Section	Nos	4.3.4	4,232	20	84,640
c	Digital Photographs	Nos	4.3.7	280	20	5,600
	Sub-Total -G					**121,220**
H	**Specific Gravity Determination**					
	Specific Gravity Determination	Nos	4.8.1	1,605	20	32,100
	Sub-Total - H					**32,100**
I	**Total - A to H**					**93,001,675**
J	**Preparation of Exploration Proposal (5 Hard copies with a soft copy)**	**5 Hard copies with a soft copy**	**5.1**	**2% of the Cost or Rs. 3.8 Lakhs whichever is lower**		**500,000**

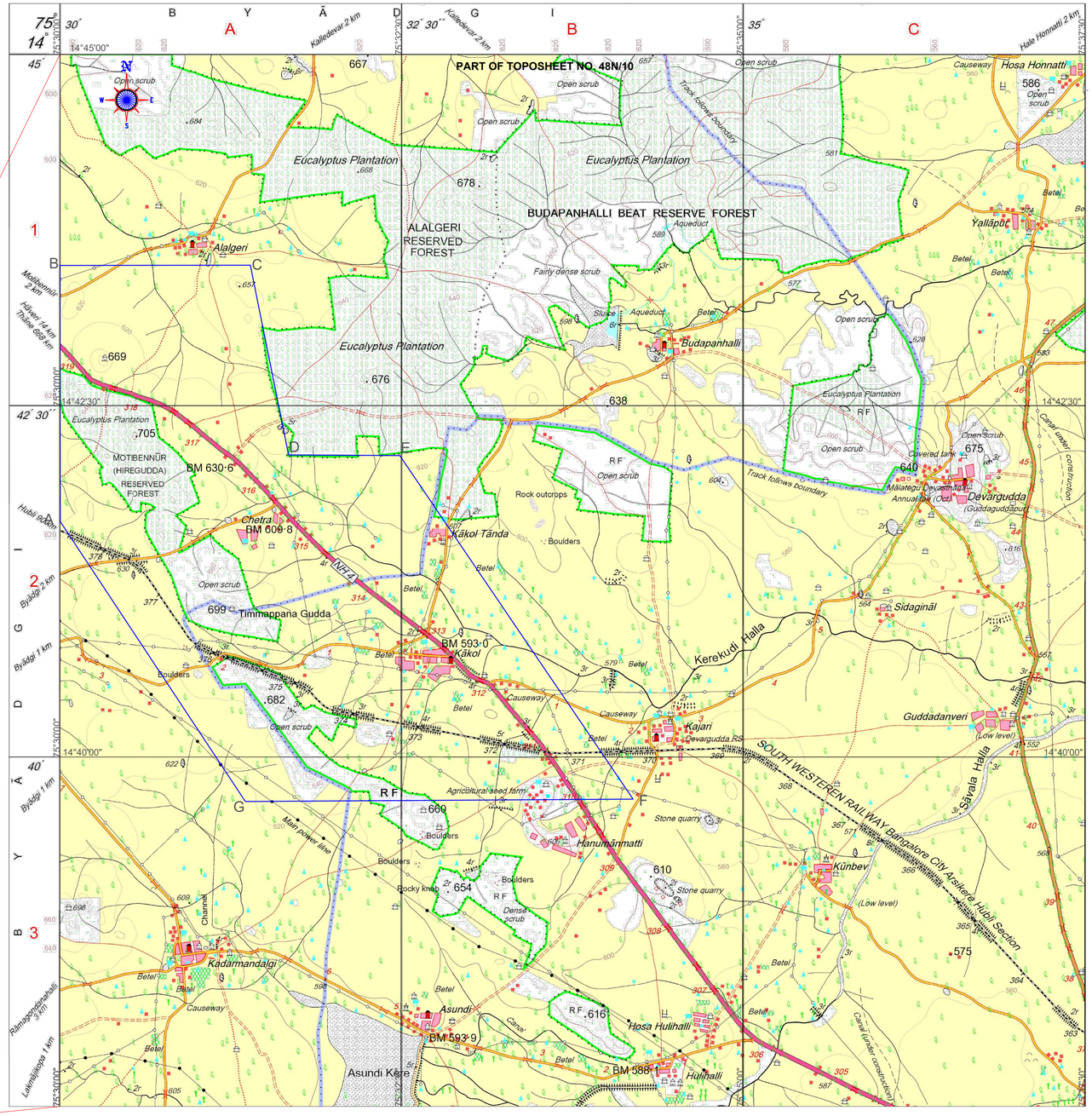
K	**Geological Report Preparation**	**5 Hard copies with a soft copy**	**5.2**	**For the projects having cost exceedingn Rs. 300 lakhs - A minimum of Rs. 9 lakhs or 3% of the value of work whichever is more subject to a maximum amount of Rs. 20 Lakh and Rs 10000/- per each additional Copy**		**2,000,000**
L	**Peer review Charges**		**As per EC decision**			**30,000**
M	**Total Estimated Cost without GST**					**95,531,675**
N	**Provision for GST (18% of K)**	**%**				**17,195,701**
O	**Total Estimated Cost with GST**					**112,727,375.910**
				Say in Lakhs (Rs.)		***1,127.27***

REFERENCES

1. Geological report for the memorandum on gold in Kakol and adjoining areas, Haveri District, Geological Survey of India. August 2021.

Listof Plates

- Location map of the proposed Block (Not to scale)
- Regional Geological Map of Kakol and adjoining areas (1: 75000 Scale)
- Geological Plan showing Proposed borehole location (1:10000 Scale)
- Geological Cross Sections (1:4000 Scale)



KAKOL DGPS CO-ORDINATES						
SI NO	CODE	LATITUDE	LONGITUDE	NORTHING	EASTING	RL
1	A	N14°41'39.59649"	E75°30'00.04554"	1624577.830	553831.294	623.779
2	B	N14°43'27.94824"	E75°30'00.17531"	1627906.806	553827.798	615.784
3	C	N14°43'27.85455"	E75°31'22.97614"	1627909.546	556303.725	631.743
4	D	N14°42'07.52943"	E75°31'39.35880"	1625442.792	556799.375	615.565
5	E	N14°42'07.19839"	E75°32'27.70285"	1625436.043	558245.141	620.578
6	F	N14°39'41.54130"	E75°34'08.82010"	1620968.319	561280.357	589.392
7	G	N14°39'40.98510"	E75°31'20.21424"	1620939.073	556237.255	620.759

PROPOSED KAKOL BLOCK BOUNDARY

MINERAL EXPLORATION AND CONSULTANCY LIMITED
(Formerly Mineral Exploration Corporation Limited)

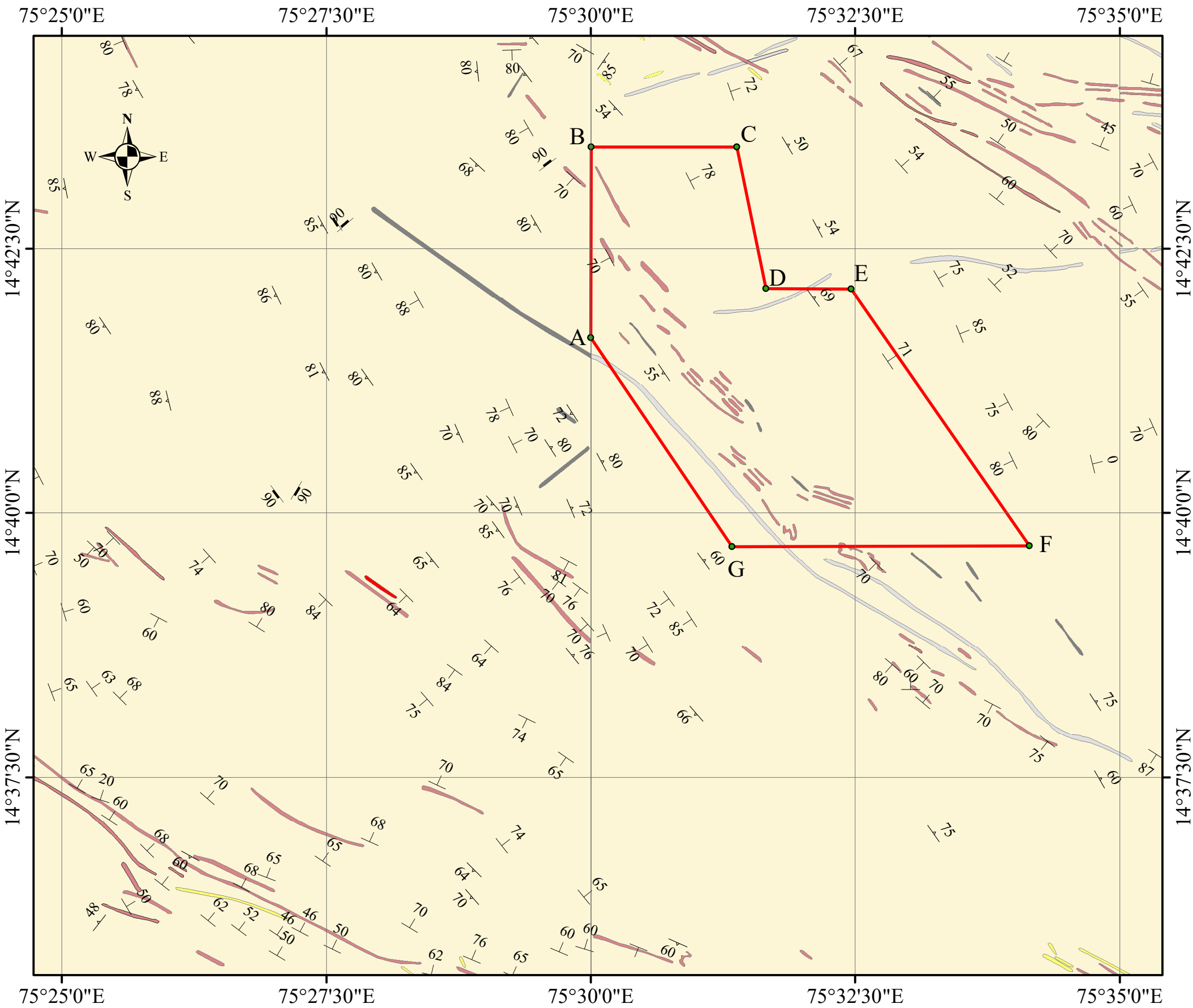
LOCATION MAP OF PROPOSED G-3 LEVEL OF
KAKOL BLOCK FOR GOLD
DISTRICT- HAVERI, STATE- KARNATAKA

NOT TO SCALE (PART OF TOPOSHEET NO. 48N/10)

PROCESSED AT : NON-COAL GR CELL,
MECL, NAGPUR

PLATE NO.- I

REGIONAL GEOLOGICAL MAP OF THE PROPOSED (G-3) KAKOL BLOCK FOR GOLD DISTRICT- HAVERI, STATE- KARNATAKA



MAP SOURCE: BHUKOSH

0 0.5 1 2 3 4 Kilometers

1:75,000

LEGEND

- BLOCK BOUNDARY POINTS
- BLOCK BOUNDARY
- BEDDING
- CLEAVAGE/FOLIATION/SCHISTOSITY (S1)
- JOINT

Lithology

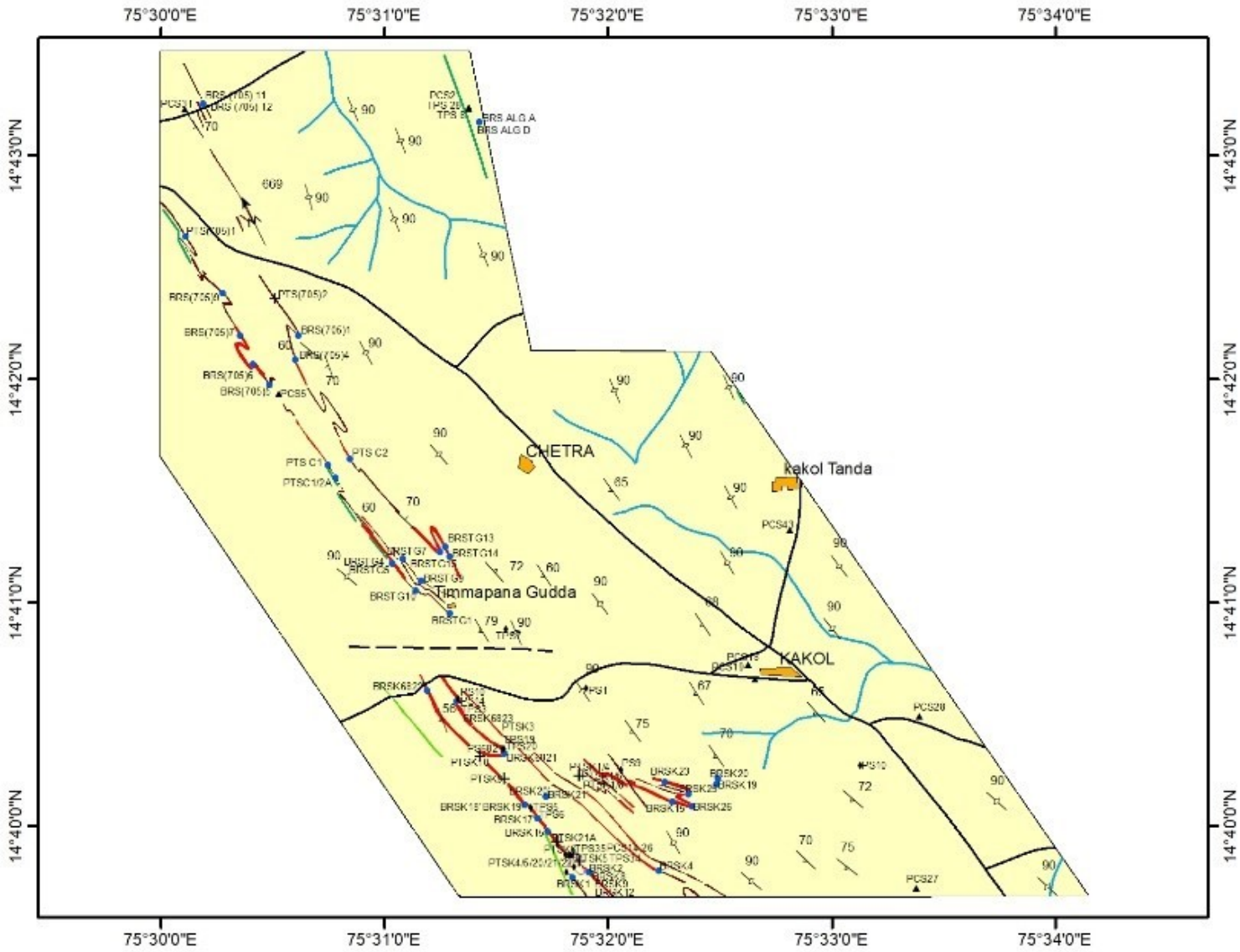
- ARGILLITE
- BANDED IRON FORMATION
- DOLERITE
- GABBRO
- META-RHYOLITE
- QUARTZ VEIN/REEF

GEOLOGICAL SURVEY OF INDIA

LARGE SCAL MAP OF KAKOL AND ADJOINING AREAS, PARTS OF SHIMOGA SCHIST BELT, HAVERI DISTRICT, KARNATAKA SHOWING CHETRA, KAKOL, BUDDAPANAHALLI, DEVARGUDDA N BLOCKS

PARTS OF TOPOSHEET No. 48N/9 & 48N/10

0 250 500 1,000 1,500 2,000 Mts



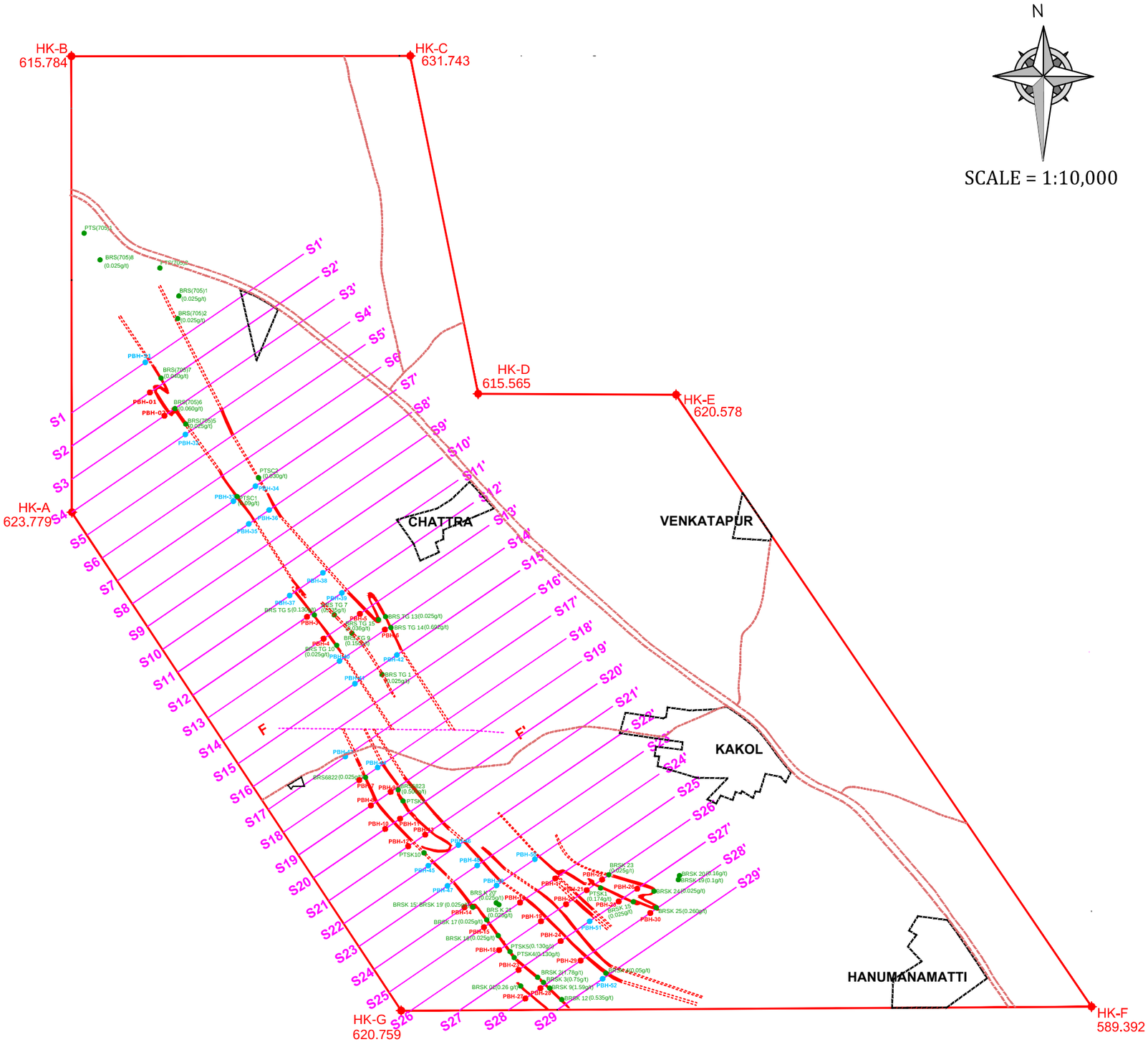
INDEX

- Gabbro dyke
- Banded iron formation
- Meta-Argillite
- Bedding with dip
- Foliation with dip
- Minor fold with plunge amount
- Strike of Vertical Foliation
- Shear zone
- Fault
- Bedrock sample line
- Petro chemical sample location
- Petrographic Ore microscopic sample with number
- Trench with number
- Ancient/Old working
- Nala
- Road
- Mineralised zone
- Settlement

MAPPED BY,
L.N. Deori, Geologist
Arsha T.L., Geologist
Aneesh Kumar. S., Geologist

SUPERVISED BY,
C.G. Hemantha Kumar, Director
Shafeeq Ahmed, Director

FSP 202-13



GENERAL INDEX

- BLOCK BOUNDARY
- SECTION LINES
- PROPOSED BOREHOLES
- PROPOSED CONDITIONAL BOREHOLES
- FAULT
- MINERALISED ZONES
- INTERPRETED OREBODY
- VILLAGE BOUNDARY
- ROAD

MINERAL EXPLORATION AND CONSULTANCY LIMITED

PLATE 2 - PROPOSED BOREHOLE PLAN

BLOCK NAME	KAKOL BLOCK
BLOCK ID:	SR_KA_01-Block-1-Kakol
EXTENT: 29.06 Sq.km	
DISTRICT : HAVERI	
STATE : KARNATAKA	

Cost Estimate for Preliminary Exploration (G3) Proposal for Estimation of Gold in Kakol block, Haveri, Karnataka
Total Area - 29.06 sqkm; Nos. of Borehole - 52 ; Borehole depth range - 100-200m ; Completion Time - 12 Months

S.N	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal	
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Total Amount (Rs)
A	**Geophysical Survey**					
1	I.P cum-resistivity, SP., Magnetic (8-10 Line km)	10 Line km	3.4b	14,48,693	2.5	36,21,733
	Sub-Total A					**36,21,733**
B	**GEOLOGICAL WORK**					
1	**Geological mapping (1:5000), Borehole logging & sampling**					
a	Charges for one Geologist per day at HQ	day	1.3	9,000	90	8,10,000
b	Charges for one Geologist per day at field (2 Nos)	day	1.3	11,000	240	26,40,000
c	Labour (2 Nos/ geologist)	day	5.7	494	480	2,37,120
2	**Survey (on 1:5000 Scale)**					
a	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes by DGPS	Per Point of observation	1.6.2	19,200	52	9,98,400
b	Charges of one Surveyor (1 Party)	one surveyor per day	1.6.1a	8,300	90	7,47,000
c	Labours (4 Nos)	day	5.7	494	360	1,77,840
d	Charges for one Sampler per day (1 Party)	one sampler per day	1.5.2	5,100	185	9,43,500
e	Labours (4 Nos)	day	5.7	494	740	3,65,560
	Sub-Total B					**69,19,420**
C	**DRILLING**					
1	Drilling up to 300m (Hard Rock)	m	2.2.1.4a	11,500	5,850	6,72,75,000
2	Drilling 301 to 600 m (Hard Rock)	m	2.2.1.4b	12,420	-	-
3	BH deviation survey by multi-shot camera	per m	2.2.6	330	3,145	10,37,850
4	Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	20,000	52	10,40,000
5	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	52	1,04,000
6	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	8,400	3,02,400
7	Monthly Accommodation Charges for drilling Camp (up to 1 Rigs)	month	2.2.9	50,000	4	2,00,000
8	Drilling Camp Setting Cost	Nos	2.2.9a	2,50,000	4	10,00,000
9	Drilling Camp Winding up Cost	Nos	2.2.9b	2,50,000	4	10,00,000
10	Road Making (Flat Terrain)	Km	2.2.10a	22,020	15	3,30,300
11	Drill Core Preservation	per m	5.3	1,590	1,000	15,90,000
	Sub Total C					**7,38,79,550**
D	**LABORATORY STUDIES**					
1	**Chemical Analysis**					
i)	**Primary samples**					
	a. for Gold and Silver by fire assay	Nos	4.1.5a	4,760	1,448	68,92,480
ii)	**Check samples Internal (5%) and External(10%)**					
	a. for Gold and Silver by fire assay	Nos	4.1.5a	4,760	217	10,33,872
iii)	**Composite samples**					
	a. for Gold and Silver by fire assay	Nos	4.1.5a	4,760	60	2,85,600
	Sub-Total -D					**82,11,952**
E	**Estimation of major oxides by XRF technique (Whole rock analysis)**					
a	Major oxides	Nos	4.1.15a	4,200	20	84,000
	Sub-Total -E					**84,000**
F	**Petrological samples (Surface & Bh Core Samples)**					
i	Preparation of thin section	Nos	4.3.1	2,353	20	47,060
ii	Study of Thin Section	Nos	4.3.4	4,232	20	84,640
	Sub-Total -F					**1,31,700**
G	**Mineragraphic Studies (Surface & Bh Core Samples)**					
a	Preparation of polished section	Nos	4.3.2	1,549	20	30,980
b	Study of Polished Section	Nos	4.3.4	4,232	20	84,640
c	Digital Photographs	Nos	4.3.7	280	20	5,600
	Sub-Total -G					**1,21,220**

S.N	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal	
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Total Amount (Rs)
H	**Specific Gravity Determination**					
	Specific Gravity Determination	Nos	4.8.1	1,605	20	32,100
	Sub-Total - H					**32,100**
I	**Total - A to H**					**9,30,01,675**
J	**Preparation of Exploration Proposal (5 Hard copies with a soft copy)**	**5 Hard copies with a soft copy**	**5.1**	**2% of the Cost or Rs. 3.8 Lakhs whichever is lower**		**5,00,000**
K	**Geological Report Preparation**	**5 Hard copies with a soft copy**	**5.2**	**For the projects having cost exceedingn Rs. 300 lakhs - A minimum of Rs. 9 lakhs or 3% of the value of work whichever is more subject to a maximum amount of Rs. 20 Lakh and Rs 10000/- per each additional Copy**		**20,00,000**
L	**Peer review Charges**		**As per EC decision**			**30,000**
M	**Total Estimated Cost without GST**					**9,55,31,675**
N	**Provision for GST (18% of K)**	**%**				**1,71,95,701**
O	**Total Estimated Cost with GST**					**11,27,27,375.910**
				Say in Lakhs (Rs.)		***1,127.27***

TIME SCHEDULE /ACTION PLAN FOR PRELIMINARY EXPLORATION OF GOLD (G-3) IN KAKOL BLOCK, HAVERI DISTRICT, KARNATAKA

Sl. No.	Activities	Unit	MONTHS												Total (Days)
			1	2	3	4	5	6	REVIEW	7	8	9	10	11	12	
1	Camp Setting	day	30													30
2	Geophysical Survey	day		30	30	30	30	30		30	30	30				240
3	Survey Party days	day		15	15	15	15	15		15	15	15				120
4	Geologist Party days (2 Party)	day					15	30		30	30	15				120
5	Sampling Party days, Core Sampling (1 party)	day					30	30		30	30	30				150
6	Core Drilling (4 rigs)	m.				30	30	30		30	30	30				180
7	Camp Winding	day											30			30
8	Laboratory Studies	Nos.											30	30	30	90
9	Geologist Party days (1 Party), HQ	day											30	30	30	90
10	Report Writing	day												30	30	60

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.**