PROPOSAL FOR PRELIMINARY EXPLORATION (G-3 STAGE) [PHASE-I] FOR GOLD IN KUDREKONDA AREA FOR GEOPHYSICAL SURVEY, SHIMOGA SCHIST BELT, HONNALI TALUK, DEVANAGERE DISTRICT, KARNATAKA (Area 2.74 sq km)

COMMODITY: GOLD

BY

MINERAL EXPLORATION AND CONSULTANCY LIMITED

DR.BABASAHAB AMBEDKAR BHAWAN

SEMINARY HILLS

PLACE: NAGPUR

DATE: November, 2022

Summary of the Block for Geophysical Survey Under Preliminary Exploration (G- 3 Stage) for Gold

General Information About the Block

	Features	**Details**
	Block ID	Kudrekonda Area,
	Exploration Agency	Mineral Exploration and Consultancy Limited (MECL)
	Commodity	Gold
	Mineral Belt	Shimoga Schist Belt
	Completion period with entire Time schedule to complete the project	6 months
	Objectives	The present exploration program at G3 stage has been formulated to fulfil the following objectives. i) To carry out Detailed geological mapping on 1:4000 scale associated with surface geochemical sampling (bedrock/channel/soil) and analysis to identify the surface manifestations and lateral disposition of the Gold bearing mineralized zones ii) To carry out integrated ground geophysical survey comprising of TDEM, MT and Deep IP survey over 2.73 sq.km area to identify mineralization zone at deeper levels. iii) To carry out TDEM & Deep IP survey cumulatively 30 Lkm at 100m traverse interval with 50m and 10m station interval respectively. iv) To carry out MT survey (36 stations) at 250m x 250m grid to cover the entire block area. Based on the positive outcome of ground geophysical survey further course of action will be decided.
	Whether the work will be carried out by the proposed agency or through outsourcing and details thereof. Components to be outsourced and name of the outsource agency	Work will be carried out by the proposed agency.
	Name/Number of Geoscientists	One nos. Geoscientist

0	Expected Field days(Geology, Geophysics, surveyor)	Geologist Party days:90 days in field & 30 days in HQ Geophysicist Party Days: 180 in field & 30 in HQ days Surveyor Party days: 90days

1.	**Location**	The area is situated 32 km north of Shimoga , 65 km south of Devnangere and 14km SW of Honnali under Honnali Taluk of Devanagere District, Karnataka. The Kudrekonda villages is well connected by metalled. The area is approachable from Bangalore through NH 48 and is connected by SH-25 & SH-52 via Devanagere & Honnali.
	Latitude/Longitude	**Block Corner points** / **WGS 84 (DD MM SS)** — **Latitude** / **Longitude** A: 14°09' 06.05" / 75°31'15.24" B: 14°09' 25.07" / 75°31'41.86" C: 14° 08' 15.76." / 75°32'39.76" D: 14° 07' 55.47" / 75°32'14.40"
	Villages	Kudrekonda,
	Tehsil/Taluk	Honnali
	District	Davangere
	State	Karnataka
2.	**Area (hectares/ square kilometres)**	
	Block Area	2.74 sq km
	Forest Area	The block co-ordinates were subjected in the Decision Support System (DSS) of Forest department, Ministry of Environment, Forest and Climate Change (MOEFCC). **It has been found that the block area is under "not inviolate". (Go)-Non Forest area.**
	Government Land Area (Bilanam)	Data not available
	Charagaha	Data not available
	Private Land Area	Data not available
3.	**Accessibility**	
	Nearest Rail Head	Shimoga (30Km)
	Road	State highway Honnali-Savalanga in middle of block.
	Airport	Bangalore Airport (335Km)
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	The area is drained by few of NE flowing streams originating from the northern slopes of the Kalvarangan Betta These streams passing through the auriferous zones with the east flowing Hire Halla, a major tributary to the Tungabhadra River.
	Rivers/ Streams	No major river passes in the block.
5.	**Climate**	
	Mean Annual Rainfall	Average annual rainfall is 70cm
	Temperatures (Minimum) Temperatures (Maximum)	Minimum - 17^{O}C in January Maximum - 45^{O}C in May
6.	**Topography**	
	ToposheetNumber	48 N/12

	Morphology of the Area	The major portion of the area is covered by plain land and highly upgraded due to agricultural activities. Only south weatern side of the area has undulating to rugged topography which passes through foot hills of a linear ridge Kalviranganguda having maximum elevation of 690m in southern margin of the block. Rest of the area is covered by plain land and highly upgraded due to agricultural activities.
7.	**Availability of baseline geoscience data**	
	Geological Map (1:50K/25K)	Regional geological map available at 1:50K Large scale geological map available at 1: 12:500 scale.
	Geochemical Map	Available
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as local scale GP maps)	Regional ground geophysical map available
8.	**Justification for taking up Reconnaissance Survey/ Regional Exploration**	i. The Honnali gold field forms an important part of Shimoga Schist Belt. Kudrekonda and Palavanahalli form the two major auriferous zones of Honnali gold fields which were known for historical underground mining by various companies floated under different names like Honnali Gold mining Company, Honnali Tribute Syndicate and Palavanahalli Gold Mining Company since 1880. ii. The exploratory works done by these companies revealed a highly erratic behavior of the lodes simulating pinching and swelling, but the values were reported to be very high. Since they were unable to understand completely the behavior of the lodes and work them, they closed their mining operations. iii. The mining work through shafts has been carried out at maximum 80-100m depth in Kudrekonda and 30m depth in Palavanahalli. Hence, in order to figure out the potentiality of the deposit, strike and depth continuity of ore zones at deeper level to be tested. iv. Pazhamalainathan (1983-84) has mapped two auriferous zones (Kudrekonda & Palvanahalli) in the area and recommended to test them through drilling. v. N. Subramani and Manjunatha (FS:1994-95) sampled adit samples indicate gold value of 10.24 g/t over a width of 1 m. The assay of trench samples

			indicates gold values of 0.24 to0.77 g/t over a width of 3 m. vi. Reconnaissance survey for gold carried out in the Nyamati block area (including Kudrekonda area) by GSI during 2016-17. Large scale mapping has been carried out on 1:12,500 scale around Kudrekonda-Palavanahalli-Holalur area to assess the gold mineralization in the area. Magnetic, IP and resistivity surveys in Nyamati block are fairly successful in demarcating lithological contacts and structural features.These surveys brought out the disposition of magnetic lineaments. Good correlation has been observed from Magnetic, IP and Resistivity anomalies. Geophysical survey conducted under this program at 700m profile interval also identified three zones of mineralization and Kudrekonda, area is one of them. It is indicated that Intense mining in the past and land enforcement has not left any traces of mineralized zone and mineralized quartz veins disposition of concealed ore body is still unrevealed. vii. Presence of old workings indicates the past mining activities in the area. Poor outcrop density, thick soil cover and dense cultivation in the mapping area makes it difficult and the disposition of concealed ore body is still unrevealed. viii. The presence of series shafts, exploratory pits and panning of the alluvial sediments makes the area more interesting for gold exploration. Hence, the proposed exploration would be helpful to unreveal concealed/deep seated mineralized ore zones in the area. ix. The time domain electromagnetic data of Heliborne geophysical survey of GSI (2019) carried out in the area (excluding Kudrekonda area) reveals that the response is observed in late time window shows that mineralization continues in deep. IP surveys, resistivity sounding and sampling through deep trenching are recommended to be carried out in the area that will prove to be helpful in assessing the depth continuity and economic viability of the possible mineralized zones”

		x. As per NGPM data the area is characterised by low magnetic anomalies and moderate bouger gravity within the block area and is favourable for gold mineralisation. Hence, further detail exploration is required in the area. xi. As advised by EC of NMET, all the available previous geological, ground geophysical & Heliborne geophysical survey data (low altitude EM data) in the area has been considered and demarcated potential Kudrekonda block area over 2.73 sq.km and accordingly formulated present exploration proposal (G3 stage) for Gold. xii. As the proposed Kudrekonda block area (2.73 sq.km) has not been covered by Heliborne geophysical survey hence keeping in view the continuation of anomalies and past mining activity the present integrated ground geophysical survey is very much required to figure out the potentiality of the well known Kudrekonda deposit. xiii. Proposed Ground geophysical survey (TDEM, MT and Deep IP) will be helpful in finding out the deeper extension, continuity and location of the gold bearing ore zones and to establish the disposition of the concealed ore body in and around area previously exploited by old shafts and adit in Kudrekonda area. Based on the positive outcome of geophysical survey, drilling will be carried out in the area.

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1.BLOCK SUMMARY

1.1.0 Introduction

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 spiralling demand for the metal, makes more thrust for exploration in strategic mineral, Precious metal, PGE and Cobalt by Government of India. In the preceding two decades there has been no deposits of any sizeable dimension found in our country.

1.1.3 Copper with its unique physical, mechanical and electrical properties, has played a vital role in the industrial growth of a nation. In India, around 75% of demand is met through imports. The increasing demand of copper metal in the country could be eased with the exploration of new copper deposits of economic importance.

1.1.4 Globally, the market for copper is one of the largest of all metals behind iron and aluminium. The size of the global market for refined copper is over U$150 billion every year, Copper has been a material component in the growth of human civilizations for thousands of years. Copper is easy to work with, an efficient conductor of heat and electricity, corrosion resistant and its abundant.

1.1.5 During, preceding decades no large-scale metal deposit has been discovered in India. However, the possibility of working of small mineral bodies in proximity to each other, though technological advances and increased operational efficiency, cannot be ruled out. At the back drop of amendment of MMDR Act, 2015 by Government of India, an impetus is being given for funding, if not large deposits, but a cluster of small deposits occurring in

close proximity to each other. Therefore, it is necessary and imperative to locate and explore such small deposits in clusters.

1.2.0 Background Information

1.2.1 The Honnali gold field forms an important part of Shimoga Schist Belt. Kudrekonda and Palavanahalli form the two major auriferous zones of Honnali gold fields which are known for historical underground mining since 1880 by various companies floated under different names like Honnali Gold mining Company, Honnali Tribute Syndicate and Palavanahalli Gold Mining Company.

1.2.2 The exploratory works done by these companies revealed a highly erratic behavior of the lodes simulating pinching and swelling, but the values were reported to be very high. Since they were unable to understand completely the behavior of the lodes and work them, they closed their mining operations. The mining work through shafts has been carried out at maximum 80-100m depth in Kudrekonda and 30m depth in Palavanahalli. Strike and depth continuity of this as well as of the presence of Gold bearing lode at deeper depth should also be tested.

1.2.3 GSI has carried out exploration work in and around of Kundirikonda & Pallavanahalli area by Bruce Foote (1876), Slater (1902), Smeeth (1909),Sen (1915) and Jayaram (1915) of Department of Mines and Geology, Mysore state. Details on the work done in respect of gold exploration are obtained from the previous geological reports of Puskar Singh (1972-73), Pazhamalainathan (1983-84) and N.Subramani and Manjunath (1994-95).

1.2.4 Reconnaissance survey carried out by GSI (2016-17) suggests that Intense mining in the past and land enforcement has not left any traces of mineralized zone and mineralized quartz veins disposition of concealed ore body is still unrevealed. However, ground geophysical survey has identified 3 mineralised zones. Presence of old workings indicates the past mining activities in the area. Poor outcrop density, thick soil cover and dense cultivation in the area makes it difficult to understand the disposition of concealed ore body and it is still unrevealed. However, the presence of series shafts, exploratory pits and panning of the alluvial sediments makes the area more interesting for gold exploration.

1.2.5 In view of the above, MECL intends to explore the area by Geophysical survey under G-3 level exploration in area of Kudrekonda where earlier mining was carried out by using Time Domain Electromagnetic (TDM) survey to establish the disposition of concealed ore body

and based on the outcome exploratory drilling program may be carried out to figure out the exact potentiality of the deposit.

1.2.6 In line with this, MECL prepared & submitted preliminary exploration proposal (G3) for gold in Kudrekonda-Palvanahalli area over 68.31 sq.km, Shimoga Schist belt, Dist. Devanagere of Karnataka in 46th TCC meeting held on 27th & 28th Oct 2022. After detailed deliberations, Committee opined that the north-western part of the block area i.e. Kudrekonda area (2.74 sq.km) may be considered for G3 stage Exploration (Phase-I) for magnetic and SP survey with 300 nos. of soundings points. In case of encouraging results in north-western part the entire block may be considered for G3 stage exploration (Phase-II) for drilling. The committee recommended the proposal for approval of EC for preliminary exploration (G3) (Phase-I) for gold in Kudrekonda area (2.74 sq.km) for geophysical survey comprising of Electromagnetic survey in Shimoga schist belt, District: Devanagere, Karnataka with an estimated cost of ₹116.99 lakh (including GST) in time schedule of 6 months for carrying out proposed work and submission of report.

1.2.7 Subsequently, the project was reviewed by 27th EC held on 10th Jan, 2023 and it is informed that low altitude EM data is available for the area and may be considered for demarcation of potential zones and also to incorporate all the geophysical data available before start of the further geophysical survey in the area. EC suggested to put of the project in abeyance till the Heliborne survey work of GSI is completed.

1.2.8 As advised by NMET, low altitude EM data as given in the A report on "Heliborne surveys (Magnetic, PTHEM & Radiometric) Data processing and Interpretation over Shimoga schist belt, Karnataka of GSI (FS. 2016-17) & Report on Interpretation & Integration of geological, remote sensing and aerogeophysical data over Shimoga Schist belt (2019) was obtained by MECL from GSI and data has been utilised for the formulation of present exploration proposal at G3 stage for Gold in Kudrekonda area and is being resubmitted for technical evaluation and approval.

1.3.0 Physiography

1.3.1. The major portion of the area is covered by plain land and highly upgraded due to agricultural activities. Only south western side of the area has undulating to rugged topography which passes through foot hills of a linear ridge Kalviranganguda having maximum elevation of 690m from MSL in south western margin of the block whereas southeaster margin has lowest evaluation of 632m from MSL.

1.3.2 The area is drained by few of NE flowing streams originating from the northern slopes of the Kalvarangan Betta. These streams pass through the auriferous zones and join with the east flowing Hire Halla, a major tributary to the Tungabhadra River.

1.3.3 The drainage pattern in hilly area parallel to sub parallel and other parts of drainage pattern is dendritic to subdendratic in nature. Savalanga canal passes approx. 1.5 km south from the block.

1.3.4 The area experiences a semi-arid zone with a dry climate with hot summer and mild winter, the temperature ranges from minimum of 18°C during January to maximum of 44°C during May. The average rainfall is 60 cm through the south-west monsoon, beginning from the first week of June till October.

1.4.0 Regional Geology

1.4.1 The Shimoga schist belt occupies a major part on the western side of the Karnataka State, which is a part of the Dharwar Craton. It forms the main extent of the schistose rocks deposited within the middle part of the larger Shimoga basin. To the south lies the Bababudan belt and to the west the Kudremukh belt while the central region forms the Shimoga belt. It is a NW-SE trending broad arcuate belt, It occupies a broad open trough covering an area of over 6,000 Km^2 from Tarikere Valley to the former Mysore State frontier, with a length of 100 km along N-S from Sorab to Davanagere along the northern part and Tirthahalli to Ajjampur in its southern part and a width of about 100 km in E-W direction. A long southerly tail of the belt extends from Mandagadde to Mertiparvata for about 50 km with an average width of 3 km (Harinadha Babu et al., 1981).

1.4.2 The following stratigraphic sequence is proposed for Shimoga schist belt after P. Harinadha Babu et.al in 1981. (Table No. I-B)

Table No-I-B

Regional Stratigraphic succession Shimoga Schist Belt (after GSI)

Age	Super Group	Group	Formation	Rock Type
Palaeoproterozoic		Younger Intrusives	Basic Intrusives	Dolerite
Archaean	Dharwar	Shimoga belt (=Chitradurga)	Medur formation	Meta-rhyolite
				Quartz porphyry
			Joldhal formation	Ferruginous Phyllites
			Jhandimatti formation	Meta-ultramafic rocks
				Banded magnetite quartzite
				Limestone
				Meta-rhyolite
				Meta basalt
				Chlorite schist
				Quartzite
				Polymictic Conglomarate
	Peninsular Gneissic Complex	Peninsular Gneiss-I	Granatoids	Epidote Granite
			Gneiss	Granite gneiss
				Migmatite gneiss
				Biotite gneiss
		Sargur		Meta-ultramafic rocks
				Amphibolite

1.4.3 Shimoga Shist belt is separated from Bababudan and Western ghats belts by Tonalite-trondhjemite-granodiorite (TTG) Gneisses but linked through small arms of schists (Ramakrishnan et.al, 2010). Islands of granite basement within the belt are exposed at Honnali, Shimoga and Saulanga. Shimoga schist belt dominantly exposes rocks equivalent to Chitradurga Group along with older Bababudan and Peninsular Gneissic Complex (PGC).

1.4.4 The stratigraphy is characterized by rapid thickening and thinning of major wedges of sedimentary rocks. Quartzite and phyllite rest unconformably over the basement. They are characterized by rapid facies variation along and across strike and include mixed-pebble conglomerate, current bedded quartzite, dolomitic and calcareous limestones, manganiferous phyllite and slate interbeded with chlorite phyllite and quartzite. This is

followed by lenses of conglomerate. Apart from these, various basic and ultra-basic intrusions are also reported from the Shimoga belt.

1.4.5 The schist belt is renowned for manganese and gold occurrences and witnessed several mining activities for both the commodities throughout the history. Regional Geological Map the area is given in Figure-1.

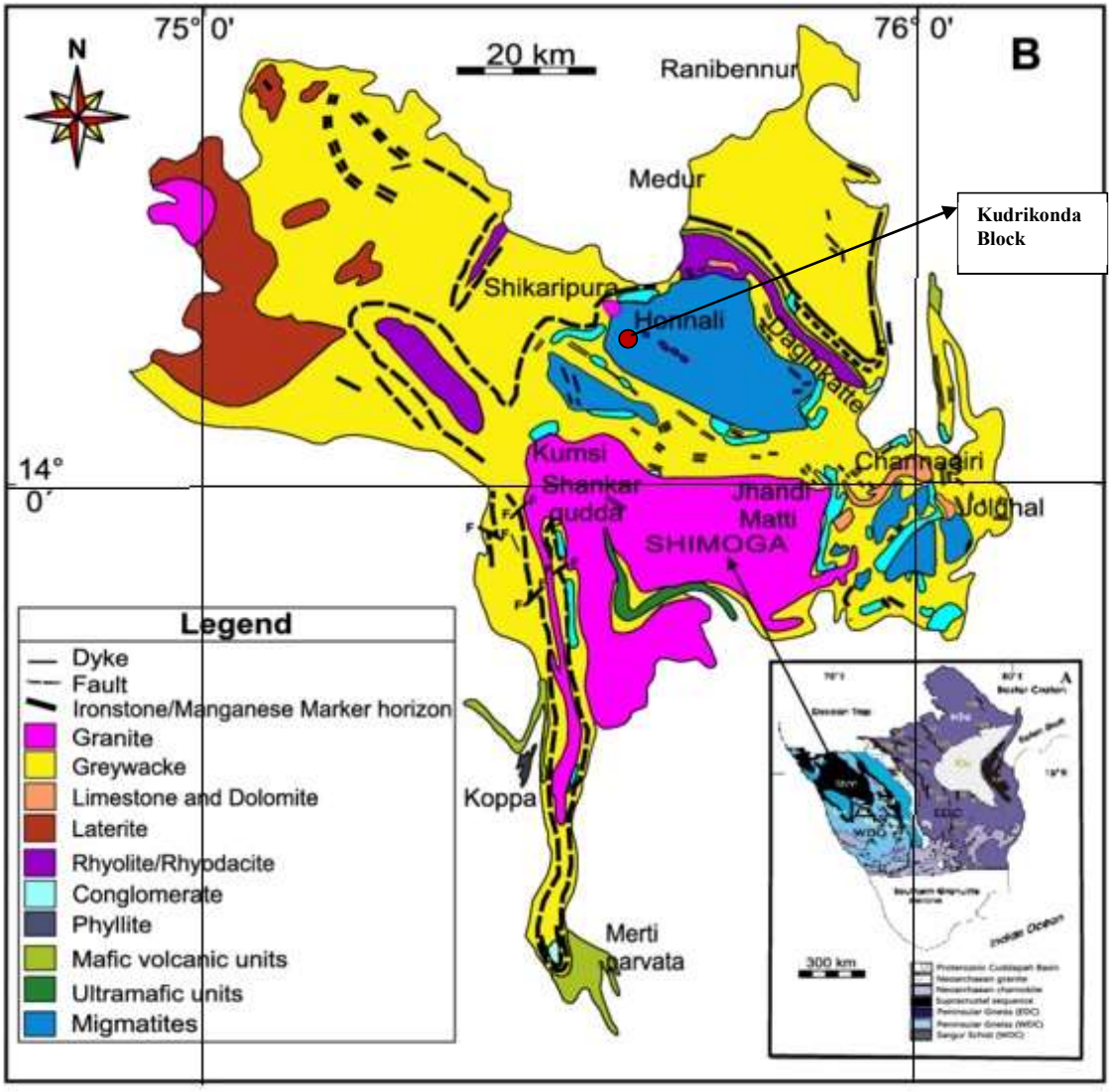

Figure 1 :Geological map of the Shimoga Schist Belt showing different lithologies and the study area (after Harinadha Babu et al. 1981).

1.5.0. Geology of the Block

1.5.1. The proposed block is the part of narrow schist band of 1.5 to 2 km width which forms a part of the Shimoga schist belt. This schist band is bounded by the Honnali Gneiss in the north and the Savalanga Granite in the south, however taking into account of small size of the block, this two lithologies do not fall in the block. The schist band is made, up of an

interlayered sequence of meta-sedimentary formations, represented by quartz-chlorite schist, ferruginous phyllite, quartzite and banded ferruginous quartzite with intermediate to acid volcanics now seen as chlorite-actinolite schist and quartz-sericite schist. The western part of the schist belt is occupied by meta-sedimentaries while the north-eastern part by meta- andesite/meta-basalt

1.5.2 The different lithological units encountered in the area are mainly Savalanga granite/ Honnali Gneiss forming base at gneiss with enclaves of ultramafics and metabasalt which are overlain by Jhandamatti formation of Chitradurga Group of rocks represented by quartz-chlorite schist associated with polymict conglomerate, metabasalt, quartzite and banded ferruginous quartzite with thin bands of argillites. These formations are later intruded by ultramafics, basic dykes and quartz veins.

Table No-I-C

General Stratigraphy of the block (after GSI)

Age	Super Group	Group	Formation	Rock Type/Litho units
Archaean	Dharwar	Younger Intrusive		Quartz veins Basic Dykes Layered Meta ultramafic rocks
		Shimoga belt (=Chitradurga Group)	Jhandimatti formation	Banded Iron Formation Banded Ferruginous quartzite Banded magnetite quartzite Limestone/ Cherty dolomite Meta basalt Quartz-Chlorite schist Quartzite Polymictc Conglomarate
	Basement Gneiss			Epidote Granite Granite gneiss Migmatite gneiss Biotite gneiss

1.6.0. Structure of the Area

1.6.1 The rocks of the area show well developed structural features like primary structure and secondary structure. The important primary structure is bedding which is well preserved in quartzite and in BFQ which is marked by colour variation and compositional variation. The trend of the bedding varies from NW-SE to N-S with dip varying from 30° to 60° towards east.

1.6.2 The schistosity developed in the meta-sedimentaries and the meta-volcanics strikes NW-SE in the southern part, WNW-ESE in the central part and almost N-S in the southern part showing a near parallelism with the trend of bedding. The foliation dips, range from 40^0 to 70^0 north-eastwards in Kudrekonda area.

1.7.0 Mineral Potentiality based on geology, geophysics, ground geochemistry etc.

1.7.1 The Honnali gold field forms a part of Shimoga schist belt belonging to Dharwar Supergroup. The area is known for several old workings in the form of vertical shafts, pits, inclines, old dumps and pounding marks.

1.7.2 Since 1880, the field has been worked intermittently by various companies floated under different names like Honnali Gold mining Company, Honnali Tribute Syndicate and Palavanahalli Gold Mining Company. The mining work through shafts has been carried out at maximum 80-100m depth in Kudrekonda and 30m depth in Palavanahalli.

1.7.3 GSI has carried out exploration work in and around of Kudrekonda & Palvanahalli area by Bruce Foote (1876), Slater (1902), Smeeth (1909), Sen (1915 and Jayaram (1915) of Dept. of Mines and Geology, Mysore State. Pazhamalainathan (1983-84) has mapped two auriferous zones in the area and recommended to test them through drilling. N. Subramani and Manjunatha (FS:1994-95) sampled adit samples indicate gold value of 10.24 g/t over a width of 1 m. The assay of trench samples indicates gold values of 0.24 to0.77 g/t over a width of 3 m.

1.7.2 The mineralization in the area is associated with the sheared metabasalt carrying quartz-carbonate veins. According to the earlier reports, quartz vein is considered as the carrier of gold in Kudrekonda area. The probable zone of mineralization is marked by wallrock alteration in the form of carbonitisation, sericitisation and silicification. Presence of fuchsite and tourmaline is also observed within quartz veins of Kudrekonda.

1.7.3 The auriferous quartz veins are localised in the quartz-chlorite schist, which exhibit typical pinch and swell structure. The area between Savalanga Granite in the west and Honnali Gneiss in the east seems to have undergone major shearing and fracturing. These shear planes have been occupied by quartz carbonate veins with sulphides. Within this zone of shearing number of old workings are seen between Kudrekondaand Palavanahalli over a strike length of about 9 km. In view of these the entire shear zone appears to be promising for gold mineralisation.

1.7.4 During F.S.2016-17, GSI carried out Reconaissance survey for Gold in Nyamati Block in the parts of Devenagere & Shimoga Districts. Large scale mapping has been carried out on 1:12,500 scale around Kudrekonda-Palavanahalli-Holalur area to assess the gold mineralization in the area. An area of 150 sq. km was covered and different lithounits and structural elements are delineated to understand the control of mineralization. The magnetic, IP and resistivity surveys in the area carried out with traverse interval of 700 mts on 37 profiles with traverse length of 1.3 km to 9.5 km to understand the subsurface nature of mineralization of previously reported auriferous zones and old workings. Geophysical

survey in the area fairly successful in demarcating lithological contacts and structural features. These surveys brought out the disposition of magnetic lineaments. Good correlation has been observed from Magnetic, IP and Resistivity anomalies. The area proposed has mineralization trending NW-SE direction which matches with the regional trend of schist belt.

1.9.9 RSAS of GSI (2016-17) carried out heliborne surveys for Geophysical data comprising of Magnetic, PTHEM & Radiometric data processing and interpretation over Shimoga schist belt, Karnataka. The zones of strong electromagnetic response in early, middle and late time window of EM data identified in central and western part of the area is proposed for detail investigation as these zones could be favourable for gold / sulphide mineralization. The time domain electromagnetic data reveals that the response is observed in late time window shows that mineralization continues in deep.

1.9.10 During FS 2018-19, GSI carried out interpretation and integration of geological, remote sensing and aerogephysical data over shimoga schist belt. Based on the outcome of integrated approach followed by field work and laboratory studies, two blocks have been identified as mineral potential areas and are recommended for detailed studies. Block 1, named as Erekatte block, has potential for base metal and gold mineralization and has an area of about 120 sq. Km. Block 2, named as Savalanga block is identified for base metal mineralization and has an area of about 80 sq. Km. IP surveys, resistivity sounding and sampling through deep trenching are recommended to be conducted in both the blocks that will prove to be helpful in assessing the depth continuity and economic viability of the possible mineralized zones

1.9.11 The present proposed Kudrekonda block falls in the identified potential Erekatte block (Block-1) for targeting gold mineralisation. The proposed Kudrekonda block area has not been covered by Heliborne geophysical survey (Fig.No.2). Hence, the entire area to be covered by ground geophysical survey comprising of TEDM, MT and Deep IP survey supported with detailed geological mapping on 1:4000 scale.

1.9.12 Moreover, as per NGPM data the area is characterised by low magnetic anomalies and moderate bouger gravity within the block area and is favourable for gold mineralisation. Hence, further detail exploration is required in the area.

2.0.0. Previous Work

2.0.1 Bruce Foote (1900) first mapped this area. He classified the quartz reefs of the Honnali gold field into three systems based on their strike and considered the Kudrekonda, Surahonne and Palavanahalli groups as the most important. He observed that the "Turnbull reef" belonging to Kudrekonda was found to yield free gold.

2.0.2 Later, Slater (1902), Smeeth (1909), Sen (1915) and Jayaram (1915) of Department of Mines and Geology, Mysore state also mapped this area. They revealed the lithological details and made a passing reference to the old workings for gold in Kudrekonda - Palavanahalli area. According to them the rocks are of igneous in origin.

2.0.3 In 1954, C.K.RShastry of GSI carried out geological mapping in Kudrekonda-Palavanahalli area and has given a brief description of the gold occurrences. He described that the country rock in Kudrekonda block is chlorite schist with intercalations of quartz-schist.

2.0.4 Narayanamurthy (1960, 61, 62, 63 and 1964) of GSI carried out mapping in the area and according to him the rocks of the area belong to two distinct groups namely the metasedimentary and metavolcanic groups. The Honnali gneissic complex formed the basement for schistose rock. He reported that the metavolcanics occurring around Kudrekonda and Palavanahalli are the host rock for the auriferous quartz veins which were worked by the ancients.

2.0.5 Later on, in 1972-73, Puskar Singh prepared a sketch map of Kudrekonda block on 1:2000 scale. Later Thakkar et. al. (1979) mapped this area mainly to establish the relationship between Honnali gneissic complex and the overlying metasedimentary rocks.

2.0.6 In 1983-84, Pazhamalainathan carried out large scale mapping (1: 31,360), pitting, trenching and analysed the samples for gold. According to Pazhamalainathan et al. the area is divided into two prospecting blocks; Kudrekonda block and Palavanahalli block. Kudrekonda block is divided into three different zones naming Kudrekonde zone, Salabalu zone and Surahonne zone. Kudrekonda zone is 600m long lying west of Kudrekonda village and mineralisation is associated with quartz-chlorite schist with vein and veinlets of quartz. Total9 old workings spaced at 20 to 100 m interval are located over a strike length of 420 m in Kudrekonda. The ore shoot is lenticular in shape and referred as Turnbull's reef in old reports. It has yielded ore with an average gold value 6.2g/t. Salabalu zone is traceable from the southern slope of Δ450, (NW of Salabalu village) towards north west for a strike length of 400m. This zone is associated with quartz-chlorite schist and quartz-carbonate veins. Surahonne zone is located north of Kudrekonda and south of Surahonne and is hosted within meta andesite. Thin quartz veins and quartz-carbonate veins are seen within the meta andesite.

2.0.7 During 1994-95 field season, N. Subramani and Manjunatha carried out second generation mapping (1:25,000 scale) and geochemical sampling in Kudrekonda-Palavanahalli areas, encompassing the old workings for gold. They identified three mineralized zones in the area as Kudrekonda, Palavanahalli and Surahonne where the mineralisation is hosted by quartz veins within carbonated and fractured metabasalt. The adit samples indicate gold value of 10.24 g/t over a width of 1 m. The assay of trench samples indicates gold values of 0.24 to 0.77 g/t over a width of 3 m. The bedrock samples indicate gold values of 0.11 to 0.6 g/t over a width of 2 m.

2.0.8 After gap of 10 years during F.S 2014-15, Nimmy K. C et. al carried out investigation for gold in this area to assess the auriferous potentiality which included large scale mapping (LSM) of 81 sq.km on 1:12,500 scale, surface sampling and detailed mapping of 2 sq.km on 1:1,000 scale. Analytical results of a bed rock sample showed Au up to 450 ppb.

2.0.9 In same field season, Jayesh Chaurasia and Lekhram Deshmukh carried out preliminary investigation for gold in Nyamati-Kunchenhalli area by LSM and DM. Although no encouraging gold values have been recorded in this area but a bed rock sample collected from metabasalt has yielded Cu values up to 4500 ppm, another BRS collected from metabasalt with carbonate has yielded Ni up to 1500 ppm and one bed rock sample collected from Cromite has yielded Cr up to 4980 ppm were reported.

2.0.10 Part of proposed block was also covered under NERP program in which an area of about 450 sq. km was covered by reconnaissance mapping on 1: 50,000 scale and 150 sq.km area by large scale mapping on 1:12500 scale Sibi P. B. & others in Nyamati block during (FS:2016-17). It was taken up as G4 investigation to locate possible zones of gold mineralization of the area. An area of about 450 sq. km was covered by reconnaissance mapping on 1: 50,000 scale and 150 sq.km area by large scale mapping on 1:12500 scale in Survey of India Toposheet No. 48N/12. 100 Bed-rock samples, 100 Pitting and trenching samples, 50 Stream sediment samples, 11 Petrological samples, 10 Petrochemical sample and 1 Ore microscopic sample was collected. Total 150 m3 of trenching followed by 100 trench samples were collected from the area. Geophysical survey comprising magnetic, IP and resistivity carried out in the Nyamati block with traverse interval of 700 mts on 37 profiles with traverse length of 1.3 km to 9.5 km to understand the subsurface nature of mineralization of previously reported auriferous zones and old workings. The magnetic, IP and resistivity surveys in Nyamati block are fairly successful in demarcating lithological contacts and structural features. Good correlation has been observed from Magnetic, IP and Resistivity anomalies. The area proposed for mineralization trending NW-SE direction which matches with the regional trend of schist belt. Three zones of mineralization in

Kudrekonda, Palavanahalli as well as in Ganjiganahalli (area between Kudrekonda-Palavanahali) have been identified with help of Geophysical survey. Resistivity and IP surveys were carried out over 11 profiles with station interval of 10 m. Out of which a total of four traverses were laid in Kudrekonda area, three traverses in Ganjiganahalli area and remaining four traverses were laid southern-east part of Ganjiganahalli area (which falls under Palvanahalli area).

2.0.11 GSI (FS 2016-17) carried out Heliborne surveys for Magnetic, PTHEM & Radiometric, data processing and interpretation over Shimoga schist belt, Karnataka. The zones of strong electromagnetic response in early, middle and late time window of EM data identified in central and western part of the area is proposed for detail investigation as these zones could be favourable for gold / sulphide mineralization. The time domain electromagnetic data reveals that the response is observed in late time window shows that mineralization continues in deep.

1.9.0. Observation and Recommendations of previous work

1.9.1. The Honnali gold fields form an important part of Shimoga Schist Belt. Kudrekonda and Palavanahalli form the two major auriferous tracts of Honnali gold fields which are known to have been worked as far back as 1880. Prior to it, the area was known for its gold washing and panning from both alluvial and eluvial materials.

1.9.2 Since 1880, the field has been worked intermittently by various companies floated under different names like Honnali Gold mining Company, Honnali Tribute Syndicate and Palavanahalli Gold Mining Company.

1.9.3 The exploratory works done by these companies revealed a highly erratic behaviour of the lodes simulating pinching and swelling, but the values were reported to be very high. Since they were unable to understand completely the behaviour of the lodes and work them, they closed their mining operations.

1.9.4 Bruce Foote (1900) observed that the “Turnbull reef” belonging to Kudrekonda was found to yield free gold. Later, the area hasbeen mapped by Slater (1902), Smeeth (1909), Sen (1915) and Jayaram (1915) of Department of Mines and Geology, Mysore state. They revealed the lithological details andmade a passing reference to the old workings for gold in Kudrekonda - Palavanahalli area.

1.9.5 Narayanamurthy (1960-64) of GSI carried out mapping in the area reported that the metavolcanics occurring around Kudrekonda and Palavanahalli are the host rock for the auriferous quartz veins which were worked by the ancients.

1.9.6 Pazhamalainathan (1983-84) identified three zones of gold mineralisation in Kudrekonda block, via., Salabalu, Kudrekonda and Surhonne zone and 5 zones of mineralisation in Palavanahalli block (P-1 to P-5 zones) and recommended detailed work by drilling. He recommended that Kudrekonda zone can be tested by putting 4 or 5 boreholes to find the nature, and depth wise continuity of gold mineralisation.

1.9.7 N.Subramani and Manjunath (1994-95) also recommended Kudrekonda zone for large scale mapping & further works.

1.9.8 Reconnaissance survey for gold carried out in the Nyamati block area by GSI during 2016-17 has indicated the magnetic, IP and resistivity surveys in Nyamati block are fairly successful in demarcating lithological contacts and structural features. These surveys brought out the disposition of magnetic lineaments. Good correlation has been observed from Magnetic, IP and Resistivity anomalies. The area proposed for mineralization trending NW-SE direction which matches with the regional trend of schist belt. Geophysical survey conducted under this program at 700m profile interval also identified three zones of mineralization in Kudrekonda, Palavanahalli as well as in Ganjiganahalli (area between Kudrekonda- Palavanahali).

1.9.9 The metabasalt with quartz-carbonate veins form the host for mineralization. The mineralized zone is characterized by the presence of wall rock alterations such as carbonitisation, silicification, sericitisation and fuchsite intergrowth within quartz vein.

1.9.10 Intense mining in the past and land enforcement has not left any traces of mineralized zone and mineralized quartz veins. The mineralized veins, which are mentioned by previous workers, do not exist in the area as of now. Poor outcrop density, thick soil cover and dense cultivation in the mapping area makes it difficult and the disposition of concealed ore body is still unrevealed.

1.9.11 The presence of series of shafts, exploratory pits and panning of the alluvial sediments; makes the area more interesting for gold exploration.

1.9.12 GSI carried out heliborne surveys for Magnetic, PTHEM & Radiometric, data processing and interpretation over Shimoga schist belt, Karnataka. The five strong anomaly zones are observed in electromagnetic data which could be due to subsurface conductive bodies. The zones of strong electromagnetic response in early, middle and late time window of EM data identified in central and western part of the area is proposed for detail investigation as these zones could be favourable for gold / sulphide mineralization. The time domain

electromagnetic data reveals that the response is observed in late time window shows that mineralization continues in deep.

1.9.13 Using all above data sets a report by GSI in 2018-19 was made to delineate potential target zones for gold and base metals in Shimoga schist belt, Shimoga, Karnataka, by using an integrated approach in which index overlay method was used to combine aero geophysical, remote sensing and geological data and narrow down the target area from 600 sq km to approx. 100 sq. km and expected deep seated mineralization.

1.9.14 Recommendation given in the report are as below:

"Based on the outcome of integrated approach followed by field work and laboratory studies, two blocks have been identified as mineral potential areas and are recommended for detailed studies. Block 1, named as Erekatte block, has potential for base metal and gold mineralization and has an area of about 120 sq. Km. Block 2, named as Savalanga block is identified for base metal mineralization and has an area of about 80 sq. Km. IP surveys, resistivity sounding and sampling through deep trenching are recommended to be conducted in both the blocks that will prove to be helpful in assessing the depth continuity and economic viability of the possible mineralized zones"

1.9.12 After studying all the above data MECL has further narrow downed and selected a small block of 2.73 sqkm from Erekatte block in which only two profile lines of ground Magnetic, I.P and Resistivity fall in the blocks out of 37 profiles of previously GSI geophysical work (FS.2016-17). The time domain electromagnetic data of heliborne geophysical survey reveals that the response is observed in late time window shows that mineralization continues in deep. As the proposed Kudrekonda block area (2.73 sq.km) has not been covered by Heliborne geophysical survey hence integrated ground geophysical survey supported with detailed geological mapping is very much required to figure out the potentiality of the deposit and to establish strike and depth continuity of the deposit. The Proposed block is shown on the Airborne Time Domain Electromagnetic map in which no profiles fall within the block.

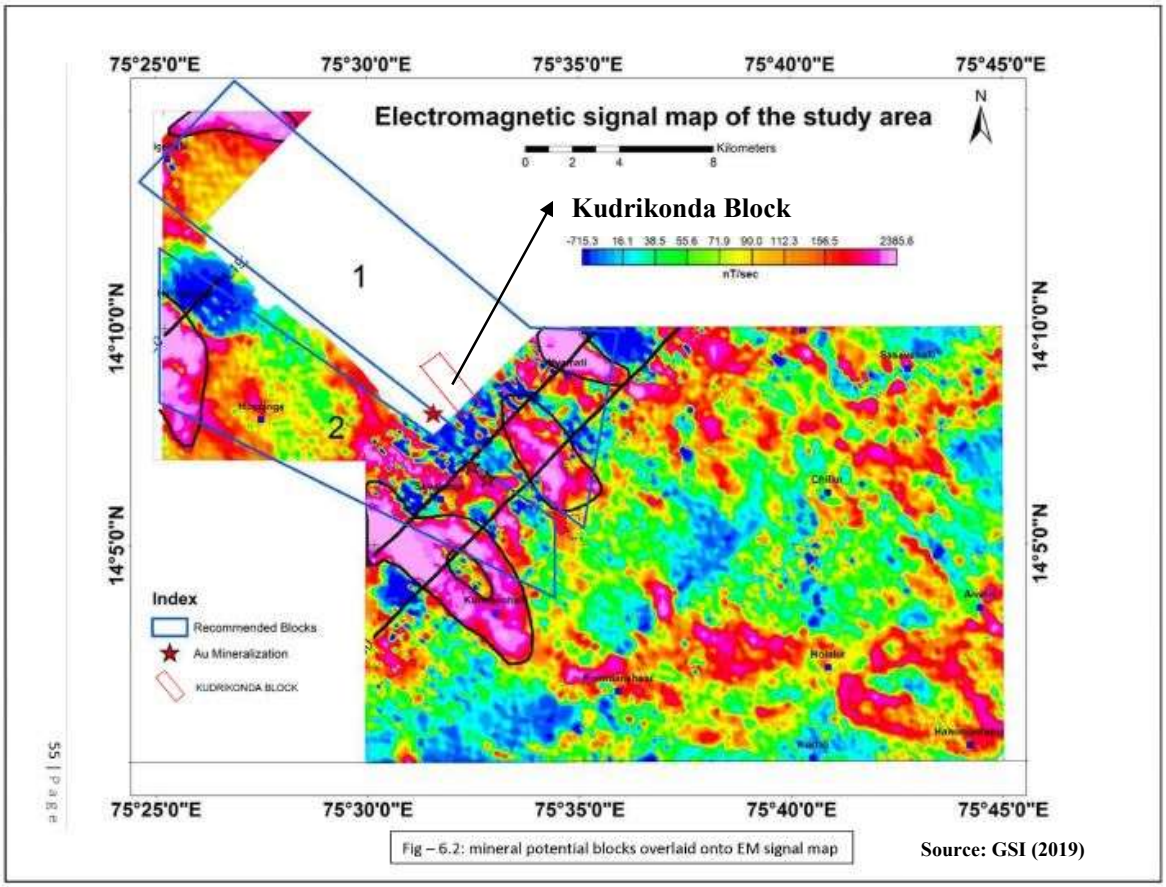

Fig – 6.2: mineral potential blocks overlaid onto EM signal map

Source: GSI (2019)

1.9.16 Proposed Ground Ground geophysical survey (TDEM, MT and Deep IP) will be helpful in finding out the deeper extension, continuity and location of the ore zones.

1.8.0. Scope of Proposed Exploration

1.8.1 The present G3 stage exploration programme has been formulated on the basis of available information on previous mining works (in 1800-1885) and previous exploration data comprising of geological, geophysical and Heliborne geophysical data of GSI. Proposed Ground geophysical survey (TDEM, MT and Deep IP) supported with detailed geological mapping (1:4000 scale) will be helpful in finding out the deeper extension, continuity and location of the ore zones in the area. The main scope of the proposal is also to establish the disposition of the concealed ore body in and around area exploited by old shafts and adit in Kudrekonda area by Geophysical survey.

1.9.0 Objectives of Present Exploration

The present exploration program at G3 stage has been formulated to fulfil the following objectives.

v) To carry out Detailed geological mapping on 1:4000 scale associated with surface geochemical sampling (bedrock/channel/soil) and analysis to identify the surface manifestations and lateral disposition of the Gold bearing mineralized zones

vi) To carry out integrated ground geophysical survey comprising of TDEM, MT and Deep IP survey over 2.73 sq.km area to identify mineralization zone at deeper levels.

vii) To carry out TDEM & Deep IP survey cumulatively 30 Lkm at 100m traverse interval with 50m and 10m station interval respectively.

viii) To carry out MT survey (36 stations) at 250m x 250m grid to cover the entire block area.

Based on the positive outcome of ground geophysical survey further course of action will be decided.

3.0.0.Block description

3.0.1 The proposed Block falls in Survey of India Toposheet No. 48N/12 and covers an area of about 2.74 sqkm near western side of villages Kudrekonda village of Honnali Tahsil, District Devanagere, Karnataka. The block location is given in **PLATE-I**. The Co-ordinates of the corner points of the proposed Block area are given in Table No.-III.A.

Table No-III.A

Location Co-ordinates of corner points of the Proposed Kudrekonda Block area

Block Corner points	WGS 84 (DD MM SS)		UTM WGS 84	
	Latitude	Longitude	N	E
A	14°09’ 06.05”	75°31’15.24”	5,56,215.9078	15,64,564.076
B	14°09’ 25.07”	75°31’41.86”	5,57,012.7772	15,65,150.139
C	14° 08’ 15.76.”	75°32’39.76”	5,58,753.4248	15,63,024.749
D	14° 07’ 55.47”	75°32’14.40”	5,57,994.6260	15,62,399.769

4.0.0 Planned Methodology

4.0.1. The exploration programme is proposed in accordance to the objective set for the block. The Exploration shall be carried out as per Minerals (Evidence of Mineral Content) Rule-2015. Accordingly, the following scheme of exploration is formulated in order to achieve the objectives. The details of different activities to be carried out are presented in subsequent paragraphs.

4.1. Geological Mapping

4.2.1. Detailed Geological mapping (DM) on 1:4000 scale associated with surface geochemical sampling (bedrock/channel/soil) and analysis to identify the surface manifestations and lateral disposition of the Gold bearing mineralized zones in the area.

4.2. Survey

4.2.1. During the course of geological mapping, the entire block area (2.73 sq.km) shall be covered by surface topographical survey wtih 2m countour interval.

4.3.0. Geochemical Sampling

4.3.1. Surface sampling (Bed Rock/Channel/Soil):

4.3.2. During the course of Geological mapping a total 30 nos of Bed rock/Channel/soil samples shall be collected from the area preferably targeting host lithologies of mineralisation for the analysis of Au by fire assay method and 34 elements by ICPMS method.

4.3.1. Check sampling:

4.3.2. Total 3 No.s of External check i.e. 10% of primary surface samples shall be analysed for Au by fire assay method in external NABL accredited laboratory to check any analytical bias in sample analysis.

4.4. Geophysical survey:

4.4.1 Based on the GSI Report (FS 2016-17) “Reconnaissance Survey for Gold In Nyamati Block” Large Magnetic lineaments were found in the area supported with I.P and Resistivity survey. After studying all the above MECL has further narrow downed and selected a small block of 2.73 sqkm from Erekatte block in which only two profile lines of Magnetic, I.P and Resistivity fall in the blocks out of 37 profiles. The time domain electromagnetic data reveals that the response is observed in late time window shows that mineralization continues in deep.

4.4.2 Hence for further detail investigation of the area Time domain Electro Magnetic Survey (TDEM) and MT was planned to carry out in proposed area to identify mineralization zone for deeper deposit. A grid pattern of 10m x 100m was planned for Deep I.P and 50m x 100m for TDEM survey, traverse in N45°E direction with an interval of 100m and station interval of 10 & 50mts respectively. A total 30 Lkm and 360 Stations were planned for I.P and TDEM survey. 36 Stations of MT were also planned to cover the entire block of 2.73 sqkm with 250m x 250m grid.

4.5. Petrological & Mineragraphic studies:

4.5.1 During the course Geological mapping total 5 nos. samples collected from various litho units shall be studied for petrography thin section studies. Total 5 nos. of samples shall be studied for mineragraphic studies for ore mineral assemblages and their distribution, alteration, enrichment etc. in polished sections.

5.0. Nature Quantum and Target

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

Table No-V.A

Envisaged Quantum of proposed work in Kudrekonda Area

S. No.	Item of Work	Unit	Target (Qty.)
A	**Geological Mapping Other Geological Work & Surveying**		
1	i. Detailed Geological mapping, (1:4000 scale) & Surface samples (Bedrock/Channel/soil)	**sq.km**	**2.74**
	ii. Collection of Surface samples (Bedrock/channel/soil)	**Nos.**	**50**
2	Survey work		
a	DGPS survey for Block Boundary	**Per Point of observation**	**4**
b	Topographical survey (2m contour interval)	**Sq.km**	**2.74**
B	**GEOPHYSICAL SURVEY**		
i	IP Survey	**Line km**	**30**
ii	Electro Magnetic survey (profiling/sounding)	**Sounding**	**360**
iii	Magneto-Telluric (MT) survey	**stations**	**36**
C	**LABORATORY STUDIES**		
1	Chemical Analysis		
i)	Geochemical Sampling-Surface samples (Bedrock /Channel/Soil)		

S. No.	Item of Work	Unit	Target (Qty.)
	a. Au by Fire Assay	**Nos**	**30**
	b) 34 Elements by ICPMS	**Nos**	**30**
ii)	Surface Check samples (10% External)		
	a. Au by Fire Assay	**Nos**	**5**
2	Physical & Petrological Studies		
i	Preparation & study of thin section	**Nos**	**5**
iii	Preparation & study of polish section	**Nos**	**5**
v	Digital Photographs	**Nos**	**5**
D	**Geological Report**	**Nos.**	**1**

6.0. Manpower Deployment

6.0.1 Manpower deployment list will be provided later.

7.0. Break-up of Expenditure

7.0.1. The tentative Cost has of proposed exploration program been estimated based on Schedule of Charges (SoC) of projects funded by National Mineral Exploration Trust (NMET) w.e.f. 01/04/2020 and the total estimated cost is **Rs. 275.24 Lakh.** The summary of tentative cost estimates is given in **Table No.-VII-A** and details of tentative cost estimates are given in **Table No. –VII-B.** Tentative Time schedule / Action plan of proposed exploration program is given in **Table No. VII-C.**

Table VII-A: Summary of Tentative Cost Estimates

Sl. No.	Item	Total
A	Geological Mapping Other Geological Work & Surveying	1808160
B	Geophysical survey	19921698
C	Laboratory studies	373700
	Sub total	22103558
D	Report	750000
E	Peer Review	30,000
F	Proposal Preparation	442,071
	Total	23325629
G	GST (18%)	4,198,613
Total cost including 18% GST		27,524,242
SAY, in Lakhs		**275.24**

Table VII-B

Annexure-5A

Estimated cost for Priliminary exploration (G-3) [Phase-1] for Gold in Kudrikonda area (2.74 sq km) for Geophysical Survey in Shimoga schist belt, District : Devanagere, Karnataka (Time schedule: 9 months)

S. No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC-Item -Sl No.	Rates as per SoC	Qty.	Amount (Rs)	
A	**Geological Mapping Other Geological Work & Surveying**						
1	Geological mapping, (1:4000 scale) & Surface samples (Bedrock/Channel/soil)	2.74 sq.km					
i	Charges for one Geologist- Field	day	1.2	11,000	90	990,000	
ii	Charges for one Geologist per- HQ	day	1.2	9,000	30	270,000	
iii	Labours (2 Nos)	day	5.7	504	180	90,720	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
iv	d. Charges for one Sampler per day (1 Party)	one sampler per day	1.5.2	5,100	10	51,000	
v	e. Labours (4 Nos)	day	5.7	504	40	20,160	
2	**Survey work**						
a	DGPS survey for Block Boundary	Per Point of observation	1.6.2	19,200	4	76800	As per TCC decision
b	Charges of Surveyor (1 party) for Topographical survey	one surveyor per day	1.6.1a	8,300	30	249000	
c	Labours Charges for survey work;	day	5.7	504	120	60480	Amount will be reimburse as per the notified rates for unskilled labor by the Central Labour Commissioner or respective State Govt. whichever is higher
				Sub Total- A		**1,808,160**	
B	**GEOPHYSICAL SURVEY**						
i	IP Survey	Line km	3.4a	69,950	30	2,098,500	
ii	Electro Magnetic survey (profiling/sounding)	Sounding	3.7a	21,197	360	7,630,920	
iii	Magneto-Telluric (MT) survey	stations	3.8	198,386	36	7,141,878	Rs. 119031/6 stations=198386 per station
iv	Charges for one Geophysicist per day at field (Geophysicist for 6 months)	day	3.18	11,000	180	1,980,000	
v	Labours (2 Nos)	day	5.7	504	360	181,440	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
vi	Charges for one Geophysicist per day at HQ	day	3.18	9,000	30	270,000	
vii	Surveyor Work	days	1.6.1a	8,300	60	498,000	
viii	Labours (4Nos)	day	5.7	504	240	120,960	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
				Sub Total- B		**19,921,698**	
C	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
i)	**Geochemical Sampling-Surface samples (Bedrock /Channel/Soil)**						
	a. Au by Fire Assay	Nos	4.1.5a	2,380	30	71,400	
	b) 34 Elements by ICPMS	Nos	4.1.14	7,731	30	231,930	
ii)	**Surface Check samples (10% External)**						
	a. Au by Fire Assay	Nos	4.1.5a	2,380	3	7,140	
2	**Physical & Petrological Studies**						
i	Preparation of thin section	Nos	4.3.1	2,353	5	11,765	
ii	Study of thin section	Nos	4.3.4	4,232	5	21,160	
iii	Preparation of polish section	Nos	4.3.2	1,549	5	7,745	
iv	study of polished section	Nos	4.3.4	4,232	5	21,160	
v	Digital Photographs	Nos	4.3.7	280	5	1,400	
				Sub Total- C		**373,700**	
				Total A to D		**22,103,558**	
E	**Geological Report Preparation**		**5.2**	For the projects having cost exceeding 150 lakhs but less than 300 lakh:- A minimum of 7.5 lakh or 3% of the work whichever is more and Rs 3000/- for each additional copy.		**750,000**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
F	**Peer review Charges**		**As per EC decision**			**30,000**	
G	**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. 5 Lakhs whichever is lower		**442,071**	EA has to submit the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
H	**Total Estimated Cost without GST**					**23,325,629.16**	
I	**Provision for GST (18% of I)**					**4,198,613**	GST will be reimburse as per actual and as per notified prescribed rate
J	**Total Estimated Cost with GST**					**27,524,242.41**	***or Say Rs. 275.37 Lakh***
Note:							
1	If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC. In case of execusion of the project by NEA on its own, a Certifiate regarding non outsourcing of any component/project is required.						

Table: VII-C

Estimated cost for Priliminary exploration (G-3) [Phase-1] for Gold in Kudrekonda area (2.74 sq km) for Geophysical Survey in Shimoga schist belt, District : Devanagere, Karnataka (Time schuedule- 9 months)												
S. No.		**Months/Days**	**1**	**2**	**3**	**4**	**5**	**6**		**7**	**8**	**9**
1	Camp Setting	**months**							**Review**			
2	Detailed Geological mapping (1:4000 scale) & Surface sampling	**months**										
3	Ground Geophysical Work (TDEM, IP, MT)	**months**										
4	Survey work	**months**										
6	Camp winding	**months**										
7	Laboratory studies	**months**										
8	Report Writing with Peer Review	**months**										

7.0. Justification

7.1.0 The Honnali gold field forms an important part of Shimoga Schist Belt. Kudrekonda and Palavanahalli form the two major auriferous zones of Honnali gold fields which were known for historical underground mining by various companies floated under different names like Honnali Gold mining Company, Honnali Tribute Syndicate and Palavanahalli Gold Mining Company since 1880.

7.2.0 The exploratory works done by these companies revealed a highly erratic behavior of the lodes simulating pinching and swelling, but the values were reported to be very high. Since they were unable to understand completely the behavior of the lodes and work them, they closed their mining operations.

7.3.0 The mining work through shafts has been carried out at maximum 80-100m depth in Kudrekonda and 30m depth in Palavanahalli. Hence, in order to figure out the potentiality of the deposit, strike and depth continuity of ore zones at deeper level to be tested.

7.4.0 Pazhamalainathan (1983-84) has mapped two auriferous zones (Kudrekonda & Palvanahalli) in the area and recommended to test them through drilling.

7.5.0 N. Subramani and Manjunatha (FS:1994-95) sampled adit samples indicate gold value of 10.24 g/t over a width of 1 m. The assay of trench samples indicates gold values of 0.24 to0.77 g/t over a width of 3 m.

7.6.0 Reconnaissance survey for gold carried out in the Nyamati block area (including Kudrekonda area) by GSI during 2016-17. Large scale mapping has been carried out on 1:12,500 scale around Kudrekonda-Palavanahalli-Holalur area to assess the gold mineralization in the area. Magnetic, IP and resistivity surveys in Nyamati block are fairly successful in demarcating lithological contacts and structural features.These surveys brought out the disposition of magnetic lineaments. Good correlation has been observed from Magnetic, IP and Resistivity anomalies. Geophysical survey conducted under this program at 700m profile interval also identified three zones of mineralization and Kudrekonda, area is one of them. It is indicated that Intense mining in the past and land enforcement has not left any traces of mineralized zone and mineralized quartz veins disposition of concealed ore body is still unrevealed.

7.7.0 Presence of old workings indicates the past mining activities in the area. Poor outcrop density, thick soil cover and dense cultivation in the mapping area makes it difficult and the disposition of concealed ore body is still unrevealed.

7.8.0 The presence of series shafts, exploratory pits and panning of the alluvial sediments makes the area more interesting for gold exploration. Hence, the proposed exploration would be helpful to unreveal concealed/deep seated mineralized ore zones in the area.

7.9.0 The time domain electromagnetic data of heliborne geophysical survey of GSI (2019) carried out in the area (excluding Kudrekonda area) reveals that the response is observed in late time window shows that mineralization continues in deep. IP surveys, resistivity sounding and sampling through deep trenching are recommended to be carried out in the area that will prove to be helpful in assessing the depth continuity and economic viability of the possible mineralized zones"

7.10.0 As per NGPM data the area is characterised by low magnetic anomalies and moderate bouger gravity within the block area and is favourable for gold mineralisation. Hence, further detail exploration is required in the area.

7.11.0 As advised by EC of NMET, all the available previous geological, ground geophysical & Heliborne geophysical survey data (low altitude EM data) in the area has been considered and demarcated potential Kudrekonda block area over 2.73 sq.km and accordingly formulated present exploration proposal (G3 stage) for Gold.

7.12.0 As the proposed Kudrekonda block area (2.73 sq.km) has not been covered by Heliborne geophysical survey hence keeping in view the continuation of anomalies and past mining activity the present integrated ground geophysical survey is very much required to figure out the potentiality of the well known Kudrekonda deposit.

7.13.0 Proposed Ground geophysical survey (TDEM, MT and Deep IP) will be helpful in finding out the deeper extension, continuity and location of the gold bearing ore zones and to establish the disposition of the concealed ore body in and around area previously exploited by old shafts and adit in Kudrekonda area. Based on the positive outcome of geophysical survey, drilling will be carried out in the area.

8.0. References

1) Pazhamalainathan N. (1984), Report on "preliminary investigation for gold in Kudrekonda-Palavanahalli area, Honnali Taluk, Shimoga district, Karnataka", Unpublished progress report of Geol. Sur. India, Bangalore for the F.S: 1983-84. Unpublished reports, Geological Survey of India.
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3) Sibi P. B, Shashikant Sudhakar Gawade (2017), Report on "Reconnaissance Survey for Gold In Nyamati Block In Parts Of Davangere And Shimoga District, Karnataka (block no. SR-KAR-04)"

4) R.K.Singh & H.C.Gouda et.al (2017), Report on "Heliborne surveys (Magnetic, PTHEM & Radiomatric) Data processing and interpretation over Shimoga Schist Belt, Karnataka. Bengaluru FS 2016-17.
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9.0 List of Plates

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Plate-III: Geological Map of the block

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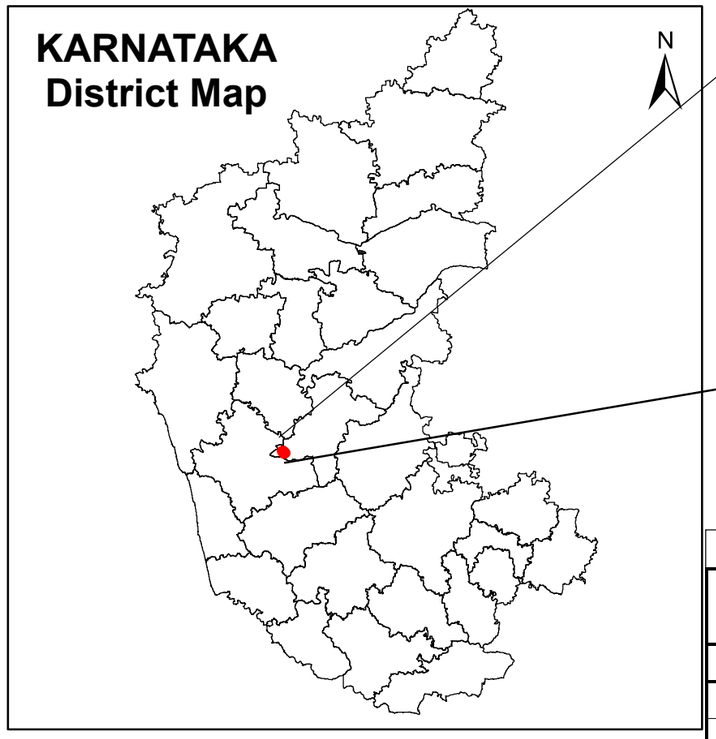
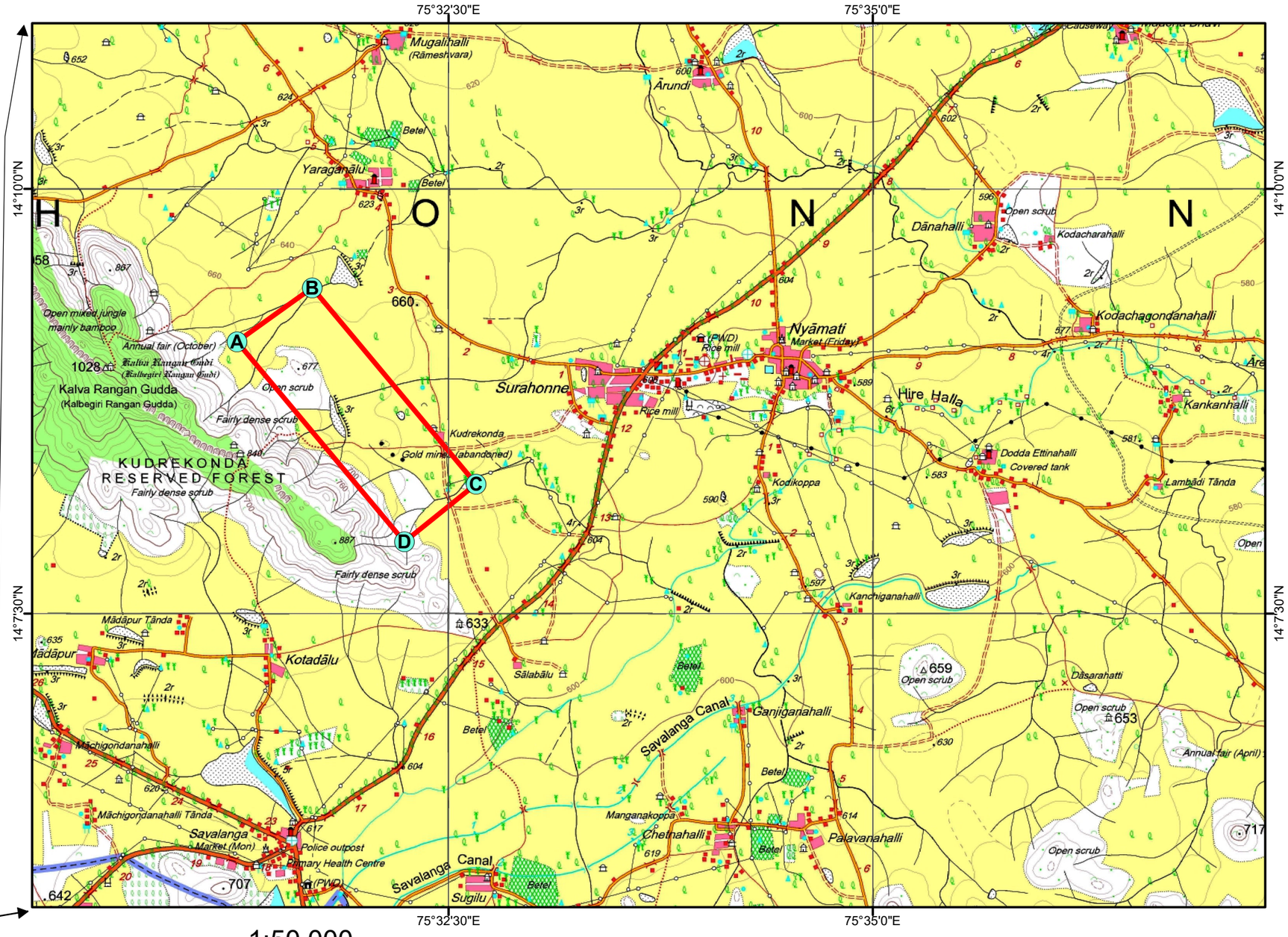
Location Map of Proposed Kudrekonda Block (2.75 Sq. Km.), Davanagere District, Karnataka





1:50,000

0 0.75 1.5 3 4.5 6 Kilometers

Source: Survey of India Toposheet No. 48N/12

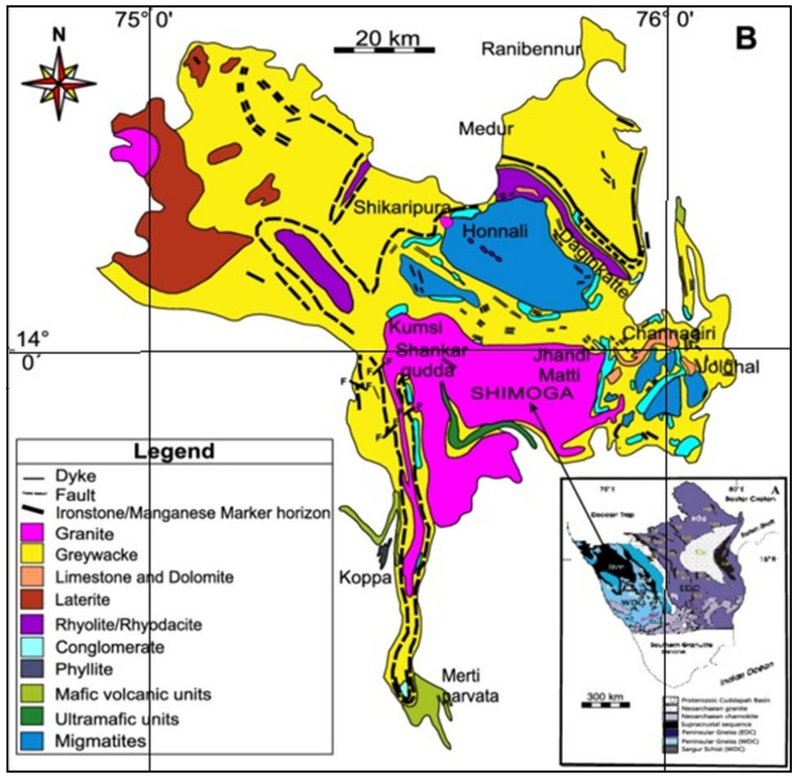
Coordinates of Corner Points of Proposed Kudrekonda Block

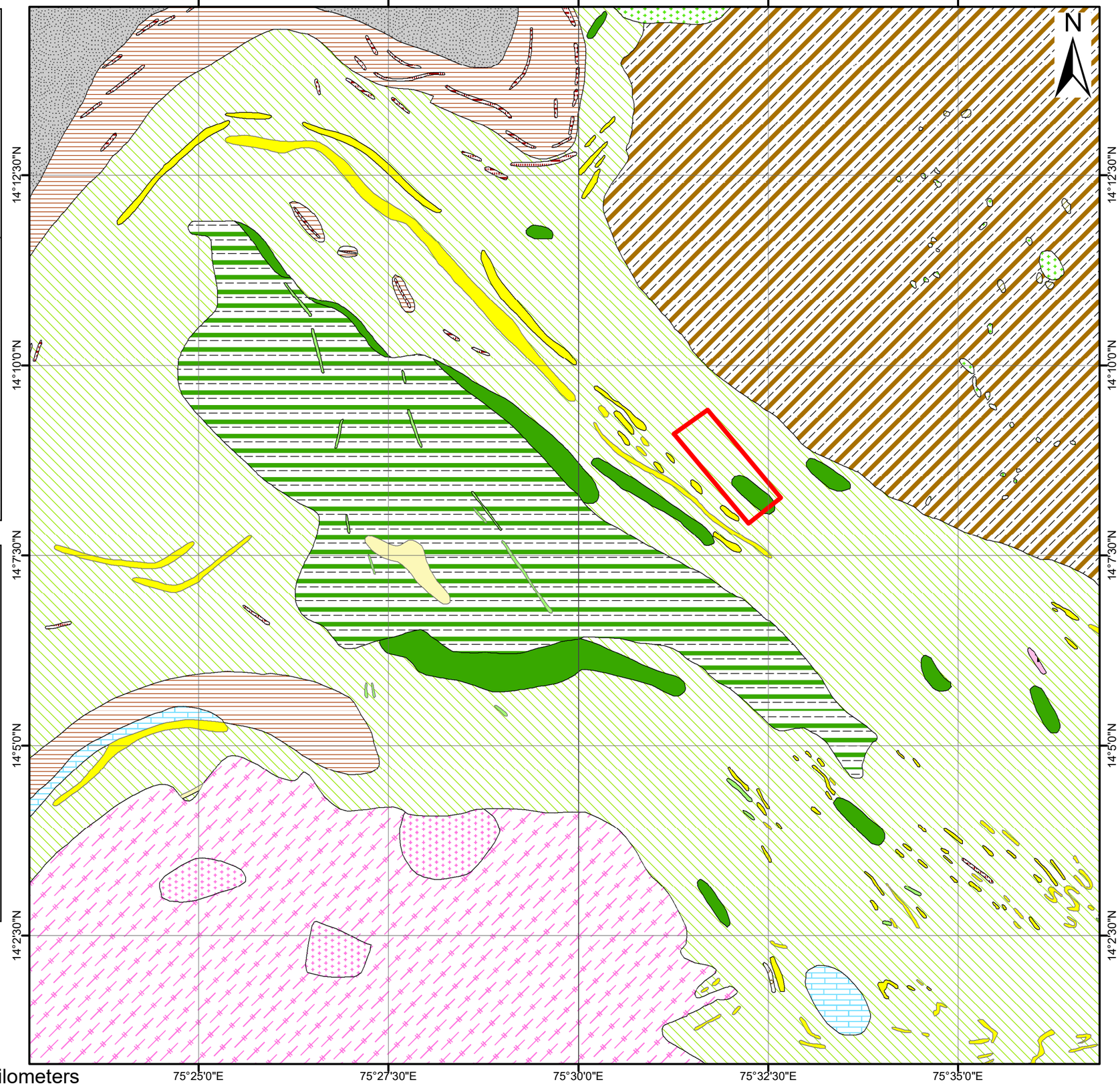
Sl. No.	Points	GCS- WGS 1984 (DD MM SS)		UTM Zone-43 (m)	
		Latitude	Longitude	Northing	Easting
1	A	14°09'06.05" N	75°31'15.24" E	1564564.007	556215.991
2	B	14°09'25.07" N	75°31'41.86" E	1565150.133	557012.709
3	C	14°08'15.76" N	75°32'39.76" E	1563024.734	558753.388
4	D	14°07'55.47" N	75°32'14.40" E	1562399.624	557994.505

Legend

- Corner Points of Proposed Kudrekonda Block
- Proposed Kudrekonda Block

Regional Geology Map showing Proposed Kudrekonda Block, Davanagere District, Karnataka





Legend

Proposed Kudrekonda Block

Lithology

- ARGILLITE
- BANDED IRON FORMATION
- BIOTITE GNEISS
- CHLORITE SCHIST
- CONGLOMERATE
- DOLERITE
- EPIDOTE GRANITE
- FERRUGINOUS PHYLLITE
- GRANITE GNEISS
- LIMESTONE
- META-BASALT
- META-ULTRAMAFITE
- MIGMATITE GNEISS
- PINK GRANITE
- QUARTZITE
- RHYOLITE
- SERICITE SCHIST

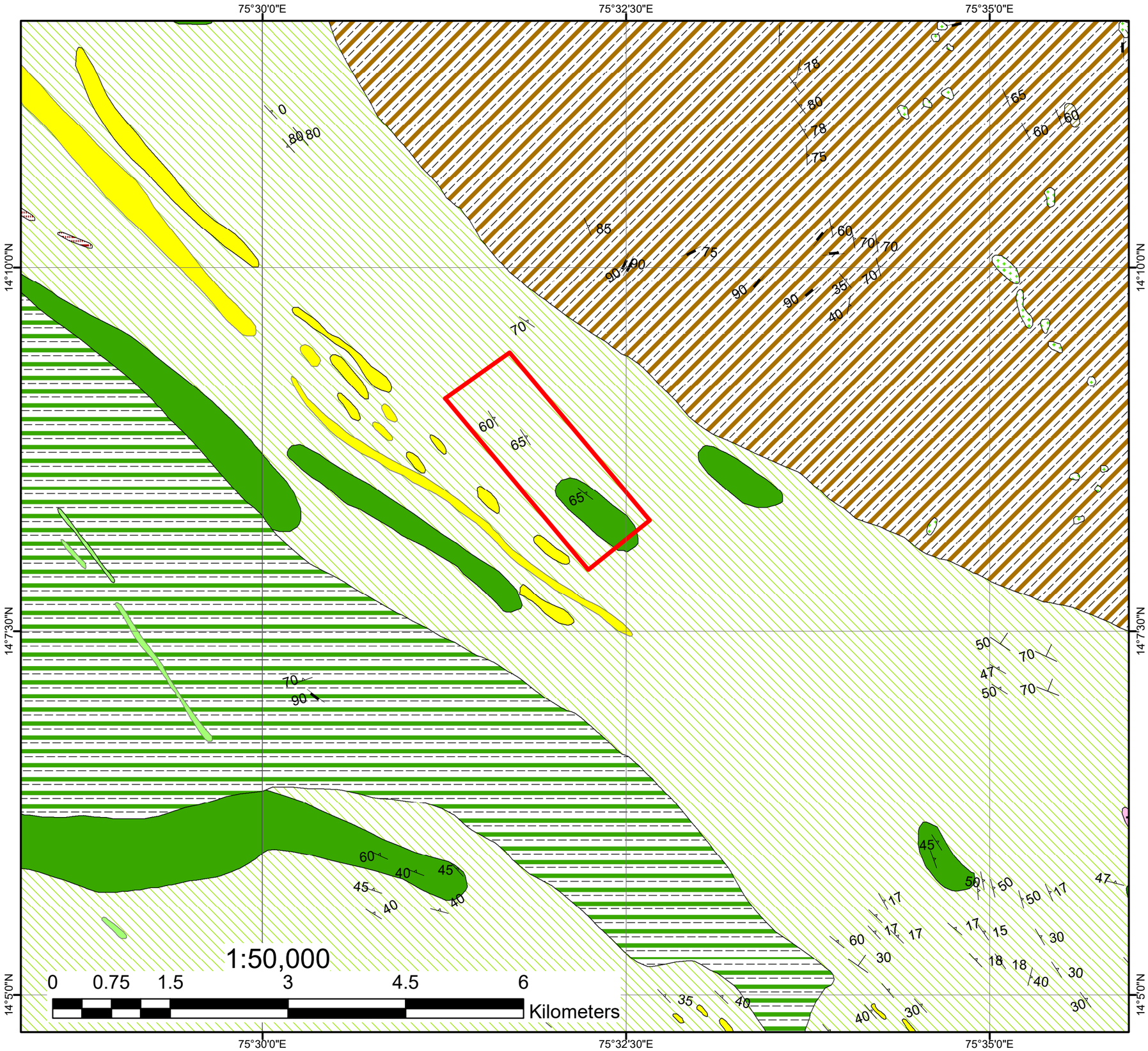
Source: Bhukosh, GSI

1:100,000

0 1.5 3 6 9 12

Kilometers

Geology Map showing Proposed Kudrekonda Block, Davanagere District, Karnataka



Legend

- Proposed Kudrekonda Block

Lithology

- BANDED IRON FORMATION
- BIOTITE GNEISS
- CHLORITE SCHIST
- DOLERITE
- EPIDOTE GRANITE
- META-BASALT
- META-ULTRAMAFITE
- MIGMATITE GNEISS
- QUARTZITE
- RHYOLITE
- BEDDING
- CLEAVAGE/FOLIATION/SCHISTOSITY (S1)
- JOINT

Source: Bhukosh, GSI

ELECTROMAGNETIC SIGNAL MAP OF STUDY AREA

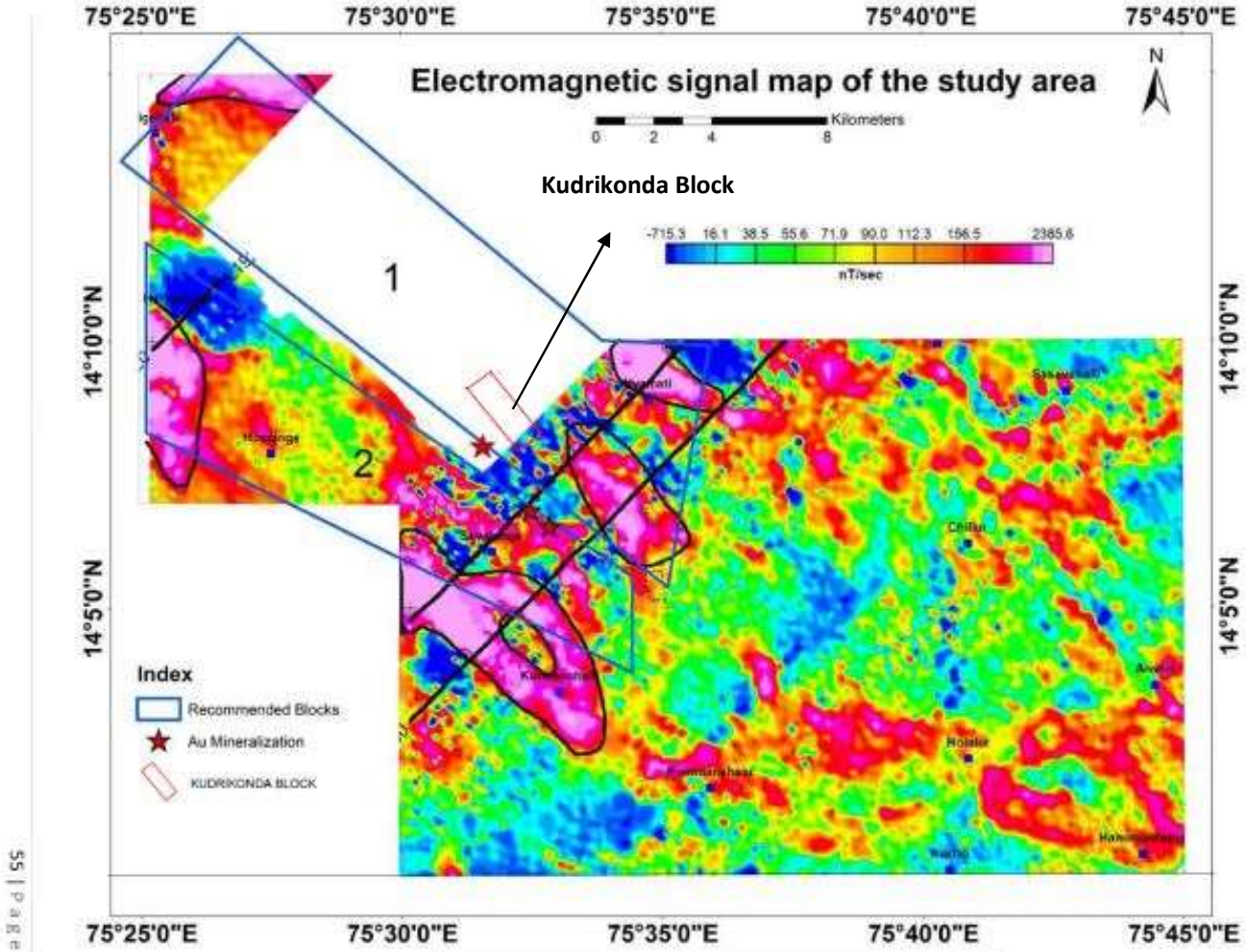
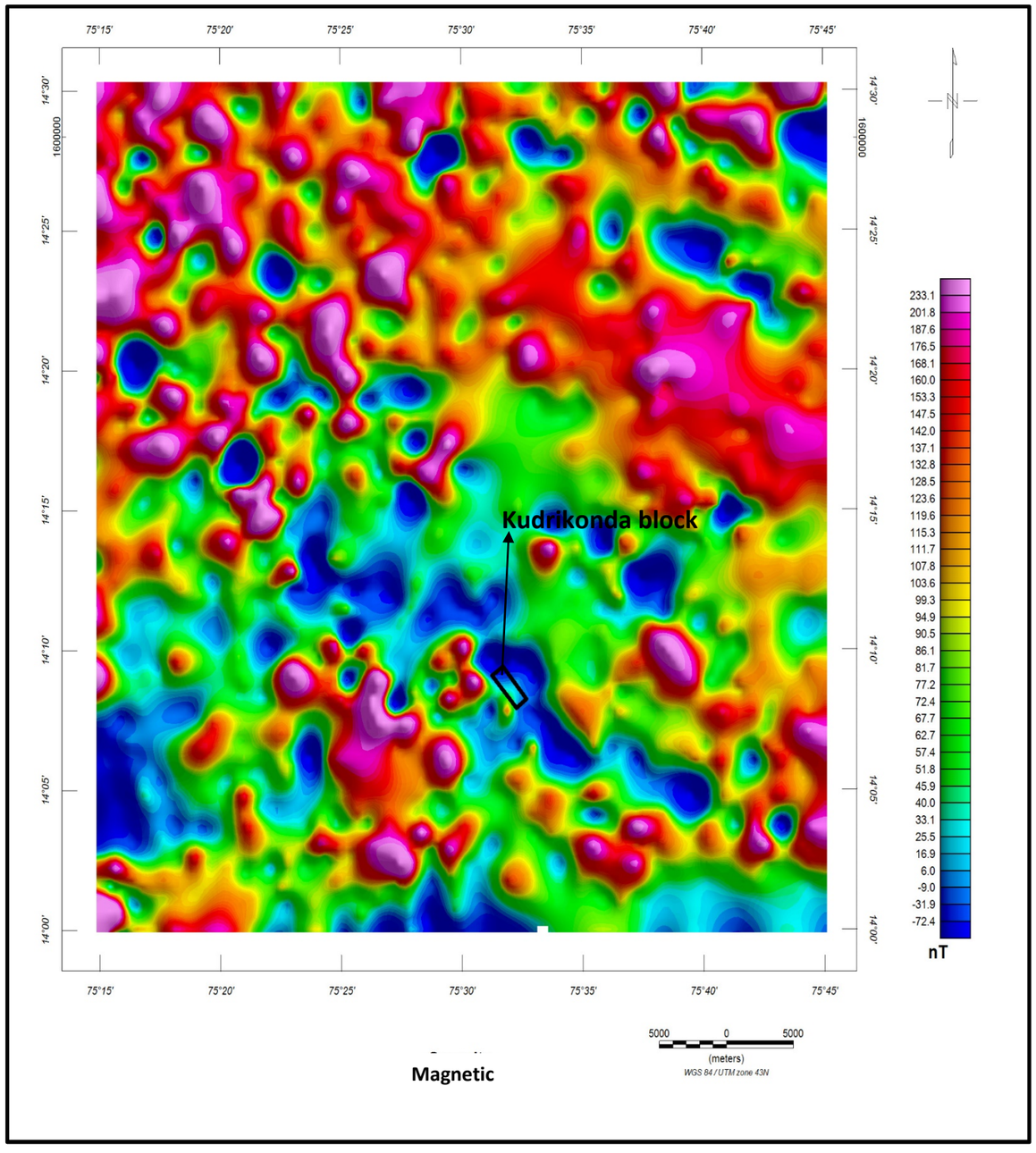


Fig – 6.2: mineral potential blocks overlaid onto EM signal map

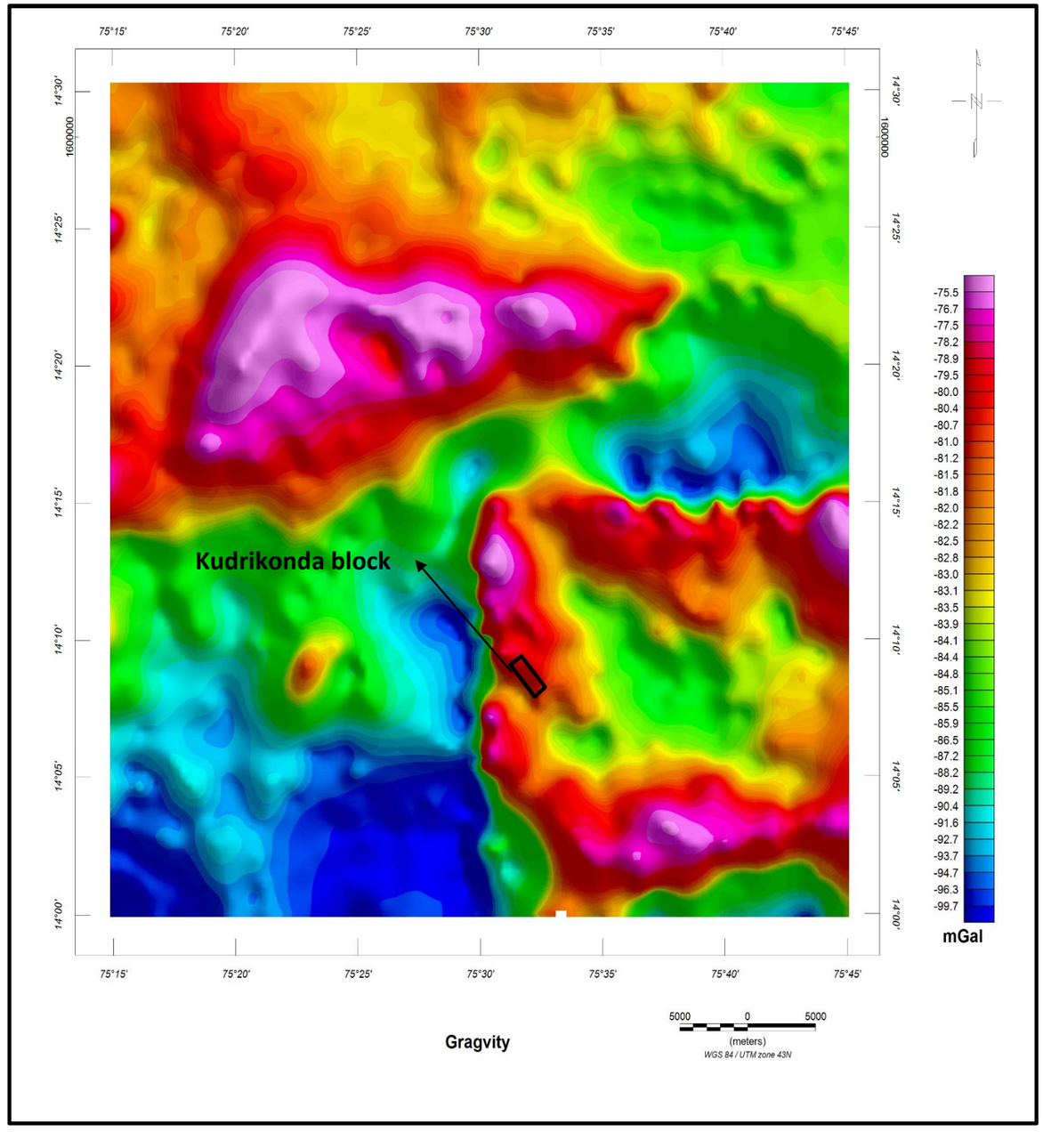
Source: GSI (2019)

PLATE No. IV

MAGNETIC & GRAVITY ANOMALY MAP OF TOPO SHEET NO. 48N/12 WITH KUDRIKONDA BLOCK, DEVANAGARE DISTRICT. KARNATAKA (Source: NGPM/BHUKOSH)



Magnetic



Gragvity

PLATE No. V