

**Regional Exploration Proposal (G-4 level) for Au, Cu, Pb, Zn, Ni and Co in
Ranibennur Block, (Block ID SR-KAR-08) in an area of 463 Sq.km,
District: Haveri & Davanagere, (Karnataka)**

1.0.0 Introduction:

- 1.1.1 In India production of Gold has declined and demand has increased drastically In India, largely the demand is met through imports. The increasing demand of base metals and gold has been accorded high priority in the XIIth Plan document for their exploration.
- 1.1.2 During the last three decades, no large gold & base metal deposit has been discovered in India. However, the possibility of working of small mineral bodies in proximity to each other, through technological advances and increased operational efficiency, cannot be ruled out. Therefore, it is necessary to locate and explore such small sized deposits in clusters.
- 1.1.3 In view of the MMDR amendments act – 2015, Mineral (Evidence of Mineral Contents) Rule 2015 and Mineral Auction Rule – 2015, Ministry of Mines, GSI identified the block for exploration & MECL decided to take up the block for G-4 level of exploration under NMET funding. MECL requested Ministry of Mines, Government of India to reserve the block to carry regional exploration.
- 1.1.4 Ministry of Mines, Government of India allotted 30 Regional Mineral Exploration Blocks for G-4 exploration from the 100 Reports handed over by GSI to MoM. The Regional Exploration Block (G-4 level) for Au, Cu, Pb, Zn, Ni and Co in Ranibennur Block, (Block ID SR-KAR-08), District: Haveri & Davanagere, (Karnataka) is one of the blocks allotted to MECL. Accordingly MECL prepared proposal for regional exploration and is put up for approval of Technical Committee of NMET.

1.2.0 Location of the Block:

- 1.2.1 The block is located 23 km from District Township in south east direction. The national highway NH-4 passes through the block area. The block area is traversed by a large network of motorable roads and tracts. The Ranibennur Township is in the middle of the block. The rail route of Southern Railway passes through Ranibennur. The Co-ordinates of the corner points of block area are given below and covers an area of 463 sq km approximately.

A) 14°30' 00"N and 75°31' 00"E and 14°40' 00"N and 75°31' 00"E

C) 14°40' 00"N and 75°45' 00"E and 14°30' 00"N and 75°45' 00"E

1.3.0 Physiology and Drainage:

- 1.3.1 The block is of undulating terrain with isolated hillocks. The highest peak is having reduced level of 697m from mean sea level is near the western margin in the southern portion of the block. The general ground level is around 580 m to 560 m in the 463 sq km block area.
- 1.3.2 The block area shows dendritic drainage pattern, the Tungabhadra River is passing within the south-east corner portion of the block and flows northerly outside the

eastern boundary of the block. The streams of the northern portion of the block flow North Easterly and of the southern portion in south eastern direction forming nalas which in turn are the part of tributary system of Tungabhadra River.

2.0.0 Previous work:

- 2.1.1 Gururaja Rao T.P. and Sinha P. A. (1975-76) in parts of Haveri, Ranibennur, Byadgi, Savanur and Shrihatti taluks, Dharwar district has studied Geology of the area around in detail. Various other workers have worked around the area, the Budapanhalli Beat reserve forest area in the north of the present block area is the closest reference for extension of mineralisation of Gold in the block proposed for exploration.
- 2.1.2 In the Budapanahalli Beat reserved forest area six BIF bands have been traced in the area over a strike length of 1.6 km. Gold values in BIF range from less than 0.1 ppm to 13.96 ppm. 23 samples have analysed gold values greater than 1 ppm. In the country rocks of argillite / greywacke / tuff, the gold values are less than 0.5 ppm. 4 trenches have indicated average gold values for the trench >1 ppm.

3.0.0 Geology and Structure:

3.1.0 Regional Geology and structure of the area.

- 3.1.1 The lithounits exposed in and around the block area are of Dharwar super group belonging to Shimoga group of Archaean age intruded by Acid and Basic intrusive of concordantly and disconcordantly. The foliation / schistosity in the greywacke / argillite vary from NW-SE to almost EW with dips of 40° northerly to vertical. There are various anticline and syncline mostly of NNW-SSE and NW-SE, the Stratigraphic Sequence of the lithounits exposed in the region is given below (after GSI, District Resource Map).

Regional Stratigraphic Sequence of the lithounits of the Area (after GSI)

Age	Super Group	Group	Formation	Lithounits
Recent				Alluvium
Palaeo Proterozoic			Acidic intrusives	Quartz veins
			Basic intrusives	Gabbro, Dolerite
Archaean	Dharwar	Chitradurga (Shimoga)	Ranibennur	Andesite
				Banded Iron Formation
				Quartzite
				Argillite
				Conglomerate

3.2.0 Geology and Structure of the Block:

- 3.2.1 The lithounits exposed in the block area are has been as Ranibennur formation, Chitradurga group of Dharwar Super group belonging to Archaean age the basic intrusives Dolerite, Gabbro and Acidic intrusives represented by Quartz veins belong

to the Palaeo-Proterozoic age. The foliation in graywacke / argillite varies NW-SE to almost EW with dips of 40° to almost vertical. There are anticline & syncline plunging NW & SE.

- 3.2.2 Gold has been reported in BIF at Kusaguru village and on the northern slope of the ridge near the peak of 686 m in the South western portion of the area. There are various exposed quartz veins and can be searched for base metals Cu, Pb, Zn, Ni and Co as associated elements. The Stratigraphic sequence of the lithounits exposed in the block area is given below.

The Stratigraphic Sequence of Lithounits exposed in the area

Age	Super Group	Group	Formation	Lithounits
Recent				Alluvium
Palaeo Proterozoic		Intrusive	Acidic	Quartz veins
			Basic	Gabbro, Dolerite
Archaean	Dharwar	Chitradurga (Shimoga)	Ranibennur	Andesite
				Banded Iron Formation
				Quartzite
				Argillite

4.0.0 Objective of the proposed exploration programme

- 4.1.1 The basic Geoscience data provided by GSI has been studied and evaluated. Based on the evaluation the data, the present exploration programme has been formulated to fulfill the following objectives.
- i) To carry out geological mapping on 1:12,500 scale and demarcate the rock types of Gold and Base metals bearing formations with the structural features to identify the surface manifestations and lateral disposition of the ore body.
 - ii) To collect surface samples for analysis of Au, Cu, Pb, Zn, Ni & Co and associated elements and decide further course of exploration programme.
 - iii) In case, surface samples give positive results supported by Remote sensing studies for mineral targeting and Geophysical survey giving sub-surface positive details for the extension of the ore body then 5 Nos of scout boreholes shall be drilled in the mineralized patches in the 463 sq.km. area which in turn will decide the future course of exploration programme at G-3/G-2 category of UNFC.
 - iv) To estimate reconnaissance Gold and Base metals resources along with accessory elements as per UNFC norms and minerals (Evidence of Mineral Contents) Rule-2015 at G-4 level.

5.0.0 Proposed scheme of Exploration:

- 5.0.1 In accordance to the objective set for the block, the exploration programme is proposed. 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 objective. The details of different activities to be carried out are presented in subsequent paragraphs.

5.1.0 Remote Sensing

5.1.1 Remote Sensing Studies will be carried out in the entire 95 sq km area to identify the lineaments, lithological contacts, other structural features and the mineral potential zones through mineral targeting process

5.2.0 Geological mapping:

5.2.1 Geological Mapping in an area of 463 sq. Km. will be done on 1:12,500 scales. Rock types, their contact, structural features will be mapped. Surface manifestations of the mineralised zones available along with their surface disposition will be marked on map. Surface samples of various litho-units for petrological studies and from ore bodies for Au, Cu, Pb, Zn, Ni & Co assay with accessory minerals will be taken during the course of geological mapping.

5.3.0 Geochemical Sampling:

5.3.1 **Surface sampling:** During the course of Geological mapping the Bed rock and Soil samples shall be collected from the out crops and Soil covered area respectively. A total of 200 no's from BIF, Argillite for Au and 100 nos from quartz veins and other mineralized manifestations for Cu, Pb, Zn, Ni & Co bed rock samples and 200 no's soil samples shall be collected, prepared and analyzed for Cu, Pb, Zn, Ni & Co assay and 100 nos. for Au by fire assay. 10% of primary sample will be analysed for Au, Cu, Pb, Zn, Ni & Co as check sample.

5.3.2 Stream Sediment Sampling

The stream sediment samples shall be collected from the entire study area of 463 sq. km. The samples shall be collected depending upon the Forest cover and accessibility of the area. A total of 200 stream sediment samples shall be collected from the study area.

5.4.0 Surveying:

5.4.1 The block boundary will be surveyed by DGPS and total station in WGS-84 datum for demarcation of block boundary points. Survey party will be associated with stream sediment sample and Bed rock sample collection by taking up the points and plotting its location on map for proper interpretation of the sample data. Survey party will also be associated with Geological Mapping will be observed during Geological mapping and the Litho-contacts will be plotted for finalization of Geological map on 1:12,500 scale. During drilling scout borehole fixation and determination of reduced level and Co-ordinates of the boreholes only will be undertaken. If mineralized zones are identified, contouring of the surrounding areas of ore bodies would be done on 2 m contour intervals along with survey of surface features.

5.5.0 Geophysical Survey:

5.5.1 The area of the block is nearly 463 sq.km.the lithounits hosting mineralisation are Banded Iron formation, Argillites and Quartz veins will be occupying the hills or slope of hills covered mostly by rubble & Soil. Hence, to assess the strike of the sub-surface

ore body continuation need of Geophysical survey is felt. Geophysical Survey shall be carried out by using Magnetic, Self Potential, Resistivity and Induced Polarisation methods. The Magnetic and Self Potential survey will be carried out on 20 m station interval and resistivity and induced potential will be carried out in 40 line km in the total study area of 463 sq. km. in splitted profiles in the concealed extension of the delineated potential mineralized zone areas.

5.6.0 Exploratory Mining

5.6.1 Shallow Trenching / Pitting (Excavation)

Trenching and pitting shall be carried out in the potential zones identified based on the results of Geological Mapping & Geochemical sampling. A provision of shallow trenching of 300 Cu. m. is kept. Pitting shall be done for correlation of mineralised zones on surface upto a depth of 1m after removal of soil/ weathered column in the area. Locations of the pits & trenches on ground will be decided by field geologist based on field observations. A provision of 300 numbers of primary & check trench / pit samples will be subjected for analysis of Cu, Pb, Zn, Co & Ni and 100 samples for Au & Ag by fire assay.

The trench & pit walls will be mapped on 1:200 scale.

5.7.0 Core Drilling:

5.7.1 The remote sensing studies and Geophysical survey will be helpful in adding new area in the block in the strike continuity. Hence 5 scout boreholes involving 600 m of drilling (3 Bhs for Au in BIF and 2 Bhs in quartz vein for Cu, Pb, Zn, Ni & Co) will be undertaken for 1st level of intersection (upto 60m vertical depth) at this stage.

5.8.0 Drill Core Logging:

5.8.1 The drill core will be logged for rock types, structural features, textures, intersection of ore zones, type of mineralization and occurrence of various ore minerals. The logging for determining the Rock quality determination will also be undertaken.

5.9.0 Drill core Sampling:

5.9.1 During the geological logging of drill core samples in mineralized zones will be marked on concentration wise and lithology wise. 300 nos of samples (primary) will be analyzed for Au and 200 for Cu, Pb, Zn, Ni & Co assay, 10% primary samples will be given for check. 30 no's composite samples will be analyzed for Au and 20 nos. for Cu, Pb, Zn, Ni & Co assay.

5.10.0 Whole Rock Analysis

5.10.1. 10 Nos of Rock samples shall be subjected to whole rock analysis for SiO_2 , Al_2O_3 , Fe_2O_3 , TiO_2 , MnO , CaO , Na_2O , $\text{K}_2\text{O}+\text{H}_2\text{O}$, MgO , P_2O_5 , CO_2 , & S 10 to check the rock types, their variation in chemical composition samples.

5.11.0 Petrological Studies:

5.11.1 During the course of core logging & mapping 40 samples from various lithounits intersected will be studied for petrography and 30 samples from mineralized zones will be studied for the ore mineral assemblages and their distribution, alteration, enrichment etc. in polished sections.

5.12.0 Specific gravity Determination:

5.12.1 For the specific gravity determination 20 samples from the mineralized zones intersected in the boreholes will be sent to lab.

5.13.0 XRD Studies:

5.13.1 From the composite samples, 10 samples shall be subjected for XRD studies.

5.14.0 Trace Element Study by LA MC- ICPMS Method / Spectroscopic studies:

5.14.0.15 NO.samples for the study of trace elements (48 Elements) by La MC- ICP-MS Method spectroscopic studies.

5.15.0 Quantum of Work Proposed

5.15.1 The details of proposed quantum of work is given in the table below:

Regional Exploration Proposal (G-4 level) for Au, Cu, Pb, Zn, Ni and Co in Ranibennur Block, (Block ID SR-KAR-08) in an area of 463 sq. km., District:- Haveri & Davanagere, (Karnataka)			
Sl. No.	Item of work	Unit (m)	Proposed Quantum of Work
1	Remote Sensing (Structural Mapping) & Reconnaissance Mapping (on 1: 50000 Scale)	Scene	1 Scene 463 sq km
2	Geological Mapping (on 1:12,500 Scale)	Sq. Km	463 sq.km
3	Topographical Survey (on 1:12,500 Scale in potential Zone Areas)	Sq. Km	As per requirement
	Bore Hole Fixation (Scout Boreholes)	Nos	5 Nos
	& Coordinate Determination	Nos	5 N0s
4	Geochemical Sampling (Will be carried out in anomalous areas)		
	a) Bed Rock Sampling	N0s.	300 N0s
	b) Soil Sampling	N0s.	200 N0
	c) Stream Sediment Sampling	N0s.	200 N0.
5	Ground Geophysical Survey (Will be carried out in anomalous areas)		
	a) Magnetic Survey	No of Sts.	2040 N0s
	b) Self Potential	No of Sts.	2040 N0s
	c) Resistivity	Line Km	40 Line Km
	d) Induced Polarisation Survey at an station interval of 25m and line interval of 100m	Line Km	40 Line Km
6	Exploratory Mining		
	Excavation (Trenching /Pitting)	Cu. m.	300 Cu m
7	Drilling (coring)	m	600m (5 Bhs)
8	Geological work		
	a) Geological Core Logging, Sample Preparation etc.	m	600m (5 Bhs.)
9	Laboratory Studies (To be carried out on samples collected from anomalous areas)		
	I) Surface Sampling (Primary samples)		
	i) Bed Rock samples		
	a) (Cu, Pb, Zn, Co & Ni)	Nos	200 Nos
	b) Au by Fire Assay	Nos.	100 Nos

	ii)) Soil Samples		
	a) (Cu, Pb, Zn, Co & Ni,)	Nos.	200 Nos.
	b) For Au By Fire Assay	Nos	100 Nos
	iii) Stream Sediment Samples		
	a) For (Cu, Pb, Zn, Co & Ni,)	Nos.	200 N0s
	b) for Au by Fire Assay	Nos.	200 N0s
	iv) Check Samples (Bed Rock / Soil/ Stream sediment)		
	a) For (Cu, Pb, Zn, Co & Ni)	N0s	70 N0
	b) For Au by Fire Assay	Nos	70 Nos
	v) Pit & Trench Primary & Check Samples		
	a) For (Cu, Pb, Zn, Co & Ni)	N0s	300 N0
	b) For Au by Fire Assay	Nos	100 Nos
	vi) Drill Core Primary Samples		
	a) For (Cu, Pb, Zn, Co & Ni)	N0s	200 Nos
	b) For Au by Fire Assay	N0s	300 Nos
	vii) Composite Samples		
	a) For 5 radicals (Cu, Pb, Zn, Co & Mo)	N0s	20 N0s
10	b) Au & Ag (By Fire Assay)	Nos	30 N0s
	Physical Studies		
10	a) XRD – Studies on Composite samples	Nos.	10 Nos
	b) Spectroscopic Studies (La-MC-ICP MS Method Full Spectrum of 48 radicals) (12 elements Cd, Sn, W, Sb, Mo, Ce, Nb, Ba, La, Bi, Co & Ni)	Nos.	15 Nos
11	Petrological Samples (Surface & Bh Core Samples)		
	a) Preparation of Thin Section	N0s	40 Nos
12	b) Study of Thin Section	N0s	40 Nos
	Mineragraphic Studies (Surface & Bh Core Samples)		
12	a) Preparation of Polished Section	N0s	30 Nos
	b) Study of Polished Section	N0s	30 Nos
13	Whole Rock Analysis -		
	SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ , TiO ₂ , MnO, CaO, Na ₂ O, K ₂ O+H ₂ O, MgO, P ₂ O ₅ , CO ₂ , & S.	Nos	10 Nos
14	Specific gravity Determination	Nos.	20 Nos
15	Report Preparation [As per Mineral (Evidence of Mineral Contents) Rule-2015]	N0s	1

6.0.0 Time schedule and cost Estimate:

6.1.0 Time schedule

6.1.1 The proposed block area is nearly of 463 sq. km. there is possibility of getting sub-surface extension of the ore body in the prospective area. The details are indicated in bar chart given below.

Time schedule (in months) for Regional Exploration (G-4 level) for Au, Cu, Pb, Zn, Ni and Co in Ranibennur Block, (Block ID SR-KAR-08) in an area of 463 sq. km., District: Haveri & Davanagere, (Karnataka)															
Item of Work	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Remote Sensing with Ground Check	←			→											
Remote sensing report					←		→								
Geological Mapping (3 Party Days)	←				→										
Bed Rock Sampling/ Soil Sampling		←			→										
Stream Sediment Samplings			←		→										
Surveying (2 Party Days) for Sampling etc	←				→										
Sample Preparation Soil/Bed Rock/Stream (2 Party Days)			←			→									
Analytical Work				←			→								
Geophysical Survey							←			→					
Geophysical Report											←		→		
Surveying in Geophysical Survey (2 Party's)							←			→					
Exploratory mining (Trenching /Pitting)						←		→							
Drilling (600 m)											←		→		
Surveying (2 Party) for drilling, contouring and surface features											←			→	
Sample Preparation (Drill Core) Party Days (2 Party)												←		→	
Geologist Party days for Drilling and Sampling work & report work (1 Party)											←			→	
Analytical Work Drill Core Samples													←		→
Camp winding													←		→
Geological Report													←		→

6.2.0 Cost Estimate:

The Project cost with provisional escalation is estimated at say **Rs 478.57Lakhs**. The details of item wise cost estimate with inbuilt actual escalation as on 31.3.2016 is given below.

SI No.	Item	Total Estimated Cost (Rs.)
1	Remote Sensing & Report	20,00,000/-
3	Geological, Survey & Sampling Work	14062620/-
3	Geophysical Survey & Report	1,69,05,760/-
4	Exploratory Mining (Pitting & Trenching)	5,55,990/-
5	Drilling	97,13,066/-
6	Laboratory Studies	41,45,985/-
	Subtotal	4,73,83,331/-
7	Report	4,73,833/-
	Total	4,78,57,164/-

Or Say Rs. 478.57Lakhs (Rs. 4.79Crore)

7.0.0 Justification:

- In view of MMDR Amendment & Mineral Auction Rule, 2015, GSI has identified this block for exploration MECL decided to take up the work under NMET funding.
- In the proposed study area, at two places Au has been reported in BIF. There are many such BIF bands in the block area. There are few quartz veins in the block which need to be explored for mineralization. The Geophysical surveys and Remote sensing studies will add to the Geological mapping for targeting the mineralized zone
- The exploration will be helpful in estimation of reconnaissance resources of Gold, Base metals and accessory minerals in block area.
- The Regional Exploration will help in planning of detailed exploration programme which in turn will facilitate the State govt. for auctioning of block.

Cost Estimate for G-4 Level of Exploration for Au, Cu, Pb, Zn, Ni & Co in Ranibennur Block, District: haveri, Davangere, (Karnataka)					
Sl. No.	Item of Work	Unit	Rates (2016-17)	Qty.	Amount
A	REMOTE SENSING & REPORT (1 BLOCK)	Nos	2,000,000.00	1	2000000.00
B	GEOLOGICAL WORK				
1	Survey Party days				
	a) Survey Party days (2party) For Sampling etc	days	6,146.00	300	1843800.00
	b) Survey Party days (2 party) For Geophysical Survey etc	days	6,146.00	240	1475040.00
	b) Survey Party days (2 party) For Drilling	days	6,146.00	180	1106280.00
2	Geologist Party days				
	a) Geological Party days (2 Party) For Geological Mapping etc	days	8,021.00	300	2406300.00
	b) Geological Party days (1 Party) For Drilling, Core Sampling	days	8,021.00	90	721890.00
3	Sampling Party days	day			
	a) Sample Preparation for Bed Rock, Soil , Stream samples (2 Partys)	days	2,945.00	240	706800.00
	b) Sample Preparation Drill Cores (1 Party)	days	2,945.00	60	176700.00
4	Transportation (Light Vehicles, 2 nos)	day	1,500.00	630	945000.00
	Sub-Total B				9381810.00
C	GEOPHYSICAL SURVEY & REPORT				
	Magnetic Stations	Nos.	482.00	2040	983280.00
	Self Potential Stations	Nos.	2,997.00	2040	6113880.00
	Resistivity	L. km	18,710.00	40	748400.00
	Induced Potential	L. km	217,505.00	40	8700200.00
4	Transportation (Light Vehicles, 2 nos)	day	1,500.00	240	360000.00
	Sub-Total C				16905760.00
D	CORE DRILLING (5 BH)				
1	Surface Drilling (2 rigs)	m	11,601.00	600	6960600.00
2	Transportations (2 Rigs)	Km	34.00	4000	136000.00
3	Accommodation (One time/ Drill)	Nos	728,250.00	2	1456500.00
4	Camp Setting / Winding	Nos	268,723.00	2	537446.00
5	Road Making (Flat Terrain)	Km	20,368.00	15	305520.00
6	GI Core Boxes	Nos	2,000.00	150	300000.00
7	Transportation Charges of Core Boxes	Km	34.00	300	10200.00
	Sub Total D				9706266.00
E	LABORATORY STUDIES				
1	Chemical Analysis				
	i) Surface sampling (Bed Rock Samples)				
	a) Au (By fire assay)	Nos.	1,127.00	200	225400.00
	b) Cu, Pb, Zn, Co & Ni	Nos.	2,287.00	100	228700.00
	ii) Soil Samples				
	a) Au (By fire assay)	Nos.	1,127.00	200	225400.00
	b) Cu, Pb, Zn, Co & Ni	Nos.	2,287.00	200	457400.00
	iii) Stream Sediment Samples				
	a) Au (By fire assay)	No	1,127.00	200	225400.00
	b) Cu, Pb, Zn, Co & Ni	No	2,287.00	200	457400.00
	d) Check Samples (Bed rock/ soil/ stream)				
	a) Cu, Pb, Zn, Ni&Co	Nos.	2,287.00	50	114350.00
	b) Au (By fire assay)	No	1,127.00	60	67620.00
	ii) BH Core Sampling, Primary & Check samples				
	a) Cu, Pb, Zn, Ni&Co	Nos.	2,287.00	88	201256.00
	b) Au (By fire assay)	Nos.	1,127.00	132	148764.00
	iii) Composite Samples for 6 radicals				
	a) Cu, Pb, Zn, Co & Ni	Nos	2,287.00	15	34305.00
	b) Au (By fire assay)	Nos	1,127.00	15	16905.00
2	Physical Analysis				
	i) Petrographic Studies (BH core + Surface Samples)				
	a) Preparation of thin section	Nos	545.00	40	21800.00
	b) Study of thin section	Nos	1,495.00	40	59800.00
	ii) Mineragraphic Studies (BH core + Surface Samples)				
	a) Preparation of polished section	Nos	583.00	30	17490.00
	b) Study of polished section	Nos	2,118.00	30	63540.00
	iii) Whole rock analysis	Nos	6,386.00	10	63860.00
	iv) Specific Gravity Determination (BH)	Nos	198.00	20	3960.00
	v) XRD & Spectroscopic Studies				
	a) X-RD Studies on composite	Nos	5,900.00	10	59000.00
	b) Spectroscopic studies (12 elements- Cd,Sn,W,Sb,Mo,Ce,Nb,Ba,La,Bi,Co& Ni)	Nos	6,274.00	15	94110.00
	Sub-Total E				2786460.00
	Total (A+B+C+D+E)				40780296.00
F	EXPLORATION REPORT - 1% of (A+B+C+D+E)				407803.00
	GRAND TOTAL (A+B+C+D+E+F)				41188099.00
				Say Rs.4.12 crore	
Note	Rates of Goel Committee based on actual escalation as per RBI indices as on 31.3.16 and provisional escalation of @15% points for drilling and 25% points for Geological & Laboratory Studies for subsequent year.				

Cost Estimate of Regional Exploration (G-4 level) for Au, Cu, Pb, Zn, Ni and Co in Ranibennur Block, (Block ID SR-KAR-08) in an area of 463 sq. km., District: Haveri & Davanagere, (Karnataka)						
Sl. No.	Item of Work	Unit	Base Rate 01-04-1990	Rates (2016-17)	Qty.	Amount
A	REMOTE SENSING & REPORT (1 BLOCK)	Nos		20,00,000	1	2000000
B	GEOLOGICAL WORK					
1	Survey Party days					
	a) Survey Party days (2party) For Sampling etc	days	1180	6,146	300	1843800
	b) Survey Party days (2 party) For Geophysical Survey etc	days	1180	6,146	240	1475040
	c) Survey Party days (2 party) For Drilling	days	1180	6,146	180	1106280
2	Geologist Party days					
	a) Geological Party days (3 Party) For Geological Mapping of 463 sq km area on 1:12500 Scale	days	1541	8,021	450	3609450
	b) Geological Party days for Trench/Pit (2 Party)	days	1541	8,021	240	1925040
	c) Geological Party days (1 Party) For Drilling, Core Sampling	days	1541	8,021	90	721890
3	Sampling Party days	day				
	a) Sample Preparation for Bed Rock, Soil , Stream samples (2 Partys)	days	525	2,945	240	706800
	b) Trench/Pit Sampling Party Days (2 Party)	day	994	5,733	240	1375920
	c) Sample Preparation Drill Cores (2 Party)	days	525	2,945	120	353400
4	Transportation (Light Vehicles, 2 nos)	day	Lumpsum	1,500	630	945000
	Sub-Total B					14062620
C	GEOPHYSICAL SURVEY & REPORT					
1	Magnetic Stations	Nos.	107	482	2040	983280
2	Self Potential Stations	Nos.	639	2,997	2040	6113880
3	Resistivity	L. km	4168	18,710	40	748400
4	Induced Polarisation Survey (The Base rate of Rs 7860/- is for Station Interval; of 200m, at 100 X 25m interval)	L. km	7860	2,17,505	40	8700200
5	Transportation (Light Vehicles, 2 nos)	day	Lumpsum	1,500	240	360000
	Sub-Total C					16905760
D	EXPLORATORY MINING					
1	Excavation (Trenching/Pitting)	Cu. m	345	1,853	300	555900
	Sub-Total D					555900
E	CORE DRILLING (5 BH)					
1	Surface Drilling (2 rigs)	m	2551	11,601	600	6960600
2	Transportations (2 Rigs)	Km	8.8	34	4000	136000
3	Accommodation (One time/ Drill)	Nos	185925	7,28,250	2	1456500
4	Camp Setting / Winding	Nos	68606	2,68,723	2	537446
5	Road Making (Flat Terrain)	Km	5200	20,368	15	305520
6	GI Core Boxes	Nos	Lumpsum	2,000	150	300000
7	Transportation Charges of Core Boxes	Km	8.8	34	500	17000
	Sub Total E					9713066
F	LABORATORY STUDIES					
1	Chemical Analysis					
	i) Surface sampling (Bed Rock Samples)					
	a) Au (By fire assay)	Nos.	205	1,127	100	112700
	b) For 5 radical Cu, Pb, Zn, Ni & Co	Nos.	110 + (76*4)=414	2,287	200	457400
	ii) Soil Samples					
	a) Au (By fire assay)	Nos.	205	1,127	100	112700
	b) For 5 radical Cu, Pb, Zn, Ni & Co	Nos.	110 + (76*4)=414	2,287	200	457400
	iii) Stream Sediment Samples					
	a) Au (By fire assay)	No	205	1,127	200	225400
	b) For 5 radical Cu, Pb, Zn, Ni & Co	No	110 + (76*4)=414	2,287	200	457400
	iv) Check Samples (Bed rock/ soil/ stream)					
	a) For 5 radical Cu, Pb, Zn, Ni & Co	Nos.	110 + (76*4)=414	2,287	70	160090

	b) Au (By fire assay)	No	205	1,127	70	78890
	v) Pit & Trench (Primary & Check Samples)					
	a) For five radicals (Cu, Pb, Zn, Co & Ni)	Nos.	110 + (76*4)=414	2,287	300	686100
	b) For Au (by fire assay)	Nos.	205	1,127	100	112700
	vi) BH Core Sampling, Primary & Check samples					
	a) For 5 radical Cu, Pb, Zn, Ni & Co	Nos.	110 + (76*4)=414	2,287	200	457400
	b) Au (By fire assay)	Nos.	205	1,127	300	338100
	vii) Composite Samples for 6 radicals					
	a) Au + Ag (By fire assay)	Nos	268	1,460	30	43800
	b) For 5 radical Cu, Pb, Zn, Ni & Co	Nos	110 + (76*4)=414	2,287	20	45740
2	Physical Analysis					
	i) Petrographic Studies (BH core + Surface Samples)					
	a) Preparation of thin section	Nos	100	545	40	21800
	b) Study of thin section	Nos	228	1,495	40	59800
	ii) Mineragraphic Studies (BH core + Surface Samples)					
	a) Preparation of polished section	Nos	100	583	30	17490
	b) Study of polished section	Nos	364	2,118	30	63540
	iii) Whole rock analysis (SiO2, Al2O3, Fe2O3, TiO2, MnO, CaO, Na2O, K2O+H2O, MgO, P2O5, CO2, & S)	Nos	1316	6,386	10	63860
	iv) Specific Gravity Determination (BH)	Nos	32	198	20	3960
	v) XRD & Spectroscopic Studies					
	a) X-RD Studies on composite	Nos	1137	5,900	10	59000
	b) Spectroscopic(12 elements- Cd,Sn,W,Sb,Mo,Ce,Nb,Ba,La,Bi,Co & Ni)/ LA MC-ICMS Method studies for full spectrum of 48 Elements (GSI rate has been considered)	Nos	6100 * GSI rate as on 2014	7,381	15	110715
	Sub-Total F					4145985
	Total (A+B+C+D+E+F)					47383331
G	EXPLORATION REPORT - 1% of (A+B+C+D+E+F)				1	473833
	GRAND TOTAL (A+B+C+D+E+F+G)					47857164
					Say Rs. 478.57 Lakhs	
Note	Revised rate of promotional work by MECL on behalf of Govt. of India vide letter no. 37(I)/2006-MI dated 02.07.2014 and based on actual escalation as per RBI indices as on 31.3.16 and provisional escalation of @15% points for drilling and 25% points for Geological & Laboratory Studies for subsequent year.					