PROPOSAL OF RECONNAISSANCE SURVEY (G-4 STAGE) FOR

IRON IN PARSILI-KARMAI BLOCK (18.34 SQ. KM)

DISTRICT- SIDHI, MADHYA PRADESH

COMMODITY: IRON

BY

MINERAL EXPLORATION & CONSULTANCY LIMITED

DR. BABASAHEB AMBEDKAR BHAWAN

SEMINARY HILLS

PLACE- NAGPUR

DATE- 06.10.2023

Summary of Parsili-Karmai G4 Block for Reconnaissance Survey (G4 Stage)

GENERAL INFORMATION ABOUT THE BLOCK

	Features	**Details**
	Block ID	PARSILI-KARMAI G4 BLOCK
	Exploration Agency	Mineral Exploration and Consultancy Limited (MECL)
	Commodity	Iron
	Mineral Belt	The area belongs to the Mahakoshal Group of rocks. Mineralisation of Iron is occurring around the area associated with Banded Iron Formation (BIF).
	Completion period with entire Time schedule to complete the project	Time Line for Exploration work with Drilling is 09 months.

	Objectives	The Mahakoshal belt represents a volcano-sedimentary sequence exposed proximal to the ENE-WSW to E-W trending Son-Narmada Lineament Zone (SNLZ) in the Central India and has an aerial extent of approximately 9000 sq. km. The Paleoproterozoic Mahakoshal belt is well known for hosting numerous economic mineralization like Sulphides, Gold, PGE, Manganese, Iron (BHQ/BMQ) etc. The presence of supporting lithology for Iron mineralization viz. BHQ and Ferruginous quartzite encourages in taking up the G4 Exploration in the area. Evaluation of previous work and field investigation done by MECL has indicated occurrence of Iron in and around the proposed block. On the basis of these evidences of mineralisation, the present exploration program has been formulated to fulfill the following objectives. i) To identify BIF bands and Ferruginous quartzites for demarcation of Iron mineralization with the structural features, lateral & vertical disposition of the mineralized zones. ii) To collect bedrock samples, channel samples and trench samples & to analyze for Iron for further course of Exploration program. iii) Pitting / trenching will be done to expose the concealed host rock and mineralisation. iv) If phase-I exploration data will give positive results, 5 Nos. of scout boreholes shall be drilled which in turn will decide the future course of Exploration program at G-3 category of UNFC. v) To estimate reconnaissance resources (334) along with accessory elements as per UNFC norms and Minerals (Evidence of Mineral Content) Rules-2015 at G-4 level.
	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 (MECL).
	Number of Geoscientists	Nos. of Geoscientists: 2 (1Field + 1HQ)
	Expected Field	Geologist Party days: 90 field + 60 HQ

<table>
<tr><td></td><td>days(Geology, Surveyor)</td><td>Survey Party days : Nil</td></tr>
<tr><td>1.</td><td>Location</td><td rowspan="2">The co-ordinate of the corner points of the proposed Parsili-Karmai Iron block (G-4) (18.34 sq km)
<table>
<tr><th rowspan="2">CARDINAL POINTS</th><th colspan="2">UTM (ZONE 44N)</th><th colspan="2">DMS</th></tr>
<tr><th>EASTING (m)</th><th>NORTHING (m)</th><th>LATITUDE (N)</th><th>LONGITUDE (E)</th></tr>
<tr><td>A</td><td>550916.927</td><td>2671066.388</td><td>24° 09' 04.6004"</td><td>81° 30' 04.2729"</td></tr>
<tr><td>B</td><td>550939.044</td><td>2674014.436</td><td>24° 10' 40.4515"</td><td>81° 30' 05.4309"</td></tr>
<tr><td>C</td><td>558778.219</td><td>2674101.178</td><td>24° 10' 42.2877"</td><td>81° 34' 43.2769"</td></tr>
<tr><td>D</td><td>558844.480</td><td>2672721.297</td><td>24° 09' 57.4136"</td><td>81° 34' 45.4228"</td></tr>
<tr><td>E</td><td>558937.725</td><td>2670785.286</td><td>24° 08' 54.4538"</td><td>81° 34' 48.4429"</td></tr>
<tr><td>F</td><td>555692.387</td><td>2671163.185</td><td>24° 09' 07.1659"</td><td>81° 32' 53.5019"</td></tr>
</table></td></tr>
<tr><td></td><td>Longitude-Latitude</td></tr>
<tr><td></td><td>Villages</td><td>Parsili, Karmai</td></tr>
<tr><td></td><td>Tehsil/Taluk</td><td>Majhauli</td></tr>
<tr><td></td><td>District</td><td>Sidhi</td></tr>
<tr><td></td><td>State</td><td>Madhya Pradesh</td></tr>
<tr><td>2.</td><td>Area (hectares/ square kilometres)</td><td></td></tr>
<tr><td></td><td>Block Area</td><td>18.34 sq km</td></tr>
<tr><td></td><td>Forest Area</td><td>The hills are highly forested while valley areas are cultivated land.</td></tr>
<tr><td></td><td>Government Land Area</td><td>Data not available</td></tr>
<tr><td></td><td>Charagaha</td><td>Data not available</td></tr>
<tr><td></td><td>Private Land Area</td><td>Part of the area is private cultivated land</td></tr>
<tr><td></td><td>Study of DSS</td><td>Area Not Inviolate</td></tr>
<tr><td>3.</td><td>Accessibility</td><td></td></tr>
<tr><td></td><td>Nearest Rail Head</td><td>Kanchanpur Road Railway Station (26 Km)</td></tr>
</table>

	Road	Fair weathered road connects all the major villages of the area. SH-55 runs in the southern part of the block.
	Airport	Bamrauli Airport (220 Km), Prayagraj
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	The drainage pattern varies from sub-parallel to dendritic and radial. It is mainly controlled by structure and lithology.
	Rivers/ Streams	The area is mainly drained by Banas river.
5.	**Climate**	
	Mean Annual Rainfall	Maximum rainfall is witnessed during the period from June end to September. The average rainfall is about 1500 mm. The rainfall is received from the southwest monsoon.
	Temperatures (December) (Minimum) Temperatures (May-June) (Maximum)	Minimum temperatures 10°C Maximum temperatures up to 45°C
6.	**Topography**	
	Toposheet Number	63H/12
	Morphology of the Area	The area exhibits rugged topography with series of hills/ridges and intervening valleys. The maximum elevation is about 480m and average elevation is about 400m.
7.	**Availability of baseline geoscience data**	
	Geological Map (1:50K/25K/12.5K)	GSI Map in 1:12,500 scale
	Geochemical Map	Available.
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as	Available.

	local scale GP maps)	
8.	**Justification for taking up Reconnaissance Survey/ Regional Exploration**	i) The area belongs to the Mahakoshal Group which is well known for various mineral resources including Iron. ii) Mineralisation of Iron is occurring in and around the area associated with BHQ and Ferruginous quartzite. iii) MECL has conducted field visit in the proposed block. During geological traverses, MECL has identified BHQ and Ferruginous quartzite trending ENE and dipping 55° southerly. 6 samples were collected from several places inside the block and was analysed in MECL Chemical Lab. Samples are showing **Fe** values ranging from **38.28%** to **55.25%**. iv) Based on the mineralization evidences of Iron in and around the block, the present Reconnaissance Survey exploration program at G-4 level has been prepared. Geological mapping, surface sampling and pitting/trenching will be helpful in assessing the lithology, disposition and grade of the mineralized zones, structural features etc. v) The Exploration will be helpful in estimation of reconnaissance resources of Iron and Manganese and associated minerals in the block area. Geochemical sampling of BRS/Channel/Chip Sample/ Pitting/trenching and the drilling of scout boreholes will be helpful in assessing the disposition and grade of mineralization. vi) The Reconnaissance Survey (G4) will eventually help in planning of detailed exploration program (incase upgraded to G-3 level) which in turn will facilitate the state Government for auction of block.

PROPOSAL OF RECONNAISSANCE SURVEY (G-4 STAGE) FOR

IRON AND ASSOCIATED MINERALS IN PARSILI-KARMAI BLOCK (18.34 SQ. KM)

DISTRICT- SIDHI, MADHYA PRADESH

1.0.0 INTRODUCTION

1.1.0 Preamble

1.1.1 Iron is estimated to make up 32.07% of the Earth

- Zone B- Bailadila, Dalli, Rajhara, Rowghat, Mahamaya, Aridongri, Surajgarh.
- Zone C- Donimalai, Ramgad, Kumaraswamy, NEB Range, Ettinahatti, Tumti, Belagal, Chitradurga and Tumkur Districts of Karnataka.
- Zone D- Goa, Ratnagiri in Maharastra and North Karnataka
- Zone E- Kudremukh, Bababudan, Kudachadri

1.1.5 The first four zones (A

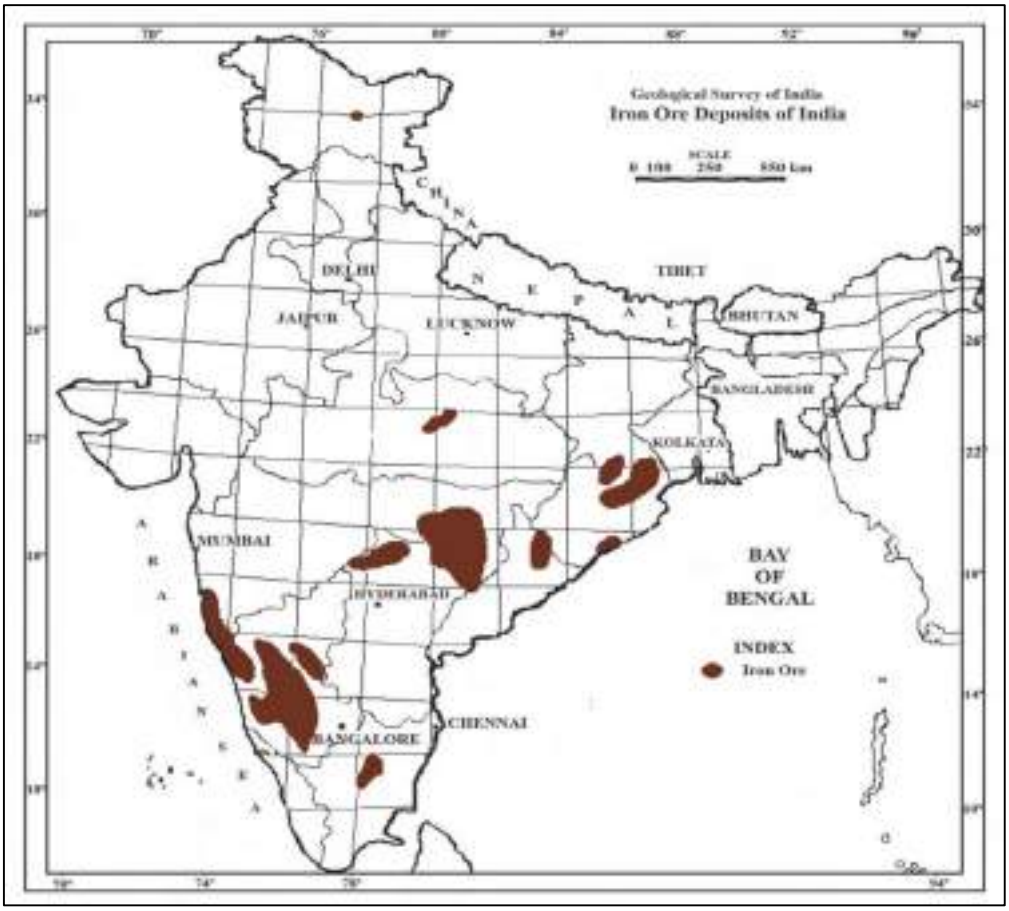

Fig- Major economic deposits of iron ore in India

1.2.0 Location and Accessibility

1.2.1 The block is located in the Sidhi district of Madhya Pradesh and falls in Majhauli tehsil. The area is about 57 km south west to the district headquarter Sidhi, 16 km from Tehsil town Majhauli and 250 km from Jabalpur via Umaria. The proposed block is well connected via SH-55 connecting Sidhi to Beohari. The entire block area is accessible through fair weather metalled roads connecting all the major villages like Parsili, Karmai etc. Kanchanpur Road Railway Station, in Singrauli-Katni line of East Central Railway (ECR), lies about 26 km south east from the block. The nearest airport is Bamrauli Airport about 210 km north of the block in Prayagraj. The area falls in Survey of India Toposheet No. 63H/12.

1.3.0 Physiography & Drainage

1.3.1 The topography of the area varies according to the litho-units. The Mahakoshal BHQ/BMQ, ferruginous quartzites are forming the ridges while the granite and intrusives forms the low mounds. The valleys are mostly occupied by Phyllites. The area exhibits rugged topography with series of hills/ridges and intervening valleys. The maximum elevation is about 480m and average elevation is about 400m.

1.3.2 The drainage pattern is mainly controlled by structure and lithology. It varies from sub-parallel to dendritic and radial. The area is drained by Banas river.

1.4.0 Climate

1.4.1 The area is known for severe cold during December and January and hot summer during May and June. The climate, in general, is of an extreme type. The maximum temperature rises to more than

pebbles of vein quartz, quartzite, BIF) sandstone, shale and porcellanite. The stratigraphic position of basic/ ultrabasics and sedimentary rocks has not been clearly understood. The stratigraphic succession of Mahakoshal belt, GSI (2011) is given in Table- I-A.

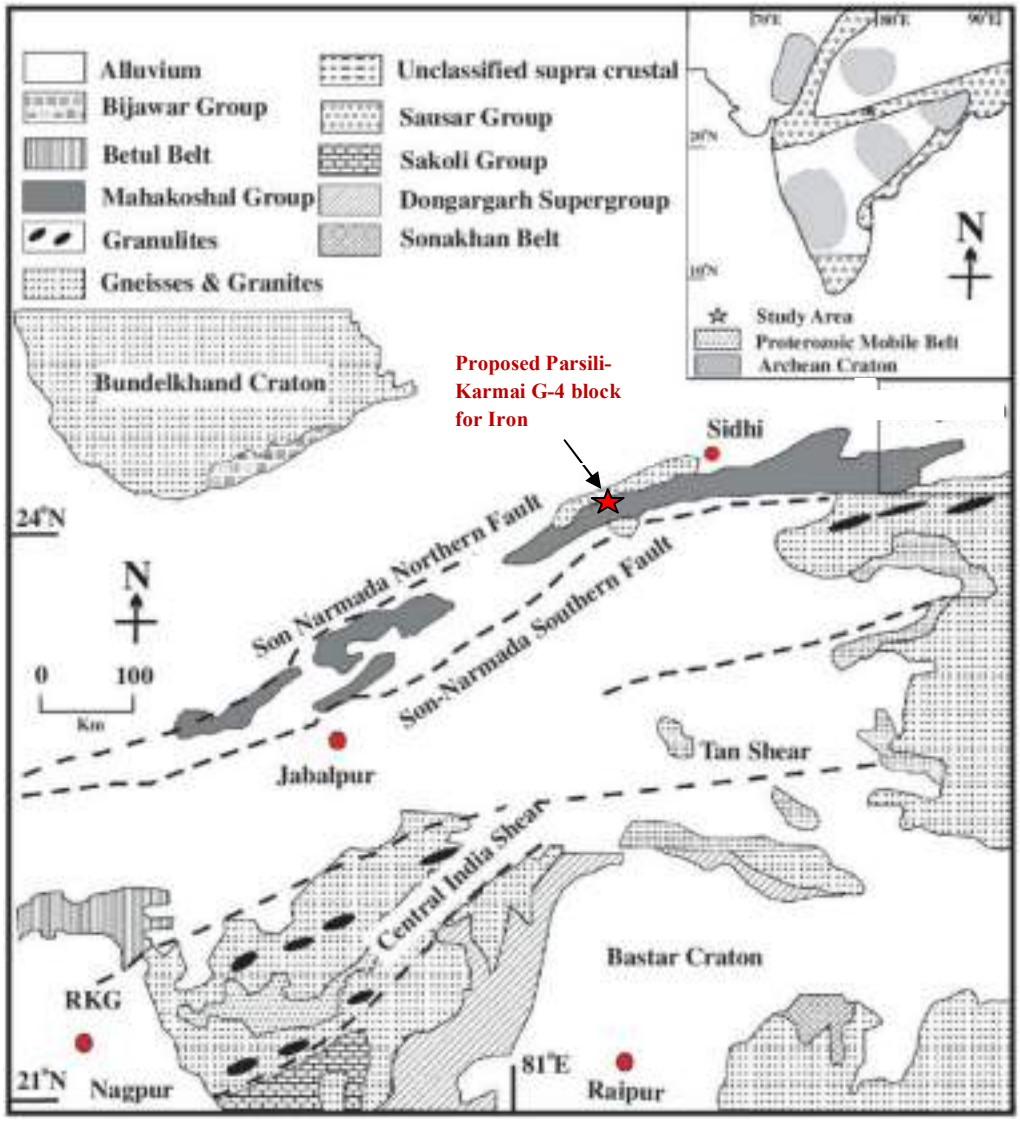

Fig- Map showing Proterozoic Mobile belt, Mahakoshal Group and the proposed G4 block (Modified After Bora, S and Kumar, S., 2015).

Table-I-A: Stratigraphy succession of Mahakoshal Belt, GSI, 2011

Age	Super group	Group	Formation	Lithology
Mesoproterozoic	Vindhyan Supergroup			
Undifferentiated- Proterozoic		Jhirganadi, Baghisoti- Dumar, Asnadohar		Two mica granite, diorite, porphyritic granite, mesocratic granite and pink leucogranite

Age	Super group	Group	Formation	Lithology
		and Sirpalia Granite		
Palaeoproterozoic		Dudhi Granitoid		Quarzt reef
				Basic rocks (Dolerite)
				Biotite grainite
				Tourmaline granite
				Porpyritic grainite and unakite
				Leucocratic granite
				Porphyritic grainte
				Pink grainite gneiss
				Grey grainite gneiss
		Mahakoshal	DUDH-MANIA	Phyllite/shale/slate/mica schist with intrusives
				Interbedded phyllite and slate
				Quartzite
				BIF and mica schist
			PARSOI	Marble /phyllite schist
				Quart-mica schist
				Quartzite-/arenaceos phullite
				Andulasite phyllite, Silliminite

Age	Super group	Group	Formation	Lithology
				schist
				Phyllite, greywacke,quartzite, metabasics
				quartzite
			AGORI	Phyllite, shale and tuff
				carbonate rocks
				BHQ,BHJ, and brecciated quartzite
				BIF, Phyllite, greywacke, quartzite and metabasic
				Basic rocks
				Tuff and ash beds
Palaeoproterozoic to Archaean		Dudhi Gneissic Complex		Feldspathic gneiss
				Porphyroblastic gneiss
				Banded gneiss, migmatite and biotite gneiss

1.7.0 Regional Structure

1.7.1 **Diastropic Structures**

The overall structural framework of the Mahakoshal belt is represented by a series of upright to slightly overturned folds on southerly dipping axial planes and the folds developed during the initial stage of deformation were refolded into nearly vertical to reclined folds during the course of the progressive deformation, especially in the vicinity of the shear zones. According to Roy and Bandyopadhyay (1990), the Supracrustal rocks of the Mahakoshal belt have been involved in folding of at least three generations (D1, D2 & D3) and the present day ENE-WSW disposition of the belt is due to the development of D1 and D2 structures. The shear zone rocks include as part of the Mahakoshal Supracrustal and the granitoids occurring further on the southern margin. The mylonitic foliation within the shear zone is parallel to the schistosity of the dominant folds (D1) and sheath like folds are found in the mylonites. The North to NNW subhorizontal shortening across a large terrain

of the deformed rocks and a shearing movement superimposed over the regional strain along the steep southerly dipping slip/shear planes represented by slip faults (Abhinaba Roy and M. K. Devarajan).

1.7.2 The regional strike of the Mahakoshal Group of rocks is ENE-WSW to East-West with dips ranging from 55° to 80°. Presence of isoclinal folds, asymmetrical folds and cross folds, reflect the deformational events. The earliest recognized folding which has generated tight, isoclinal, reclined folds with sub vertical axial planes is represented by a closure at Pan Umariya village located at south west of the Imaliya village. The pervasive foliation in the volcano sedimentary sequence, which strikes in ENE-WSW direction and was generated during this deformation, is seen in this part of the Mahakoshal belt. The plunge of the folds is towards SSE. The second event of the deformation has developed folds with sub vertical axial planes with axis plunging very gently either ENE or WSW. Both of these events have developed folds which are co-axial but one has a gentle plunge whereas the other has steep plunge of axis. Topography in this part is also representing ENE-WSW trending alternate hills and valleys. The third event, which has NNW-SSE axial trend with open warps where cross faults are present, has caused discontinuity or gap in these ridges. This particular activity is most important in the Mahakoshal belt for localization of mineralisation. The above mentioned diastrophic structures like foliation, mesoscopic and minor folds, are reflecting the deformational history of the supracrustals in the present area. In the central part of Mahakoshal belt fold closures of the major folds as such are not well preserved, however, some of the F2 fold closures seen in the central part are at Pan Umariya, Sihora and Tindni which also represent the large scale folds of the Mahakoshal belt. The map scale folds and minor folds have varying plunges which are either plane cylindrical or non-planar and non-cylindrical, tight to isoclinal, upright to reclined folds. These may overall represent sheath geometry. These are seen in the Sarda area (23°28

The area mostly exposes lithounits belonging to Paleoproterozoic to Archaean aged Mahakoshal Group of Rocks comprising Quartz veins, Mafic and Ultramafic intrusives, Phyllites with bands of quartzite, Conglomerate, Dolomite, Limestone with bands of BIF, quartzite and metabasalts, pyroclasts. The tentative srtratigraphic sequence of litho units exposed in the Block area (After GSI) is given in Table I.B.

Table I.B
Stratigraphic sequence of the Parsili-Karmai G4 Block
(After GSI)

Supergroup	Group	Formation	Rock Type	Age
Deccan Trap Supergroup	Amarkantak Group	-	Basalt	Upper Cretaceous to Palaeocene
Gondwana Supergroup	Lower Gondwana	Pali Formation	Sandstone	Late Permian

1.9.0 Mineral Potentiality based on geology and ground geochemistry

1.9.1 Iron mineralization associated with the Paleoproterozoic aged Mahakoshal Group of rocks has been present in the area marked by the presence of BIF and Ferruginous quartzites. Phyllites are exposed in the moderate to low lying areas and across road cuts. In general, it represents low-grade metamorphic activities. At places, they are whitish or greyish in colour. The low lying areas are mostly soil covered.

2.0.0 Previous Work

2.1.0 The southern limit of Mahakoshal Group has been a matter of debate as most of the mappers had shown granite, granite gneiss, schist and metamorphics occurring to the south as basement for Mahakoshal Group. In the

group of Rocks) in the Tikhwa-Naurhiya-Gijwar area, Sidhi and Shahdol district M.P. Akhilesh Narain and P.I. Thambi (1977-78), carried out study on Geology and structure of Khaddi- Gajrehi area Gopad-Banas Tehsil Sidhi District Madhya Pradesh.

2.8.0 Specialized Thematic Mapping was carried out in parts of Mahakoshal Belt and adjoining granitoids in the Tikhwa-Karda area, Sidhi, and Shahdol districts(Parts of Toposheet 63H/4,8,12,16) by Utkarsh Tripathi, Yuvaraj M and Ravishankar D, Geologists (2013-15). Search for low-grade Iron Ore in Mahakoshal Belt Jabalpur, Katni, Rewa, Sidhi, Shahdol, Singrauli Districts (In Parts of Degree sheet 63Hand 64A) was carried out by Shalini Gupta and Vivek Kumar Maurya, Geologist (2015-17).

2.9.0 Geochemical mapping of Toposheet no. 63H/12 in parts of Sidhi and Shahdol districts of M.P was carried out by Anuj Kumar and Rajnish Kumar (2018-19).

2.10.0 Reconnaissance survey for basemetal, gold and PGE was carried out in Parsili-Tal-Karmahi area during FSP 2021-22 by Alok Kumar and Anuj Kumar. During the course of exploration the entire area was mapped in 1:12,500 scale and sampling done for basemetal, gold and PGE.

3.0.0 FIELD VISIT BY MECL

MECL has conducted field visit in the proposed block. During geological traverses, our team has identified the host rocks viz. BIF/ Ferruginous quartzites at several places. A total of 6 no. of BRS/Chip samples were collected and analysed in MECL Chemical Lab. Samples are showing Fe values ranging from 38.28 to 55.25 %. The analytical results of Samples analysed in MECL Chemical Lab are mentioned below:

Table III – Analysis Results of Samples in MECL Chemical Lab

Sr. no.	Sample no.	Latitude	Longitude	T. Fe%	T. Mn%	SiO_2 %	Al_2O_3 %	P_2O_5 %	CaO %	MgO %
1	P-06	24.173	81.568	5.37	0.03	88.67	2.04	0.05	0.16	0.29
2	P-07	24.175	81.560	41.68	0.01	21.82	6.32	0.82	0.12	0.46
3	P-08	24.174	81.568	55.25	0.04	4.51	3.43	1.05	0.08	0.28
4	P-09	24.176	81.569	54.78	0.05	5.02	3.32	1.35	0.06	0.22
5	P-13	24.172	81.506	38.84	0.01	24.11	9.36	0.51	0.05	0.33
6	P-14	24.161	81.511	38.28	0.01	25.22	11.79	0.05	0.05	0.11

Fig- Google Earth Location of the Proposed G4-Block for Iron

Fig-Quartzite exposure along the road cuts

Fig- Ferruginous quartzite exposure

Block description

3.1.0 The proposed G-4 block for Iron falls in Survey of India Toposheet No. 63H/12 and covers an area of 18.34 sq km in and around villages Parsili and Karmai in Sidhi District, Madhya Pradesh. The block location is given in **PLATE-I.** The Co-ordinates of the corner points of the block area both geodetic and UTM are given in **Table No.-IV.**

Table No. IV- The co-ordinate of the corner points of the proposed Parsili-Karmai Iron block (G-4) (18.34 sq km)

CARDINAL POINTS	UTM (ZONE 44N)		DMS	
	EASTING (m)	NORTHING (m)	LATITUDE (N)	LONGITUDE (E)
A	550916.927	2671066.388	24° 09' 04.6004"	81° 30' 04.2729"
B	550939.044	2674014.436	24° 10' 40.4515"	81° 30' 05.4309"
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F	555692.387	2671163.185	24° 09' 07.1659"	81° 32' 53.5019"

4.0.0 Planned Methodology

In accordance to the objective set for reconnaissance survey (G-4) of the block, the exploration programme is proposed. The Exploration shall be carried out as per Minerals (Evidence of Mineral Contents) 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.

4.1.0 Geological Mapping

BIF bands and Ferruginous quartzites will be demarcated for Iron mineralization with the structural features, lateral & vertical disposition of the mineralized zones by using the available GSI map in 1:12,500. Gap areas after GSI map will be updated.

4.2.0 Surveying:

During exploratory drilling of scout boreholes, fixation and determination of reduced level and co-ordinates of the boreholes will be undertaken by DGPS/ Total station.

4.3.0 Surface Geochemical sampling (Bed Rock/Channel/Chip Sample): During the course of Geochemical Sampling the bed rock /channel/chip samples shall be collected from the outcrops.

4.4.0 Exploratory Mining (Trenching/Pitting):

Trenching/pitting (Excavation) shall be carried out in the potential zones identified based on geological mapping and geochemical sampling. A provision of trenching/pitting of 100 cubic meters has been planned. Trenching work will be carried out by cutting trenches of 1m width and up to 2m depth in the area to expose the BIFs. Locations of pits/trenches on ground will be decided by field geologist based on field observations. Trench will be geologically mapped thoroughly.

4.5.0 Bed Rock/Channel Sample and Trench Samples:

4.5.1. A total of 100 no of primary and 10 no of external check Bedrock/Channel/Chip samples will be collected. Sample taken will be analysed for Total Fe, Total Mn, Al_2O_3, P_2O_5, Cao, SiO_2 and Acid insolubles.

4.5.2. A total of 100 no of primary and 10 no of external check trench samples will be collected. Sample taken will be analysed for Total Fe, Total Mn, Al_2O_3, P_2O_5, Cao, SiO_2 and Acid insolubles.

4.6.0 Core Drilling:

4.6.1. Based on Geological mapping data, Geochemical studies and trenching/pitting (Excavation), the extension of the mineralized zones (ore bodies) will be marked. To find out the potentiality of mineralized zones in strike & dip direction, 5 no of scout boreholes involving 500m of drilling will be carried out for first level of intersection of mineralized zones.

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

4.7.0 Drill Core Sampling:

4.8.0 The mineralized (Iron) part of drill core will be sampled as Primary sample. The length of each sample will be kept 1.00 m within the ore zone depending upon the thickness and its physical character. The primary core samples will be analysed for Total Fe, Total Mn, Al_2O_3, P_2O_5, Cao, SiO_2

and Acid insolubles. The cores of rocks 3m immediate on footwall and 3m immediate on hanging wall of mineralized zones would be sampled at 1.0 m interval, as far as possible, depending upon the intensity of mineralization, change in lithology and core recovery etc.

4.9.0 A total of 200 no Primary and 20 no of External Check samples shall be generated from the mineralized zones to be intersected in the boreholes. Samples will be analysed for Total Fe, Total Mn, Al_2O_3, P_2O_5, Cao, SiO_2 and Acid insolubles. 10% of Primary samples will be sent as External Check Samples to NABL External Labs.

4.10.0 Whole Rock Analysis:

4.10.1. Whole Rock analysis for SiO_2, Al_2O_3, Fe_2O_3, TiO_2, MnO, CaO, Na_2O, K_2O+H_2O, MgO, P_2O_5, CO_2, S and LOI will be carried out on 5 Nos samples to check the rock types, their variation in chemical composition.

4.11.0 Petrological & Mineralogical Studies:

4.11.1. During the course of Geological mapping and core logging, 5 samples from various litho units from surface, Pit/Trench/Channels and lithounits intersected in boreholes will be studied for petrography and 5 samples from mineralized zones will be studied for the ore mineral assemblages and their distribution, alteration, enrichment etc in polished sections.

4.12.0 Trace element Studies: Trace element Studies will be done on 5 nos. for 34 elements.

4.13.0 Justification :

i) The area belongs to the Mahakoshal Group which is well known for various mineral resources including Iron.

ii) Mineralisation of Iron is occurring in and around the area associated with BHQ and Ferruginous quartzite.

iii) MECL has conducted field visit in the proposed block. During geological traverses, MECL has identified BHQ and Ferruginous quartzite trending ENE and dipping 55° southerly. 6 samples were collected from several places inside the block and was analysed in MECL Chemical Lab. Samples are showing **Fe** values ranging from **38.28%** to **55.25%**.

iv) Based on the mineralization evidences of Iron in and around the block, the present Reconnaissance Survey exploration program at G-4 level has been prepared. Geological mapping, surface sampling and pitting/trenching will be helpful in assessing the lithology, disposition and grade of the mineralized zones, structural features etc.

v) The Exploration will be helpful in estimation of reconnaissance resources of Iron and Manganese and associated minerals in the block area. Geochemical sampling of BRS/Channel/Chip Sample/ Pitting/trenching and the drilling of scout boreholes will be helpful in assessing the disposition and grade of mineralization.

vi) The Reconnaissance Survey (G4) will eventually help in planning of detailed exploration program (incase upgraded to G-3 level) which in turn will facilitate the state Government for auction of block.

4.14.0 Nature Quantum and Target

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

Table No-V

Envisaged Quantum of proposed work in Parsili-Karmai G4 Block

Sl. No.	Item of Work	Unit	Proposed Quantum of work
1	Survey Work		
	i) Bore Hole Fixation, RL & Coordinate Determination by DGPS	Nos	5
2	Trenching	cu m	100
3	Core Drilling (5 Scout Boreholes x 90.0 m)	m	500
4	Sample Preparation & Chemical Analysis		
A	Primary samples for Iron-Manganese (Bedrock/Channel /Trench/Core Samples)		
	i) Primary samples for Total Fe, Total Mn, Al_2O_3, P_2O_5, Cao, SiO_2 and Acid insolubles	Nos.	100+100+200=400 (Surface+Trench+BH)
B	External Check samples (Bedrock/Channel /Trench/Core Samples)	Nos.	40
5	Trace Elements Studies (34 Elements)	Nos.	5
6	Whole Rock Analysis For SiO2, Al2O3, Fe2O3, TiO2, MnO, CaO, Na2O, K2O+H2O, MgO, P2O5, CO2, S and LOI.	Nos.	5
7	Petrographic Studies	Nos	5
8	Mineragraphic Studies	Nos	5
9	Report Preparation (Digital format)	Nos.	1

5.0.0 Manpower Deployment

5.1.0 Manpower deployment List will be provided later.

6.0.0 Break-up of Expenditure

6.1.0 Tentative Cost has been estimated based on Schedule of Charges (SoC) of projects funded by National Mineral Exploration Trust (NMET) w.e.f. 01/04/2020. The total estimated cost is Rs. **151.99 Lakh**. The summary of tentative cost estimates for Reconnaissance Survey (G-4 Level) is

given in **Table No.-VI-A** and details of tentative cost estimates are given in **Table No.–VI-B**. Tentative Time schedule/action plan for proposed Reconnaissance Survey (G-4) Block is given in **Table No. VI-C.**

Table No-VI-A

Summary of Tentative Cost Estimates for Reconnaissance Survey (G-4 Level) Exploration in Parsili-Karmai Block, Sidhi, Madhya Pradesh

Sl. No.	Item	Total
1	Geological Work	**2,043,480**
2	Pitting & Trenching	**333,000**
3	Laboratory Studies	**1,970,885**
4	Drilling	**7,662,800**
	Sub total	**12,010,165**
4	Report	**600,508**
5	Peer Review	**30,000**
6	Proposal Prepration	**240,203.30**
	Total	**12,880,877**
7	GST (18%)	**2,318,557.78**
Total cost including 18% GST		**15,199,434**
SAY, in Lakhs		**151.99**

Table No-VI-B

Details of Tentative Cost Estimates for Reconnaissance Survey (G-4 Level) Exploration in Parsili-Karmai Block, Sidhi, Madhya Pradesh

Estimated cost for Reconnaissance survey (G4) for Iron in Parsili-Karmai Block, Districts: Sidhi, State: Madhya Pradesh. [Block area- 18.34 sq. km; Schedule timeline- 09 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 WORK (Mapping update in 1:12,500 scale)**						
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	60	540,000	
iii	2 labours/ party (Rs 477/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	494	180	88,920	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
iv	Core Sampling -1 Samplers Labour charge not included	day	1.5.2	5,100	60	306,000	
v	4 labours/ party (Rs 477/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	494	240	118,560	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
				Sub Total- A		**2,043,480**	
B	**PITTING AND TRENCHING**						
i	Trenching	Cu m	2.1.1	3330	100	333,000	
				Sub Total- B		**333,000**	
C	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
i	**Primary & Check samples for Iron-Manganese BRS/Chip/Channel/Trench/BH samples)**						
	a. Primary Samples for Total Fe, Total Mn, Al2O3, P2O5, CaO, SiO2 and Acid insolubles	Nos	4.1.15a	4,200	400	1,680,000	Surface Samples-100, Trench Samples-100, BH Samples-200)
	b.External (10%) Check samples for 4 Radicals Fe, Al2O3, P2O5 & SiO2	Nos	4.1.15a	4,200	40	168,000	
ii	**Trace element study (34 Elements)**	Nos	4.1.14	7,731	5	38,655	
2	**Physical,Petrological, Mineralogical Studies**						
i	Preparation of thin section	Nos	4.3.1	2,353	5	11,765	
ii	Complete petrographic study report	Nos	4.3.4	4,232	5	21,160	
iii	Preparation of polished section	Nos	4.3.2	1,549	5	7,745	
iv	Complete mineragraphic study report	Nos	4.3.4	4,232	5	21,160	

Estimated cost for Reconnaissance survey (G4) for Iron in Parsili-Karmai Block, Districts: Sidhi, State: Madhya Pradesh. [Block area- 18.34 sq. km; Schedule timeline- 09 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)**	
v	Digital Photographs	Nos	4.3.7	280	5	1,400	
vi	Whole Rock Analysis (Major oxides)	Nos	4.1.15a	4,200	5	21,000	
				Sub Total- C		**1,970,885**	
D	**DRILLING**						
i	Drilling upto 300m (Very Hard Rock) (1 rigs)	m	2.2.1.4a	12,650	500	6,325,000	
ii	Land / Crop Compansation	per BH	5.6	20,000	5	100,000	Amount will be reimbursed as per actuals or max. Rs. 20000 per BH with certification from local authorities
iii	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	5	10,000	
iv	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	1,050	37,800	Certification in this regard is required to be provided
v	Monthly Accomodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	3	150,000	
vi	Drilling Camp Setting Cost	Nos	2.2.9a	250,000	1	250,000	
vii	Drilling Camp Winding up Cost	Nos	2.2.9b	250,000	1	250,000	
viii	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	5	110,100	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed
ix	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes and by DGPS	Nos	1.6.2	19,200	5	96,000	5 Boreholes
x	One complete borehole plus mineralised cores of all the remaining Bhs	m	5.3	1,590	210	333,900	This amount will be reimbursed after successful delivery of the cores to concerned libraries/authorities
				Sub Total- D		**7,662,800**	
E				**Total A to D**		**12,010,165**	
F	**Geological Report Preparation**		**5.2**	For the projects having cost exceeding Rs. 50 lakhs but less than 150 lakhs - A minimum of Rs. 2.5 lakhs or 5% of the value of work whichever is more		**600,508**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
G	**Peer review Charges**		**As per EC decision**			**30,000**	
H	**Preparation of Exploration Proposal**	**5 Hard copies with a soft**	**5.1**	2% of the Cost or Rs. 5 Lakhs whichever is lower		**240,203**	EA has to submit the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.

Estimated cost for Reconnaissance survey (G4) for Iron in Parsili-Karmai Block, Districts: Sidhi, State: Madhya Pradesh. [Block area- 18.34 sq. km; Schedule timeline- 09 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)	
		copy					
I	Total Estimated Cost without GST					12,880,877	
J	Provision for GST (18% of I)					2,318,557.78	GST will be reimburse as per actual and as per notified prescribed rate
K	Total Estimated Cost with GST					15,199,434.33	
				or Say Rs. In Lakhs		151.99	
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.						

List of Plates:

1. Plate-I: Location Map of the Proposed Parsili-Karmai block, Distt Sidhi, State Madhya Pradesh
2. Plate-II: Regional Geological Map of the Proposed Parsili-Karmai block, Distt Sidhi, State Madhya Pradesh

Table No-VI-C

Tentative Time Schedule/action plan for proposed Reconnaissance Survey (G-4) Block

Estimated time schedule for Reconnaissance survey (G4) for Iron in Parsili-Karmai Block, Districts: Sidhi State: Madhya Pradesh. [Block area- 18.34 sq. km; Schedule timeline- 09 months]												
S. No.	**Particulars**	**Months**	**1**	**2**	**3**		**4**	**5**	**6**	**7**	**8**	**9**
1	Camp Setting	**Months**										
2	Trenching	**cu.m**										
3	Drilling (1 rig)	**m**										
4	Geologist days	**days**										
5	Sampling days, BRS/Trench/Core Sampling	**days**				**Review**						
6	Camp winding	**Months**										
7	Laboratory Studies	**days**										
8	Geologist days, HQ	**days**										
9	Report Writing with Peer Review	**days**										

Large Scale Map of Parsili-Tal-Karmahi area in parts of Toposheet No. 63H/08 & 12, Distt. Shahdol and Sidhi , M.P.

Scale 1:12,500

0 1 2 4 6 Km

81°28'30"E 81°29'E 81°29'30"E 81°30'E 81°30'30"E 81°31'E 81°31'30"E 81°32'E 81°32'30"E 81°33'E 81°33'30"E 81°34'E 81°34'30"E 81°35'E 81°35'30"E 81°36'E

24°12'30"N 24°12'N 24°11'30"N 24°11'N 24°10'30"N 24°10'N 24°9'30"N 24°9'N 24°8'30"N 24°8'N 24°7'30"N

N

Mahan Nadi
Kotra
Banas River
Parsili
Karmahi
A
B
C
D
E
F
P-1
P-2
P-3
P-4
P-5
P-6
P-7
P-8
P-9
P-10
P-11
P-12
P-13
P-14
P-15
PT-1
PT-4
CS-1
SH-55

Legend

- Block Boundary

Lithology

Laterite		
Sandstone	Pali Fm	L. Gond
Sandstone	Deoland Fm	Semri G
Gabbro		
Metabasalt		Mahak
Phyllite	Agori Fm	
Dolomite		
Quartzite		
BIF		
Granite gneiss		Chhota

- Cr
- Cr-Ni
- Cu
- Road
- River
- Location
- PT
- CS
- BRS/SS samples

Structural Symbols

- Bedding
- Foliation
- Ver. Foliation
- Ver. joint
- Joint
- Fold Axis
- Fault

FID	LATITUDE	LONGITUDE
P-1	24.136	81.595
P-2	24.136	81.596
P-3	24.147	81.591
P-4	24.147	81.591
P-5	24.148	81.590
P-6	24.173	81.568
P-7	24.175	81.560
P-8	24.174	81.568

FID	LATITUDE	LONGITUDE
P-9	24.176	81.569
P-10	24.142	81.543
P-11	24.149	81.538
P-12	24.148	81.516
P-13	24.172	81.506
P-14	24.161	81.511
P-15	24.144	81.522

Legend

- Sample Point by MECL
- Parsili Karmai Block Boundary

Map Source: GSI

Large Scale Map of Parsili-Tal-Karmahi area in parts of Toposheet No. 63H/08 & 12, Distt. Shahdol and Sidhi , M.P.

Scale 1:12,500

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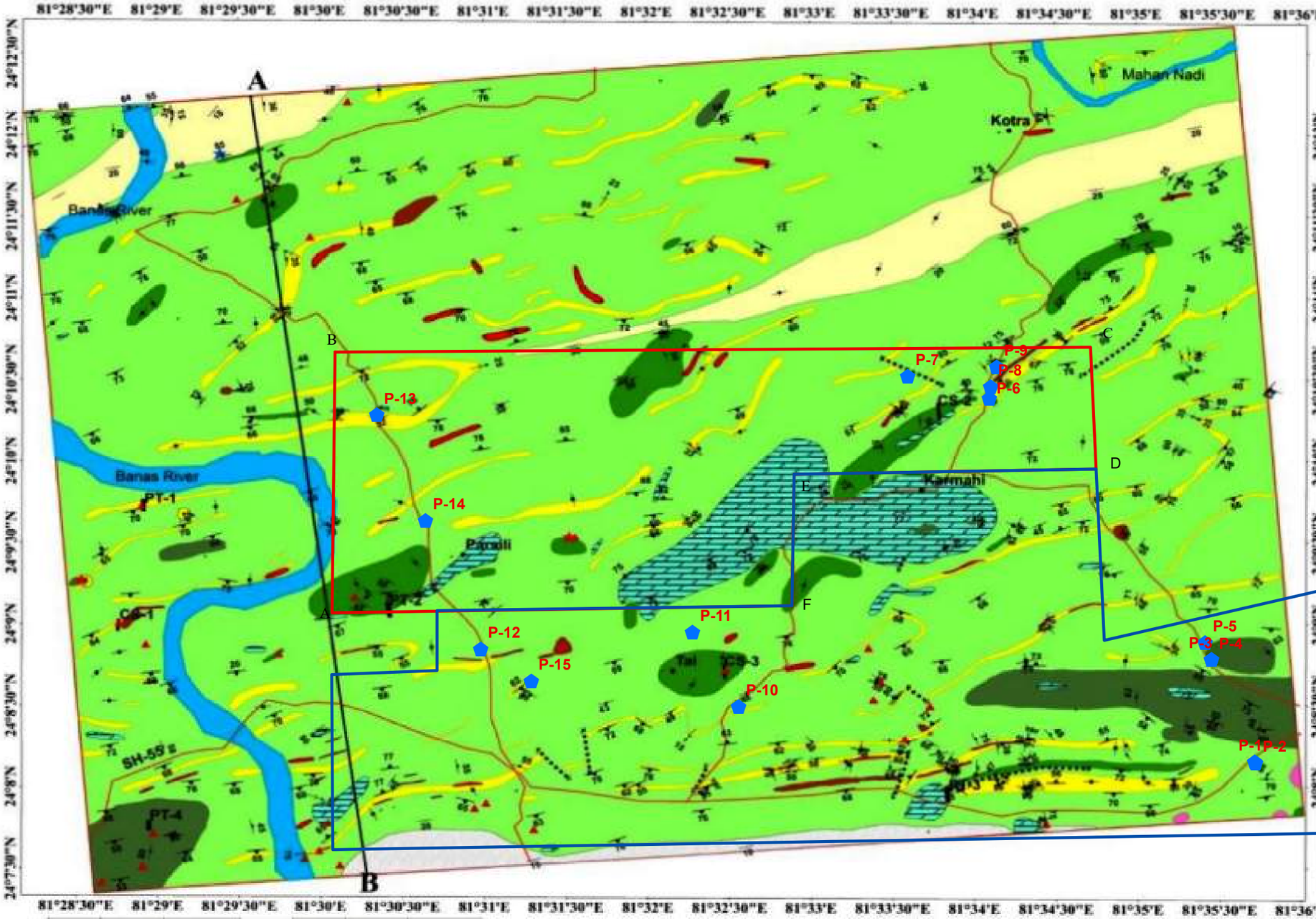
24°12'30"N 24°12'N 24°11'30"N 24°11'N 24°10'30"N 24°10'N 24°9'30"N 24°9'N 24°8'30"N 24°8'N 24°7'30"N



N

Legend

- Block Boundary

Lithology

- Laterite
- Sandstone — Pali Fm — L. Gond
- Sandstone — Deoland Fm — Semri G
- Gabbro
- Metabasalt
- Phyllite — Agori Fm — Mahak
- Dolomite
- Quartzite — Chhota
- BIF
- Granite gneiss
- Cr
- Cr-Ni
- Cu
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- Bedding
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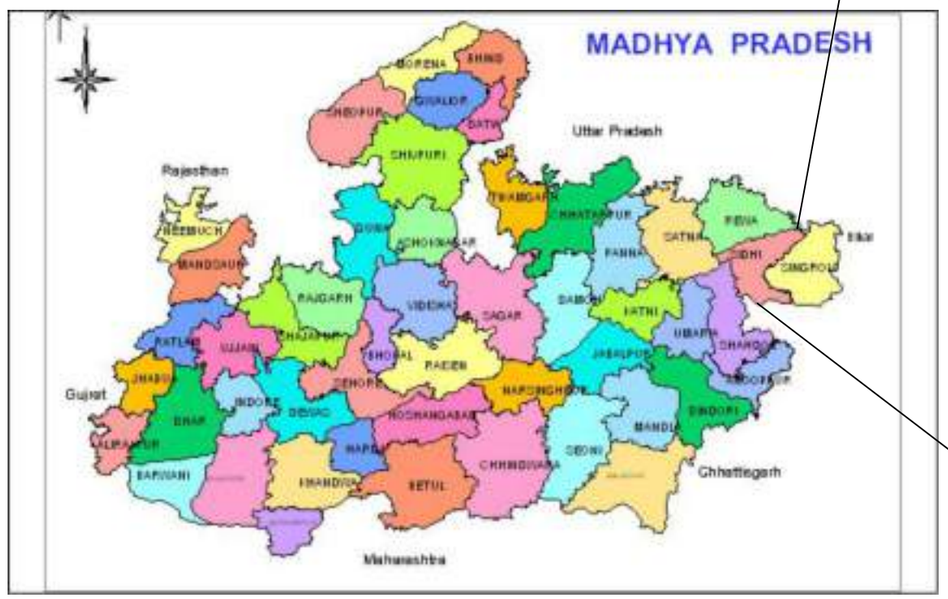
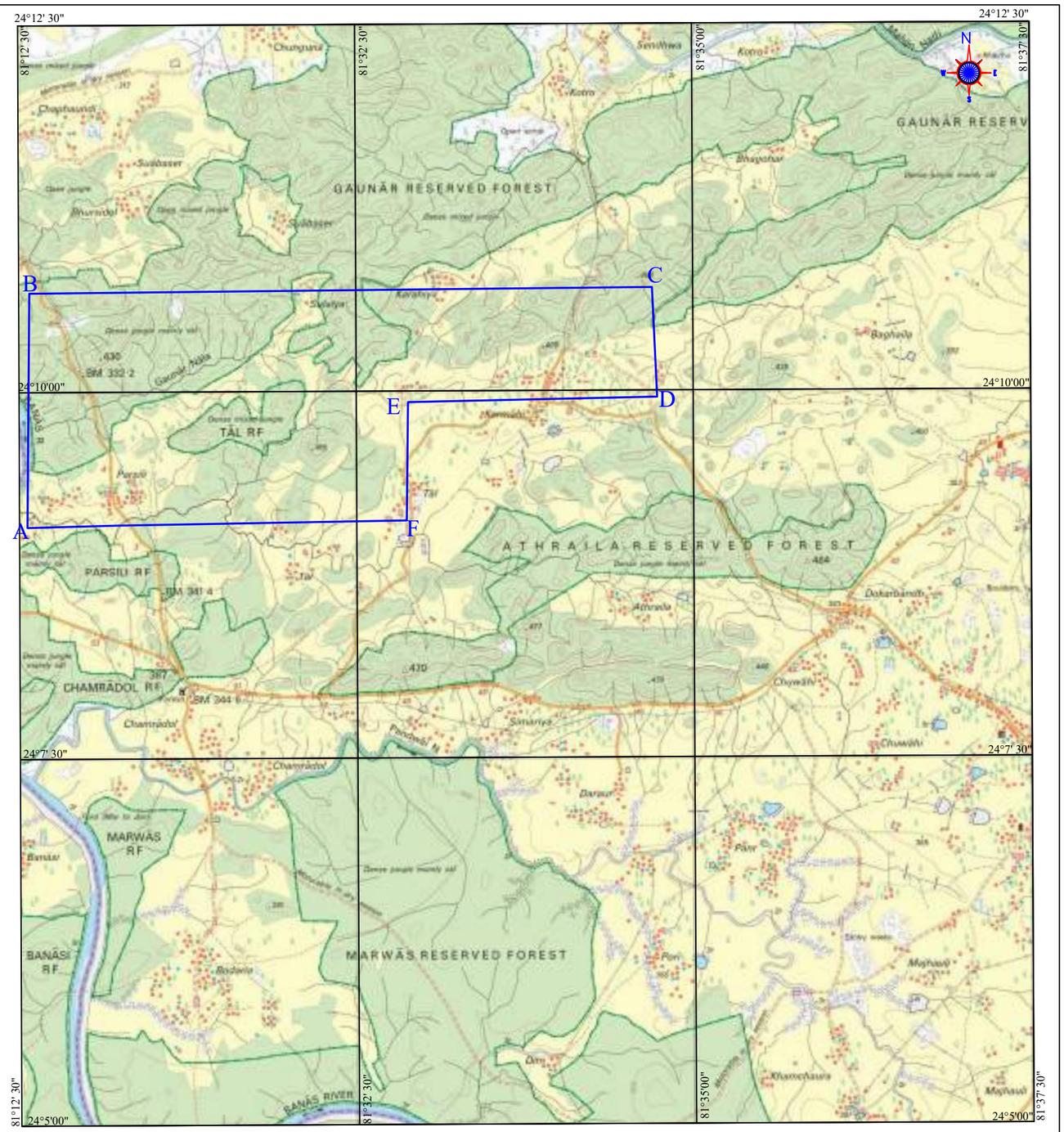
P-12	24.148	81.516
P-13	24.172	81.506
P-14	24.161	81.511
P-15	24.144	81.522

Legend

- Sample Point by MECL
- Karmai Chuwahi (G-4) Block Boundary
- Parsili Karmai Block Boundary

Map Source: GSI





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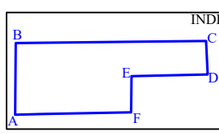

BLOCK BOUNDARY

CO-ORDINATES OF CARDINAL POINTS OF THE PROPOSED PARSILI-KARMAI IRON BLOCK (G-4)

PARSILI KARMAI (18.34 sq km)				
CARDINAL POINTS	UTM (ZONE 44N)		DMS	
	EASTING (m)	NORTHING (m)	LATITUDE (N)	LONGITUDE (E)
A	550010.027	2671006.388	24° 08' 04.0084"	81° 30' 04.2720"
B	550050.044	2674014.434	24° 09' 40.4535"	81° 30' 05.4569"
C	556778.219	2674105.178	24° 09' 42.2877"	81° 34' 43.2780"
D	556846.980	2672731.207	24° 08' 57.4146"	81° 34' 45.4258"
E	556017.725	2670705.204	24° 08' 54.4538"	81° 34' 48.4429"
F	555992.987	2671160.185	24° 09' 07.3099"	81° 32' 53.3010"

MINERAL EXPLORATION AND CONSULTANCY LIMITED

LOCATION MAP

PROPOSED PARSILI-KARMAI (18.34 sq km) BLOCK FOR IRON EXPLORATION (G-4)

(PART OF TOPOSHEET NO. 63H/12)

NOT TO SCALE

DISTRICT : SIDHI TEHSIL : MAJHAULI STATE : MADHYA PRADESH

MECL / EXPLORATION / OCT-2023

Estimated cost for Reconnaissance survey (G4) for Iron in Parsili-Karmai Block, Districts: Sidhi, State: Madhya Pradesh. [Block area- 18.34 sq. km; Schedule timeline- 09 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 WORK (Mapping update in 1:12,500 scale)**						
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	60	540,000	
iii	2 labours/ party (Rs 477/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	494	180	88,920	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
iv	Core Sampling -1 Samplers Labour charge not included	day	1.5.2	5,100	60	306,000	
v	4 labours/ party (Rs 477/day/labour) (As per rates of Central Labour Commissioner)	day	5.7	494	240	118,560	Amount will be reimburse as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher
					Sub Total- A	**2,043,480**	
B	**PITTING AND TRENCHING**						
i	Trenching	Cu m	2.1.1	3330	100	333,000	
					Sub Total- B	**333,000**	
C	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
i	**Primary & Check samples for Iron-Manganese BRS/Chip/Channel/Trench/BH samples)**						
	a. Primary Samples for Total Fe, Total Mn, Al2O3, P2O5, CaO, SiO2 and Acid insolubles	Nos	4.1.15a	4,200	400	1,680,000	Surface Samples-100, Trench Samples-100, BH Samples-200)
	b.External (10%) Check samples for 4 Radicals Fe, Al2O3, P2O5 & SiO2	Nos	4.1.15a	4,200	40	168,000	
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					Sub Total- C	**1,970,885**	
D	**DRILLING**						
i	Drilling upto 300m (Very Hard Rock) (1 rigs)	m	2.2.1.4a	12,650	500	6,325,000	
ii	Land / Crop Compansation	per BH	5.6	20,000	5	100,000	Amount will be reimbursed as per actuals or max. Rs. 20000 per BH with certification from local authorities
iii	Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000	5	10,000	
iv	Transportation of Drill Rig & Truck associated per drill	Km	2.2.8	36	1,050	37,800	Certification in this regard is required to be provided
v	Monthly Accomodation Charges for drilling Camp (up to 2 Rigs)	month	2.2.9	50,000	3	150,000	
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viii	Approach Road Making (Flat Terrain)	Km	2.2.10a	22,020	5	110,100	Road Making will be considered as per the requirement and Road Making Charges will be reimbursed
ix	Bore Hole Fixation and determination of co-ordinates & Reduced Level of the boreholes and by DGPS	Nos	1.6.2	19,200	5	96,000	5 Boreholes
x	One complete borehole plus mineralised cores of all the remaining Bhs	m	5.3	1,590	210	333,900	This amount will be reimbursed after successful delivery of the cores to concerned libraries/authorities
					Sub Total- D	**7,662,800**	
E					**Total A to D**	**12,010,165**	
F	**Geological Report Preparation**		**5.2**	For the projects having cost exceeding Rs. 50 lakhs but less than 150 lakhs - A minimum of Rs. 2.5 lakhs or 5% of the value of work whichever is more		**600,508**	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.
G	**Peer review Charges**		**As per EC decision**			**30,000**	
H	**Preparation of Exploration Proposal**	**5 Hard copies with a soft copy**	**5.1**	2% of the Cost or Rs. 5 Lakhs whichever is lower		**240,203**	EA has to submit the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
I	**Total Estimated Cost without GST**					**12,880,877**	
J	**Provision for GST (18% of I)**					**2,318,557.78**	GST will be reimburse as per actual and as per notified prescribed rate
K	**Total Estimated Cost with GST**					**15,199,434.33**	
				or Say Rs. In Lakhs		**151.99**	
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.						

Estimated time schedule for Reconnaissance survey (G4) for Iron in Parsili-Karmai Block, Districts: Sidhi State: Madhya Pradesh.
[Block area- 18.34 sq. km; Schedule timeline- 09 months]

S. No.	Particulars	Months	1	2	3	Review	4	5	6	7	8	9
1	Camp Setting	Months										
2	Trenching	cu.m										
3	Drilling (1 rig)	m										
4	Geologist days	days										
5	Sampling days, BRS/Trench/Core Sampling	days										
6	Camp winding	Months										
7	Laboratory Studies	days										
8	Geologist days, HQ	days										
9	Report Writing with Peer Review	days										