

# **Proposal for G4 stage mineral exploration under NMEDT**

**Commodity: Critical & Associated Minerals**

**Area=120.0 Sq. Km.**

**Location: Kanore-Bari Sadri, District- Udaipur & Chittorgarh,  
State-Rajasthan (INDIA)**

**Notified Private Exploration Agency**



**Envirogreen Consultants (India) Private Limited**

**1-B, Machhla Magra, Near Patel Circle,**

**Udaipur-313001, Rajasthan (INDIA)**

**info@egcipl.com | www.egcipl.com**

**Accreditation No. NABET/AEA/24/010**

**Gazette Notification by MoM, GoI: S. O. 4561(E) dated 17.10.2024**

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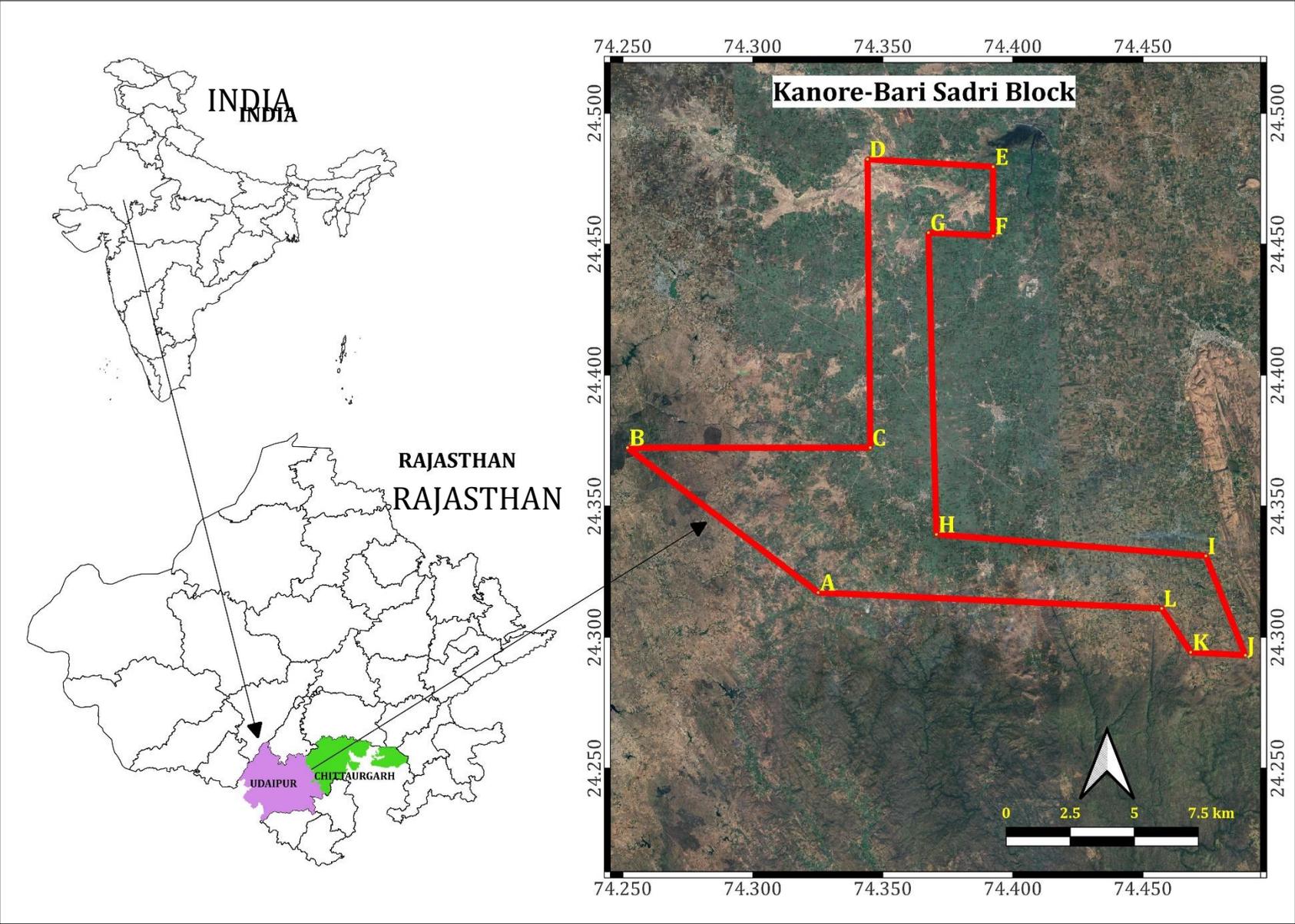
## Summary of the Block for G4 stage exploration

Features	Details		
Block ID	EGCIPL/NMET/2025-26/6		
Current Exploration Agency	Envirogreen Consultants (India) Private Limited		
Previous Exploration Agency	Area within and adjoining of block has been done by DMG Rajasthan i.e. "A Report on Reconnaissance for search of Economic minerals like Tungsten ore, Soapstone, Limestone, Barytes, calcite etc. In Kanore, Bhindar, Bari sadri area tehsil, Dhariawad District. Udaipur. PROJECT NO. 33 (UD T-1) (1983-84)".		
G4 stage Geological Report (Previous stage Geological Report)	Reference report and map are enclosed.		
Commodity	Critical & Associated Minerals		
Mineral Belt	Mangalwar Complex- Lasaria Formation- Granite Gneiss, Migmatite, Composite Gneiss, Amphibolite/ Hornblende Schist, Conglomerate. Archean- Dolerite, Granite. Hindoli Group- Bhadesar Formation- Shale, Slate Phyllite. Hindoli Group- Sujanpura Formation- Carbonated Tuff. Late Cretaceous- Paleocene- Deccan Trap- Malwa Basalt (Unclassified). Vindhyan-Semri Group-Khairmalia Formation-Andesite with Pyroclast and Tuff.		
Completion Period with entire time schedule to complete the project	10 months		
Objectives	To assess the mineral resource & enhance the exploration level of Critical & Associated Minerals at G4 stage in 120 sq. km. of this block. i. To carry out geological & structural mapping on 1:12500 scale for demarcation of Mineralization. ii. To collect surface (Bedrock/soil/stream sediment) samples & analyze. iii. On the basis of geological mapping and geochemical analysis of surface samples, few scout boreholes shall be drilled at G-4 category of UNFC & MEMC 2015.		
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	Geological mapping, Sample Analysis, Pitting, Trenching, Core logging etc. will be carried out by EGCIPL.  Drilling work will be outsourced.		
Name/ Number of Geoscientists	Nos. of Geoscientists: 5 (Field + HQ)		
Expected Field days (Geology, Geophysics, Surveyor)	120 days: Field Geologist 50 days: HQ Geologist		
<b>1. Location</b>			
<b>Latitude &amp; Longitude</b>	Co-ordinate of Corner Points		
	<b>Block corner points</b>	<b>Latitude</b>	<b>Longitude</b>
	A	74.32517	24.31706
	B	74.25183	24.37234
	C	74.34521	24.37237
	D	74.34414	24.48244
	E	74.39243	24.47958
	F	74.39238	24.45318
	G	74.36756	24.45444

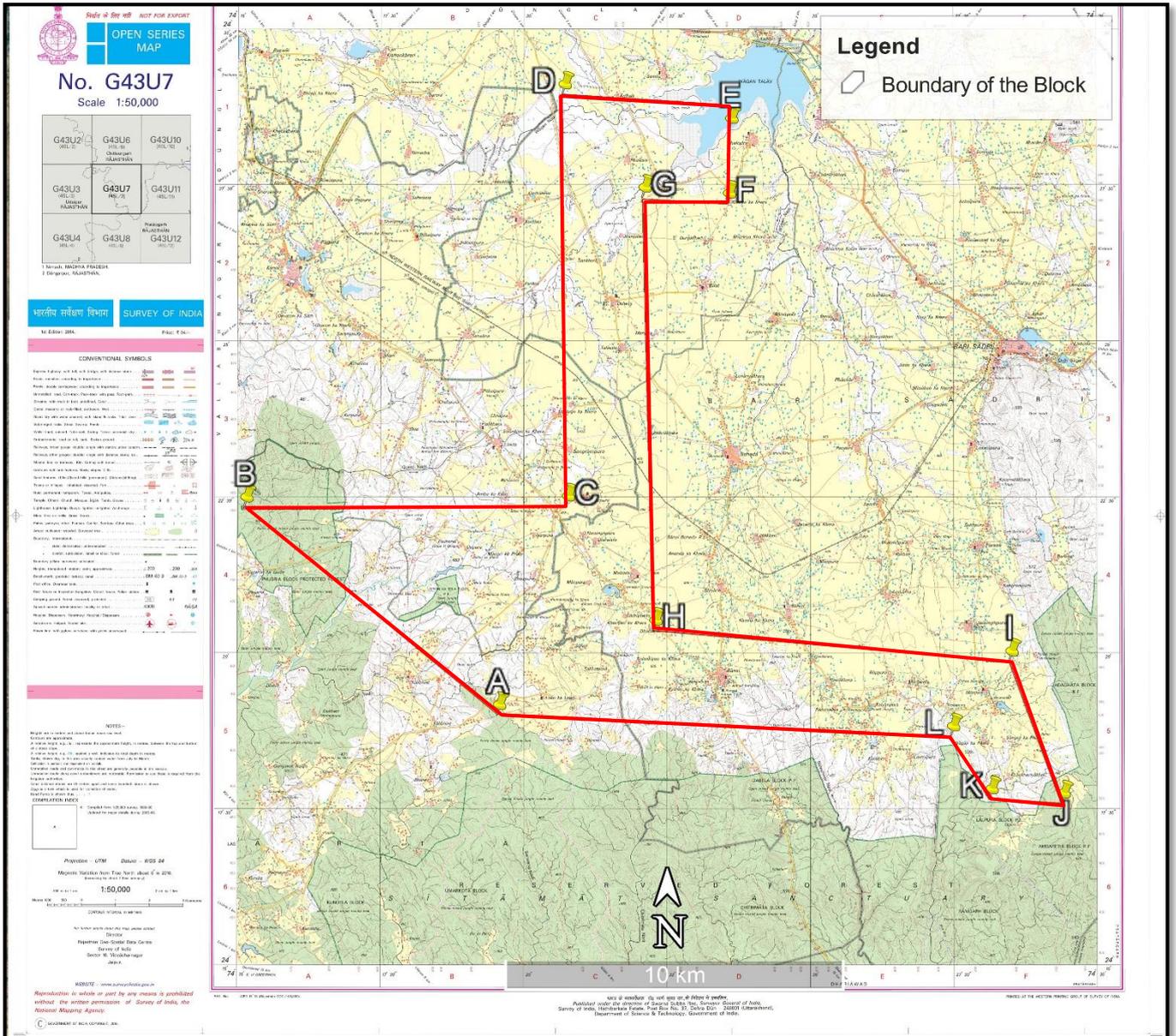
	H	74.37063	24.33928
	I	74.47422	24.33107
	J	74.4894	24.29313
	K	74.4684	24.29429
	L	74.45723	24.31103
Villages	Bansi, Talwada, Phalasiya, Kalibhint, Kesarpura		
Tehsil/ Taluka	Vallabhnagar, Bari Sadri		
District	Udaipur & Chittorgarh		
State	Rajasthan		
<b>2.</b>	<b>Area (hectares/ square kilometers)</b>		
	Block Area	120.0 Sq.km	
	Forest Area	Checked with the boundaries provided by Department of Forest, Government of Rajasthan & SOI Toposheet 45L/07. The area cover Umron Ka Bela Block PF, part of Balicha Block RF and Ambarethi Block RF.	
	Government Land Area	Data Not Available	
	Private Land Area	Data Not Available	
<b>3.</b>	<b>Accessibility</b>		
	Nearest Rail Head	Bari Sadri Railway Station (approx. 12-15 kms) & Bhinder Railway Station (approx. 15 kms)	
	Road	The block is located at approx.95 km from Udaipur via NH27. Motorable/ metaled roads are available in the area.	
	Airport	Udaipur (Rajasthan) which is ≈ 50km from the block.	
<b>4.</b>	<b>Hydrography</b>		
	Local Surface Drainage Pattern (Channels)	The general drainage is towards the East and Northeast.	
	Rivers/ Streams	There are no prominent rivers or streams exist within the proposed block area.	
<b>5.</b>	<b>Climate</b>		
	Mean Annual Rainfall	Average annual rainfall of the district is 898.71mm.	
	Temperatures (January) (Minimum) Temperature (May) (Maximum)	Minimum: 12 °C Maximum: 45 °C	
<b>6.</b>	<b>Topography</b>		
	Toposheet Number	45L/07	
	Morphology of the Area	This block area is flat to undulated terrain partly covered with isolated steeply rising hills and flat rocky areas, with agricultural land. The highest elevation is 458 mRL, minimum is 505 mRL.	
<b>7</b>	<b>Availability of baseline geoscience data</b>		
	Geological Map (1:50K/ 25K)	Available on Bhukosh portal (1:50K)	
	Geochemical Map	Not available	
	Geophysical Map (Aero geophysical, Ground geophysical, Regional as well as local scale GP maps)	Not available	

8	Justification for taking up Reconnaissance Survey/Regional Exploration	<p>As per allocation of project area by the 3<sup>rd</sup> joint meeting of Technical Cum-Cost Committees (both TCC-I &amp; TCC-II) of National Mineral Exploration and Development Trust (NMEDT) for allocating 51 no's of blocks to NPEAs &amp; NEAs for upgradation under NMEDT fund was held on 4<sup>th</sup> September, 2025. EGC IPL awarded one block for DPR out of the 51 blocks i. e. on S. No. 20 of the list titled as <b><i>"SFA-1723: Report on Reconnaissance for Search of Economic Minerals like Tungsten ore, Soapstone, Limestone, Barites, Calcite etc. in Kanore, Bhinder, Bari Sadri Area, Tehsil- Dhariawad, District- Udaipur"</i></b>. As per previous report the area is having prospect of minerals like Tungsten ore, Soapstone, Limestone, Barites, Calcite etc.</p> <p>The study area is modified as per the suggestion of TCC-I committee and on the basis of mineralization, earlier study reports, evidences and preliminary field investigation.</p>
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# Location Map of Proposed Block

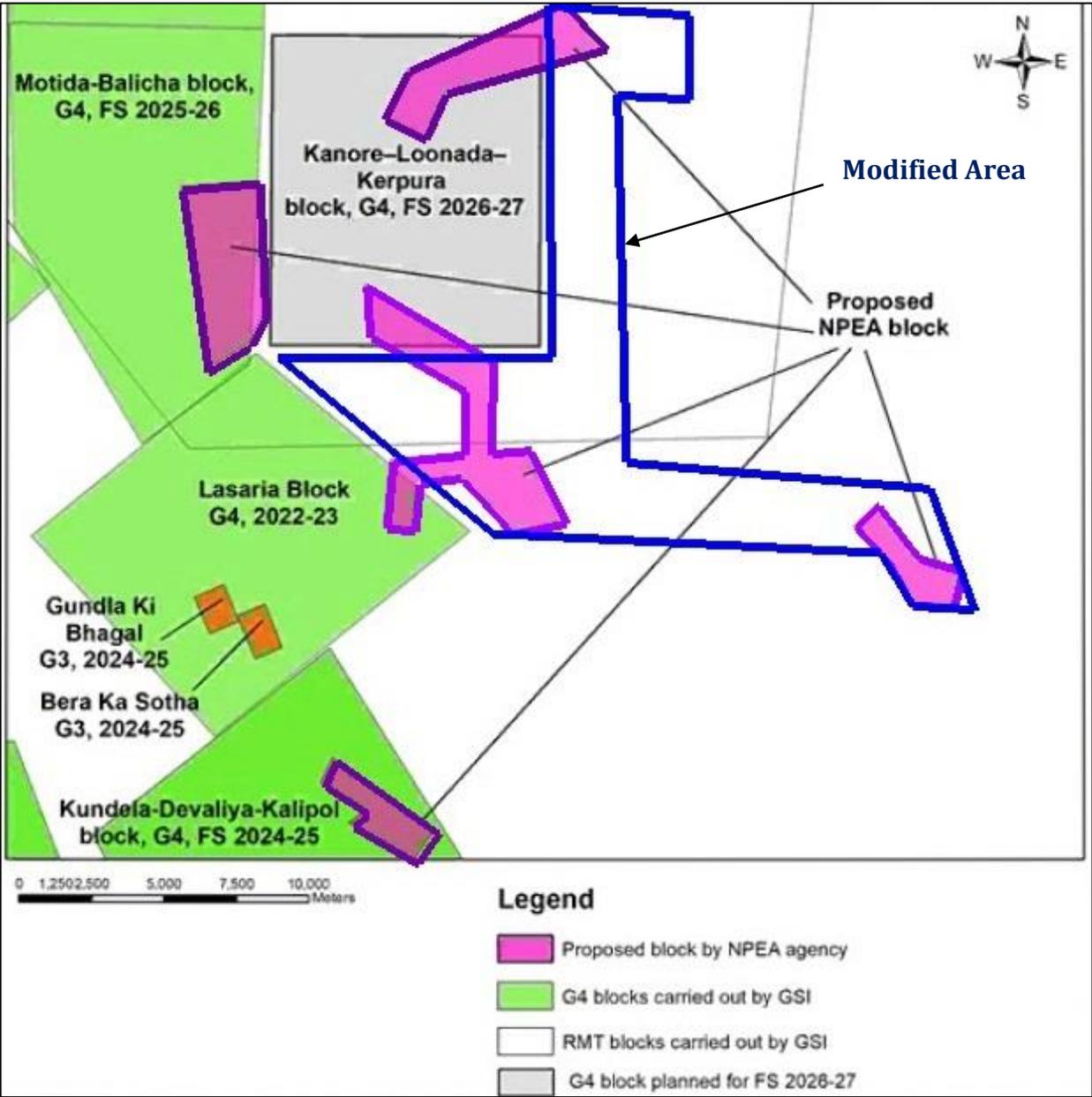


# LOCATION OF BARI SADRI BLOCK OVER TOPOSHEET (Toposheet No. 45L/07)



Source: SOI

**COMPOSITE MAP SHOWING PREVIOUS & ONGOING PROJECTS SURROUNDING TO KANORE - BARI SADRI BLOCK**



Source: NMEDT

## 1. Block Summary

### Physiographic

The proposed block area (Bansi, Talwada, Phalasiya, Kalibhint & Kesarpura) are located in the Bari Sadri, Udaipur & Chittorgarh district in the Southern part of Rajasthan. Most of the area is vegetation covered, with isolated steeply rising hills and flat rocky areas. The southern area is drainage by several nalahs which falls in rivers namely Chitirimata Nadi, sarwania nadi and Naleshwar Nadi. The southern part of this project is covered by forest lands. The forest blocks fall in the south of the area are namely Umar Kota block, Chitrimata block, Alaghata block and Ranigarh block.

### Background Geology

The proposed block area of investigation is located in the southern part of the Rajasthan. Regionally prospect area is located in Mangalwar Complex of Bhilwara Super Group.

**Bhilwara Super Group** –Bhilwara Supergroup comprises metapelite and quartzite, protoquartzite, conglomerate, metagreywacke, marble, calc-silicate rock, calc-schist, calc-gneiss, mica schist, kyanite-sillimanite schist, para-gneiss, para-amphibolite, synsedimentational metavolcanics, feldspathised mica schist and gneisses, migmatites, granite, granite gneiss, granodiorite, charnockites, norite, enderbite, dolerite and ultramafics. The rocks have attained progressively higher grade of regional metamorphism, from green schist facies in the east to granulite facies towards west, and have undergone syntectonic migmatization.

### Mangalwar Complex -

The Mangalwar complex comprises, an assemblage of migmatite, Feldspathised mica schist, garnetiferous, mica schist, quartz-feldspar gneiss, granite gneiss, granitised amphibolite, dolomitic marble and, occupying the peneplained terrain of Mewar. Sudden change in the grade of metamorphics is the main evident indicator of such events. This indicates the cessation of deposition during Archean Proterozoic transition. Exposures of Mangalwar are also present along the Dhariyawad and Lasaria stretch. Due to its complex geology and varied range of lithological associations the Mangalwar group is now designated as Mangalwar complex.

### Lasaria Formation -

The rocks regionally metamorphosed to intermediate pressure amphibolite grade and syntectonically migmatize to various degrees, in Pipalkhunt-Mangalwar, Lasaria and Kalakhet areas, have been assigned to the Lasaria formation. Migmatites and composite

gneisses have patchy occurrence and are intruded by younger amphibolite, pegmatite, aplite, granite and numerous quartz veins. Interfolial injections of quartz and quartzofeldspathic material, within the mica schist, have resulted in the formation of banded biotite gneisses and porphyritic biotite gneiss. Variation in texture and constant change in composition are the characteristic features of the gneisses which are in general, are grey and medium- to coarse-grained. Deformation is primary as no overlapping or second generation folds are detected from meta-pelitic sequence deposited over the basement.

### **Hindoli Group-**

The rocks Hindoli group were assigned to the Hindoli group were included in the Aravalli system by Heron (1936) and Gupta (1934) and in the Gwalior series of the Aravalli system by Colson (1928) grouped these rocks in Chittorgarh. It comprises a low-grade (green schist), predominantly argillaceous flysch-like sequence deposited during main geosynclinal phase of Bhilwara Geological – cycle the rocks of the Hindoli group occur as an arcuate belt, 10km to 50km wide, extending from Gyaspur in the south to Deyi in the north and further north-eastward, over a strike length of about 400km, trending NNW-SSW in the southern part becoming N-S near Chittorgarh. The Hindoli group comprises shales, slates, Phyllite, mica-schist with interstratified sequence of metagreywack, metavolcanic, quartzite, dolomite and limestone.

The Hindoli group has been subdivided into three lithostratigraphic units: the Bhadesar formation, the Sujapur formation and the Nangauli formation.

### **Bhadesar formation-**

The Bhadesar formation derives its name from the Bhadesar town located 40km SSE of Chittorgarh. It comprises shale, Slate Phyllite, with thin bands of conglomerate greywacke, quartzite impure limestone, dolomite and basic metavolcanic due to repeated folding in shale slate and Phyllite it is difficult to estimate their exact thickness. Shale slate and Phyllite the main litho units have patchy exposure. These are pale, pale-grey, brown purple and greenish grey in color and thinly bedded with alternating arenaceous and ferruginous layers depicting color banding load cast ripple marks and fine grained cross bedding are observed in arenaceous or semipelitic bands.

**Vindhyan supergroup** - The Vindhyan Supergroup is one of the largest and oldest sedimentary rock formations in India, spanning an immense area across Madhya Pradesh, Uttar Pradesh, Rajasthan, Chhattisgarh, and Bihar. Composed mainly of sandstone, shale, limestone, and conglomerate, the Vindhyan rocks were deposited in ancient marine, fluvial, and deltaic environments, preserving important records of Earth's early atmosphere and

ecosystems. The Supergroup is divided into two main sections — the Lower Vindhyan (Semri Group) and the Upper Vindhyan (Kaimur, Rewa, and Bhandar Groups). It contains some of the earliest known microfossils and stromatolites, which provide clues about primitive life and evolution.

**Semri Group** – The name Semri comes from the Semri River, its type locality near Bijawar. Semri Group rests with non-conformity on the Bundelkhand granite and on the Banded Gneissic Complex (BGC) with angular unconformity. The basal succession consists of conglomerates, ferruginous sandstones and shales mainly exposed in Rajasthan (Khardeola Sandstone). The overlying stromatolitic limestones and dolomites (Kajrahat/Tirohan Limestone and Lohar Dolomite) suggest a continental shelf setting. The basal succession is overlain by pyroclastic and volcanics known as Chopan/ Deonar Porcellanite Formation. It is overlain by Stromatolite bearing Fawn coloured limestones or Bargawan Limestone in which *Collenia clappii* and *Conophyton garganicus* are profusely developed Fawn Limestone is overlain by the Glauconitic Sandstone (also called Chorhat Sandstone). Rohtas Limestone of the Semri Group (Lower Vindhyan) is conformably overlain by the Sasaram Sandstone of the Kaimur Group (Upper Vindhyan).

### **Deccan Traps**

The Deccan Traps are a large igneous province of west-central India. They are one of the largest volcanic features on Earth, taking the form of a large shield volcano. They consist of many layers of solidified flood basalt that together are more than about 2 kilometres (1.2 m) thick, cover an area of about 500,000 square kilometres (200,000 sq mi). This volume overlies the Archean age Indian Shield, which is likely the lithology the province passed through during eruption. The Deccan Traps are thought to have been produced in major part by the still active Reunion hotspot, responsible for the creation of the modern Mascarene Islands in the Indian Ocean.

### **Malwa – Plateau**

The Malwa Plateau, located in central India (mainly in western Madhya Pradesh), is a volcanic and sedimentary-origin plateau known for its unique geological history. It is primarily made up of Deccan Traps basalt, formed by extensive volcanic eruptions during the late Cretaceous period about 65 million years ago. These basaltic lava flows created layered, flat-topped hills and rich black cotton (regur) soil across the region. Beneath the volcanic rocks lie older Archaean gneisses, granites, and Vindhyan sedimentary rocks, which are exposed in some areas. The plateau also exhibits evidence of fluvial erosion, resulting in deeply incised river valleys like those of the Chambal, Kali Sindh, and Narmada.

## Background Note

As per report no. SFA 1723 (**Department of Mines & Geology, Rajasthan. 1983-1984 of G-4 Stage on which the block is allocated**); the reconnaissance work carried out in 128 Sq. Km. area around village Bansi, Utarwara, Kahara, Manucea, Bansi- Bohera, Andokhera , Khemji- Ka-Khera, Miyana, Bansi to Dabela , Tajela , Seti & Bhatia tehsil Dhariyawad distt . Udaipur. The Geochemical samples were collected in above field season indicated the presence of **Copper 0.60 to 2.45%**, **Lead 0.37 to 0.48 %**, **Zinc 10 to 30 PPM** and **Cobalt 50 to 110 PPM** . The collected samples of this area indicated the presence of Tungsten (**0.6% WO<sub>4</sub>**) and also reported the **limestone** band near village Pitalpur and Sheopura. As mentioned above the spot samples collected from Kel- Ki- Kui area indicated the presence of lead, Copper, zinc, and cobalt in the form of feeble occurrence.

As per another report (**GSI report WRO-25690-2022 of G-4 Stage**) Surface indications of mineralization are observed in the form of malachite staining, ferruginization, epidotisation and fresh specks pyrite and chalcopyrite. Along these zones, chalcopyrite and bornite can be observed in dug-well samples and this clearly indicates Cu mineralization. Copper mineralization is confined to a NNW-SSE trending metaconglomerate horizon which is polymictic in nature and highly sheared. Encouraging values of copper (**upto 3.96% Cu**) in bed rock samples, and **3m x 0.43 % Cu and 5 m x 0.56 % Cu** in the channel nos. CH-04-LS and CH-20-LS respectively indicating copper mineralizations are mainly noted along the shear zones within meta-conglomerate and the amphibolite bands.

## Evidence of Mineralisation & Justification in Study Area

As per allocation of project area by the 3<sup>rd</sup> joint meeting of Technical Cum-Cost Committees (both TCC-I & TCC-II) of National Mineral Exploration and Development Trust (NMEDT) for allocating 51 nos of blocks to NPEAs & NEAs for upgradation under NMEDT fund was held on 4<sup>th</sup> September, 2025. EGC IPL awarded one block for DPR out of the 51 blocks i. e. on S. No. 20 of the list titled as **“SFA-1723: Report on Reconnaissance for Search of Economic Minerals like Tungsten ore, Soapstone, Limestone, Barites, Calcite etc. in Kanore, Bhinder, Bari Sadri Area, Tehsil- Dhariawad, District- Udaipur”**.

The study area is modified as per the suggestion of TCC-I committee and on the basis of mineralization, earlier study reports, evidences and preliminary field investigation.

## Evidence of Mineralisation & Justification for Proposed Block

- As per the Report on Reconnaissance for search of Economic minerals like Tungsten ore, Soapstone, Limestone, Barytes, calcite etc. In Kanor, Bhindar, Bari sadri area tehsil, Dhariawad District. Udaipur. PROJECT NO. 33 (UD T-1) (1983-84)”; objective of the project was to search the base metal, tungsten and other economic mineral like soapstone, limestone, baryte, calcite etc. in prescribed area. The study reported the **limestone band** near village pitalpur and Sheopura. Also, mining of limestone is being carried out adjoining to the proposed area.
- As Per Earlier Report adjoining to proposed block on “Reconnaissance Survey For Base metal Mineralization in Lasaria-Relwara-Kalibhint Areas of Chittorgarh and Udaipur Districts, Rajasthan” (G-4), (Final Report for F.S. 2022-23). The sulphide mineralization occurs in the form of specks and disseminations at the contact of amphibolite and granite gneiss along the shear zone. The field evidences indicated the epigenetic nature of mineralization. Encouraging values indicating copper mineralization are mainly concentrated in the mapped area in NNWSSE to NW-SE direction. In the area, mainly mata-conglomerate, schistose amphibolite and granite gneiss showed encouraging values of **copper upto 3.96 % Cu** in the bed rock samples.
- As per Bhukosh Geology by G.S.I, it is observed that Rhyolite and Newania Carbonatite are also present nearby this proposed block area for which this area is proposed for further detailed study for the occurrence of *REE Mineralization*.
- As Per NGDR Mining Lease data, it is found that one Mining Lease allotted within/nearby the proposed block whose details is mentioned below-

Sl.no	ML No	Name of ML Holder
1.	M.L No-04/2018 (Quartz & Feldspar Mine) Village- Laku ka Leva	Not traced
2.	M.L No-04/2018 (Quartz, Feldspar & Soapstone Mine)	Mr. R. C. Baser

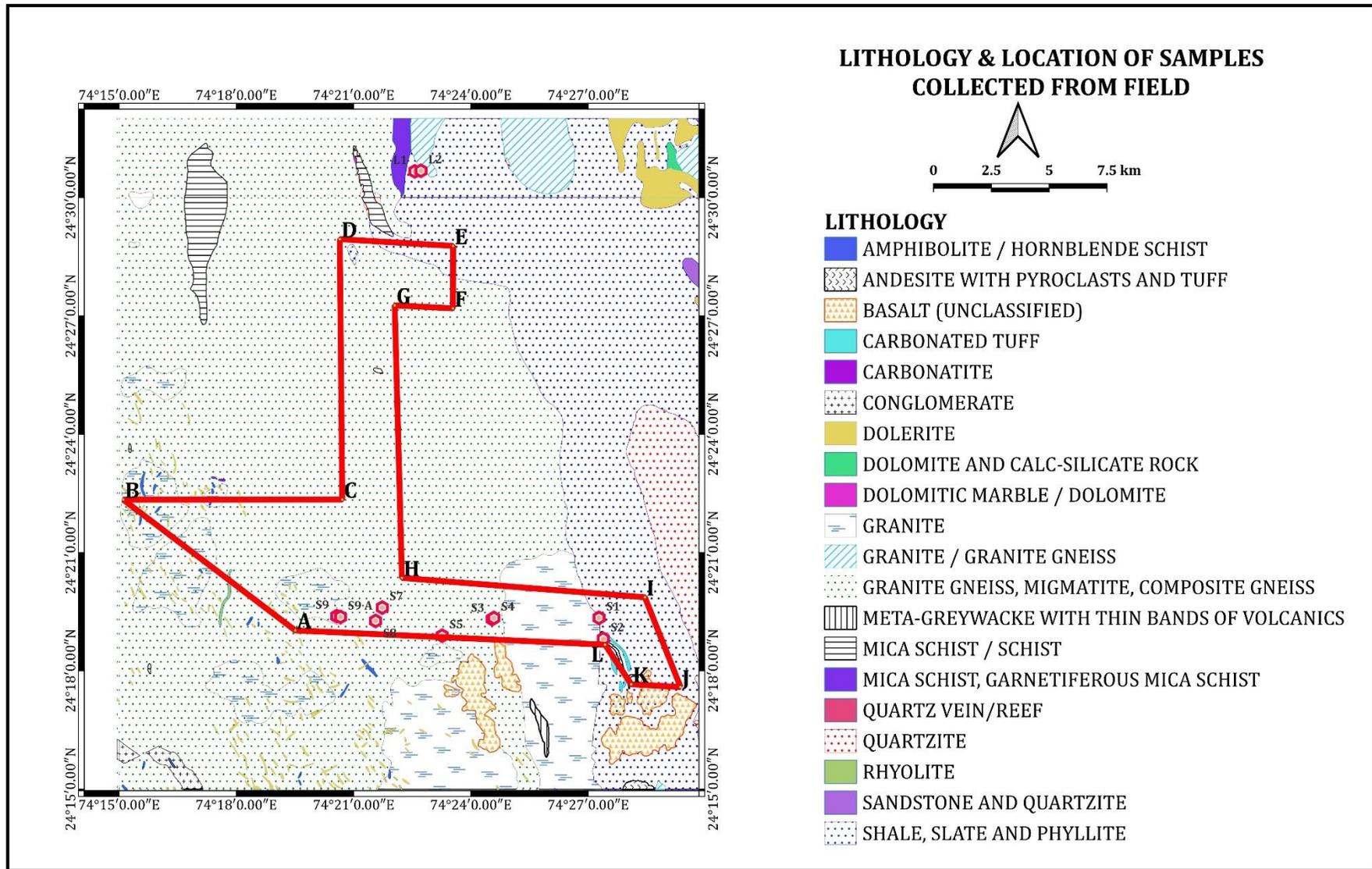
- As per our Reconnaissance visit at site few samples collected from the site and analysed which show some significant values of Vanadium and cobalt (i.e.  $V_2O_5$  values ranges from **0.0187 % to 0.0920 %** and  $Co_2O_3$  values ranges from **0.0116 % to 0.0271 %**) which shows the presence of these minerals within this proposed area. The values are above cut-off grade on which blocks have been auctioned.
- Values for the samples tested for  $Ta_2O_5$  ranges from **0.0016% to 0.0047%**.

- Analysis results for samples collected from nearby proposed block for Limestone are below:

Sample Code	Commodity	Coordinates		Analysis in %					
		Northing	Easting	LOI	Fe <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	SiO <sub>2</sub>
L-1	Limestone	24°30'39.90"N	74°22'33.99"E	42.80	1.14	0.28	49.22	3.83	2.50
L-2	Limestone	24°30'40.82"N	74°22'43.45"E	42.55	0.92	0.31	48.22	4.43	2.72

- We have referred NGCM data also where values of  $\Sigma$ REE+Y ranges from **172.5 ppm to 879.447 ppm**.

# Kanore-Bari Sadri Block (Commodity: Critical & Associated Minerals)



Field visit carried to confirm occurrences/possibilities of mineralization/ exposures within the proposed block.



Fig. 1- Limestone band occur near Proposed Block



Fig. 2- Outcrop of Rhyolite in nearby Proposed Block



Fig.3- Sampling of Volcanic tuff for mineral Vanadium & Cobalt in Proposed Block



Fig.4- Contact zone of amphibolite and granite in study area

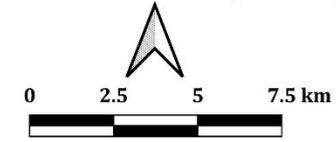
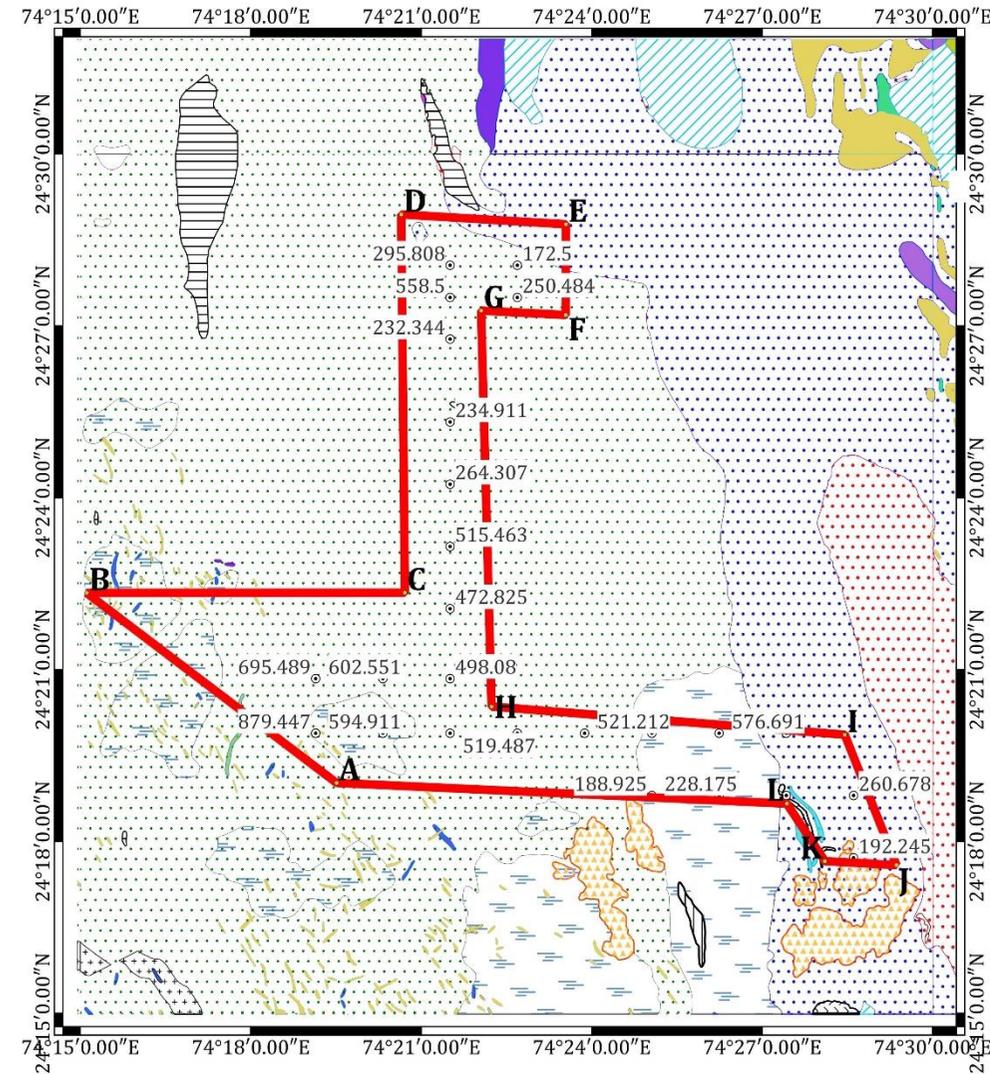
## Sample Analysis & Results

### XRF Results of Kanore-Badi-Sadri area

Sample no		S-1	S-2	S-3	S-4	S-5	S-9	S-9(A)
Coordinate	Latitude	24°19'20.58"N	24°18'48.69"N	24°19'18.72"N	24°19'20.36"N	24° 18' 53.42"N	24°19'23.08"N	24°19'21.94"N
	Longitude	74°27'16.74"E	74°27'23.15"E	74°24'32.73"E	74°24'35.42"E	74° 23' 16.11"E	74°20'34.15"E	74°20'40.03"E
SiO2	%	70.2	44.1	65.6	68.3	89.1	86.1	94.9
Fe2O3		13.2	19.3	4.68	4.45	2.11	4.99	1.35
Al2O3		8.07	21.9	14.2	13.6	3.47	3.93	1.63
MgO		7.41	1.45	1.97	1.05	0.458	2.26	0.781
CaO		0.283	9.47	0.983	0.493	3.87	2.13	0.332
K2O		0.22	2.29	5.47	4.52	0.467	0.0871	0.539
P2O5		0.195	0.167	0.426	0.264	0.168	0.23	0.198
MnO		0.159	0.0462	0.0502	0.0202	0.05	0.074	0.021
TiO2		0.113	0.786	0.367	0.238	0.0804	0.0162	0.0963
SO3		0.0742	0.0926	0.103	0.108	0.0683	0.0881	0.0583
V2O5		<b>0.057</b>	<b>0.092</b>	<b>0.0308</b>	<b>0.024</b>	<b>0.0187</b>	<b>0.0117</b>	<b>0.0127</b>
Cl		0.0418	0.0314	0.0411	0.0501	0.0348	0.0356	0.0148
Co2O3		<b>0.0165</b>	<b>0.0271</b>	0.0042	0.0037	0.0006	0.0048	0.0002
Cr2O3		0.013	0.0367	0.0077	0.0118	0.004	0.0021	0.0071
ZnO		0.0121	0.0221	0.0045	0.002	0.0014	0.0082	0.0019
NiO		0.0094	0.0133	0.0073	0.0061	0.0046	0.0082	0.0058
SnO2		0.0044	0.0095	0.0079	0.0085	0.0068	0.0036	0.0078
Ta2O5		<b>0.0023</b>	<b>0.0047</b>	0	<b>0.0025</b>	<b>0.0016</b>	0	0.0007
CuO		0.0022	0.0069	0.0027	0.0011	0.0016	0.002	0.0009
ZrO2		0.0017	0.0164	0.0286	0.0152	0.0083	0.0006	0
SrO		0.0009	0.0041	0.0118	0.0062	0.0327	0.0026	0.0013
Rb2O		0.0007	0.0089	0.0114	0.0069	0.0013	0.0003	0.002
Sb2O3		<0.0001	0	0.0006	0.0005	0.0003	0	0.0015
WO3		<0.0001	<0.0001	0	<0.0001	0	<0.0001	<0.0001
PbO		0	<b>0.0416</b>	0.0017	0.0006	0.0011	<0.0001	0
Y2O3		0	0.0034	0.0014	0.0007	0.0011	0	0.0002
As2O3		0	0.0022	<0.0001	<0.0001	<0.0001	<0.0001	0
Nb2O5		0	0.0012	0.0007	0.0004	0	0	0
Na2O	0	0	6.0000	<b>6.78</b>	0	0	0	
BaO	0	0.0115	0.0351	0.0245	0.0042	0.0017	0.0064	

S.No.	Sample No.	Coordinate		LOI	Fe <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	SiO <sub>2</sub>	MgO	K <sub>2</sub> O	Na <sub>2</sub> O
		Latitude	Longitude								
2	S-7	24°19'36.16"N	74°21'44.08"E	1.35%	2.14%	17.03	0.30%	65.69%	0.97%	8.63	2.31
3	S-8	24°19'15.88"N	74°21'33.92"E	1.49%	1.59%	20.09%	0.49%	64.71%	1.71%	0.34%	7.75%

## MAP SHOWING ΣREE+Y VALUES (NGCM)



### LITHOLOGY

- AMPHIBOLITE / HORNBLENDE SCHIST
- ANDESITE WITH PYROCLASTS AND TUFF
- BASALT (UNCLASSIFIED)
- CARBONATED TUFF
- CARBONATITE
- CONGLOMERATE
- DOLERITE
- DOLOMITE AND CALC-SILICATE ROCK
- DOLOMITIC MARBLE / DOLOMITE
- GRANITE
- GRANITE / GRANITE GNEISS
- GRANITE GNEISS, MIGMATITE, COMPOSITE GNEISS
- META-GREYWACKE WITH THIN BANDS OF VOLCANICS
- MICA SCHIST / SCHIST
- MICA SCHIST, GARNETIFEROUS MICA SCHIST
- QUARTZ VEIN/REEF
- QUARTZITE
- RHYOLITE
- SANDSTONE AND QUARTZITE
- SHALE, SLATE AND PHYLLITE

Source: NGDR Portal

## Scope for Proposed Exploration and Objectives

G4 level exploration identifies areas of enhanced mineral potential on the basis of results of geological mapping, scout drilling and analysis of samples. The scope and objectives of the study are summarized below:

- Geological mapping on 1:12500 scale of the block.
- Topographical survey of the block.
- Scout drilling of 500 meters (5 Nos. of borehole with 100 m depth for each). However, this is indicative only and may vary as per actual geological conditions. The core recovery in all the formation should be at least 70%-80% except in fault zone, weathered zone, soil, sand and structurally disturbed area.
- Pitting: Tentatively 200 m<sup>3</sup>.
- Trenching: Tentatively 100 m<sup>3</sup>.
- Sampling & their analysis:

To expose the mineralization by WD-XRF, (Bedrock/Stream/Soil/Pit) & Core will be analyzed. No. of samples will be 100 tentatively.

Tentatively 450 No's of samples will be analyzed for 14 REE & 9 trace elements through ICPMS.

Tentatively 100 No's of samples will be analyzed for Base metals (including Au & Ag) & Associated Minerals through AAS.

**Note**-5% internal + 10% External will be analysed for each category of Analysis.

- Petrographic analysis: 15 samples

## 2. Previous Work

**Previous Exploration in the proposed block area as well as adjoining: The entire sample (bed rock/trench/ groove/soil), borehole location should be plotted on the geological map and analytical data should be discussed briefly.**

**Ref: A Report on Reconnaissance for search of Economic minerals like Tungsten ore, Soapstone, Limestone, Barytes, calcite etc. In Kanor, Bhindar, Bari sadri area tehsil, Dhariawad District. Udaipur. PROJECT NO. 33 (UD T-1) (1983-84)". The Report is compiled by the Office of the superintending Geologist, Mines & Geology dept., Udaipur Region.**

The project has been taken up in the field season 1983-84. The object of this project to search the base metal, tungsten and other economic mineral like soapstone, limestone, baryte, calcite etc. in prescribed area. The back ground information of this project is base metal indication was reported near villages Kel-k i-kui and Belvi. The collected samples of this area indicated the presence of tungsten (0.6% wu 4) and also reported the limestone band near village pitalpur and Sheopura. The Geochemical samples were collected in above field season indicated the presence of copper 0.60 to 2.45%, lead 0.37 to 0.48 %, zinc 10 to 30 PPM and cobalt 50 to 110 PPM .

**Ref: A Report on "Reconnaissance Survey For Base metal Mineralization in Lasaria-Relwara-Kalibhint Areas of Chittorgarh and Udaipur Districts, Rajasthan" (G-4), Gautam Chand Garg, Senior Geologist, Dr. Manoj Kanwar Shekhawat, Director and Laya M. B. Pillai, Suptdg. Geologist, G.S.I, Western Region (Block Id: PW-WRO-25690-2022 (G4)) (Final Report for F.S. 2022-23).**

Copper mineralization is confined to a NNW-SSE trending meta-conglomerate horizon in between Lasaria and Kun, which is polymictic in nature and highly sheared. Cu mineralisation is structurally controlled and the mineralisation is seen along the S2 foliation and mylonitic foliation. Shear zone is mainly seen in the conglomerate and granite gneiss and amphibolite which are also sheared along with the conglomerate are also mineralised. In the area, mainly meta-conglomerate, schistose amphibolite and granite gneiss showed encouraging values of copper upto **3.96 % Cu** in the bed rock samples. Based on encouraging Cu values from channels, four mineralised zones have been demarcated for further studies: (i) Gundla Ki Bhagal (ii) South of Bera Ka Sotha (iii) Malon Ka Gura and (iv) East of Dhikia village for further detailed exploration.

Mineralized Zone	Location	Rock Type	Strike (NNW) Length (m)	Width (m)
MZ-I	Gundla Ki Bhagal	Meta Conglomerate with amphibolites band	500m	15 m
MZ-II	Bera Ka Sotha	Meta conglomerate with amphibolites band	600	12 m
MZ-III	Dhikia	Quartz Reef	600	08 m
MZ-IV	Malon Ka Gura	Schistose amphibolite	200	10 m

### Recommendation

The surface manifestations and chemical analytical data for copper in most of the random bedrock and channel samples showed *encouraging values (up to 3.96% Cu)* around Gundla Ki Bhagal, South of Bera Ka Sotha, Malon Ka Gura, Lasaria and east of Dhikia. G3 level investigation may be carried out in Gundla Ki Bhagal, South of Bera Ka Sotha, Malon Ka Gura and east of Dhikia areas.



**Ref: A Report on “Integrated Geophysical Survey for Investigation of Base Metals in Bortalai - Balicha and Chargadia - Kadesar areas near Bhinder, Udaipur District, Rajasthan”, S. R. Prasad, Geophysicist (Sr.) & Babu Lal, Geophysicist (Jr.), G.S.I, Western Region (Block Id: PW-WRO-24036-2001 (G4)) (Final Report for F.S. 2001-02).**

In this report the systematic geophysical surveys employing SP, Magnetic (VF) and IP (TD) cum resistivity methods were carried out in Bortalai-Balicha and Chargadia -Kadesa areas on 54 line km. against a target of 35 line km. The archean gneiss-green stone restite assemblage (Mangalwar Complex) host remobilized concentration of Cu with traces of Zn along North-South shear zone on either side of Bhupalsagar-Bhinder cover belt.

***Bortalai area***

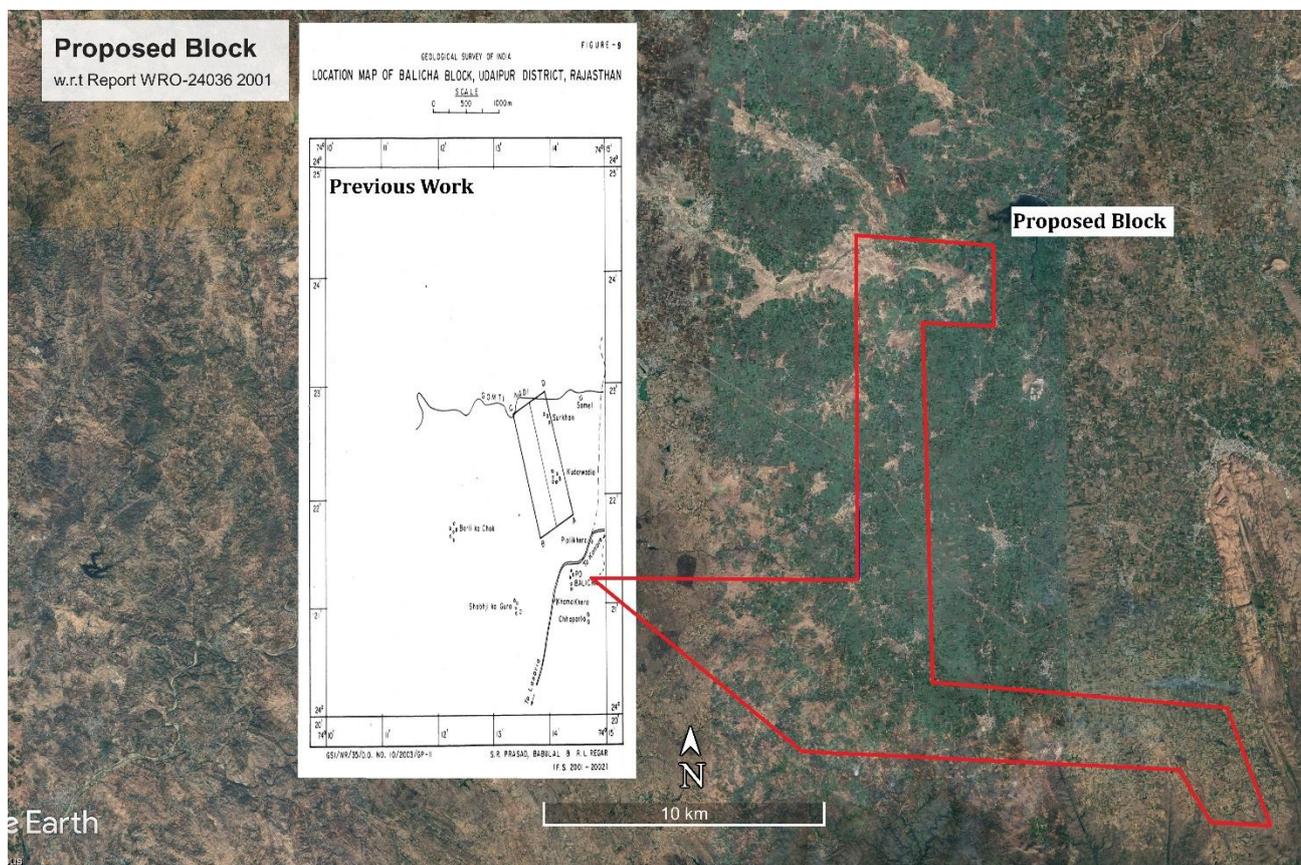
The IP (Time - Domain) Survey using gradient array for C1 C2 = 2000m and P 1 P2 = 40m has delineated three moderate IP anomaly zones (200m Each) for a cumulative strike length of 600m over Amphibolite / Pegmatic Quartzite. These IP zones are characterized by IP anomaly (7-8 Mv/V), SP (- 10 To - 20mv), magnetic (250 To 2500 Nt) and resistivity (4000 To 7000 Wm).

***Balicha Area***

The IP survey using gradient array for C 1 C2 = 2000m and P1P2=40m has delineated three anomaly zones Viz. I, II and III For a strike length of about 400m, 500m and 200m respectively. Out of these three zones, zone II has been located in the central part of the area passing through old working over quartz Amphibole Schist. This zone is characterized by IP (19.5 Mv /V), SP(-78mv), magnetic (+800 nt) nd relatively (4000 Wm) and appears to be significant from view point of mineralization.

***Chargadia Area:***

IP Survey has indicated a feeble anomaly of ( 3 Mv/V ) corroborated with magnetic anomaly the order of 600 Nt around station test traverse 0 located near working old over quartzite / migmatitic .



### 3. Block description

The Proposed Block area located near village Bari Sadri in Udaipur & Chittorgarh district. The area falls in SOI Toposheet-45L/07. The total area of the block is 120.0 Sq. Km. Geographic location of the block is as under:

Block corner points	Latitude	Longitude
A	74.32517	24.31706
B	74.25183	24.37234
C	74.34521	24.37237
D	74.34414	24.48244
E	74.39243	24.47958
F	74.39238	24.45318
G	74.36756	24.45444
H	74.37063	24.33928
I	74.47422	24.33107
J	74.4894	24.29313
K	74.4684	24.29429
L	74.45723	24.31103

The area has been allocated by the 3rd Joint meeting of Technical Cum-Cost Committees (both TCC-I & TCC-II) of National Mineral Exploration and Development Trust (NMEDT) was held on 4th September, 2025.

### 4. Planned Methodology

In accordance to the objectives, the following scheme of exploration has been formulated. The details of different activities to be carried out are presented in subsequent paragraphs.

#### A) Geological Map

Geological mapping will be done in the entire 120.0 sq. km area on 1:12500 scales based on structural data, surface samples, exposed outcrops etc. Rock types, their contact, structural features will be mapped. Surface manifestations of the ore bodies available along with their surface disposition will be marked on map.

The available previous work geological map will be used as base map for mapping work. Based on the Geological mapping data, few scout boreholes will be planned as Surface drilling.

#### B) Geochemical Sampling

##### Surface Samples (Bed Rock/Channel//Soil/ Stream Sediment Sample):

During the course of Geological mapping, the Bed rock / Channel / Soil / Stream sediment samples shall be collected so as to over the entire area. The samples shall be collected depending upon the accessibility of the area; In case outcrops are not available on systematic grid then random samples will be collected from the available outcrops / exposures.

### **C) Pitting**

Shallow pitting (2m\*2m\*2m) shall be carried out in the potential zones identified based on the results of geological mapping and geochemical sampling. A provision of shallow pitting of 200 cubic meters has been kept. Locations of pits on ground will be decided by field geologist based on field observations.

### **D) Trenching**

Shallow pitting shall be carried out in the potential zones identified based on the results of geological mapping and geochemical sampling. A provision of shallow pitting of 100 cubic meters has been kept. Locations of pits on ground will be decided by field geologist based on field observations.

### **E) Drilling**

Based on Geological mapping with Geological studies, Geochemical studies and Shallow pitting (Excavation), the extension of the mineralized zones (ore bodies) will be marked. To find out the potentiality of mineralized zones in strike & dip 5 no's scout boreholes involving 500 m of drilling will be carried out for upper level of intersection of mineralized zones. Scout drilling will be carried out at G4 level of exploration as per "The Minerals (Evidence of Mineral Contents) Rule 2015 after reviewing the test results with NMEDT.

### **Core Logging**

Geological core logging will be carried out systematically by recording carefully the minute details and physical/lithological characters of the rock formations, lithological variations, structural features, textures, intersection of ore zones, types of mineralization and occurrence of various ore minerals encountered in boreholes.

### **Core Sampling**

During geological logging of drill core, mineralized zone will be marked on basis of concentration and lithology.

Drilled core will be split in to two equal halves for collection and preparation of primary samples. The other half portion of the drilled core sample will be kept as duplicate half for future reference.

### **A) Laboratory Studies**

- ✓ To expose the mineralization by WD-XRF, (Bedrock/Stream/Soil/Pit) & Core will be analyzed. No. of samples will be 100 tentatively.
- ✓ Tentatively 450 No's of samples will be analyzed for 14 REE & 9 trace elements through ICPMS.
- ✓ Tentatively 100 No's of samples will be analyzed for Base metals (including Au & Ag) & Associated Minerals through AAS.
- ✓ **Note**-5% internal + 10% External will be analyzed for each category of Analysis.
- ✓ Petrographic analysis: 15 samples

**Note: Number of samples may vary on the basis of lithological variation.**

## 5. Nature Quantum and Target

Nature and Quantum of work proposed

S. No	Description of Work	Unit	Proposed Quantum of Work
A	<b>Geological Work and Surveying</b>		
i)	Geological Mapping (on 1:12500 Scale)	Sq.km	120.0 Sq.km
B	<b>Pitting &amp; Trenching</b>		
i)	Pitting (2m*2m*2m)	Cum	200 m <sup>3</sup>
ii)	Trenching	Cum	100 m <sup>3</sup>
C	<b>Exploratory Drilling</b>		
i)	Drilling up to 50m each scout borehole (Core Drilling in medium to Hard rock) for 15 Boreholes.	m	500 m
D	<b>Laboratory Studies</b>		
1	<b>Chemical Analysis: Surface Samples (Bed Rock/Channel/Soil/ Stream Sediment/ Pit/ Trench Samples) &amp; Core Samples</b>		
i)	<b>Primary samples</b>		
	a. WD XRF	No's	100
	b. 14 REE+9 Trace elements through ICPMS.	No's	450
	c. Base metals & Asso. Minerals through AAS	No's	100
ii)	<b>Check samples (5% internal and 10% external)</b>		
	a. WD XRF	No's	15
	b. 14 REE+9 Trace elements through ICPMS.	No's	68
	c. Base metals & Asso. Minerals through AAS	No's	15
	<b>Petrological Studies</b>	No's	15
E	<b>Report Preparation (Hard copies)</b>	No's	5
F	<b>Report Preparation (Soft copy)</b>	No's	1

## 6. Exploratory Drilling

- A few scout drilling approximately 5 Scout boreholes in depth range of approximately 100 m. However, this is indicative only and may vary as per actual geological conditions.
- Type of Drilling: for NQ size in medium to Hard rock.
- Borehole size: The holes shall be derived in NQ sizes.
- While drilling, wherever water table is encountered, depth of the water table should be recorded and to be mentioned in the driller logs.
- The core recovery in all the formation should be at least 70 to 80% except in fault zone, weathered zone, soil, sand and structurally disturbed area.

## 7. Manpower Deployment

<b>For Geological Mapping</b>	
Field work (Area in Sq. Km)	120.0 Sq.km
HQ work Days	50
<b>Pitting (Volume in Cum)</b>	
	200 m <sup>3</sup>
<b>Trenching (Volume in Cum)</b>	
	100 m <sup>3</sup>
<b>Trenching</b>	
<b>Core drilling</b>	
No. of Boreholes	05
Average Drilling depth m (each borehole)	100m
Meterage	500
<b>Laboratory Studies</b>	
Number of samples for Primary Analysis + Check samples+Petrological (Sample count)	748+15

## Time schedule

The proposed exploration programme envisages geological mapping, topographic survey, Scout drilling, laboratory studies and geological report preparation, All activities have been planned with overlapping and tentative timeline has been worked out for total 10 months for the proposed project completion.

S. No.	Activities	Unit	Months												
			1	2	3	4	5	6	7	8	9	10			
<b>PHASE-I</b>															
1	Camp Mobilization & Setting	Month	■												
2	Geologist Party days in HQ (1 Party)	Month	■		■									■	
3	Geological mapping & sampling	day /Month	■	■	■	■									
4	Trenching	day /Month		■											
5	Pitting	m.			■										
<b>PHASE-II</b>															
6	Drilling , Core Logging	day			■	■	■								
7	Geologist Party days in field (1 Party)	day		■	■	■	■	■							
8	Sampling Party days, Core Sampling (1 party)	day			■	■	■	■							
9	Laboratory Studies (Sample preparation & Analysis)	Nos.		■	■	■	■	■						■	
10	Camp Winding	Month													■
11	Geological Report Writing	Month					■	■	■			■	■	■	■
<b>Note: 1. Commencement of project may be reckoned from the day the exploration acreage is available along with all statutory clearances.</b> <b>2. Time loss on account of monsoon/agricultural activity/forest clearance/local law &amp; order problem may be additional to above time line.</b>															

## 8. References

- Reconnaissance for search of Economic minerals like Tungsten ore, Soapstone, Limestone, Barytes, calcite etc. In Kanor, Bhindar, Bari sadri area tehsil, Dhariawad District. Udaipur. PROJECT NO. 33 (UD T-1) (1983-84)". The Report is compiled by the Office of the superintending Geologist, Mines & Geology dept., Udaipur Region.
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- Bhukosh ([www.gsi.gov.in](http://www.gsi.gov.in))
- NGDR Portal
- Bhuvan, GSI
- Survey of India Toposheet