

**DETAILED PROJECT REPORT ON RECONNAISSANCE
SURVEY (G4) FOR Zn AND ASSOCIATED CRITICAL
MINERALS IN KALSANS-REECHHRA BLOCK, BHILWARA
DISTRICT, RAJASTHAN**

RECONNAISSANCE SURVEY (G-4 STAGE) UNDER NMEDT

COMMODITY:

Zn AND ASSOCIATED CRITICAL MINERALS



BY

ENKAY ENVIRO SERVICES PVT. LTD.

JAIPUR, RAJASTHAN

PLACE: - JAIPUR

DATE: - 06.08.2026

Block Summary

General Information about the block

Table-1.1 Summary of the Block, Bhilwara District, Rajasthan

S. No.	Features	Details
	Block ID	ME/DD/G4/RJ/26-27/053
	Exploration Agency	Enkay Enviro Services Pvt. Ltd.
	Commodity	Zn and Associated Critical Minerals
	Mineral Belt	Pur Banera Group
	Completion Period with entire Time schedule to complete the project	10 Months
	Objective	The Present Exploration Program (G-4) is formulated based on the available regional geological data on the work carried out by GSI in and around the area; the program has the following objectives vis-à-vis proposed field components. 1) To carry out Geological mapping on 1:12,500 scale of the block (Area: 24.5Sq.km) to delineate various Litho-units and their linear/planar structural features with special attention to identify potential host rocks of mineralization. 2) To collect systematic bedrock and channel samples for analysis of Major Oxides (WD XRF) -(oxides + traces -24 elements) which include Base Metal to understand the distribution on primary source 3) To carry out detail surface geophysical survey by gravity, magnetic and Gamma ray spectrometry method to understand the continuity and characteristics of Migmatites, Amphibolite and mica schist below the Aeolian cover. 4) To carry out scout drilling of boreholes to establish subsurface occurrence of Base Metals. To establish the reconnaissance resource for Base Metal bearing minerals as per UNFC norms & Minerals (Evidence of Mineral Contents) Rules- 2015. 5) Pitting-trenching to know the continuity of host rock of selected zones and sampling.

		6) To assess G4 category (334) resource if any, in the Block, as per UNFC norms and Minerals (Evidence of Mineral Contents) Rules (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	Primarily M/S. Enkay Enviro Services Pvt. Ltd. would carry out the work. However, the Enkay Enviro Services Pvt. Ltd. would outsource some of specialized works viz. Chemical analysis and Petrological work will be out sourced to GSI Test lab WR, Jaipur, Rajasthan or any NABL Accredited Lab. Drilling work will be out sourced as company has MOUs with Ghanchi Drilling and Arihant Drilling																					
	Name/ Number of Geoscientists	Three no's of geoscientist (2 Field+1 HQ)																					
	Expected Field days (Geology) Geological Party Days	Geologist: 90-man days for Geological Party Days: Approximately 3 months Total man days for surveyor- 23-man days																					
1.	Location																						
	The coordination of corner point of proposed Base metal and other associated mineralization around N/V Kalsans, Reechhra, District Bhilwara, Rajasthan. as follows:																						
	<table border="1"> <thead> <tr> <th>POINT</th><th>LATITUDE</th><th>LONGITUDE</th></tr> </thead> <tbody> <tr> <td>A</td><td>25°27'22.51"N</td><td>74°45'0.16"E</td></tr> <tr> <td>B</td><td>25°21'41.38"N</td><td>74°44'59.57"E</td></tr> <tr> <td>C</td><td>25°22'45.19"N</td><td>74°44'3.86"E</td></tr> <tr> <td>D</td><td>25°22'54.43"N</td><td>74°44'14.52"E</td></tr> <tr> <td>E</td><td>25°22'56.52"N</td><td>74°44'18.89"E</td></tr> <tr> <td>F</td><td>25°23'0.33"N</td><td>74°44'20.65"E</td></tr> </tbody> </table>		POINT	LATITUDE	LONGITUDE	A	25°27'22.51"N	74°45'0.16"E	B	25°21'41.38"N	74°44'59.57"E	C	25°22'45.19"N	74°44'3.86"E	D	25°22'54.43"N	74°44'14.52"E	E	25°22'56.52"N	74°44'18.89"E	F	25°23'0.33"N	74°44'20.65"E
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	Localities	Kalsans, Reechhra			
	District	Bhilwara			
	State/UT	Rajasthan			
2.	Area (hectares/ square kilometres)				
	Block Area	24.5 sq. km			
	Forest Area	N/A			
	Government Land Area	Not Specified			
	Private Land	Not Specified			

	Area	
3.	Accessibility	
	Nearest Rail Head	Bhilwara Railway Station 9 Km towards SSW direction.
	Road	SH-56, NH-48
	Nearest Airport	Kota Airport 113 Km towards SES direction & Maharana Pratap Airport (Udaipur) 121 Km towards SSW direction.
4.	Hydrography	
	Local Surface Drainage Pattern	Dendritic to sub-dendritic
	Rivers/ Streams	The drainage system of the proposed area is manifested by Banas River and its tributaries.
5.	Climate	
	Mean Annual Rainfall	500-700 mm
	Temperatures	During Summer (March to June), the maximum temperature generally around 40°C , January is the coldest month, During Winter(December to February) minimum temperatures may fall to 7-8°C at night.
6.	Topography	
	Toposheet Number	Part of Toposheet 45K/11
	Physiography of the Area	The District generally consists of an elevated plateau. The eastern position of the district as a cluster of hills. The District is intersected by the Aravalli ranges at several places. The soil of the district varies from sandy loam to heavy loams.
7.	Availability of baseline geoscience data	
	Geological Map (1:25K)	1:25,000
	Geochemical Map	NGCM Data is available in NGDR
	Geophysical Map (Aeromagnetic, Ground	NGPM & Aero-geophysical Data is available in NGDR

	geophysical, Regional/local scale GP maps)	
8.	Justification for taking up reconnaissance survey / Regional Exploration	1. Reconnaissance exploration program is proposed for Kalsans-Reechhra block to systematically evaluate the mineral potential associated with the Pur Banera Group and its structural aureole. The work will combine desk compilation, rapid field mapping, systematic soil and stream-sediment geochemistry, targeted rock sampling and regional geophysical screening to identify and prioritise targets for G3-level follow up. This staged approach minimises technical and fiscal risk, provides robust target definition, and ensures that subsequent detailed exploration or drilling is focused only on the highest-priority targets. 2. The block lies adjacent to (or within the structural/metasedimentary and metavolcanic rocks) the Pur Banera Group, Key rock types include garnet-staurolite-kyanite bearing metapelites, banded magnetite quartzite (BMQ), mica schist, calc-schist, calc-gneiss, marble, and felsic volcanics. The area is known for iron-ore (hematite/magnetite) and base metal (Pb-Zn-Cu) mineralization, often found within highly deformed rocks. 3. The DRM and Geological maps indicate that the proposed block is dominantly underlain by metasedimentary rocks (mica schist, biotite schist, and quartzite) with amphibolite/meta-basic intercalations, which are favorable host lithologies for strata bound and volcanogenic base metal mineralization. The block lies within a structurally disturbed zone (folds, lineaments and probable shear trends), and such structural corridors commonly act as conduits for hydrothermal fluids responsible for sulphide deposition. 4. The District Resource Map from the GSI site shows that the block is predominantly covered by migmatites, composite gneiss, calc-silicate, amphibolite, and mica schist rock types. These are part of the Mangalwar Complex of the Bhilwara Supergroup, which is Archaean in age. The Mangalwar Complex is highly suitable for base metal deposits, particularly copper, as detailed in the GSI WR report by S.N. Patel (FS: 1987-88). High-category predicted metal reserves of 15.47 MT were identified, with the complex hosting significant reserves of 21.34 MT, 17.56 MT, and 16.01 MT across same lithologies. 5. Near Kewara Village & Balaji ka Khera area anomalous Base Metal concentrations were reported during the GSI Field Season 2019-20 by Bindiya Vandana Ekka and Shruti Singh. BRS No-1, BRS No-3, BRS No-4, BRS No-5, BRS No-14 and BRS No-189 comprising meta sedimentary amphibolite /hornblende bearing quartzite recorded high Base Metal values: Cu – 0.281 %, 0.418 %, 0.35%, 0.346 %, 0.19 % and 0.36%

respectively.

6. Based on the studies of FS 2018-19 in Indrapura-Lanpiya Block Based on surface mineralization indicators, favorable lithological and structural settings, and analytical results (BRS, stream sediments, trench/channel samples, and hydro geochemical data), three significant base metal mineralized zones—MZ1, MZ2, and MZ3—were delineated. These are located east of Ranikpura, northwest of Mahuwakhurd, and west of Lanpiya village, respectively. And the values show Cu values of **14345** ppm (BRS-25), **2613** ppm (BRS-26), **10877** ppm (BRS-27), **8648** ppm (BRS-28), **6658** ppm (BRS-29), **23796** ppm (BRS-30), 2266 ppm (BRS-44), **19061** ppm (BRS-45), **2309** ppm (BRS-46), **15000** ppm (BRS-87), **and 7400** ppm (BRS-146) respectively.

7. Avi Mero and Imlishila Imchen conducted a reconnaissance survey targeting REE and associated minerals over 100 sq km (1:12,500 scale) in Toposheet 45K/15. While bedrock and petrochemical samples showed modest Σ REE values (<1000 ppm), more promising results were obtained from soil (up to 3241 ppm), stream sediment (up to 5624 ppm), and heavy mineral sediment samples (up to 3757 ppm). These anomalous values are localized near Sidariyas village, within a 4.9 sq km area associated with pegmatite intrusions in garnet mica schist.

8. These anomalous values highlight the significant Base Metal potential of the Kalsans- Reechhra sector in proximity to the Pur Banera Group and justify further systematic exploration.

9. Encouraging Geochemical Signatures from Present Study Area

Preliminary geochemical analysis of samples collected from the Kalsans–Reechhra area has yielded encouraging results indicative of base metal mineralization.

One of the analyzed samples recorded:

Element	Value
Zn	~5699 ppm
Pb	~82 ppm
Cu	~79 ppm
Co	~138 ppm
Ni	~123 ppm

		The significant zinc anomaly along with associated Pb-Cu-Co-Ni enrichment suggests possible hydrothermal sulfide mineralization. Additionally: • Elevated Fe and Mn values indicate oxidized sulfide/gossanous conditions, • Multi-element association reflects a favorable polymetallic environment. Such anomalous values at reconnaissance stage are considered highly encouraging and justify systematic follow-up investigation.
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PROPOSAL FOR RECONNAISSANCE SURVEY (G-4) FOR Zn AND ASSOCIATED CRITICAL MINERALS IN KALSANS - REECHHRA AREA (24.5 SQ KM), DISTRICT-BHILWARA, RAJASTHAN

1.1.0 INTRODUCTION

1.1.1 The growing demand for base metals such as copper, lead, and zinc has significantly increased due to their essential role in industrial development, infrastructure growth, and modern technological applications. These metals are fundamental to sectors such as electrical power transmission, construction, transportation, and renewable energy systems. The exploration and development of base metal resources are therefore critical for sustaining economic growth and ensuring long-term resource security. In India, several metallogenic provinces host economically significant base metal deposits, among which the Pur-Banera belt of Rajasthan forms an important geological domain.

1.1.2 Base metals are widely utilized because of their excellent physical and chemical properties, including high electrical and thermal conductivity, corrosion resistance, ductility, and strength. Copper, lead, and zinc in particular are indispensable for a wide range of industrial and technological applications. Copper plays a vital role in electrical and electronic industries, zinc is extensively used for galvanization and alloy production, while lead is primarily used in batteries, radiation shielding, and specialized industrial applications. With the rapid expansion of infrastructure and clean energy technologies, the demand for these base metals is expected to increase substantially in the coming decades.

1.1.3 The Pur-Banera belt, located in the Bhilwara district of Rajasthan, represents an important Proterozoic metallogenic province associated with the Pur-Banera Group of rocks. This belt comprises a sequence of metasedimentary and metavolcanic rocks including schists, quartzites, Phyllites, and carbonate rocks, which have undergone multiple phases of deformation and metamorphism. These geological conditions have provided a favourable environment for the formation and localization of base metal sulphide mineralization within the region.

1.1.4 Base metal mineralization in the Pur-Banera belt is generally associated with sulphide minerals such as chalcopyrite, galena, sphalerite, and pyrite. These sulphide minerals occur in veins, disseminations, and strata bound forms within the host rocks. The mineralization is often structurally controlled and influenced by faults, fractures, and shear zones developed during regional tectonic events. Such geological features have played a significant role in the concentration and emplacement of base metal deposits within the belt.

1.1.5 The Pur-Banera belt forms part of the Bhilwara Supergroup and represents an important geological terrain for understanding the metallogeneses of base metals

in northwestern India. Previous geological studies and exploration activities have indicated the presence of promising base metal occurrences in this region. However, the complexity of lithological variations, structural controls, and metamorphic overprinting presents challenges in exploration and resource evaluation.

- 1.1.6** Considering the increasing demand for base metals in industrial development, renewable energy infrastructure, and modern technological applications, systematic exploration and detailed geological studies of the Pur–Banera belt are essential. Understanding the lithological associations, structural framework, and mineralization patterns of this belt will contribute significantly to identifying potential base metal resources and strengthening the mineral resource base of the country.

1.2.0 BACKGROUND

- 1.2.1** Emphasis has been given to explore the more numbers of blocks for Base Metal minerals in the different states of India by Govt of India. Keeping this in view, the present proposal Reconnaissance Survey (G-4) for Base Metal and associated minerals is proposed in near village Kalsans - Reechhra Dist. Bhilwara, Rajasthan

1.3.0 LOCATION AND ACCESSIBILITY

- 1.3.1** The proposed area comprises of 24.5 sq. km area and lies in Bhilwara District (part of Toposheet no 45K/11) Rajasthan. The major villages falling in and around the proposed block are Kalsans, Reechhra. The area is well connected with district HQ Bhilwara by - SH-56. And NH-48 the study area is well traversed with metalled, semi metalled and gravel road. Nearest railway station is Bhilwara Railway Station of SSW railway which is present in the SW part of the study area and nearest airport is Kota located 113 km approx. from the study area.
- 1.3.2** The location map of the proposed block is provide as Plate No: 1 The detailed location of the boundary points are given in Table No : 01

Table No 01 Coordinates of Corner Points of Proposed Kalsans - Reechhra Area Bhilwara District Rajasthan

POINT	LATITUDE	LONGITUDE
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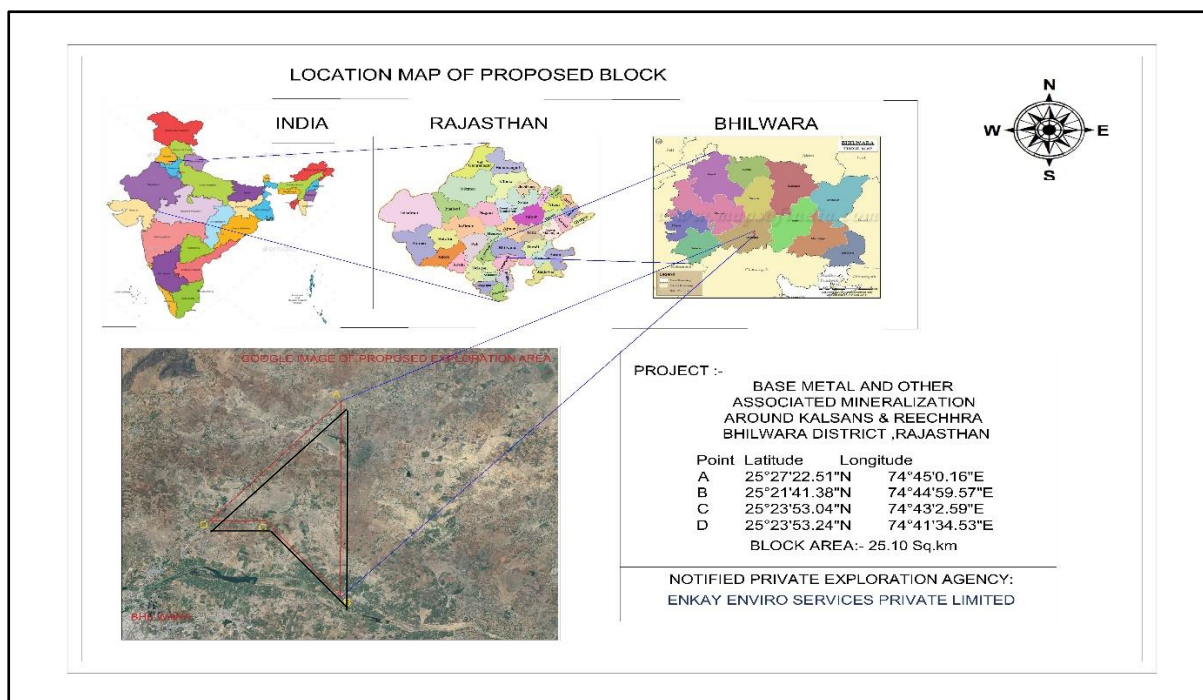


PLATE NO: 01 LOCATION MAP OF PROPOSED AREA

1.4.0 PHYSIOGRAPHY, DRAINAGE AND CLIMATE

- 1.4.1 Bhilwara District is located in the south-eastern part of Rajasthan and has a varied physiography consisting mainly of plateaus, plains, and hill ranges. The district is influenced by the hills of the Aravalli Range, which run through parts of the region and create a rugged terrain in some areas. The land surface is generally an undulating plateau with scattered rocky hills and broad plains. In the eastern part, the terrain merges with the Vindhyan Plateau. The soils are mainly sandy loam to clay loam and are suitable for agriculture in many areas.
- 1.4.2 The drainage system of Bhilwara district mainly belongs to the basin of the Banas River, which is the principal river of the region. It flows through the district and forms an important source of water for irrigation and other uses. Several tributaries such as the Kothari River, Berach River, Khari River, and Chandrabhaga River also flow through the district. Most of these rivers are seasonal and depend mainly on monsoon rainfall. The drainage of the district ultimately becomes part of the larger Chambal River system.
- 1.4.3 The climate of Bhilwara district is semi-arid and continental in nature. The region experiences very hot summers, a moderate monsoon season, and cool winters. Summer temperatures can rise up to about 45–47°C, while in winter the temperature may fall to around 7°C. The district receives most of its rainfall during the southwest monsoon between June and September, with an average annual rainfall of around 600–800 mm.

1.5.0 FLORA AND FAUNA

- 1.5.1 Natural vegetation in Bhilwara district mainly consists of dry tropical thorn forests and scrub vegetation due to the semi-arid climate. Common trees found in the region include Babool, Neem, khair, ber, and palas. The forest cover is relatively limited but supports a variety of wildlife. Animals commonly found in the area include nilgai, jackal, fox, chinkara, mongoose, and monitor lizard. Various birds such as peafowl and vultures are also commonly seen in the district.

2.0.0 REGIONAL GEOLOGY

- 2.1.1 Bhilwara District lies within the south-eastern part of Rajasthan and forms a significant segment of the Bhilwara Supergroup belonging to the Precambrian terrain of the Aravalli Craton. The district is geologically important as it exposes some of the oldest rock formations of north-western India. The basement rocks are mainly composed of gneisses, schists and migmatites which are grouped under the Mangalwar Complex. These rocks are overlain by metasedimentary sequences belonging to the Bhilwara Supergroup consisting of quartzite, schist, phyllite, dolomite and marble. The geological history of the region records several phases of deformation, metamorphism and igneous activity during the Precambrian period.
- 2.1.2 The rocks of the Bhilwara Supergroup are intruded by granitic bodies belonging to the Erinpura Granite Intrusion and other younger granites. These granitic intrusions occur as batholiths, stocks and pegmatite veins in several parts of the district. The region has also experienced intense folding, faulting and metamorphism related to tectonic movements associated with the evolution of the Aravalli Range. Pegmatite and quartz veins are common in the metamorphic rocks and are often associated with economically important minerals such as feldspar, mica and quartz. Basic dykes and dolerite intrusions cutting across the older formations are also reported in parts of the district.
- 2.1.3 The geological formations of the district are structurally controlled and display prominent folds, joints and faults trending mainly in a NE-SW direction parallel to the Aravalli structural trend. The rocks are well exposed in hill ranges and isolated ridges while the plains are generally covered by weathered material and alluvium. Lithologically, the area is characterized by a complex assemblage of gneiss, schist, quartzite, phyllite and granitic rocks belonging mainly to the Bhilwara Supergroup and associated intrusive bodies. These geological formations not only define the structural framework of the region but also contribute to the mineral wealth for which Bhilwara district is known.
- 2.1.4 Generalized classification of Bhilwara Supergroup (modified after S.N Gupta et al., 1997) is given in the Table no.2 below:

Table No 2: Classification of Bhilwara Supergroup (modified after S.N Gupta et al., 1997)."

Age	Group / Complex	Formation / Units
Unclassified Granites and Basic Rocks	Ranthambore Group	Bari Sadri Formation
		Hora Formation
		Mandalgarh Formation
Lower Proterozoic	Jahazpur Group	Chuleshwarji / Jhikri / Umer Formations
	Rajpura–Dariba Group	Satdudhia Formation
		Sindesar Formation
		Dariba Formation
		Malikhera Formation
		Bhinder Formation
	Pur–Banera Group	Samodi Formation
		Tiranga Formation
		Rewara Formation
		Pur / Pansal Formation
	Sawar Group	Morhi Formation
		Ghatiali Formation
Intrusives	—	Berach Granite and Gneiss (~2585 Ma)
		Untala and Gingla Granites (~2860 Ma)
		Ultramafics, Giyangarh–Asind acidic rocks
		Raipur–Jalayan mafic rocks
Archaean	Hindoli Group	Nangauli Formation
		Sujanpura Formation
		Bhadesar Formation
	Mangalwar Complex	Potla / Rajmahal Formations
		Lasaria / Suwana Formations

		Kekri Formation
		Mando-ki-Pal Formation
		Sarara Formation
	Sandmata Complex	Baranch Formation
		Badnor Formation
		Shambhugrah Formation

2.1.5 REGIONAL GEOLOGY

The Bhilwara Supergroup represents an important Precambrian metasedimentary sequence exposed in parts of Bhilwara District and adjoining regions of Rajasthan. It unconformably overlies the basement rocks of the Mangalwar Complex and consists mainly of low to medium grade metamorphosed sedimentary rocks. The lithology of this Supergroup comprises phyllite, mica schist, quartzite, calc-silicate rocks, dolomite, limestone and marble, along with minor metavolcanic components. The rocks of the Bhilwara Supergroup have undergone multiple phases of deformation, folding and regional metamorphism, resulting in well-developed foliation, schistosity and structural complexity. This Supergroup forms an important component of the Precambrian geological framework of the Aravalli Range region.

Pur-Banera Group

The Pur-Banera Group forms a major subdivision of the Bhilwara Supergroup and is widely exposed in the Pur and Banera areas of Bhilwara district. This group is composed mainly of metasedimentary rocks such as phyllite, schist, quartzite, dolomite, dolomitic marble and calc-silicate rocks. The sequence also includes bands of graphitic schist, amphibolite and metavolcanic rocks at certain places. The rocks of the Pur-Banera Group show well-developed foliation, folding and shearing due to tectonic movements associated with the evolution of the Aravalli orogenic belt. The lithological assemblage and structural features of this group make it favourable for the occurrence of base metal mineralization, particularly lead and zinc deposits in certain localities.

Mangalwar Complex

The Mangalwar Complex constitutes the oldest geological unit in the region and

forms the crystalline basement underlying the Bhilwara Supergroup. It is mainly composed of high-grade metamorphic rocks such as banded gneiss, biotite gneiss, granitic gneiss, migmatite and amphibolite. These rocks represent the Archaean continental crust and have undergone intense deformation, recrystallization and migmatization during multiple tectono-metamorphic events. The complex also contains quartz veins, pegmatite intrusions and granitic bodies that cut across the gneissic rocks. The Mangalwar Complex forms the structural and lithological foundation upon which the younger metasedimentary sequences of the Bhilwara Supergroup were deposited.

3.0.0 Geology of the Block

3.1.0 The block is predominantly covered by fine Aeolian sand and silt with occasional kankar of Quaternary age. Although the area is largely covered by Aeolian deposits, the stratigraphy indicates that these Quaternary fine Aeolian sands and silts overlie the basement rocks of the Mangalwar Complex, which occur beneath the superficial cover. Granite and granite gneiss are exposed mainly along the margins and in the southern part of the area. Minor occurrences of dolomitic marble and dolomite are also present in small patches. The central to southern part of the block displays mixed lithology, which may provide favorable conditions for structural control and the occurrence of base metal mineralization.

TABLE: 3 STRATIGRAPHY OF AREA

Supergroup	Group	Formation	Lithology	Age
Bhilwara Supergroup	Pur-Banera Group	Tiranga and Rewara Formation	phyllite, mica schist, quartzite, calc-silicate, dolomite, dolomitic marble, limestone	Lower Proterozoic
Bhilwara Supergroup	Mangalwar Complex	Potla/Rajmahal Formations	gneisses, migmatites, schists, biotite gneiss, banded gneiss, granitic gneiss and migmatitic gneiss	Archaean

3.2.0 DESCRIPTION OF THE ROCK TYPES

- 3.2.1 Sand, soil and alluvium:** More than 90% of the total area mapped is covered by a thick deposit of soil and alluvium. Sand occurs in the form of longitudinal sandy plains. The western part of the area is characterised by sand cover while the rest of the area is plain. The average thickness of sand cover in the plain area as noticed in wells, is about 2-3 metres. The colour of soil varies according to the parent rock. Alluvium occurs as thin, narrow creeks along the Kothari River.
- 3.2.2 Quartzite:** Quartzite forms one of the dominant lithological units in the area. It is generally hard, compact, medium- to coarse-grained, and composed predominantly of recrystallized quartz. The rock is massive to foliated in nature and commonly exhibits grey, whitish grey, pinkish, and brownish colours. In places, quartzite is highly fractured and traversed by quartz veins and silicified zones. Iron staining, limonitization, and sulphide specks are observed locally along fractures and shear zones. Quartzites often act as favourable host rocks for hydrothermal fluid movement and associated sulphide mineralization.
- 3.2.3 Phyllite and Schist:** Phyllite and schist occur as foliated metasedimentary rocks within the block area. These rocks are fine- to medium-grained and exhibit well-developed schistosity and cleavage. The colour varies from grey, greenish grey, and brown to dark grey. Mineralogical, these rocks comprise quartz, sericite, chlorite, biotite, muscovite, and subordinate feldspar. The schistose rocks are frequently sheared, folded, and weathered. Sulphide mineralization is often associated with schistose and sheared horizons due to enhanced permeability and fluid circulation.
- 3.2.4 Amphibolite / Mafic Meta-volcanics:** Amphibolite bands and mafic metavolcanic rocks occur as dark coloured, medium- to coarse-grained units within the metasedimentary sequence. These rocks are generally composed of hornblende, actinolite, plagioclase, chlorite, and epidote. The amphibolites are massive to foliated and are commonly associated with tectonic contacts and shear zones. These rocks may represent metamorphosed basic volcanic flows or doleritic intrusive. Sulphide dissemination and alteration are occasionally developed near contacts and fractures.

3.3.0 STRUCTURE

- 3.3.1** The Kalsans–Reechhra block is structurally controlled and exhibits multiple phases of deformation represented by foliation, folding, faulting, shearing, jointing, and fracturing. The structural disposition of the rocks is mainly governed by regional tectonics of the Aravalli–Delhi Fold Belt in Rajasthan.

The dominant structural trend in the area is generally NE–SW to NNE–SSW, which is consistent with the regional strike of the metasedimentary formations. Mica schist occurring in the northern and western parts of the block shows prominent foliation and schistosity developed due to regional metamorphism and tectonic deformation.

Quartzite and schist units are highly fractured and jointed at places, and several quartz veins and veinlets are observed occupying fractures and weak planes. Shear zones and silicified fractures are important structural features and may act as favourable loci for hydrothermal fluid circulation and sulphide mineralization.

4.0.0 PREVIOUS WORK

4.1.1 Sanganer Area, FS 1985–86:

A magnetic survey was undertaken by A.K. Agarwal, R.N. Agarwal, and Narendra Singh to evaluate the geological framework, structural setup, and base metal potential. The study revealed mineralization within a doubly plunging antiform structure. Borehole data confirmed strata bound mineralization with minor Pb–Zn values in the upper horizons and predominant Cu (~0.5%) in the lower Proterozoic horizon, lacking apparent structural control.

4.1.2 Pur-Banera-Rajpura-Dariba-Bhinder Belt, FS 1987–88:

S.N. Patel conducted geological mapping across parts of Bhilwara, Chittorgarh, and Udaipur districts. Amphibolite enclaves within the Mangalwar Complex were identified as favourable for copper mineralization. High Cu values were reported in cell numbers 56 (15.47 MT), 190 (16.01 MT), and 192 (17.56 MT). Lead and zinc occurrences were limited and mainly confined to the Pur-Banera segment, with some Cu-rich samples also showing gold association (notably in cells 56 and 190).

4.1.3 Lanpiya- Indrapura, FS 2018-19:

The project involved Large Scale Mapping over 108 sq. km in the Lanpiya–Indrapura area including previously explored Banera and Sanganer Block (Toposheet No. 45K/11) at 1:12,500 scale to assess base metal potential and delineate possible ore bodies. Field work included 116 cubic meters of pitting/trenching and collection of 165 BRS, 106 PTS, 50 stream sediment samples, and 15 PCS for chemical analysis. Additionally, 30 groundwater samples were collected to trace subsurface mineralization in soil/alluvium-covered areas. For mineralogical studies, 5 ore microscopic samples, 5 XRD samples, and 25 petrographic samples were collected. Based on surface mineralization indicators, favourable lithological and structural settings, and analytical results (BRS, stream sediments, trench/channel samples, and hydro geochemical data), three significant base metal mineralized zones—MZ1, MZ2, and MZ3—were delineated. These are located east of Ranikpura, northwest of Mahuwakhurd, and west of Lanpiya village, respectively.

4.1.4 Suwana Block, FS 2019–20 (with references to earlier work):

Geologists Bindiya Vandana Ekka and Shruti Singh carried out reconnaissance mapping over 40 sq km, with detailed mapping over 2.15 sq km. Earlier detailed mapping by C.P. Sisodia (FS 1985–86) under the AMSE project and geochemical mapping during FS 2005–07 indicated anomalous Cu (up to 78 ppm), Pb (170 ppm), and Zn (330 ppm) values. Petrochemical samples showed maximum Cu at 350 ppm, Pb at 32 ppm, and Zn at 143 ppm. Bedrock samples near Kewara and Balaji ka Khera recorded Cu values up to 0.418%, though trench and pit samples returned lower Cu concentrations, with a maximum of 306 ppm (Pit No. 32), suggesting limited surface expression of mineralization.

4.1.5 Kodukota-Raser-Lulas-Kallyakhera Area, FS 2022–23:

Avi Mero and Imlishila Imchen conducted a reconnaissance survey targeting REE and associated minerals over 100 sq. km (1:12,500 scale) in Toposheet 45K/15. While bedrock and petrochemical samples showed modest Σ REE values (<1000 ppm), more promising results were obtained from soil (up to 3241 ppm), stream sediment (up to 5624 ppm), and heavy mineral sediment samples (up to 3757 ppm). These anomalous values are localized near Sidariyas village, within a 4.9 sq. km area associated with pegmatite intrusions in garnet mica schist.

5.0.0 MINERAL POTENTIALITY OF THE BLOCK

The block located in the expanse of the Pur-Banera Group and Mangalwar Complex of Bhilwara Supergroup, represents a highly prospective geological environment for the occurrence of Base metal and associated mineralization. The block is predominantly covered by fine Aeolian sand and silt with occasional Kanker of Quaternary age. Although the area is largely covered by Aeolian deposits, the stratigraphy indicates that these Quaternary fine Aeolian sands and silts overlie the basement rocks of the Mangalwar Complex, which occur beneath the superficial cover. Granite and granite gneiss are exposed mainly along the margins and in the southern part of the area. Minor occurrences of dolomitic marble and dolomite are also present in small patches. The central to southern part of the block displays mixed lithology, which may provide favorable conditions for structural control and the occurrence of base metal mineralization.

The block forms part of the Pur- Banera Belt, a region already established as India's most significant Base metal - bearing Proterozoic terrain, with known occurrences in Suwana, Kewara, Balaji Ka Khera, Lanpiya, and surrounding area. The Kalsans - Reechhra block lies within the eastern extension of this geological terrain and exhibits all the fundamental features for enriched in base metal deposits.

Approximately 90% of the block area is covered by soil and alluvium; however, scattered rock exposures in the northern and western parts reveal mica schist,

quartzite, and structurally disturbed zones. The presence of foliated schist, fracture systems, quartz veining, silicification, Ferruginization, and shear-controlled structures indicates favourable conditions for circulation of mineralizing hydrothermal fluids.

The mica schist exposed in the northern and western part of the block appears to be the most prospective host rock for base metal mineralization due to:

- Well-developed schistosity and foliation
- Presence of fractures and shear zones
- Association with quartz veins and veinlets
- Hydrothermal alteration features

Quartzite horizons and contact zones between lithological units may also act as favourable sites for sulphide deposition. Structurally controlled mineralization associated with fractures, joints, and sheared zones is expected within the block area.

The probable ore minerals expected in the area include:

- Chalcopyrite (Cu)
- Galena (Pb)
- Sphalerite (Zn)
- Pyrite and other sulphides

5.1.1 High Base Metal Potential in a Geochemically Evolved metasedimentary rocks

In conclusion, the block exhibits a favourable geologic environment for Base metal mineralization based on: Extensive metasedimentary rocks with evidence of strata bound and volcanogenic base metal mineralization, known worldwide as hosts for Cu, Pb, and Zn. The block lies within a structurally disturbed zone (folds, lineaments and probable shear trends), and such structural corridors commonly act as conduits for hydrothermal fluids responsible for sulphide deposition. Therefore, the integrated geological and geophysical signatures collectively support the possibility of structurally controlled, stratiform to volcanogenic base metal (Cu-Pb-Zn) mineralization within the proposed block, warranting detailed exploration at G-4 stage.

6.0.0 SCOPE OF THE PRESENT EXPLORATION: -

Based on the evaluation of geological data available, the present exploration program has been formulated to fulfill the following objectives:

1 For the total block area, assessment will be performed by geological mapping **(1:12,500 scale)** and identification of host rock and surface evidence of mineralisation. This will lead to an area reduction.

2 To collect systematic bedrock and channel samples for analysis of 24 elements by IC-PMS which include base metal to understand the distribution on primary source.

3 To carry out detail surface geophysical survey by gravity, magnetic and Gamma ray spectrometry method to understand the continuity and characteristics of Mangalwar complex below the Quaternary fine Aeolian sand cover.

4 To carry out scout drilling of boreholes to establish subsurface occurrence of Base Metals.

6.1.0 GEOLOGICAL MAPPING

6.1.1 Geological mapping will be carried out in the entire 24.5 sq.km area on 1:12500 scale. Rock types, their contact, structural features will be mapped. Surface manifestations of the mineralization (Base metal) available along with their surface disposition will be marked on map.

6.2.0 GEOCHEMICAL SAMPLING

6.2.1 Bed Rock Sampling: bedrock samples will be collected systematically in grid pattern during mapping from the various Litho units present in the area, to understand the distribution of Base metal in Migmatites, amphibolite and mica schist.

6.3.0 EXPLORATORY DRILLING

6.3.1 Scout drilling will be carried out in accordance with the amended MEMC rule after mapping of all the rock type, lineaments and major structural systems. A provision of 750m of core drilling has been kept in the exploration scheme which will be finalized after geological mapping.

6.3.2 **Borehole Samples:** Core sampling is carried out after detailed core logging of the borehole. Since the Base Metal mineralization cannot be distinguished easily by naked eye or petrographic studies, sampling can be done on the basis of the mineralized zones established on surface by channel sampling. The sample interval is kept at 1m. However, to avoid mixing of samples of different lithologies, variable lengths samples may be collected near to the Litho contacts.

6.4.0 Chemical Analysis

6.4.1 All samples including bedrock samples, channel samples and borehole core samples will be subjected to chemical analysis of all Base metal elements through WD-XRF at western region Jaipur.

6.5.0 PETROLOGICAL STUDIES

6.5.1 During the course of Geological mapping, drilling and sampling, samples from outcrops and borehole core samples of various Litho units will be collected for Petrographic Studies.

6.6.0 XRF STUDY

6.6.1 To know the different mineral phases which can possibly host Base Metal, samples will be studied by XRD method. The samples for XRD will be selected from the samples which will analyse higher values of Base metal in bedrock, channel and core samples.

6.7.0 GEOPHYSICAL SURVEY

6.8.1 As the area is mostly under Quaternary fine Aeolian soil cover, IP cum Resistivity S.P. magnetic Survey is proposed in order to delineate the sub-surface geology of the area.

Decision points:

The exploration strategy incorporates the GO-NO GO milestones to be collaboratively decided between the Enkay Enviro Services Pvt. Ltd., State of Rajasthan and the NMET based on the results of the on-going phases. Total duration of the work plan is 10 months. The exploration plan incorporates one decision point.

Methodology

Geological Mapping (1:12,500), Lithological mapping, Sampling, Mineralogy, Geochemistry

Outcome: - Identification of Mineralisation, detail Structural Mapping, Lithology and Ore Minerals



Drilling, Core sampling, down depth of borehole, Metal assay

Outcome: - Identification of Mineralize Zone, Tectonic Setting, covered petrology, Metal percentage



Petrography, XRF (Random and Oriented) and Whole rock and Trace Element Assay

Outcome: - 1. Vector to additional target. 2. Identification of Actual Mineralisation Zone
3. Characterisation of Mineralised zones and Report with recommendation for the next stage of exploration

7.0.0 TIMELINE

7.1.1 The entire project is planned tentatively for 10 months. Initially, geological mapping, geophysical survey and surface bedrock sampling shall be carried out followed by scout drilling provided positive results are obtained in the first phase of sampling.

Table No 04 Timeline

Annexure 3B													
Timeline- Reconnaissance Survey (G4) of Zn and associated Critical Mineralization in Kalsans-Reechhra Area, Bhilwara District32, Rajasthan													
S. No	Activity	MONTHS											
		M1	M2	M3	M4	Review	M5	M6	M7	M8	Review	M9	M10
1	Camp setting												
2	Geological mapping												
3	Sample preparation												
4	Analytical work												
5	Pitting and Trenching												
6	Sample preparation (Pit and Trench samples)												
7	Analytical work												
8	Drilling												
9	Report Writing with Peer Review												
10	FGR Submission												

Annexure I

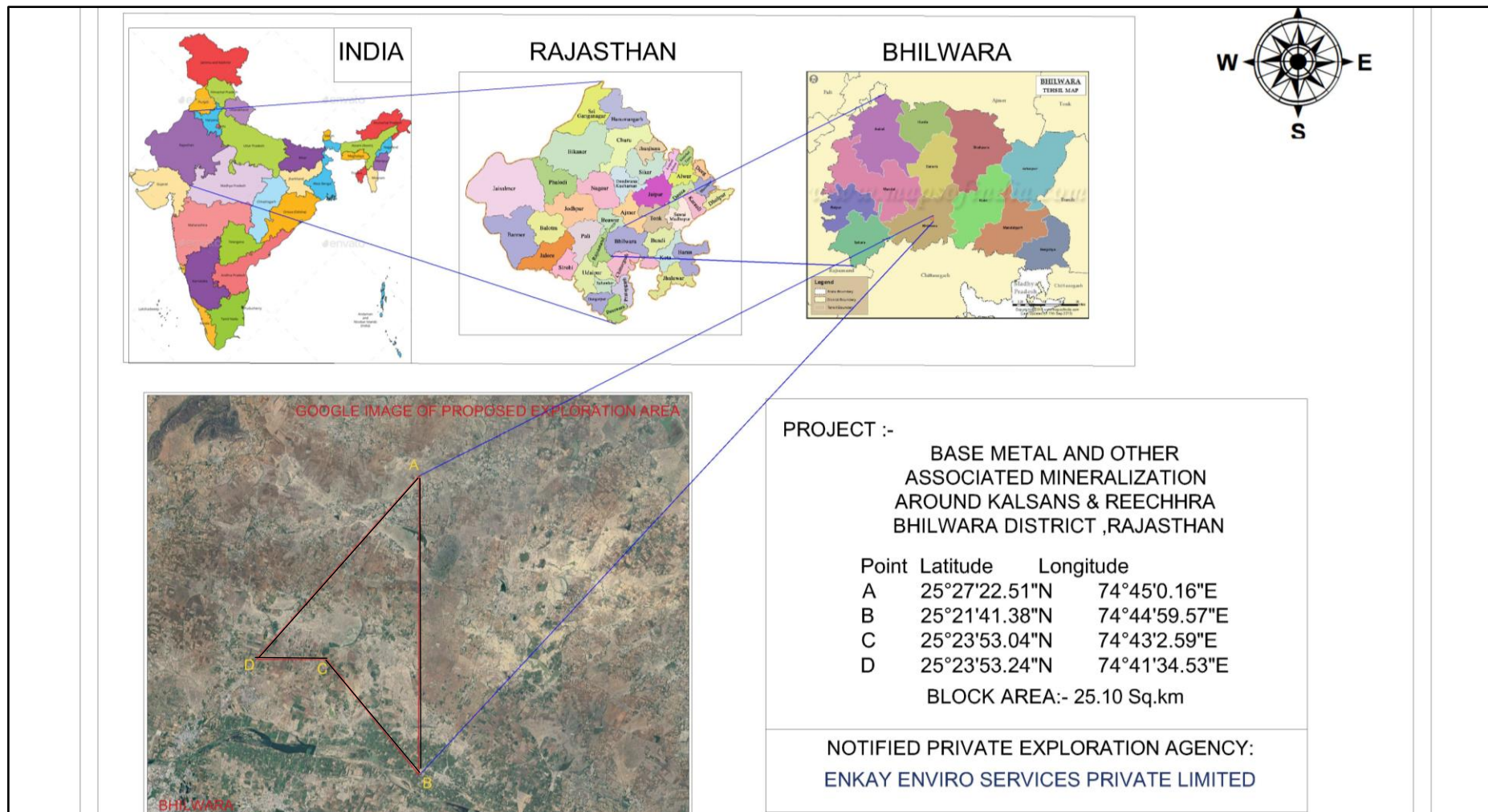
Annexure-10								
Cost Estimate for Reconnaissance Survey (G4) of Zn and associated Critical Minerals in Kalsans-Reechhra Area District Bhilwara, Rajasthan . Area: 24.5 sq.km, Total Drilling: 300 m, BH:2, Total Duration: 10 months, Review after: 4 & 8 months.								
							PSC Approved	
1	Geological Mapping (1:12,500)							
a	Large Scale (LSM) Geological Mapping	1.1	per sq km	24.5	18300	448350	24.5	448350
b	Charges for one Geologist per day at HQ	1.2.1a (a)	per day	30	10500	315000	30	315000
c	Charges for one Geologist per day in field (without labour)	1.2.1a(b)	per day	90	14500	1305000	90	1305000
d	Labour Charges (Geologist)	5.8		180	556	100080	180	100080
e	Sample processing work including marking of samples, core splitting, crushing and powdering of samples, coning and quartering, packing & labeling of samples, preparation of beneficiation samples etc.	1.2.1b	per day	25	7850	196250	23	180550
f	Labour for sampler (4)	5.8		100	556	55600	92	51152
					Sub Total: 1	2420280		2400132
2	Survey work							
a	Demarcation of lease boundary, Fixation of borehole and determination of co-ordinates & Reduced Level (RL) of the boreholes by DGPS (including charges for labours deployed for the work) - use of CORS Network system for all	1.3.2	Per point of observation	2	24000	48000	2	48000
					Sub Total: 2	48000		48000
3	Trenching/Pitting							
a	Pitting	2.1.2	per cu.m	50	4725	236250	50	236250
b	Trenching	2.1.1	per cu.m	100	4125	412500	100	412500
					Sub Total: 3	648750		648750
4	Core Drilling (Outsourced)							
a	Drilling	2.2.1.1d	Per m	300	10000	3000000	300	3000000

b	Land/Crop Compensation	5.6	Per BH	2	30000	60000	As per actuals as certified by local authorities subject to a maximum of 30,000 per bore hole	2	60000
c	Borehole plugging by cement	2.2.8	Per BH	2	10000	20000		2	20000
d	Drill Core Preservation	5.3	Per m	50	1590	79500		50	79500
	Sub Total :4					3159500			3159500
5	Laboratory Study								
	Chemical Analysis								
a	Major oxides (WD XRF)- (oxides+ traces - 24 elements)	4.1.17a	Per Sample	150	4200	630000	BRS-20, CS-30, TS-100	150	630000
	External Check (10%)	4.1.17a	Per Sample	15	4200	63000		15	63000
b	Analysis of one rock/ soil sample for quantitative analysis of 14 REE elements + 9 trace element (U,Ta,Ge,Be,Hf,Sn,As,Rb,Th) by ICP-MS (sequential technique)	4.1.15	Per Sample	30	7400	222000		30	222000
	External Check (10%)	4.1.15	Per Sample	3	7400	22200		3	22200
	Sub Total : 5					937200			937200
6	Petrological studies								
a	Preparation of polished thin section of rock/ wafer	4.3.2	Per Sample	10	800	8000		10	8000
b	Complete petrographic /ore microscopic study/mineragraphic report of rock sample (along with 5 nos. digital photo microgrphs)	4.3.4	Per Sample	10	2800	28000		10	28000
c	Bulk Density	4.8.3	Per Sample	2	2500	5000		2	5000
	Sub Total: 6					41000			41000
	Total (1 to 6)					7254730			7234582
	Cost of Outsourced Components					3000000			3000000
	Tendering Cost				5.9	60000			60000
	Technical Supervision charge				6	300000			300000
	Total					7614730			7594582
7	Preparation of Exploration Proposal	5.1				152295			151892
8	Geological Report Preparation	5.2(ii)				250000			250000
9	Peer Review charge	As per EC				30000			30000

	GRAND TOTAL	8047025			8026474
	GST @ 18%	1448464			1444765
	Grand Total Including GST	9495489			9471239
	Rs. In Lakhs	94.95			94.71

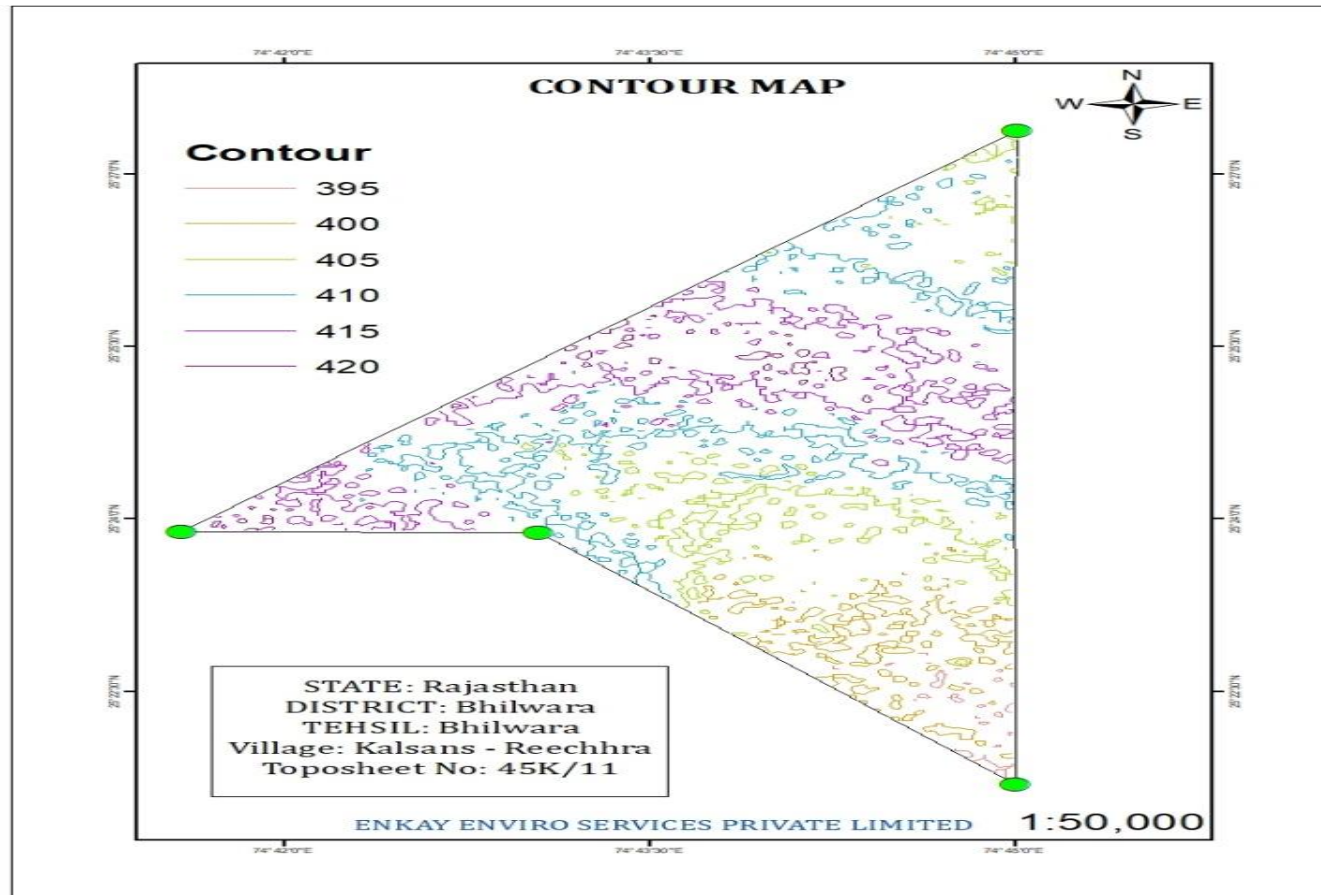
LOCATION MAP

PLATE NO 01



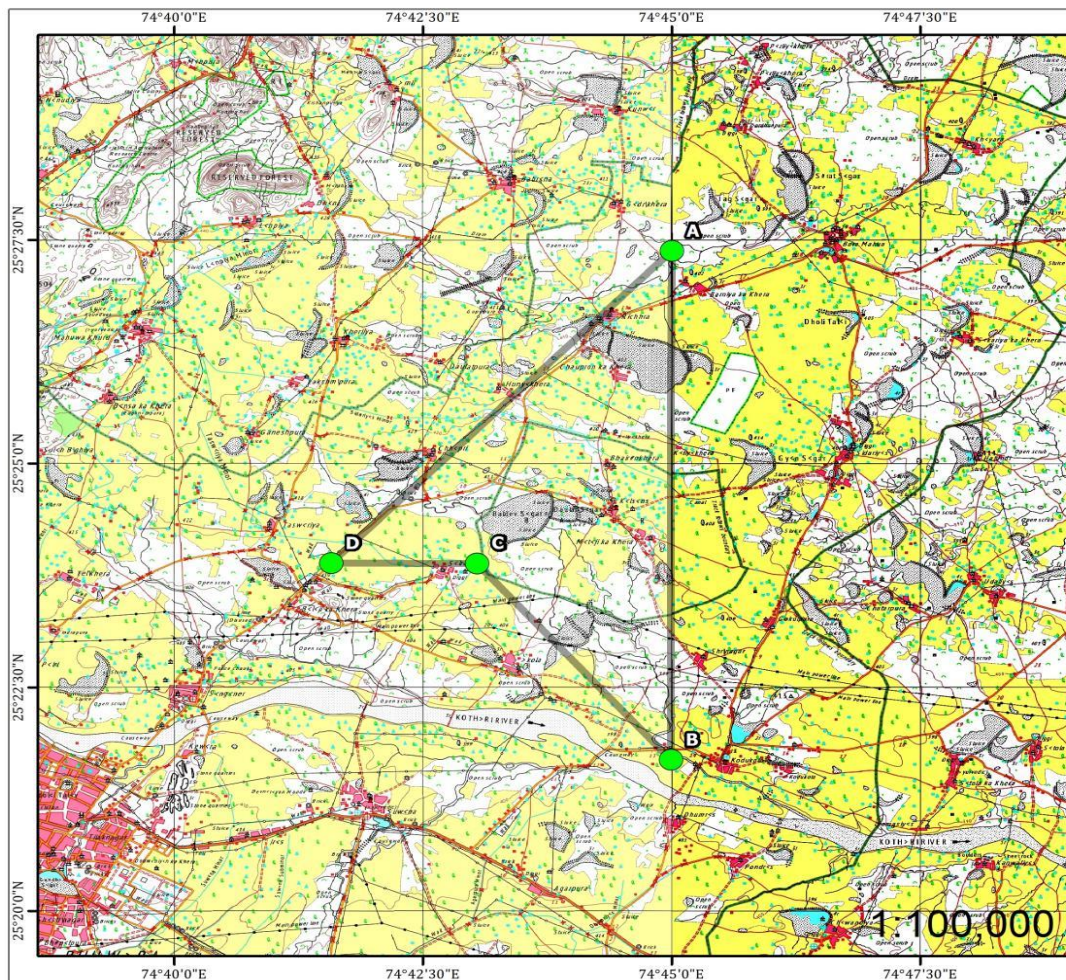
CONTOUR MAP

PLATE NO 02



TOPOGRAPHICAL MAP

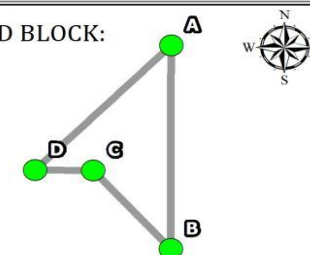
PLATE NO 03



PROPOSED BLOCK ON TOPOGRAPHICAL
MAP

SOURCE: NATIONAL GEOSCIENCE
DATA REPOSITORY (NGDR)
TOPOSHEET NO:45K/11

PROPOSED BLOCK:



POINT	LATITUDE	LONGITUDE
A	25°27'22.51"N	74°45'0.16"E
B	25°21'41.38"N	74°44'59.57"E
C	25°23'53.04"N	74°43'2.59"E
D	25°23'53.24"N	74°41'34.53"E

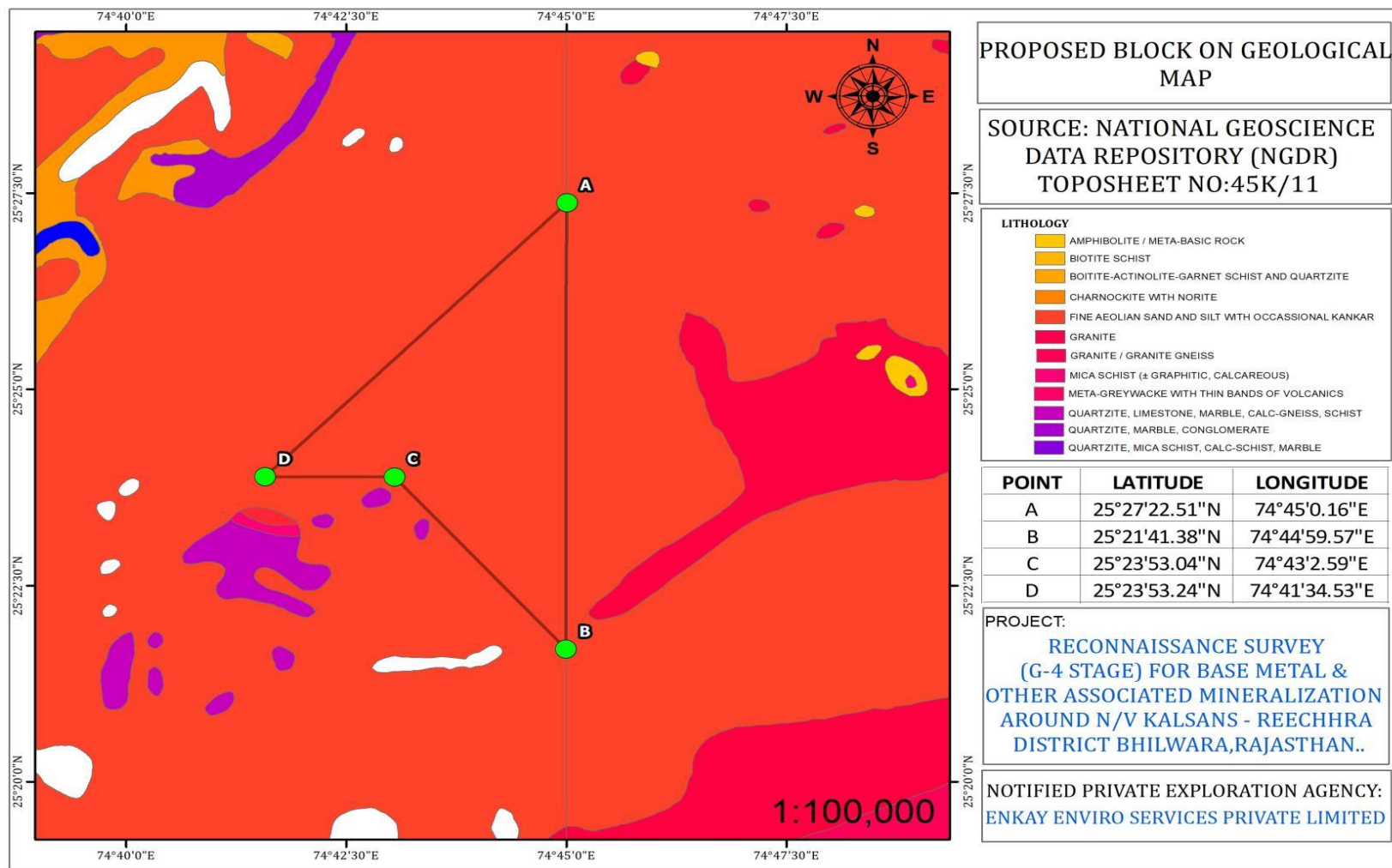
PROJECT:

RECONNAISSANCE SURVEY
(G-4 STAGE) FOR BASE METAL &
OTHER ASSOCIATED MINERALIZATION
AROUND N/V KALSANS - REECHHRA
DISTRICT BHILWARA, RAJASTHAN..

NOTIFIED PRIVATE EXPLORATION AGENCY:
ENKAY ENVIRO SERVICES PRIVATE LIMITED

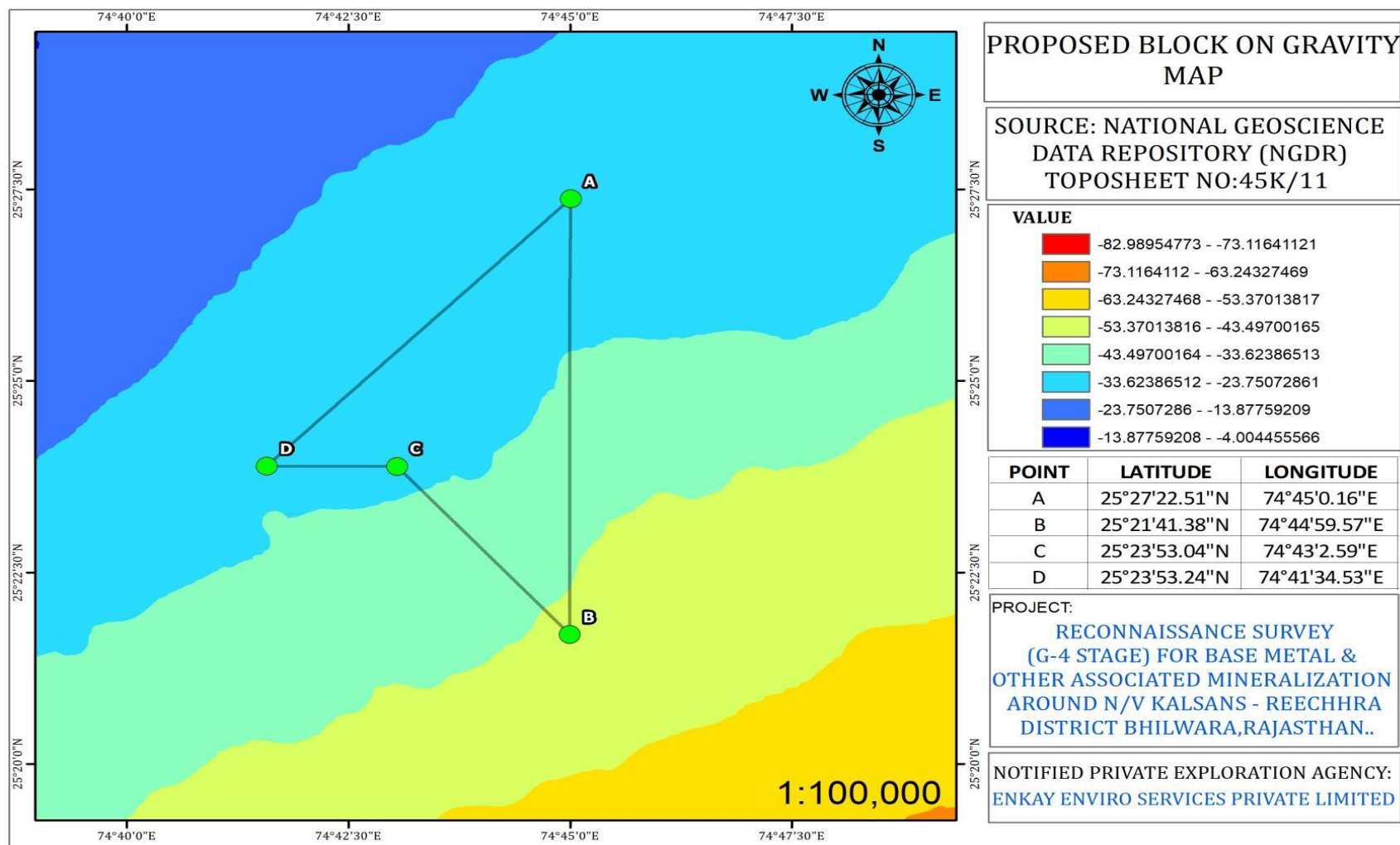
GEOLOGICAL MAP

PLATE NO 04



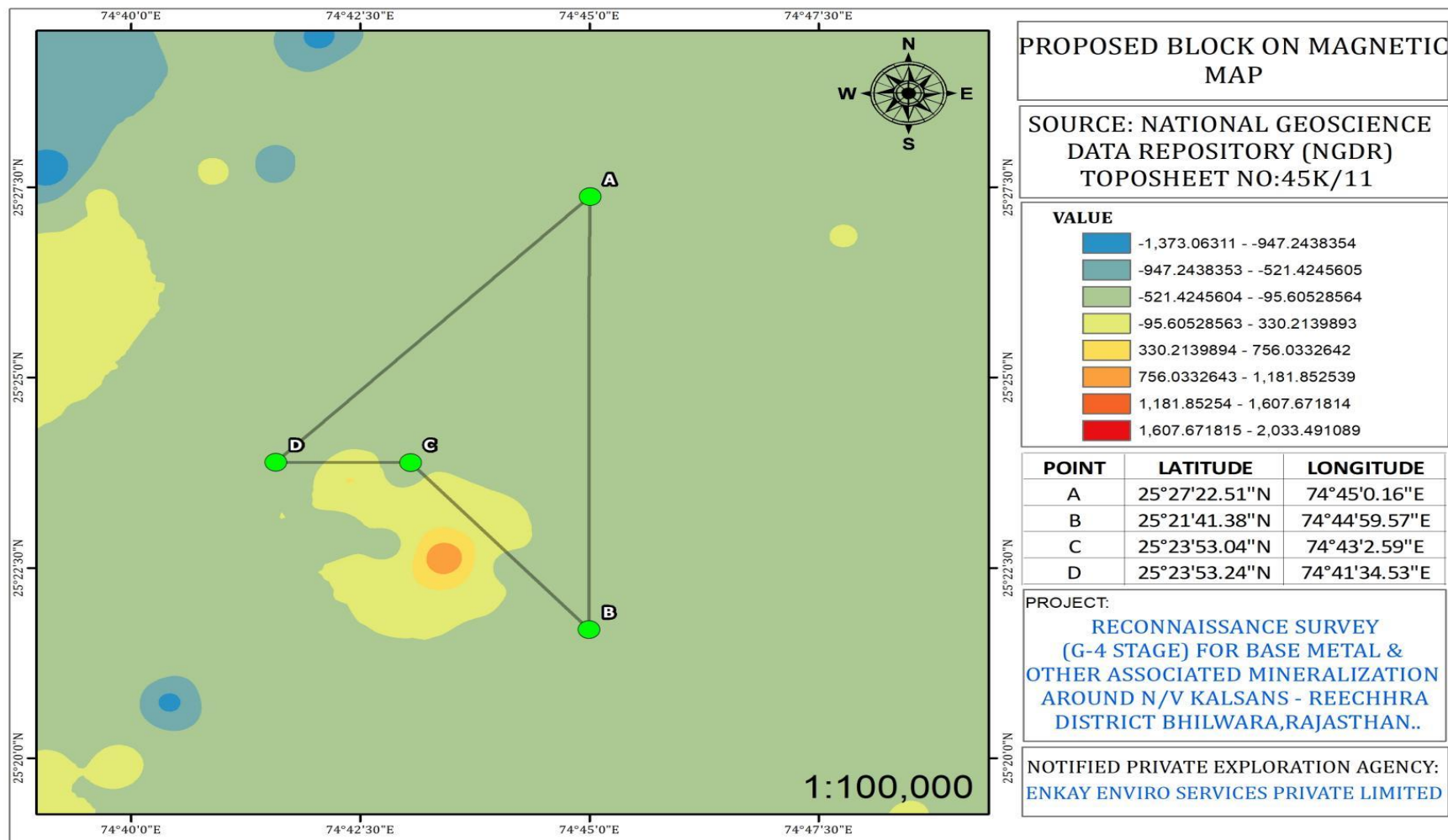
GRAVITY MAP

PLATE NO 05



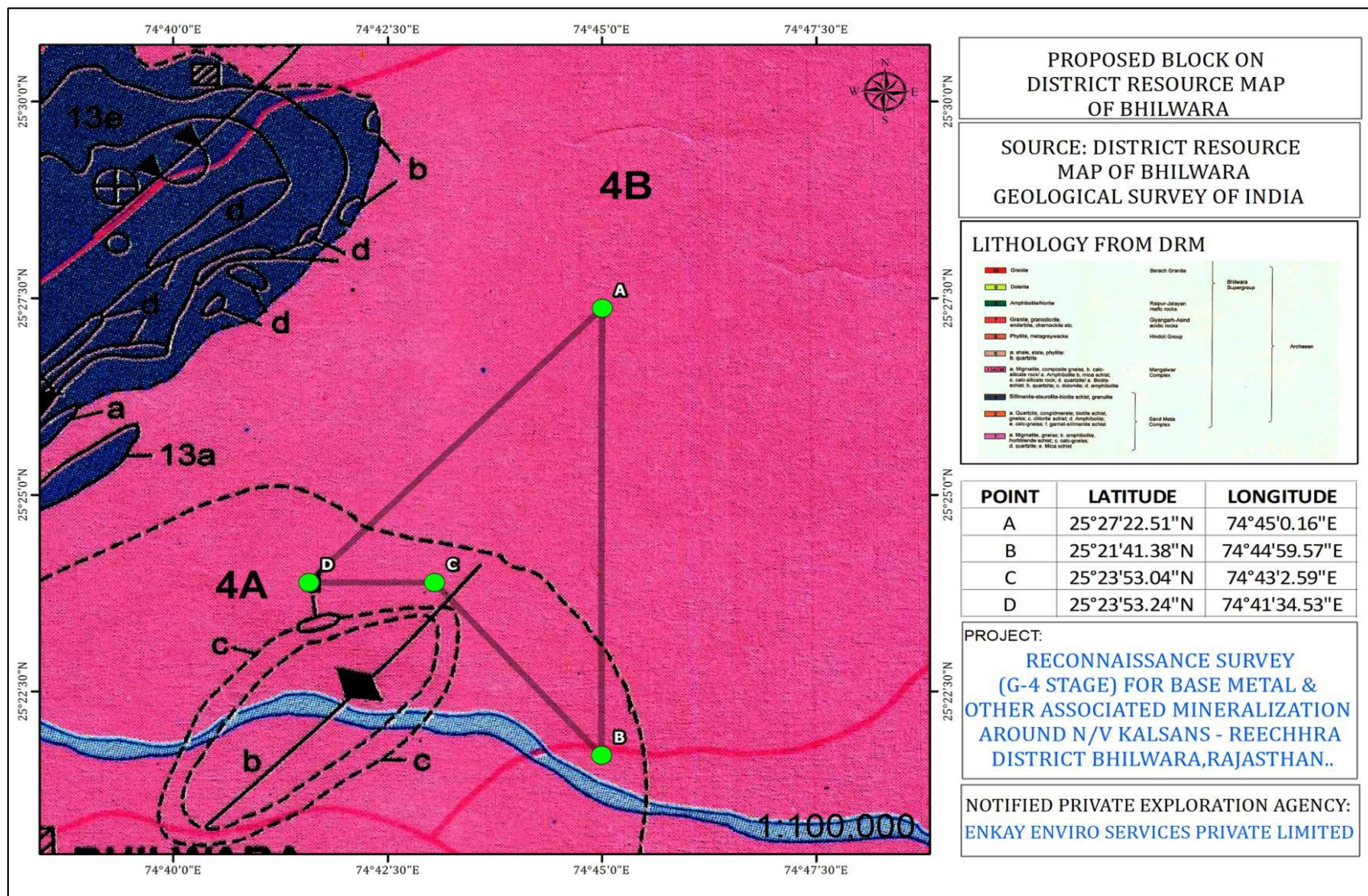
MAGETIC MAP

PLATE NO 06



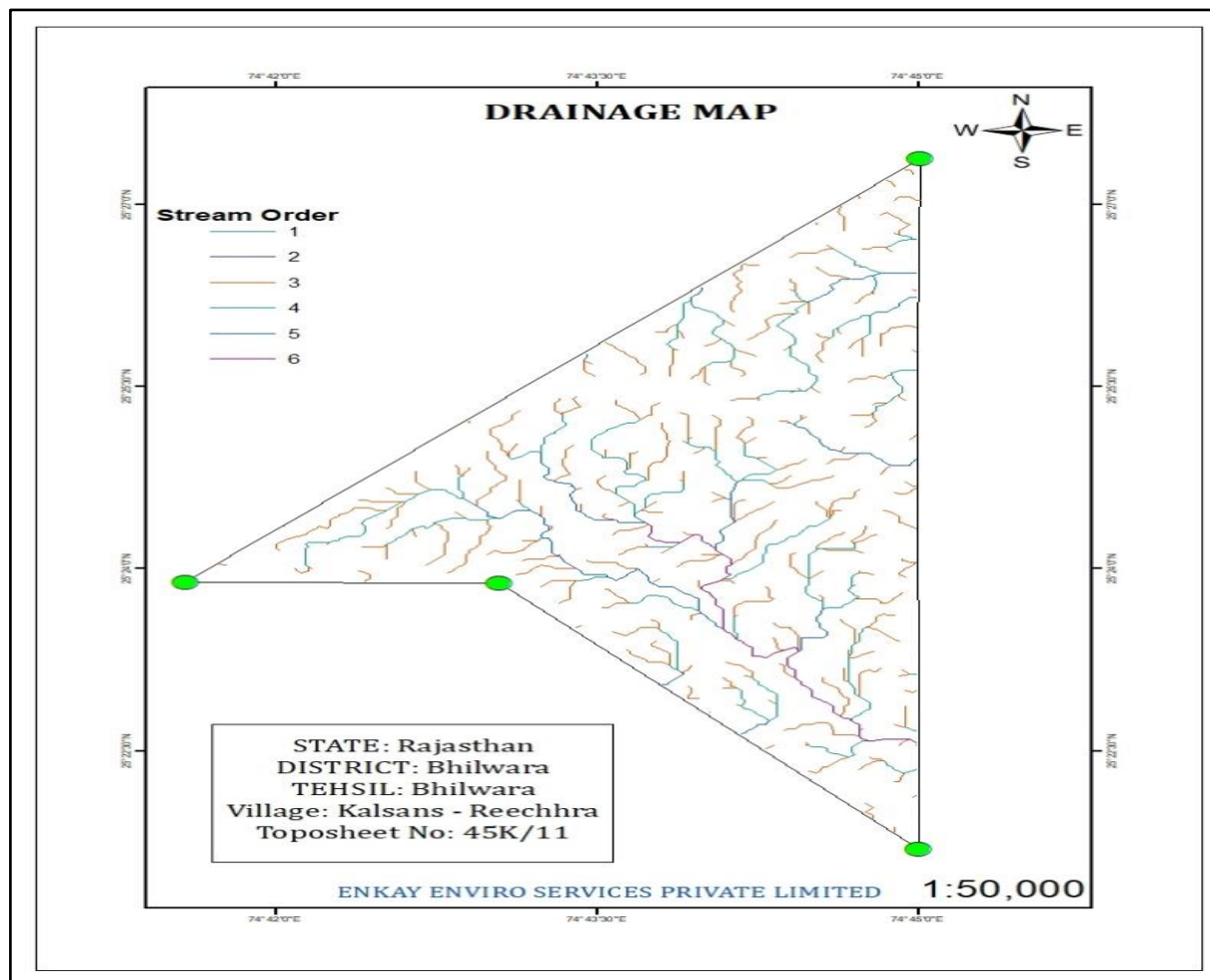
DISTRICT RESOURCE MAP

PLATE NO 07



DRAINAGE MAP

PLATE NO 08



FIELD PHOTOGRAPH

PLATE NO 09





CPVR+P6R, Reechhra, Rajasthan 311401, India
 Latitude 25°26'39.744"N Longitude 74°44'27.416"E
 LOCAL 11:52:00 TUESDAY 03.17.2026
 GMT 06:22:00 ALTITUDE 363 METER



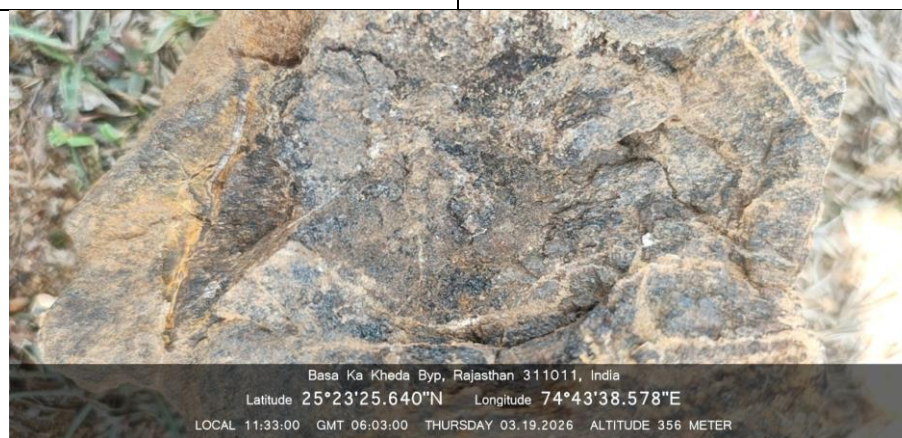
9Q85+QR9, Kodu Kota, Rajasthan 311011, India
 Latitude 25°22'5.147"N Longitude 74°45'32.854"E
 LOCAL 09:18:23 WEDNESDAY 03.18.2026
 GMT 03:48:23 ALTITUDE 0 METER



Basa Ka Kheda Byp, Rajasthan 311011, India
 Latitude 25°23'29.157"N Longitude 74°43'30.067"E
 LOCAL 10:09:02 THURSDAY 03.19.2026
 GMT 04:39:02 ALTITUDE 359 METER



CPFG+W8M, Reechhra, Rajasthan 311401, India
 Latitude 25°25'33.708"N Longitude 74°43'26.341"E
 LOCAL 11:24:25 TUESDAY 03.17.2026
 GMT 05:54:25 ALTITUDE 374 METER



Basa Ka Kheda Byp, Rajasthan 311011, India
 Latitude 25°23'25.640"N Longitude 74°43'38.578"E
 LOCAL 11:33:00 GMT 06:03:00 THURSDAY 03.19.2026 ALTITUDE 356 METER

Sample Analysis Report of Samples

Before submission of the DPR, fieldwork was carried out and 10 (ten) bedrock samples were collected. The rock/soil samples were analysed for quantitative Base Metal analysis, including Cu and 24 trace elements SiO₂, Al₂O₃, Fe₂O₃, TiO₂, CaO, MgO, MnO, Na₂O, K₂O, P₂O₅, Ba, Co, Cr, Cu, Ga, Nb, Ni, Pb, Sc, Sr, V, Y, Zn, Zr. using the XRF (sequential technique) at the GSI, Jaipur office.



Office: 15-16, Khanij Bhawan, GSI Complex,
Jhalana Institutional Area, Jhalana Doongri,
Jaipur-302004, Rajasthan

भारत सरकार / GOVERNMENT OF INDIA
भारतीय भूवैज्ञानिक सर्वेक्षण / GEOLOGICAL SURVEY OF INDIA
पश्चिमी क्षेत्र / WESTERN REGION
रसायन प्रभाग / CHEMICAL DIVISION

Phone: 0141-2710753
Email: dir.chem.wr@gsi.gov.in

13/5/26

CHEMICAL ANALYSIS REPORT

1. Sender's Name : Director, TCS Division, GSI WR
2. Sender's Letter No. : 22-04/TCS/GSI/WR/2025-26
3. Nature of Sample: Rock Samples
4. Name of the Party: Enkay Enviro Services Pvt. Ltd.
5. Nature of Test desired by the party: XRF Analysis

6. Preliminary Registration No.: Y-3121 (01-10)
7. Date of Registration: -22/04/2026
8. Method of Analysis: GSI/CL/JPR/SOP/02/XRF/2A Issue No. 2
9. Instrument used: WD XRF
10. Working group: डॉ. एमपी अशोक, अधीक्षण रसायनज्ञ, संजय कुमार, सोनाली मीना, वंदना पोपली,

वरिष्ठ रसायनज्ञ, सरिता सैनी, संदीप सिंह, वी. के. जागिड़, मोहित, रसायनज्ञ, डॉ. अभिलाषा, सहायक रसायनज्ञ

Seq	Sample No/ Ref No	SiO ₂ (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	MnO (%)	CaO (%)	MgO (%)	Na ₂ O (%)	K ₂ O (%)	TiO ₂ (%)	P ₂ O ₅ (%)	Ba (ppm)	Co (ppm)
1	Y-3121-01-XRF/ICPMS/XRD/EESPL-01	74.03	12.34	3.47	0.06	1.43	1.43	0.55	3.23	0.36	0.06	468	27
2	Y-3121-02-XRF/ICPMS/XRD/EESPL-02	9.73	0.63	6.52	0.54	38.69	19.74	0.06	0.07	0.01	0.26	126	39
3	Y-3121-03-XRF/ICPMS/XRD/EESPL-03	20.87	2.37	17.83	1.38	40.93	2.17	0.13	0.56	0.14	0.08	1133	80
4	Y-3121-04-XRF/ICPMS/XRD/EESPL-04	15.36	2.13	38.21	2.27	30.97	3.45	0.27	0.09	0.12	0.12	272	138
5	Y-3121-05-XRF/ICPMS/XRD/EESPL-05	68.93	14.25	5.01	0.03	1.39	1.91	1.26	3.09	0.7	0.08	710	18
6	Y-3121-06-XRF/ICPMS/XRD/EESPL-06	40.87	10.23	14.88	0.21	12.74	5.87	1.84	0.55	1.18	0.15	150	68
7	Y-3121-07-XRF/ICPMS/XRD/EESPL-07	19.86	1.41	8.01	0.34	38.08	10.51	0.22	0.09	0.04	0.12	127	34
8	Y-3121-08-XRF/ICPMS/XRD/EESPL-08	33.27	12.68	4.85	0.04	30.07	2.67	0.23	2.32	0.32	0.03	134	30
9	Y-3121-09-XRF/ICPMS/XRD/EESPL-09	57.68	13.21	6.64	0.08	2.43	6.55	2.22	3.45	0.6	0.15	411	15
10	Y-3121-10-XRF/ICPMS/XRD/EESPL-10	45.56	12.15	13.84	0.2	10.52	6.9	2.23	0.54	0.91	0.11	119	50

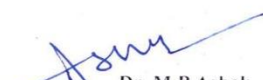
Seq no.	Sample No/ Ref No	Cr	Cu	Ga	Nb	Ni	Pb	Sc	Sr	V	Y	Zn	Zr
		(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
1	Y-3121-01-XRF/ICPMS/XRD/EESPL-01	118	37	10	8	68	35	8	97	9	10	53	71
2	Y-3121-02-XRF/ICPMS/XRD/EESPL-02	13	6	3	3	5	5	55	122	4	6	29	13
3	Y-3121-03-XRF/ICPMS/XRD/EESPL-03	47	41	5	4	35	10	66	142	109	2	43	29
4	Y-3121-04-XRF/ICPMS/XRD/EESPL-04	96	79	3	3	123	82	60	98	202	4	5699	20
5	Y-3121-05-XRF/ICPMS/XRD/EESPL-05	163	20	16	13	18	38	11	154	23	26	69	215
6	Y-3121-06-XRF/ICPMS/XRD/EESPL-06	167	48	21	6	38	6	43	168	343	23	120	77
7	Y-3121-07-XRF/ICPMS/XRD/EESPL-07	9	14	3	2	5	5	67	113	12	4	37	11
8	Y-3121-08-XRF/ICPMS/XRD/EESPL-08	53	33	12	9	42	5	45	217	66	9	111	62
9	Y-3121-09-XRF/ICPMS/XRD/EESPL-09	242	15	21	10	23	27	9	247	77	19	90	123
10	Y-3121-10-XRF/ICPMS/XRD/EESPL-10	246	61	12	5	67	10	34	144	314	17	99	52

This report related to particular sample(s) tested under stated condition. Result pertains to the sample(s) only.

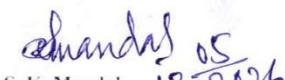
Sample(s) not drawn by us. Any discrepancy in this report should be brought to notice within 15 days from the date of certificate.

#Value is indicative only as standard is not available

Reviewed by


Dr. M.P. Ashok
Suptdg. Chemist

Authorised Signatory


Dr. S. K. Mandal
Director (Chemistry) & OIC, Chemical

Dr. SUSHIL KUMAR MANDAL

डॉ. सुशील कुमार मण्डल

निदेशक (रसायन) / Director (Chemistry)

भारतीय भूयोजनिक सर्वेक्षण, जयपुर

Geological Survey of India, W. R., Jaipur

Seq	Sample No/ Ref No	SiO2 (%)	Al2O3 (%)	Fe2O3 (%)	MnO (%)	CaO (%)	MgO (%)	Na2O (%)	K2O (%)	TiO2 (%)	P2O5 (%)	Ba (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Ga (ppm)	Nb (ppm)	Ni (ppm)	Pb (ppm)	Sc (ppm)	Sr (ppm)	V (ppm)	Y (ppm)	Zn (ppm)	Zr (ppm)
1	Y-3121-01-XRF/ICPMS/XRD/EESPL-01	74.03	12.34	3.47	0.06	1.43	1.43	0.55	3.23	0.36	0.06	468	27	118	37	10	8	68	35	8	97	9	10	53	71
2	Y-3121-02-XRF/ICPMS/XRD/EESPL-02	9.73	0.63	6.52	0.54	38.69	19.74	0.06	0.07	0.01	0.26	126	39	13	6	3	3	5	5	55	122	4	6	29	13
3	Y-3121-03-XRF/ICPMS/XRD/EESPL-03	20.87	2.37	17.83	1.38	40.93	2.17	0.13	0.56	0.14	0.08	1133	80	47	41	5	4	35	10	66	142	109	2	43	29
4	Y-3121-04-XRF/ICPMS/XRD/EESPL-04	15.36	2.13	38.21	2.27	30.97	3.45	0.27	0.09	0.12	0.12	272	138	96	79	3	3	123	82	60	98	202	4	5699	20
5	Y-3121-05-XRF/ICPMS/XRD/EESPL-05	68.93	14.25	5.01	0.03	1.39	1.91	1.26	3.09	0.7	0.08	710	18	163	20	16	13	18	38	11	154	23	26	69	215
6	Y-3121-06-XRF/ICPMS/XRD/EESPL-06	40.87	10.23	14.88	0.21	12.74	5.87	1.84	0.55	1.18	0.15	150	68	167	48	21	6	38	6	43	168	343	23	120	77
7	Y-3121-07-XRF/ICPMS/XRD/EESPL-07	19.86	1.41	8.01	0.34	38.08	10.51	0.22	0.09	0.04	0.12	127	34	9	14	3	2	5	5	67	113	12	4	37	11
8	Y-3121-08-XRF/ICPMS/XRD/EESPL-08	33.27	12.68	4.85	0.04	30.07	2.67	0.23	2.32	0.32	0.03	134	30	53	33	12	9	42	5	45	217	66	9	111	62
9	Y-3121-09-XRF/ICPMS/XRD/EESPL-09	57.68	13.21	6.64	0.08	2.43	6.55	2.22	3.45	0.6	0.15	411	15	242	15	21	10	23	27	9	247	77	19	90	123
10	Y-3121-10-XRF/ICPMS/XRD/EESPL-10	45.56	12.15	13.84	0.02	10.52	6.9	2.23	0.54	0.91	0.11	119	50	246	61	12	5	67	10	34	144	314	17	99	52
	Avg.	38.616	8.14	11.926	0.497	6.12	6.12	0.901	1.399	0.438	0.116	365	49.9	115.4	35.4	10.6	6.3	42.4	22.3	39.8	150.2	115.9	12	635	67.3