

**Proposal for Preliminary exploration (G3 Stage) of  
Bara Khurd Limestone Block, Maihar District,  
Madhya Pradesh State under NMEDT**

**(Industrial Mineral- Limestone)**

**By**

**Agency**  
**MMPL PRIVATE LIMITED**

**Place: KOLKATA**

**Date:09/03/2026**

## Summary of the Block for Preliminary Exploration (G3 Stage)

### GENERAL INFORMATION ABOUT THE BLOCK

	<b>Features</b>	<b>Details</b>
a	Block ID	Bara Khurd Limestone Block
b	Exploration Agency	MMPL Private Limited
c	Commodity	Limestone
d	Mineral Belt	Vindhyan Supergroup - Semri Group- Rohtas Limestone Formation
e	Completion Period with entire Time schedule to complete the project	12
f	Objectives	<ol style="list-style-type: none"> <li>1. To carry out Geological Mapping on 1:4,000 scale of the block (2.07 Sq. Km).</li> <li>2. To study different geological sections to build up local stratigraphy.</li> <li>3. To expose the concealed limestone and check the CaO, Fe<sub>2</sub>O<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, etc. content at shallow depth, pitting will be carried out.</li> <li>4. To check the extension of limestone in the gap area as well as below ground level, by drilling boreholes.</li> <li>5. To estimate the 333 Mineral Resources and grade for limestone in the block as per UNFC and MEMC-2015,</li> <li>6. Attempt to delineate a Limestone block or more than one block for auction.</li> </ol>
g	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	MMPL Private Limited.

	outsource agency	
h	Name/ Number of Geoscientists	Two Geologists.
i	Expected Field days (Geology) Geological Party Days	Expected field days: 90 days and 60 days for Headquarter
<b>1.</b>	<b>Location</b>	
	Latitude & Longitude	In Annexure -1
	Villages	Jowa, Bara Khurd, Tikara Khurd, Barkula
	Tehsil/ Taluk	Maihar
	District	Maihar
	State	Madhya Pradesh
<b>2.</b>	<b>Area (hectares/ square kilometers)</b>	
	Block Area	2.07 sq km
	Forest Area	Nil
	Government Land Area	Not available.
	Private Land Area	Not available.
<b>3.</b>	<b>Accessibility</b>	
	Nearest Rail Head	Maihar- 22km
	Road	Via SH11- Maihar - Vijayraghavgarh - Barhi Rd with a connected route to Ghotari approx. 7km
	Airport	Jabalpur 130 Km
<b>4.</b>	<b>Hydrography</b>	
	Local Surface Drainage Pattern (Channels)	Local surface drainage pattern is dendritic, with seasonal streams flowing towards the southwest and east
	Rivers/ Streams	The only perennial nala is the Andhiari which drains in to the Mahanadi, a tributary of the Son River
<b>5.</b>	<b>Climate</b>	
	Mean Annual Rainfall	800 mm to 1,100 mm

	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	The maximum temperature recorded is 45°C and in winter temperature drops down to 8°C.
<b>6.</b>	<b>Topography</b>	
	Toposheet Number	63D/16
	Morphology of the Area	Area features gentle undulating terrain with isolated hills and a general slope towards the southwest, indicative of a dendritic drainage pattern formed by seasonal streams. The area forms a part of the drainage basins of Satna & Tons or Tamasa River, a major tributary of the River Son. The Vindhyan rocks form ENE-WSW trending very long, linear ridges. Depending upon the rock types over which land form was developed. Wide valleys and Smooth Ridges are geomorphic units can be clearly distinguished in the area. The highest elevation in the area is 390 meters towards the SE boundary of the block, and the lowest elevation is 380 meters above mean sea level towards the west of the block.
<b>7</b>	<b>Availability of baseline geoscience data</b>	
	Geological Map (1:50K/ 25K)	1:50K Geological Map is available (Bhukosh)
	Geochemical Map	<b>Available</b>
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as local scale GP maps)	<b>Not Available</b>
	<b>Justification for taking up Reconnaissance Survey / Regional Exploration</b>	<ul style="list-style-type: none"> <li>In the proposed study area, geological and stratigraphical indications suggest the presence of the <b>Semri Group of the Vindhyan Supergroup</b>, which contains</li> </ul>

several bands of limestone. The block largely covers these lithologies and formations. The proposed area belongs to the **Rohtas Limestone Formation of the Semri Group, Vindhyan Supergroup**.

- The **Geological Survey of India (GSI)** carried out **General Exploration (G2)** in the **Riwara Block during 2018–2019**, which is located about **3 km southwest of the proposed block**. The study reported that the thickness of limestone varies from **0.57 m to 21.05 m**.

- Geological studies in this region were initially carried out by GSI in the **early 19th century**, and subsequently several investigations were conducted along the **Kaimur Hill range south of Satna district (Madhya Pradesh)**. Based on these studies, a number of suitable areas were identified for the installation of cement units.

- Three separate limestone layers have been identified: **Upper Limestone, Lower Limestone, and Purple to Grey Argillaceous Limestone**. The **highest quality limestone occurs exclusively within the Lower Grey Limestone stratum**.

- Maps prepared from earlier explorations conducted by GSI have already established the presence of limestone in this region. Therefore, **G3 stage exploration is proposed in the area**.

- GSI also carried out a study of the **Vindhyan Supergroup of rocks around the**

**Kaimur–Bhadanpur area in Jabalpur, Panna, Satna, and Shahdol districts of Madhya Pradesh during the field season 1985–1986.** In this work, S. Sanyal, S. Prasher, K. Sanyal, and K.C. Bandyopadhyay reported the occurrence of limestone in the area.

- **MMPL collected one sample from the proposed area, and the CaO value obtained from chemical analysis is 50.17%.**

Augmentation of limestone resource which is the base of the infrastructure development and makes these blocks auctionable in accordance with the existing Rules & Regulations.

Demand for cement in construction industry will increase in coming years that will further increase the demand for limestone. The infrastructural projects like rail, water, transport, electricity, telecom, etc. will have increased investments and that also arise the need of limestone.

**Based on the above findings, it is proposed to carry out G3 stage exploration for limestone in the area.**

## **Detailed description on the following titles to be made in the proposal.**

### **1. Block Summary**

**Physiography-** The area forms a part of the drainage basins of Satna & Tons or Tamasa River, a major tributary of the River Son. The Vindhyan rocks form ENE-WSW trending very long, linear ridges. Depending upon the rock types over which land form was developed. Wide valleys and Smooth Ridges are geomorphic units can be clearly distinguished in the area.

- Wide valley and Smooth Ridges this land form is observed over Limestone. The occasional sandstone forms linear continuous ridges in this geomorphic unit

### **2. Background-**

#### **2.1 Regional Geology-**

Oldham (1856) was the first to use the term 'Vindhyan' for the entire group of rocks. The Vindhyan Formations of Central India form an ENE-WSW trending syncline. The northern limb of the syncline shows Bundelkhand granite overlain by Vindhyan Formations dipping imperceptibly towards SSE. The southern limb shows sub vertical NNW dipping formations in faulted contact with Mahakoshal/Sidhi Group of rocks. Semri Group is well developed and well exposed in the eastern half of the area mapped and continues into adjoining areas eastward which exposes several well-developed sections along Son valley region. In the adjoining westward areas, around Katni, Semri Group is almost entirely concealed under post-Vindhyan cover; consequently, it is not possible to estimate the thickness. Available literature suggests decreasing thickness from east to west (Ghosh, 1981; Shastry & Moitra, 1984). As a result of decreasing thickness and facies variation along strike and particularly because of scarcity of exposures, Semri rocks west of Katni can no longer be correlated, formation wise with the Son valley succession (with the exception of Rohtas Limestone at the top Semri Group, and a vertically dipping conglomerate exposure at Sarra Which, in terms of lithology, attitude and stratigraphic position corresponds to the conglomerate at the base of Semri Group). Further west, Semri and Kaimur Groups are indistinguishable and together they constitute a linear ridge of steep newly dipping beds along Bahuriband-Biriya tract. Thickness of Kaimur Group, too, decreases from east to west. Upper half of Kaimur group shows a monolithic, cross-bedded orthoquartzite which forms a prominent south facing escarpment on Kaimur Hill; the

thickness of this orthoquartzite and its scarp forming nature diminishes westward along strike; eventually the orthoquartzite disappears under scree cover in the adjoining westward area. The lower half of Kaimur Group shows a shale-porcellanite-clay assemblage, which in some places begins with an orthoquartzite in sharp contact with the underlying Rohtas Limestone Formation. The shale-porcellanite is well exposed around Kaimur and becomes increasingly scarce along strike on either side. West of Kaimur, around Kanchhagawan region shale-Porcellanite is thinner and banded clay appears in the sequence. East of Kaimur, although exposures are rare because of scree cover, the shale-porcellanite can be seen persisting along strike, continuing into the Son Valley area towards east. It needs mentioning in the context that the shale-porcellanite assemblage is designated as Bhagwar Shale Formation, overlying Rohtasgarh Limestone Formation; and the two Formations, together, constitute Rohtas Subgroup at the top of Semri Group (Shastri & Moitra op.cit). Semri Group comprises shale-limestone-sandstone formations in which medium to coarse sand facies are largely restricted to the basal parts, (i.e. in Deoland Formation of Mirzapur Subgroup). The overlying parts i.e. Kheinjua Subgroup and Rohtas Subgroup are dominated by argillite-limestone facies. Deonar Formation (Porcellanite Stage) defines a well-known stratigraphic marker, but in terms of thickness the porcellanite beds represent a narrow period of time during Semri deposition.

The most conspicuous feature of Semri Group that distinguishes it from the overlying Kaimur, Rewa and Bhandar Groups, is recurrent appearance of limestone bands throughout the sequence, culminating in the thick and virtually monolithic Rohtas Limestone towards the end of Semri deposition. The advent of Kaimur sedimentation marks a sharp change in depositional environment which led to the alternating sequence of thick, cross-bedded sandstone and shale formations of Kaimur, Rewa and Bhandar Groups. Limestone bands reappear, after a long time-interval, in the lower parts of Bhandar Group. In the northern limb of Vindhyan syncline, limestone bands appear in the lower parts of Rewa Group as well. But inspite of the calcareous occurrences, Rewa and Bhandar Groups, in both limbs, are dominated by shale-sandstone facies. It bears emphasizing that the aforesaid discussion refers to the Semri succession of the southern limb, known from Son Valley region. The development of Semri Group in the northern limb cannot be immediately correlated with the Son Valley succession. Thus, in the southern limb, the contact between Rohtas Limestone and the overlying sandstone-Shale-porcellanite marks turning point from predominance of shale-limestone facies, to the dominance of shale-sandstone facies.

The stratigraphic column of the area mapped was derived from the order of

superposition and the nomenclature was obtained from correlation with known successions in adjoining areas (after **Shastri & Moitra, 1984**). The stratigraphic succession of the area mapped in given below in Table 1.1. Regional Geology Map of the area

Age	Group	Formation	Associated Mineral Deposits
Recent	Alluvium		--
Pleistocene	Laterite and Bauxite		Bauxite Deposit of Rewa and Satna
-----Unconformity-----			
Proterozoic	Bhandar Group	Upper Bhandar Sandstone	
		Sirbu Shale Formation	
		Nagod Limestone Formation	Limestone deposits of Damoh, Katni, Satna Districts etc,
		Ganurgarh Shale Formation	
	Rewa Group	Upper Rewa Sandstone Formation	
		Jhiri Shale Formation	
	Kaimur Group	Kaimur Sandstone Formation	Diamodiferrous Kimberlites of Panna, Limestone deposits of Mandsaur, Rewa, Satna Districts, Lead Zinc deposits of Damoh District
		Bhagwar Shale Formation	
	Semri Group	<b>Rohtas Limestone Formation</b>	
		Kheinjua Group-Rampur Formation Salkhan Formation-Fawn Limestone Koldaha Shale Formation	
Deonar Formation		Porcellanite Stage	
Base Not Seen			

### **Vindhyan Super Group:**

The entire Vindhyan succession is one of the thickest sedimentary basins with maximum thickness estimated to be around 3 km, and comprising mainly sandstone, shale and limestone is assigned as the Vindhyan Supergroup. The Vindhyan have been separated into 2 division which, though of very unequal proportions, have been determined by important physical considerations. They are separable as much by an unconformable junction between the two

divisions as by the sharp lithological contrast between them. The lower division consists of one group and upper divisions have three groups. The Supergroup is divisible into four groups:

1. Semri Group,
2. Kaimur Group,
3. Rewa Group and
4. Bhandar Group,

The Vindhyan Super Group is composed mostly of low dipping formations of sandstone, shale and carbonate, with a few conglomerate and volcanoclastic beds, separated by a major regional and several local unconformities. The regional unconformity occurs at the base of the Kaimur Group and divides the sequence into two units: the Lower Vindhyan (Semri Group) and the Upper Vindhyan (Kaimur, Rewa and Bhandar Groups). The outcrop pattern of the Super Group resembles a simple saucer shaped syncline. It is generally believed that the Vindhyan basin was a vast intra-cratonic basin formed in response to intraplate stresses.

The different depositional systems recognized in the Vindhyan succession are: alluvial fan, fan delta, braid delta, braid plain, eolian sand sheet, tidal flat (carbonate as well as siliciclastic), shoreface (tide and storm dominated), storm dominated shelf, homoclinal carbonate ramp, distally steepened carbonate ramp and epeiricperitidal flat (siliciclastic).

### **Semri Group:**

The Semri Group overlies the Bundelkand Granite Gneisses and Bijawar Group of metamorphics. Three major rock formations of Semri group are exposed.

**Chorhat Sandstone** - It is a major rock formation of Semri group and occurs in the central part of the block in NNE-SSW direction. Chorhat Sandstone formation is represented by glauconitic sandstone & minor shale, pebbly grit, siltstone conglomerate & breccia and thin limestone bands. Ripple marks, small scale cross bedding, mud cracks are abundantly recorded.

**Rohtas limestone** – This formation overlies Chorhat sandstone in form of thin band and it is exposed near Malar village to near Majora village. Rohtasgarh limestone comprises greyish to greyish black limestone and shales. Dominantly it shows parallel lamination.

**Suket Shale**- Suket shale overlies Rohtasgarh limestone and underlain by Dhandraul

(baghain) sandstone and Ghaghar sandstone of Kaimur group. Suket shale trending NNE-SSW occurs on escarpments of ridges.

A sequence of Chorhat sandstone, Rohtasgarh limestone and Suket shale of semri group is well exposed along the road in Ghat section on SH-51 from Bajana to Shoba villages.

## 2.2 Geology of the Block

### Rohtas limestone:

This rock varies in colour from pink near the bottom horizon to dark grey to blue grey in the middle and to light pink and cream coloured at the top. The lower pink coloured, hard and partly siliceous rock (distinguished by its reaction to hydrochloric acid) is about 75 ft. thick. Veins of calcite are often found traversing across this limestone. The trend of these veins is east – west to E.N.E. - W.S.W. They often cut across the bedding planes. It is likely that they represent fracture planes filled subsequently with calcite.

### Mineral Potentiality-

There are several mines nearby. The details are as under: -

No	Mine Name	Mineral	Village	Tehsil	District	State	Area (Hect)	Mine Owner
1	BHATURA	Limestone	Bhatewara	Maihar	Maihar	MP	2.684359	
2	JAMUWANI	Limestone	Ghorbai	Maihar	Maihar	MP	925.3544	M/s Sanghi Industries
3	BHATOORA (2696 Ha)	Limestone	Bhatewara	Maihar	Maihar	MP	2.234662	
4	BHATURA (1750)	Limestone	Bhatewara	Maihar	Maihar	MP	14.67664	
5	BHATOORA (10560 Ha)	Limestone	Bhatewara	Maihar	Maihar	MP	10.56	HUKUMCHAND STONE LIME CO
6	BHATURA (3564 Ha)	Limestone	Bhatewara	Maihar	Maihar	MP	3.596477	
7	PADREHI	Limestone	Padrehi	Vijayraghav garh	Maihar	MP	2.5	ML.BHASIN
8	BHATURA	Limestone	Harraiya	Vijayraghav garh	Maihar	MP	2.75	PRABHU DAYAL AWASTHI
9	HARRIYA (3917 Ac or 15.848 Ha)	Limestone	Harraiya	Vijayraghav garh	Maihar	MP	15.848	SUKHDEO PRASAD GOENKA
10	BHATOORA (6062 Ha)	Limestone	Bhatewara	Maihar	Maihar	MP	6.071318	
11	BHATURA	Limestone	Bhatewara	Maihar	Maihar	MP	5.529	HUKUM CHAND STONE LIME CO
12	BHATURA (10 Ac)	Limestone	Bhatewara	Maihar	Maihar	MP	4.05	SN.S.(MINERALS) LTD.
13	A P NAGRATH	Limestone	Bhatewara	Maihar	Maihar	MP	1.3	Shalendra Nagrath
14	BHATOORA (6104 Ha)	Limestone	Bhatewara	Maihar	Maihar	MP	6.1	K K. GAUTAM, KATNI
15	R M G SUPER CONDUTORS	Limestone	Bandhi	Maihar	Maihar	MP	804.5387	

The same lithology continues towards the eastern side within the proposed boundary, clearly indicating the presence of limestone in the area. The Semri Limestone of the Vindhyan

Supergroup is well known for its limestone deposits, and the presence of limestone has already been established through earlier explorations carried out by GSI. In order to further advance the exploration and upgrade the level of investigation, the present proposal for exploration has been formulated.

### 3. Block description

The proposed G-3 block for Limestone falls in Survey of India Toposheet No. 63 D/16 and covers an area of 6.86 sqkm in and around villages Pathera, Ghotari, Burkua, Goriya, Jowa etc. of Maihar District, State Madhya Pradesh. The block location is given in PLATE-I. The Co-ordinates of the corner points of the block area are given below in Table No.-3

ID	LONGITUDE	LATITUDE
BK 1	80.92950515	24.16906187
BK 2	80.9374679	24.16900982
BK 3	80.93698134	24.15758371
BK 4	80.93355916	24.15679398
BK 5	80.93342753	24.15475383
BK 6	80.92562604	24.15454507
BK 7	80.92557888	24.15321569
BK 8	80.92542152	24.15321254
BK 9	80.92522953	24.15335417
BK 10	80.92501551	24.15332585
BK 11	80.92499623	24.15319402
BK 12	80.923959	24.15321997
BK 13	80.92384494	24.1533467
BK 14	80.92356895	24.15332417
BK 15	80.92187324	24.15410563
BK 16	80.9218828	24.15515316
BK 17	80.92179225	24.15566102
BK 18	80.9215521	24.15587755
BK 19	80.92021825	24.15586569
BK 20	80.9201432	24.15778408
BK 21	80.91952751	24.15814477

BK 22	80.91909136	24.15923834
BK 23	80.91892803	24.16000373
BK 24	80.92158638	24.16013147
BK 25	80.92171007	24.16180815
BK 26	80.9256671	24.16169091
BK 27	80.92548777	24.16372774
BK 28	80.92950133	24.16355134

### Previous Literature Study

- Willson (1869-1870) mapped the area on 1:253,440 scale in Vindhyan Supergroup of Rocks and classified them into different parts.
- S. Sanyal., K Sanyal, K C Bandopadhyay and S Parasher (1985-1986) mapped the area in 1:150000 scale. A.B. Dutt and G. C. Chatterjee (1942-43) of the Geological Survey of India, investigated limestones of KAIMUR- BHADANPUR AREA IN JABALPUR, PANNA, SATNA AND SHAHDOL DIST, MP.
- G. Venkateswara Rao (1954-55) carried out the mapping in the T.S. 63D/16 and widely recognised as a source of building material and limestone. Limestone occurrences are very common in Khenjua, Rohtasgarh and Nagod Formation. Besides, clay is also extensively quarried near Nadawan and Rohnian villages. Limestone is mainly used for 12 manufacturing cement, lime and in cement industry. Rewa Sandstone is quarried near Bhadanpur, used as building stone and reported Khenjua sandstone, though felspathic, may prove to be a good building stone owing to its hardness and generally even-grained nature.
- K.V.J.R. Krupanidhi et.al. (1963) carried out investigation for flux grade limestone deposits in Maihar area and reported three grey limestone horizons in the Bhandar limestone formation, namely the Upper, Middle and Lower grey limestone bands (2 to 4 metres each in thickness). Besides these, there is a purple to grey limestone band 2 to 3 metres in thickness; mostly cement to blendable cement grade and a thin flux grade limestone band, associated with dolomitic limestones. Of the first three flux grade limestone bands, the middle one is the most promising one; it, however, has intercalated bands of flaggy limestone of cement grade- This band is being quarried extensively in many localities in the area. The upper grey limestone band shows variation in quality from east to west in the area while the lower grey limestone

band is mostly concealed. Deposits of flux grade limestone confined to one or more of the above grey limestone bands are located in the area between Emlia (24°15': 80°48').

- Madhya Pradesh State Mining corp. (MPSMC) has done General Exploration (G2) during 2018-2022 and carrying out Exploration Activities in the southwest of the proposed block for Limestone (Riwara Limestone block). During Prospecting, they have carried out 25 vertical Boreholes in which Limestone has been reported.

#### **4.Planned Methodology –**

In present exploration scheme for proposed Bara Khurd block, geological mapping, topographical survey and exploratory drilling (at G-3) at an overall grid interval of 800m interval is planned. The proposed activities are described below.

- Work will start with geological mapping of the block on 1:4000 scale.
- Core drilling will be carried out at G3 level of exploration as per "The Minerals (Evidence of Mineral Contents) Rule 2015. As per MEMC rule Schedule II minerals (Limestone) for area more than 100 Ha, 5 boreholes may be sufficient. Therefore 5 boreholes in 800 m and closer spacing are planned.

[Part III- Schedule II Provided that for deposits specified in Schedule II, 3 bore holes drilled so as to form a polygon in blocks of less than 100 hectares and 5 bore holes in blocks of more than 100 hectares may be sufficient. The lateral influence beyond the bore hole spacing may be limited to a maximum of 50 per cent. of the spacing depending on the results of surface geological mapping.]

- Surface sampling will be carried out during mapping.
- Pitting of 40 cu m, will carried out at G3 level of exploration.
- Chemical analysis (CaO, MgO, Fe<sub>2</sub>O<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub> & LOI) of all the samples will be done from departmental laboratory as well as NABL accredited laboratories. 10% of the sample will take as check samples to be analysed at different lab.
- Physical & Bulk Density test will also be carried out.

- These activities will be followed by data interpretation and report writing work.

### 5. Nature Quantum and Target:

#### Nature and Quantum of work proposed

A	Geological Mapping Other Geological Work & Surveying		1:4,000 scale mapping of 2.07 sq km
B	Survey work		
a	DGPS Survey for BH fixation & RL determination	Per point	5
D	Trenching/Pitting		20 pits – 40 cu m
E	DRILLING (after review)- In -house	Meterage	250
F	LABORATORY STUDIES		
i)	Geochemical Sampling-Surface samples (Bedrock/Channel /Soil/Stream sediment)		50 BRS+ 5 Channel
	a. Analysis of major oxides and trace samples by XRF	Nos	50
ii)	Surface Check samples (10% External)		
	a. Analysis of major oxides samples by XRF	Nos	5
iii)	Pitting & Check Samples from Pitting		
	a. Analysis of major oxides samples by XRF	Nos	40
	Pitting samples		
iv)	Pitting Check samples (10% External)		
	a. Analysis of major oxides samples by XRF	Nos	4
v)	BH Core samples		
	a. Analysis of major oxides samples by XRF	Nos	150
vi)	BH Core samples (10%External)		
	a. Analysis of major oxides samples by XRF	Nos	15
G	<u>Physical &amp; Petrological Studies</u>		
i	Preparation of thin section	Nos	10
ii	Study of thin section	Nos	10
iii	EPMA Study	Hrs	10
iv	Digital Photographs	Nos	10
v	Bulk density analysis	Nos	3
H	Geological Report Preparation		5 copy preparation

## 6. Break-up of expenditure

Annexure 7A								
Estimated cost for Preliminary exploration Survey (G3) for Bara Khurd Area, Maihar District, Madhya Pradesh								
Total area: 2.07 sq km, Period of Completion: 12 months BH:5, Review: 4 Months								
S. No.	SoC- Item No.	Item of Work *	Unit *	Rates as per SoC * (a)	Qty. (b)	Original Estimated Cost of the Proposal		
						Total Amount (Rs) (a*b)	Remarks	
1800								
<b>A</b>		<b>Geological Mapping Other Geological Work &amp; Surveying</b>						
i	1.1	<b>Large scale (LSM) Geological Mapping/ Traverse mapping / Detailed Mapping in Peninsular India</b>	Per. Sq. km	18300	2.07	<b>37881.00</b>	b) Field: 18300 per sq.km	
ii	1.2.1a. b	a. Charges for Geologist per day (Field) for geological mapping & trenching work, drilling work	day	14500	90	<b>1305000.00</b>	1:10,000 scale mapping of 12.6sq km for a party of two geologist	
iii	1.2.1a. a	c. Charges for Geologist per day (HQ)	day	10500	60	<b>630000.00</b>		
v	5.7	Labours Charges for geological work	day	544	360	<b>195840.00</b>	4 labours per day	
		<b>Sub Total- A</b>					<b>2168721.00</b>	
<b>B</b>		<b>Survey work</b>						

i	1.6.1a	Charges for one qualified surveyor with Total Station for carrying out topographical survey in different RF and surface contouring at different interval, fixation of borehole and determination of co-ordinates & Reduced Level (RL) of the boreholes with total station etc.	one surveyor/per day	10500	15	<b>157500.00</b>	For Topographical survey
ii	1.6.2	DGPS Survey for BH fixation & RL determination	Per Point of observation of observation	24000	5	<b>120000.00</b>	5 borehole points, 4 boundary points of the block
iii	5.7	Labours Charges for survey work	day	544	60	<b>32640.00</b>	4 labours per day
<b>Sub-Total B</b>						<b>310140.00</b>	
<b>C</b>	<b>Trenching/Pitting</b>						
ii	2.1.2	Excavation of Pit upto 2.0 m depth with back filling	per cu.m	4725	40	<b>189000.00</b>	20 pits of 2 cu m (1 x 1 x 2)
<b>Sub Total C</b>						<b>189000.00</b>	
<b>D</b>	<b>DRILLING (after review)- In -house</b>						
i	2.2.1.1d	Drilling in Hard Rock: HQ size borehole upto 400 m depth	per m	5500	250	<b>1375000.00</b>	5 boreholes of 50 m each depth/ 250 m total drilling metergae.
iii	5.6	Land / Crop Compansation (in case the BH falls in agricultural Land)	per BH	20000	5	<b>100000.00</b>	As per actuals
iv	2.2.7	Construction of concrete Pillar (12"x12"x30")	per borehole	2000	5	<b>10000.00</b>	
v	2.2.8	Borehole plugging by cement	Lumpsum per borehole	10000	5	<b>50000.00</b>	

vi	2.2.9	Miscellaneous charges (Transportation of drilling rig, accomodation of drill camp, camp setting and winding, construction of approach road and drill core preservation)	lumpsum	343750		<b>343750.00</b>	<p>1. For drilling cost less than ₹50 lakhs: 25% of the drilling cost</p> <p>2. For drilling cost more than ₹50 lakhs and less than ₹1 cr. 20% of the drilling cost with a maximum ceiling of ₹20 lakh.</p> <p>3. For drilling cost more than 1 crore and less than 2 crore : 15% of the drilling cost with a maximum ceiling of ₹ 20 lakhs</p> <p>4. For drilling cost more than 2 crore: 10% of the drilling cost wit ha maximum ceiling of ₹25 lakhs.</p>
vii	5. X	Drill core preservation One complete borehole plus mineralised cores of all the BHs of the Block/ prospect to be preserved in GI Core boxes and subsequently transported to the notified Core Repository	Per m	1590	100	<b>159000.00</b>	50 m core of one borehole and mineralised zone (10-15 m each) of 4 remaining boreholes.
viii	1.2.1b	Sample processing work including marking of samples, core splitting, crushing and powdering of samples, coning and quartering, packing and labelling of samples, preparation of beneficiation samples, etc.	one sampler/p er day	7850	25	<b>196250.00</b>	assuming 20 samples per borehole total samples 100.

ix	5.7	Labours (4 Nos)	day	544	100	<b>54400.00</b>	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or respective State Govt. whichever is higher.
<b>Sub Total D</b>						<b>2288400.00</b>	
<b>E</b>	<b>LABORATORY STUDIES</b>						
1	<b>Chemical Analysis</b>						
i)	<b>Surface Sample (Bedrock/Channel /Soil/Stream sediment)</b>						
b	4.1.17a	a. Analysis of major oxides by XRF	per sample	4200	50	<b>210000.00</b>	BRS 50 Channel 5,
ii)	<b>Surface Check samples (10% External)</b>						
a	4.1.15a	a. Analysis of major oxides samples by XRF	per sample	4200	5	<b>21000.00</b>	
<b>Pit sample</b>							
iii)	<b>Pit</b>						
a	4.1.15a	a. Analysis of major oxides samples by XRF	per sample	4200	40	<b>168000.00</b>	40 cu m pitting
iv)	<b>Pit Check samples (10% External)</b>						
	4.1.15a	a. Analysis of major oxides samples by XRF	per sample	4200	4	<b>16800.00</b>	
<b>Borehole Core Samples</b>							
v)	<b>BH Core samples</b>						
					150		assuming 20 samples per borehole total samples 150 for five boreholes

b	4.1.15a	a. Analysis of major oxides samples by XRF	per sample	4200	150	<b>630000.00</b>		
vi)		<b>BH Core samples (10%External)</b>						
a	4.1.15a	a. Analysis of major oxides samples by XRF	per sample	4200	15	<b>63000.00</b>		
vii)		<b><u>Physical &amp; Petrological Studies</u></b>						
a	4.3.1	Preparation of thin section	Per sample	500	10	<b>5000.00</b>		
c	4.3.4	Complete petrographic /ore microscopic study/mineragraphic report of rock sample (along with 5 nos. digital photo micrographs)	Per sample	2800	10	<b>28000.00</b>		
d	4.4.1	EPMA studies per hour	Per Hour	10500	10	<b>105000.00</b>	10 hours	
e	4.8.3	Bulk density analysis	Per sample	2500	3	<b>7500.00</b>		
		<b>Total E</b>					<b>12,54,300</b>	
F		<b>Total A+B+C+D+E</b>					<b>62,10,561</b>	
F	5.2	Geological Report Preparation	5 Hard copies with a soft copy	ii		<b>750000.00</b>	Reimbursement will be made after submission of the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.	
G	As per EC decision	Peer review Charges			30000	1	<b>30000.00</b>	

H	5.1	Preparation of Exploration Proposal (5 Hard copies with a soft copy)	5 Hard copies with a soft copy	2% of the Cost or Rs. 5.0 Lakhs whichever is less	500000.00	EA will be reimbursed after submission of the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
I		<b>Total Estimated Cost without GST</b>			<b>74,90,561.00</b>	
J		<b>Provision for GST (18% of I)</b>			<b>1348300.98</b>	GST will be reimburse as per actual and as per notified prescribed rate
K		<b>Total Estimated Cost with GST</b>			<b>8838861.98</b>	
				<b>Rs. In Lakhs</b>	<b>88.389</b>	
Note:						
1		<b>Strict adherence to the Ministry of Finance's and GFR guidelines is mandatory. Every transaction must adhere to GFR rule 21.</b>				
2		<b>In case of delay/non- performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/guidelines on procurement.</b>				
3		<b>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 excusion of the project by NEA on its own, a Certifiante regarding non outsourcing of any component/project is required.</b>				
4		<b>Necessary efforts should be made to minimize any adverse impact on the environment during exploration activities.</b>				
5		<b>Any item of work not mentioned above shall be added as per SoC.</b>				

**7. References: Geological Reports:**

1. CRO-100392- REPORT ON THE LOWER VINDHYAN MAPPED IN THE SOUTH-EASTERN MAIHAR, SATNA DISTRICT, VINDHYAN PRADESH (FIELD SESSION 1954- 1955) BY G. VENKATESWARA RAO.
2. CRO-11838- VINDHYAN SUPER GROUP OF ROCKS AROUND KAIMUR- BHADANPUR AREA IN JABALPUR, PANNA, SATNA AND SHAHDOL DIST, MP. (FIELD SESSION 1985-1986) BY S. SANYAL, S. PRASHER, K. SANYAL, K C BANDYOPADHYAY.
3. CHQ-4856- REPORT ON THE PRELIMINARY INVESTIGATION FOR FLUX GRADE LIMESTONE IN THE AREA EAST OF MAIHAR, MAIHAR DIST, MP. (FIELD SESSION 1962-1963) BY K.V.J.R. KRUPANIDHI, P.K. RAMAM AND M.N. VISWANATHANIT.
4. REPORT FOR AUCTION RIWARA LIMESTONE BLOCK IN TOPOSHEET NO 63D16 (YEAR-2024) BY BASANT RAM. (MPDGM).

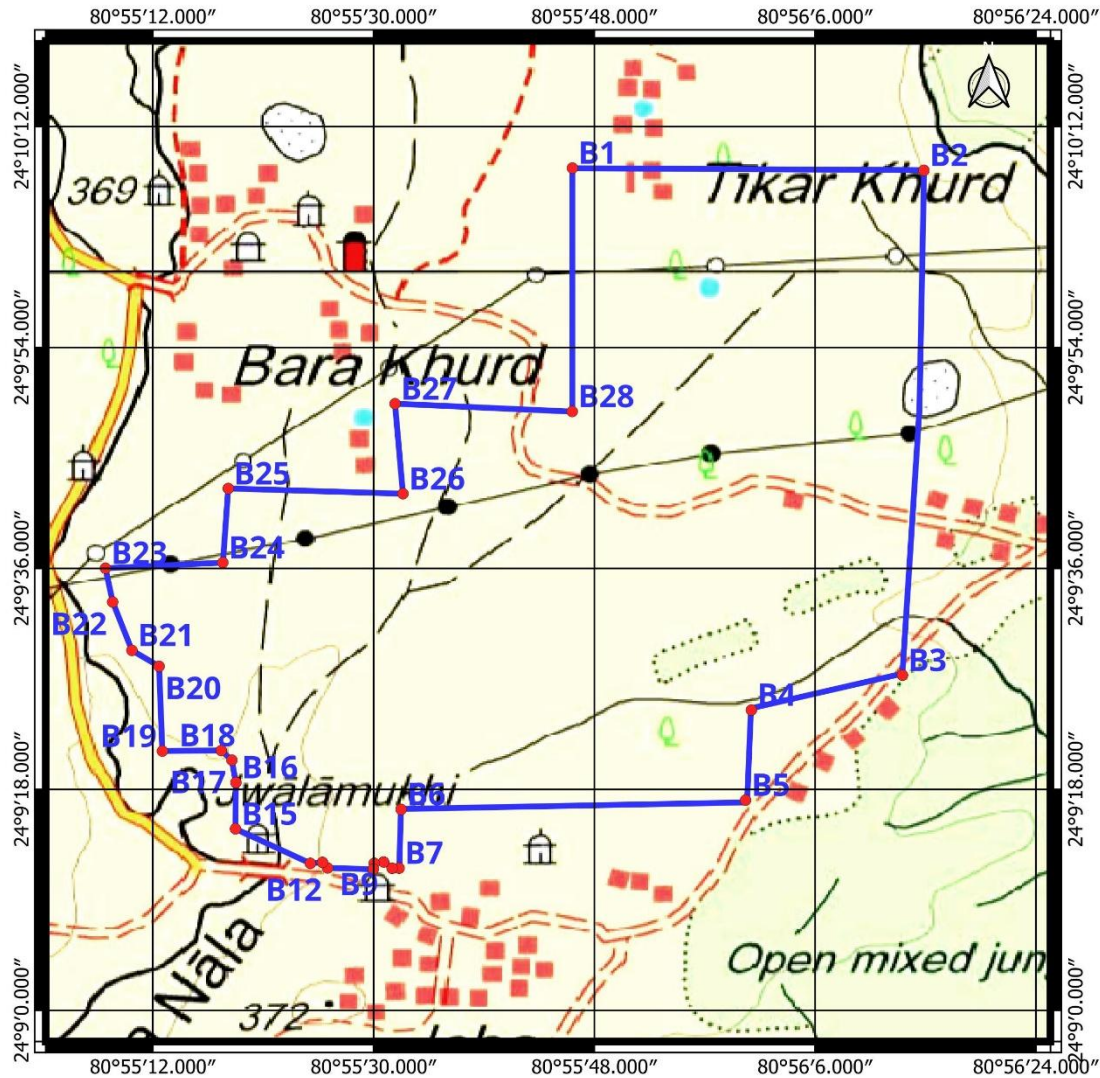
**List of Annexure**

1. Annexure I- Previous work in the area attached in the table
2. Annexure II- Proposed Block Geo-coordinated.
3. Annexure III- Geo-coordinates of Proposed Boreholes in Bara Khurd Limestone Block

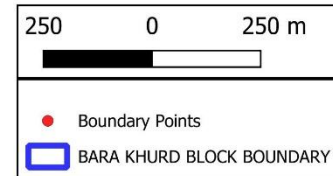
**List of Plates-**

1. Plate-I-Part of SOI Toposheet number 63D/16 showing proposed Bara Khurd Block in Maihar, MP
2. Plate-II- Lithological map of part of SOI Toposheet number 63D/16 showing proposed Bara Khurd Block in Maihar, MP
3. Plate-III- Lithological map of part of SOI Toposheet number 63D/16 showing nearby locations and proposed Bara Khurd Block in Maihar, MP
4. Plate-IV- Google earth image of parts of SOI Toposheet No. 63 D/16 showing proposed Bara Khurd Block in Maihar District, Madhya Pradesh
5. Plate-V OSM in parts of SOI Toposheet No. 63 D/16 showing proposed Bara Khurd Block in Maihar District, Madhya Pradesh
6. Plate-VI- Google earth image of parts of SOI Toposheet No. 63 D/16 showing borehole locations over proposed Bara Khurd Block in Maihar District, Madhya Pradesh
7. Plate- VII- Borehole Plan over Lithological map of part of SOI Toposheet number 63D/16 showing proposed Bara Khurd Block in Maihar, MP

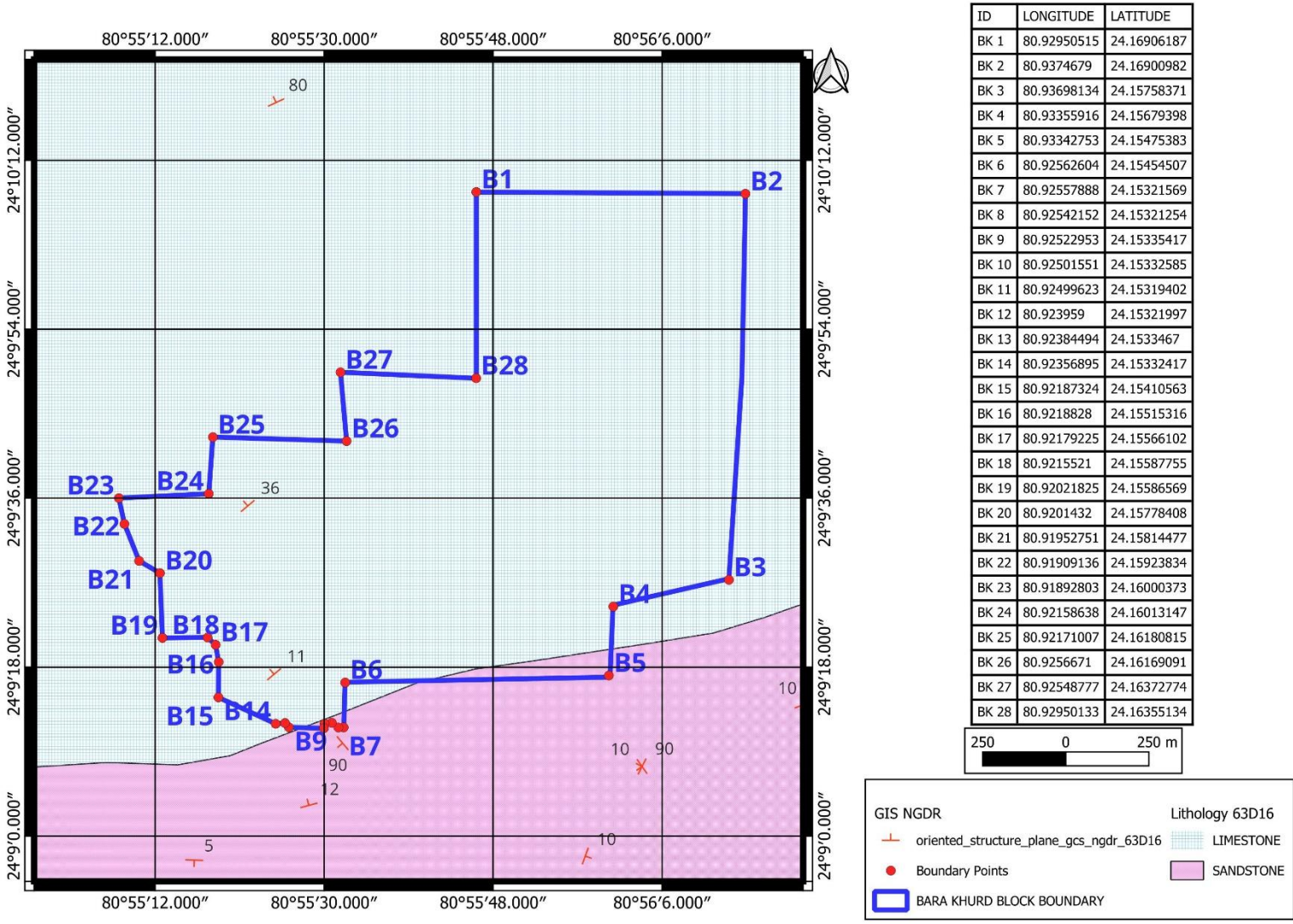
Part of SOI Toposheet No. 63 D/16 showing Proposed Bara Khurd Block in Maihar District, Madhya Pradesh



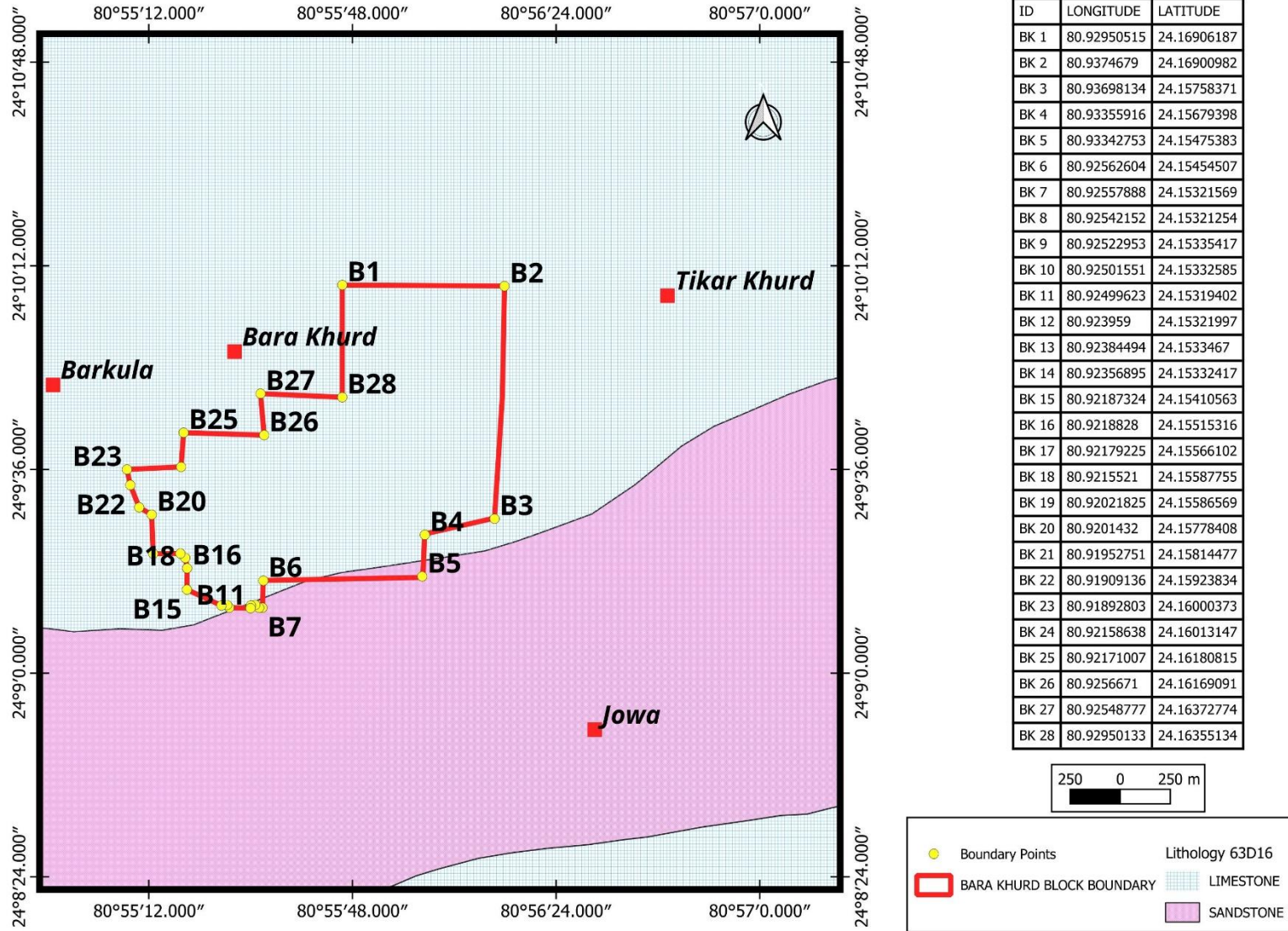
ID	LONGITUDE	LATITUDE
BK 1	80.92950515	24.16906187
BK 2	80.9374679	24.16900982
BK 3	80.93698134	24.15758371
BK 4	80.93355916	24.15679398
BK 5	80.93342753	24.15475383
BK 6	80.92562604	24.15454507
BK 7	80.92557888	24.15321569
BK 8	80.92542152	24.15321254
BK 9	80.92522953	24.15335417
BK 10	80.92501551	24.15332585
BK 11	80.92499623	24.15319402
BK 12	80.923959	24.15321997
BK 13	80.92384494	24.1533467
BK 14	80.92356895	24.15332417
BK 15	80.92187324	24.15410563
BK 16	80.9218828	24.15515316
BK 17	80.92179225	24.15566102
BK 18	80.9215521	24.15587755
BK 19	80.92021825	24.15586569
BK 20	80.9201432	24.15778408
BK 21	80.91952751	24.15814477
BK 22	80.91909136	24.15923834
BK 23	80.91892803	24.16000373
BK 24	80.92158638	24.16013147
BK 25	80.92171007	24.16180815
BK 26	80.9256671	24.16169091
BK 27	80.92548777	24.16372774
BK 28	80.92950133	24.16355134



Lithological map of parts of SOI Toposheet No. 63 D/16 showing proposed Bara Khurd Block in Maihar District, Madhya Pradesh

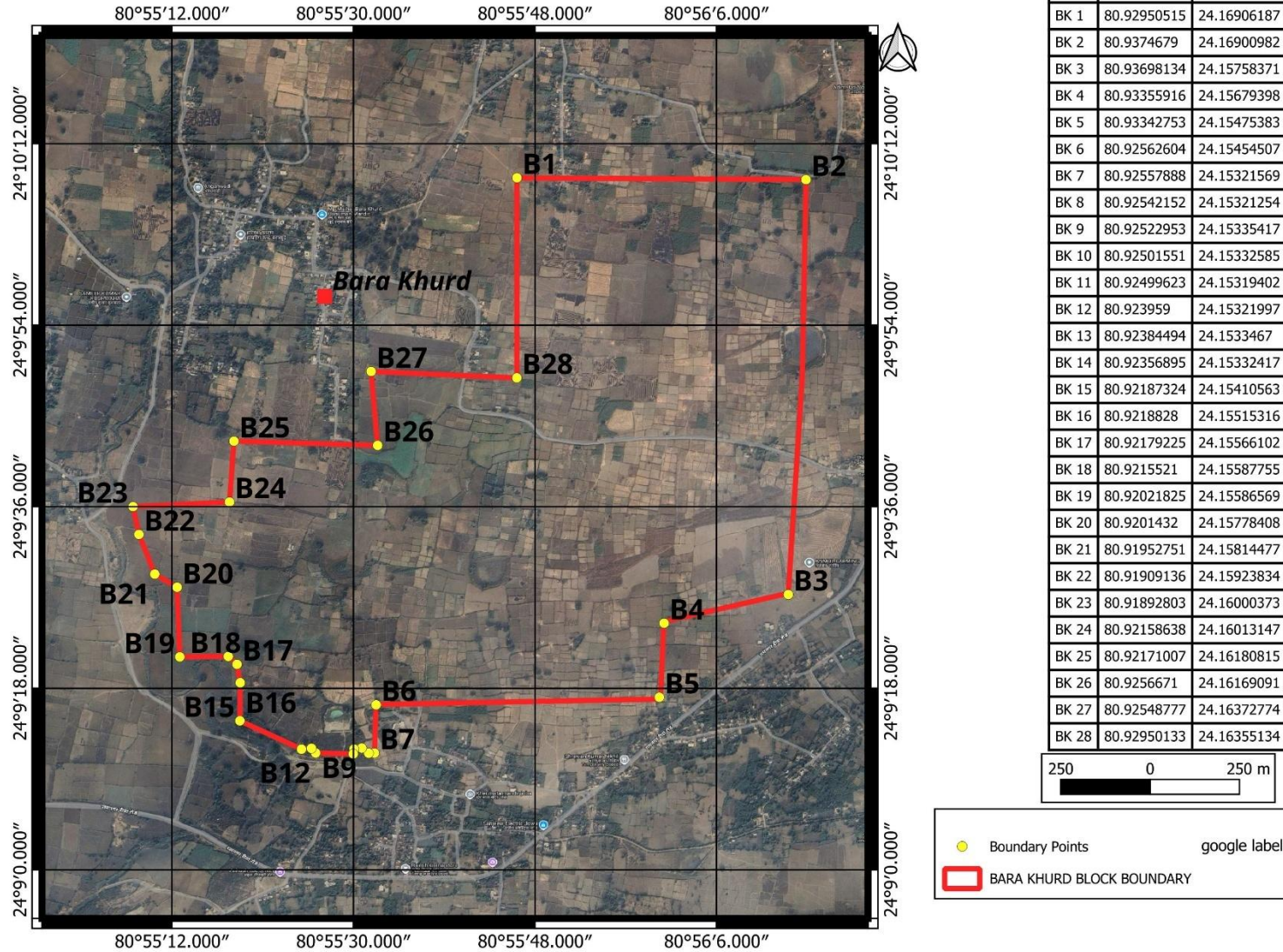


Lithological map of parts of SOI Toposheet No. 63 D/16 showing nearby locations and proposed Bara Khurd Block in Maihar District, Madhya Pradesh

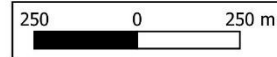




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BK 27	80.92548777	24.16372774
BK 28	80.92950133	24.16355134

Google earth image of parts of SOI Toposheet No. 63 D/16 showing proposed Bara Khurd Block in Maihar District, Madhya Pradesh

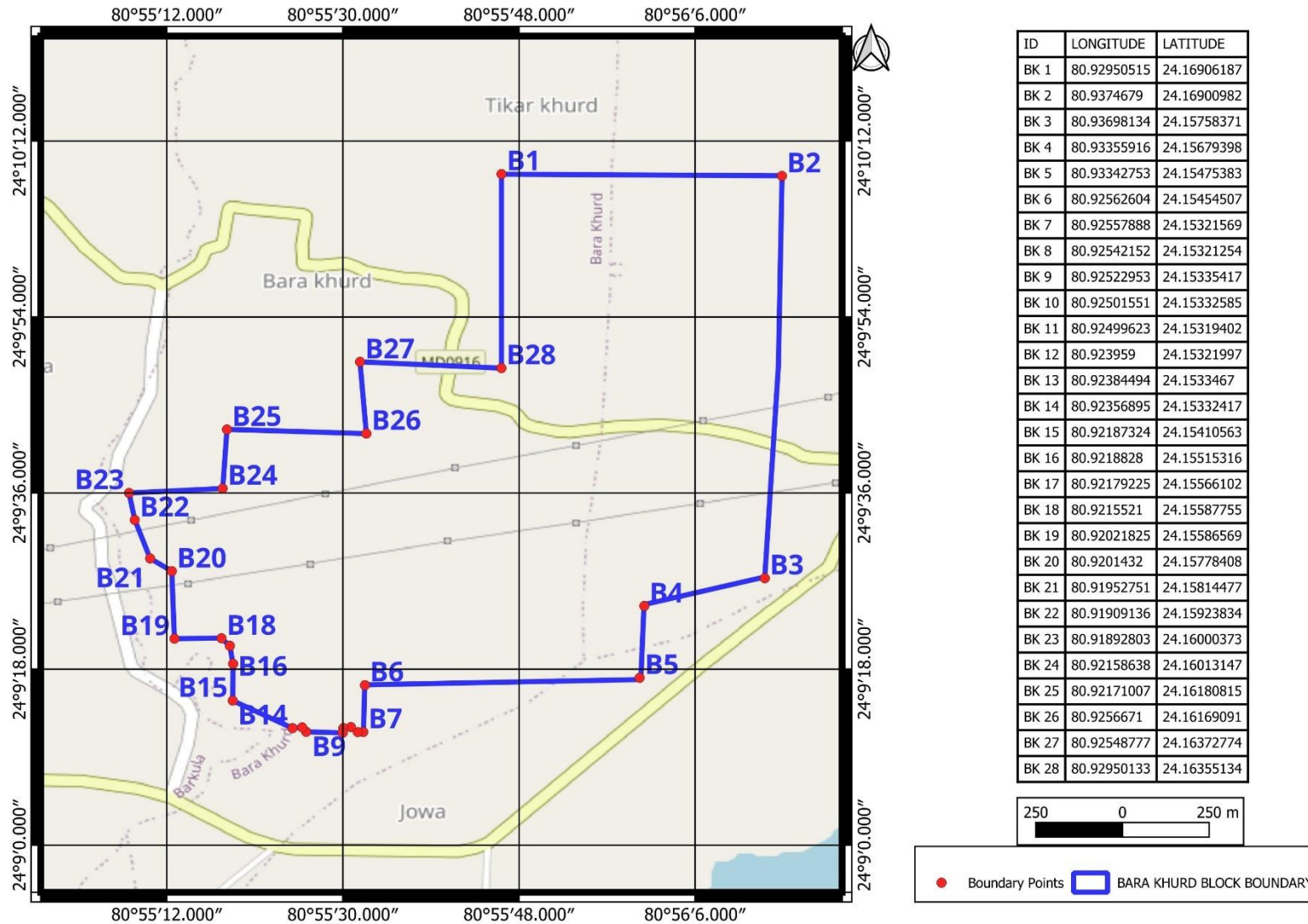


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BK 27	80.92548777	24.16372774
BK 28	80.92950133	24.16355134

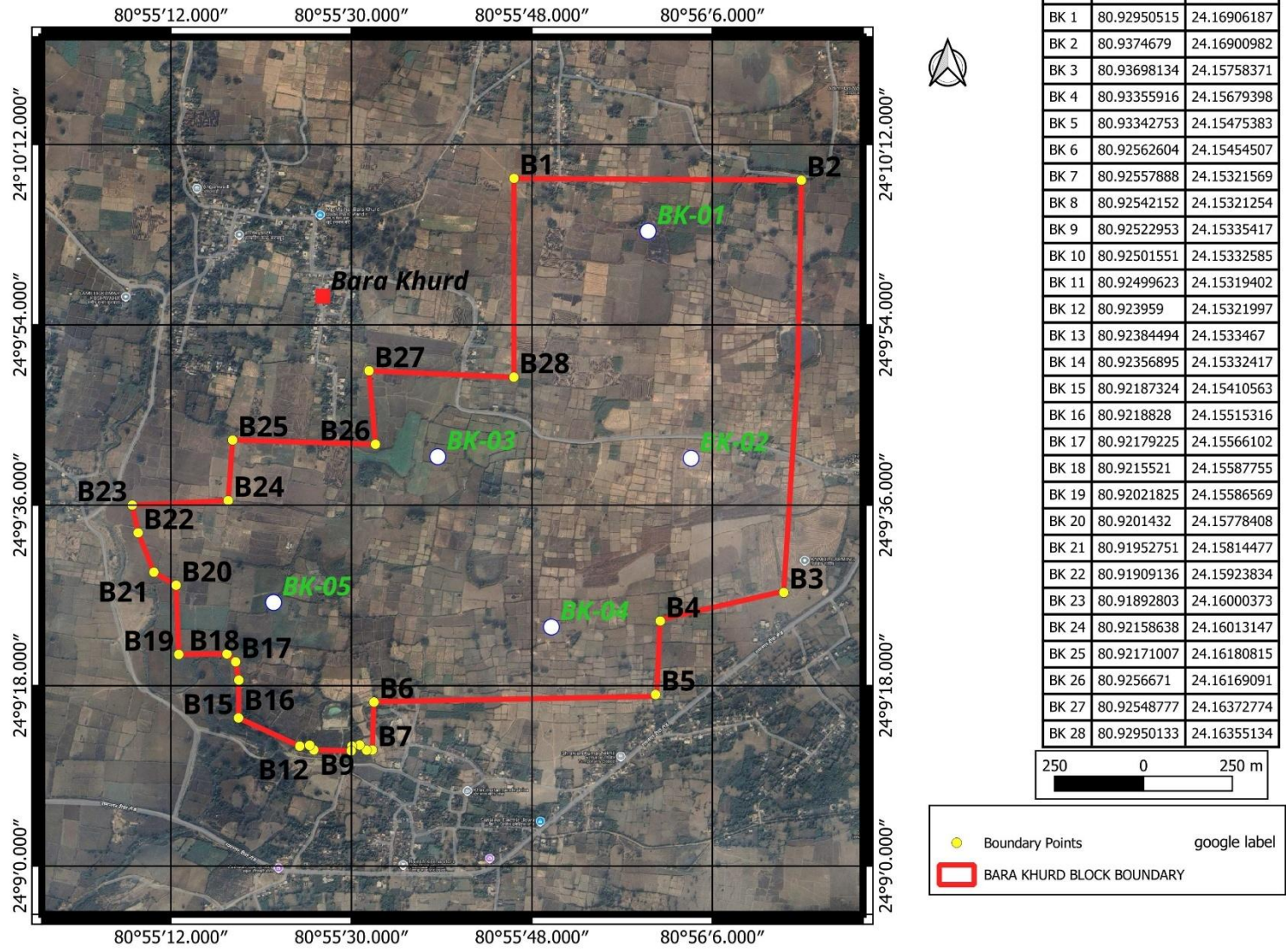


	Boundary Points	google label
	BARA KHURD BLOCK BOUNDARY	

OSM on parts of SOI Toposheet No. 63 D/16 showing proposed Bara Khurd Block in Maihar District, Madhya Pradesh

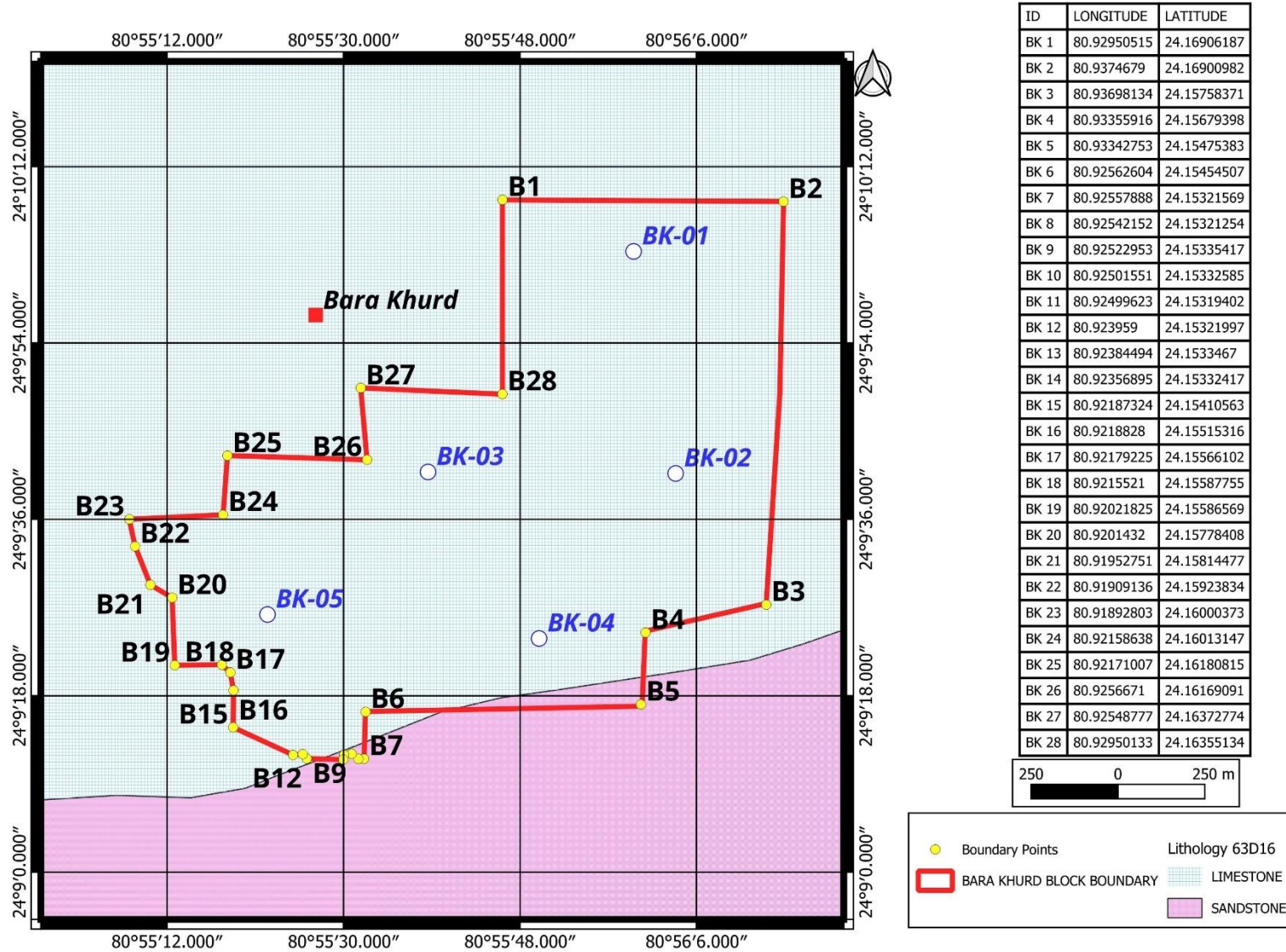


Google Earth Image over parts of SOI Toposheet No. 63 D/16 showing borehole plan over proposed Bara Khurd Block in Maihar District, Madhya Pradesh



ID	LONGITUDE	LATITUDE
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BK 24	80.92158638	24.16013147
BK 25	80.92171007	24.16180815
BK 26	80.9256671	24.16169091
BK 27	80.92548777	24.16372774
BK 28	80.92950133	24.16355134

Lithological map of parts of SOI Toposheet No. 63 D/16 showing borehole plan over proposed Bara Khurd Block in Maihar District, Madhya Pradesh



**Annexure I-**

Geological Report On Preliminary Exploration (G-3 Stage) For Limestone, Bauxite, Fire-Clay Etc. In Piparhat-Kubri Block (2.51 Sq Km) Tehsil-Maihar, District- Satna, Madhya Pradesh	Limestone, Bauxite, Fire Clay	National Mineral Exploration Trust- Ministry Of Mines	2023
GEOLOGICAL REPORT ON PRELIMINARY EXPLORATION (G-3 STAGE) FOR LIMESTONE, BAUXITE, FIRE-CLAY IN PIPARHAT-KUBRI BLOCK (2.51 SQ.KM) TEHSIL- MAIHAR, DIST- SATNA, MADHYA PRADESH	Limestone, Bauxite, Fire Clay	Mineral Exploration Corporation Ltd (MECL)	2023
Geological Prospecting Report For Limestone On Prospecting License Area Of 689.630 Ha Villages Gairtalai And Jararoda Tehsil Vijairaghogharh District Katni	Limestone	Indian Bureau of Mines (IBM)	2016
Prospecting Report Of Bihara Khurd Lime Stone P.L. Area M/S. Bhushan Steel Limited Pl Area 326.06 Ha. Village-Bihara Khurd, Tah. Maihar, Dist. Satna., (Mp)	Limestone	Indian Bureau of Mines (IBM)	2015
Prospecting Report Of Limestone Deposit (Pl-2) Area 676.505 Ha. M/S. Bhushan Steel Limited Village-Bharewa, Biharakala, Tikarkala Tah. Maihar, Dist. Satna., (Mp)	Limestone	Indian Bureau of Mines (IBM)	2013
Prospectng Report Of Kubri Bauxite, Laterite And Fire Clay Deposit Area- 100.0 Ha. Village-Kubri, Piprahat, Bhadanpur And Deo Re Tehsil-Maihar, District-Satna State-Madhya Pradesh For The Mineral-Bauxite, Laterite And Fire Clay	Bauxite, Polymetallic, Fire Clay	Indian Bureau of Mines (IBM)	2012
Prospecting Report For Jariyari Forest Comparment No.P-647 P-648 Of Satna Forest Division State M.P For Laterite Fireclay Deposit Over An Area Of 422.930-Hectare	Fire Clay, Polymetallic	Indian Bureau of Mines (IBM)	2011
Final Prospecting Report For Tegna Limestone Deposit (3192.517 Hect) In Form-B Of Mcdr, 1988	Limestone	Indian Bureau of Mines (IBM)	2010
Submission Of Form B (Completion Report Of The Prospecting Operation Carried Out) In Pl Of Limestone In Villages Nandan Sharda Parsad Nandan Shiv Parsad Barahiya Rigra District Satna Madhya Pradesh On 1205.183 Hectares	Limestone	Indian Bureau of Mines (IBM)	2008

Annual Report For The Field Season 1987-88	Uranium	Atomic Mineral Directorate (AMD)	1987
Petrology Of Majhgawan Kiberlite Plug With Special Reference To Diamond Mineralization	Diamond	GSI	1980
The Regional Assessment Of The Kuteshwar Limestone Deposits(Manghata Block), Jabalpur And satna District Madhya Pradesh	Limestone	GSI	1980
The Regional Assessment Of The Kuteshwer Limestone Deposits Manghata Block, Jabalpur And Satna Districts, Madhya Pradesh	Limestone	GSI	1980
Exploration Of High Grade Limestone In Nanhwara Area Tehsil Murwara District Jabalpur	Limestone	Directorate of Geology and Mining, Madhya Pradesh	1975
A Report On Availability Of Limestone And Possibility Of Setting Up A Calcium-Carbide Manufacturing Unit In Tahsil Katni, District Jabalpur, Madhya Pradesh	Limestone	Directorate of Geology and Mining, Madhya Pradesh	1974
Report On The Study And Preliminary Assessment Of The Bauxite Occurrences Of Parsowania-Kamtala Area, Satna District, Madhya Pradesh	Bauxite	GSI	1973
Report On Detailed Prospecting Of Cement Grade Limestone Deposits Near Bhadanpur Tahsil Maihar District Satna Madhya Pradesh	Limestone	Directorate of Geology and Mining, Madhya Pradesh	1967
Cement Grade Limestone Of Bhadanpur Area In Maihar Tahsil-Satna District	Limestone	Directorate of Geology and Mining, Madhya Pradesh	1967
Report On Detailed Prospecting Of Cement Grade Limestone Deposit Near Maihar District Satna	Limestone	Directorate of Geology and Mining, Madhya Pradesh	1966

Report On The Preliminary Investigation Of Flux-Grade Limestone Deposits In Different Leaseholds In Satna And Jabalpur Districts, Madhya Pradesh	Limestone	GSI	1964
Report On The Preliminary Investigation of Flux Grade Limestone Deposits In Different Leaseholds In Satna And Jabalpur Districts Madhya Pradesh	Limestone	GSI	1962
Report On The Preliminary Investigation For Flux Grade Limestone In The Area East Of Maihar, Maihar Tehsil, Satna District, Madhya Pradesh	Limestone	GSI	1962
Report On The Preliminary Investigation For Flux Grade Limestone In The Area East Of Maihar, Maihar Tahsil, Satna District, Mp	Limestone	GSI	1962
Report On Limestone Occurrences In Durjanpur Chirri And Adjacent Areas In Jabalpur District, Madhya Pradesh	Limestone	GSI	1961
Report On The Investigation Of Limestone Deposits In Satna District, Madhya Pradesh	Limestone	GSI	1960
Report On The Occurrence Of Rohtas Limestone South Of Kaimur Ranges In Maihar Tahsil, District Satna And Katni Tahsil (District Jabalpur) Madhya Pradesh.	Limestone	Directorate of Geology and Mining, Madhya Pradesh	1960

**Annexure II- Proposed Block Geo-coordinated.**

<b>ID</b>	<b>LONGITUDE</b>	<b>LATITUDE</b>
BK 1	80.92950515	24.16906187
BK 2	80.9374679	24.16900982
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BK 19	80.92021825	24.15586569
BK 20	80.9201432	24.15778408
BK 21	80.91952751	24.15814477
BK 22	80.91909136	24.15923834
BK 23	80.91892803	24.16000373
BK 24	80.92158638	24.16013147
BK 25	80.92171007	24.16180815
BK 26	80.9256671	24.16169091
BK 27	80.92548777	24.16372774
BK 28	80.92950133	24.16355134

**1. Annexure III- Geo-coordinates of Proposed Boreholes in Bara Khurd**

**Limestone Block**

<b>BH Point</b>	<b>X</b>	<b>Y</b>
BK-01	80.93322	24.1676
BK-02	80.93441	24.1613
BK-03	80.9274	24.16135
BK-04	80.93054	24.15662
BK-05	80.92284	24.15731