



PRB INFRAPROJECTS PRIVATE LIMITED

**(Notified Private Exploration Agency)
WORK PLAN-G3 STAGE EXPLORATION FOR
BAUXITE IN GARJANBIJA BAUXITE BLOCK**

MINERAL EXPLORATION PROJECT PROPOSAL

FOR

**PRELIMINARY EXPLORATION (G-3 STAGE) FOR BAUXITE,
ALUMINOUS LATERITE & ASSOCIATED MINERALS IN GARJANBIJA
BLOCK (14 SQ, KMS) PUSHPRAJGARH TALUKA, ANUPPUR DISTRICT,
MADHYA PRADESH".**

**UNDER NMET
(TOPOSHEET NO-64F/05)
AREA 14 SQ.KM
COMMODITY- BAUXITE
(Industrial Mineral)**



Submitted by:

PRB INFRAPROJECTS PVT.LTD.
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To,

THE DIRECTOR AND HOD
National Mineral Exploration Development Trust
Ministry of Mines
NEW-DELHI-110001

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1. Summary of the Block for G3 stage exploration

Sr.No.	Features	Details
1	Block ID	Garjanbija Bauxite Block
2	Current Exploration Agency	PRB Infraprojects Pvt Ltd
3	Previous Exploration Agency	Geological Survey of India
4	Previous Geological Exploration Report	Geological Survey of India carried out Reconnaissance Survey for Bauxite and Aluminous Laterite Mineralization around Lamsarai–Kohka–Bicharpur areas of Anuppur District, Madhya Pradesh during FS 2022–23
5	Commodity	Bauxite / Aluminous Laterite
6	Mineral Belt	Aamarkantak Group
7	Completion Period with entire Time Schedule to complete the project	10 Months
8	Objectives	1. Geological mapping in 1:4000 scale to delineate the surface outcrops of Bauxite. 2. Systematic collection of Bed Rock samples and analysis. 3. To drill 34 Nos. of boreholes as per MEMC rules 2015 (Being varying thickness of the deposit) to decipher depth persistence and subsurface continuity of bedded deposits. 4. To estimate the in-situ resource of bauxite and aluminous laterite from G3 stage of exploration and preparation of Geological Report (GR). 5. Carry out mineral exploration works as per Minerals (Evidence of Mineral Contents) Rule-2015, Mineral (Auction) Rules-2015 and MMDR Amendment act-2015. In turn to facilitate the Government of Madhya Pradesh in auctioning of the block.
9	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	Entire work shall be Carried out by M/s PRB Infraprojects Pvt. Ltd. (In house)
10	Name/Number of Geoscientists	Two Geologist(2G) & Surveyor (1)
11	Expected Field days(Geology, Geophysics, Surveyor)	a. Geologist:120, Field Days 90 + 30 HQ Days b. Surveyor:30Days

12.	Location	
A)	Latitude/ Longitude	Coordinates of Garjanbhija Block
		BP No. Latitude Longitude
		A 22°55'1.61"N 81°24'28.56"E
		B 22°55'1.61"N 81°25'20.36"E
		C 22°54'52.66"N 81°25'20.36"E
		D 22°54'52.67"N 81°27'46.60"E
		E 22°54'12.06"N 81°27'46.51"E
		F 22°54'12.05"N 81°28'24.07"E
		G 22°52'57.02"N 81°28'24.17"E
		H 22°52'45.17"N 81°27'47.44"E
		I 22°53'9.01"N 81°27'6.02"E
		J 22°53'47.17"N 81°27'11.35"E
		K 22°53'47.33"N 81°26'52.67"E
		L 22°53'27.78"N 81°26'52.50"E
		M 22°53'27.85"N 81°26'15.95"E
		N 22°53'48.62"N 81°26'15.97"E
		O 22°53'48.60"N 81°25'4.89"E
		P 22°54'11.70"N 81°25'4.97"E
		Q 22°54'11.62"N 81°25'55.72"E
		R 22°54'37.31"N 81°25'55.85"E
		S 22°54'37.24"N 81°24'28.56"E
B)	Nearby Villages	Garjanbhija, Gotai Kalan, Baidara
C)	Tehsil /Taluka	Pushprajgarh
D)	District	Anuppur
E)	State	Madhya Pradesh
13	Area (hectares/square kilometers)	
	Block Area	14 Sq. Km
	Forest Area	-
	Government Land Area	-
	Private Land Area	-
14	Accessibility	
	Nearest Rail Head	Anuppur Railway Station
	Road	NH 43- Nearest highway to the block area
	Airport	Jabalpur Airport 260 km Bilaspur Airport 130km
15	Hydrography	
	Local Surface Drainage Pattern (Channels)	The area shows both trellis drainage and dendritic drainage patterns.
	Rivers/Streams	The streams and rivers in the study area generally flow in an east–west (E–W) direction , with some tributaries flowing northward along structurally controlled valleys.
16	Climate	
	Mean Annual Rainfall	960-1235mm
	Temperatures (December) (Minimum)	Minimum-2.6 ⁰ C
	Temperatures (June) (Maximum)	Maximum-46 ⁰ C
17	Topography	
	Toposheet Number	64F/05

	Morphology of the Area	The area consists of rugged to moderately undulating plateau and hilly terrain with NE–SW trending ridges and intervening valleys. The topography shows moderate to steep slopes with a general gradient controlled by the plateau morphology and drainage system. Flat-topped laterite/bauxite capped hills are prominent geomorphic features of the area.
18	Availability of base line geosciences data	
	Geological Map (1:12,500)	(Plate III)
	Geochemical Map	-
	Geophysical Map (Aerogeophysical, Ground geophysical, Regional as well as local scale GP maps)	-
19	Justification for taking up G3 stage mineral exploration	The proposed exploration program for bauxite and aluminous laterite mineralization in Anuppur District, Madhya Pradesh, is justified based on the encouraging exploration results, significant resource potential, and favourable analytical values obtained from previous investigations, as given below – 1. The Pipariya Mal Block (G2), which has undergone auction, has already established significant resources of bauxite and laterite mineralization. The combined resources estimated by GSI and DGM include 29.80 MT of in-situ aluminous laterite, 21.35 MT of float aluminous laterite, 7.55 MT of in-situ bauxite, 3.26 MT of float bauxite, 2.329 MT of in-situ ferruginous laterite, and 0.288 MT of float ferruginous laterite. 2. The Baranjh Pakkatola Block and the Bhalwar Block (G4/GM), which have undergone auction, have shown promising indications of bauxite and aluminous laterite mineralization in the proposed area. 3. The Baghrela Block (G4/GM), which has undergone auction, has yielded encouraging analytical results. Bauxite samples show Al_2O_3 values ranging from 35.73% to 60.38%, SiO_2 up to 6.8%, and TiO_2 from 3.21% to 11.22%, while aluminous laterite samples contain Al_2O_3 values from 19.65% to 49.15%, SiO_2 from 7.63% to 29.67%, and TiO_2 from 2.25% to 9.81%. The area is also enriched with critical minerals, with Vanadium values up to 1906.2 ppm and Gallium up to 105.07 ppm. 4. The operational Chachandeeh Mine, under Mining Lease status, confirms the mining feasibility and economic potential of bauxite deposits in the region. 5. Further justification is provided by the

		reconnaissance survey carried out around the Lamsarai-Kohka-Bicharpur areas of Anuppur district under the G4 exploration stage. BRS samples show Al_2O_3 values ranging from 30.46% to 43.47% and SiO_2 values from 2.77% to 6.47%, while PTS samples contain Al_2O_3 values from 6.84% to 32.39% and SiO_2 values from 3.71% to 38.10%. The area is also enriched with critical minerals, with Vanadium ranging from 483.27 ppm to 1703.01 ppm, Gallium from 25.39 ppm to 89.47 ppm, Lithium from 2.4 ppm to 24.01 ppm, and TiO_2 from 2.16% to 9.67%, indicating strong potential for bauxite and associated critical mineralization. Therefore, the block is considered prospective for bauxite mineralization and is proposed for detailed G3 level exploration
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2. DETAILED DESCRIPTION OF THE PROJECT

A) Location and Accessibility:

The investigated area falls between **latitude 22°55'01.61"N to 22°54'37.24"N and longitude 81°24'28.56"E to 81°24'28.56"E**, covering about **14 sq. km** in the Lamsarai–Kohka–Bicharpur sector of Pushparajgarh Tehsil, Anuppur District, Madhya Pradesh. The area falls under the jurisdiction of Rajendragram and Karanpathar Police Stations near Rajendragram and Benibari villages respectively. The block area is well connected by the Gadasarai–Lilatola–Rajendragram–Anuppur road and Lilatola–Amarkantak Road. Pushparajgarh Tehsil headquarters is located about 30 km east of the block area, while Gadasarai, Anuppur, and Amarkantak are situated approximately 35 km, 56 km, and 63 km away respectively. The nearest railhead is Anuppur Railway Station under South East Central Railway, located about 56 km from the area. The nearest highway is NH-43, and the interior parts of the block are accessible through a network of all-weather metalled roads and fair-weather kuccha roads. The nearest airports are Jabalpur Airport located about 260 km away and Bilaspur Airport situated approximately 130 km from the block area.

B) Physiography:

The study area forms part of the Amarkantak Plateau of the Maikala hill range and is characterized by rugged to moderately undulating plateau and hilly terrain with NE–SW trending ridges and intervening valleys. The topography comprises flat-topped laterite/bauxite capped plateaus, moderate to steep slopes, and structurally controlled drainage. Elevation in the area ranges approximately from 780 m to 1045 m above mean sea level. The northern part of the area predominantly shows trellis drainage, whereas the southern part exhibits dendritic drainage pattern.

C) Regional Geology:

The Amarkantak area is part of the wide laterite-capped plateaus of the Maikal Range. Rocks of the Chilpi Group and Chhattisgarh Supergroup are well exposed in the southern areas such as Gaurella, Bilaspur, Raigarh, and Rajnandgaon.

Gneissic rocks are exposed towards the east and northeast of the Amarkantak plateau around Kotma and Jaithari. These rocks form the core of the Maikal Range and are mainly exposed along the lower slopes of the plateau.

The Amarkantak plateau is covered by basalt flows and intertrappean beds of the Deccan Traps, ranging in age from the Paleocene to Upper Tertiary period.

The general geological succession of the area is given below (after Roychowdhury, 1968)

Generalized Stratigraphy of the area					
Supergroup	Group	Formation	Lithounits	Thickness (m)	Age
			Soil	1-10	Recent
			Laterite with or without bauxite	20-30	Upper Tertiary to Quaternary
Deccan Trap	Amarkantak	Unclassified	Basaltic flows, intertrappean and dykes.	200-300	Upper Cretaceous to Paleocene
	Lameta		Cherty limestone, sandstone and sands	10-40	Middle to upper Cretaceous
-----Unconformity-----					
Gondwana	Lower Gondwana	Talchir	Sandstone, shale and tilltes	700-900	Permian to Carboniferous
-----Unconformity-----					
	Sausar	Bichua	Schist, gneisses, migmaties with granite and other acid intrusives		Palaeoproterozoic

The Sausar Group is the oldest rock unit in the region. It mainly consists of steeply dipping medium- to high-grade metamorphic rocks such as schists and gneisses, along with pink granite. These rocks are exposed in the eastern part of the area around Pendra Road.

The rocks of the Gondwana Supergroup are younger and rest unconformably over the older crystalline rocks. These rocks dip gently towards the north and are exposed in the northern part of the region around Shahdol, Burhar, and Anuppur, forming the rolling plains of the Sohagpur coalfield and nearby coalfields.

Several basalt dykes and sills intrude the Gondwana rocks. The Lameta Formation, consisting of thick-bedded cherty limestone and sandstone, lies flat over the Gondwana rocks in the northern part of the region. Good exposures of these rocks are seen between Pendra Road and Pakaria.

Laterite capping is commonly found in the southern part of the region and occurs over the flat-topped plateau areas.

D) Geology of the area

Geologically, the area is mainly covered by basalt and intertrappean beds of the Amarkantak Group belonging to the Deccan Trap Supergroup of Upper Cretaceous to Paleocene age. Over these rocks, aluminous laterite and bauxite of Cenozoic age have developed due to weathering. Black cotton soil of recent age occurs in the low-lying areas.

The entire area is covered by rocks of the Amarkantak Formation of the Deccan Trap and laterite/bauxite formed under tropical to subtropical weathering conditions. Three basaltic lava flows have been identified, separated by intertrappean beds. The first flow occurs below the lower fossiliferous intertrappean bed, the second flow lies between the lower and upper intertrappean beds, and the third flow occurs above the upper non-fossiliferous intertrappean bed.

Vesicular basalt is observed in the southern part of the hill, where cavities are filled with secondary silica. In the northeastern part of Jatanga village, a lower intertrappean bed is exposed as a hard calcareous layer containing fossils of molluscs such as Physa and Conus gastropods, some bivalves, and plant remains. The upper intertrappean beds do not contain fossils.

The basaltic flows of the Deccan Trap capped by laterite are responsible for the occurrence of bauxite in the area.

Local litho-stratigraphic succession of the Area			
Supergroup/ Group	Formation	Lithology	Age
		Soil (Black Cotton)	Recent
		Laterite/Bauxite	Cenozoic
Deccan Trap	Amarkantak Formation	Basalt (Top flow-3)	Upper Cretaceous to Paleocene
		Intertrappean Beds (Non fossilliferous)	
		Basalt (Middle flow-2)	
		Intertrappean Beds (fossilliferous)	
		Basalt (Bottom flow-1)	
-----Base Not Exposed-----			

3. Scope for proposed exploration

Sr.No.	Nature of Work	Proposed Work
1	Detailed Mapping in 1:4000 scale	14 sq. km
2	Bed Rock Samples	50
3	Specific Gravity Determinations/Bulk Density	5 nos
4	Sample Analysis (Bed rock samples)	50
5	Core Drilling	2700 m
6	Borehole Depth	15 m
7	Drill Core Samples	180 Nos
8	Category of Land	Forest
9	Geological Personnel	02 Nos.
10	Period of Scheme	10 months

4. Objectives:

1. To delineate the surface outcrop of Bauxite/ Laterite by geological mapping at a 1:4000 scale with 2m interval Contouring and collection of bed rock samples and analysis
2. To drill 34 Nos. of boreholes on block at definite grid pattern of 400m X 400m as per MEMC rules 2015 (Being irregular/patchy occurrence of the deposit) to decipher its depth persistence and subsurface continuity and to establish the different zones of aluminous laterite/bauxite.
3. To estimate the insitu resources of different grade of aluminous laterite/Bauxite and preparation of Geological Report (GR).
4. Carry out mineral exploration works as per Minerals (Evidence of Mineral Contents) Rule-

2015, Mineral (Auction) Rules-2015 and MMDR Amendment act-2015. In turn to facilitate the Government of Gujarat in auctioning of the block.

5. Previous Work

Geological Survey of India carried out Regional Geological Mapping in and around Toposheet No. 64F/05 of the Amarkantak Plateau region by King (1885) and Hughes (1925).

Geological Survey of India carried out Regional Geological Mapping in and around Toposheet No. 64F/05 of the Amarkantak Plateau region by King (1885) and Hughes (1925).

Hira Lal (1886–87) was the first to report the **occurrence of bauxite** in the region, followed by **Fermor (1914)** who confirmed its presence over the Amarkantak plateau.

Fermor (1914) carried out investigation and recorded the presence of Bauxite deposits over the Amarkantak Plateau area.

Fox (1923, 1945) and **Sinor (1923)** described the bauxite deposits and evaluated their potential for **aluminium production**, including feasibility aspects.

G.L. Rahangdale (1969–74) carried out detailed exploration in **Mandla district (TS 64F/06)**, including reconnaissance and large-scale mapping, drilling of **953 boreholes** (7651.20 m), and pitting. The study estimated **15.96 million tonnes of bauxite** with average Al_2O_3 ~48.5% and SiO_2 ~2.9%, classified into Grade-I, II, and III.

S.A. Pandhare (1977–78) conducted reconnaissance surveys (~100 line km) in Bilaspur, Mandla, and Rajnandgaon districts, identifying **massive to pisolitic bauxite** occurring as cappings and pocket-type deposits with thickness ranging from a few cm to 4 m. The Al_2O_3 content varies from **42.84% to 65.28%**, with estimated reserves of ~2.4 MT and ~1.5 MT in different sectors.

D.R.S. Mehta, G.V. Rao, S.R. Shrivastava, and Mahendra Singh (1965–66) carried out detailed exploration in **Hazari Dadar** and adjoining areas with 292 boreholes. The bauxite thickness varies from **0.02 m to 6.0 m** (avg. ~1.3–1.7 m), with estimated reserves of ~7.61 million tonnes and average specific gravity of ~2.23.

Prabhakar Lakra and Ravindra Parmar (2010–12, Geological Survey of India) conducted bauxite prospecting in Dindori district, identifying 5 bauxite pockets over ~3.91 sq. km with average thickness of ~1.94 m. The bauxite falls under **Metallurgical Grade-II**, with a prospective resource of ~173.96 million tonnes

Modi V.S. and Kewat M.K. (2020–21) carried out **G4 level exploration** in Tulra–Mediyaras–Benibari area (TS 64F/05), estimating **3.72 million tonnes of bauxite** and **96.02 million tonnes of aluminous laterite**.

Geological Survey of India carried out Reconnaissance Survey for Bauxite and Aluminous Laterite Mineralization around Lamsarai–Kohka–Bicharpur areas of Anuppur District, Madhya Pradesh during **FS 2022–23**

6. Block description

The proposed Garjanbija block lies in parts of TS 64F/05 and is bounded by the coordinates as shown in the table below:

Co-ordinates of Garjanbhija Block		
BP No.	Latitude	Longitude
A	22°55'01.61"N	81°24'28.56"E
B	22°55'1.61"N	81°25'20.36"E
C	22°54'52.66"N	81°25'20.36"E
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H	22°52'45.17"N	81°27'47.44"E
I	22°53'9.01"N	81°27'6.02"E
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L	22°53'27.78"N	81°26'52.50"E
M	22°53'27.85"N	81°26'15.95"E
N	22°53'48.62"N	81°26'15.97"E
O	22°53'48.60"N	81°25'4.89"E
P	22°54'11.70"N	81°25'4.97"E
Q	22°54'11.62"N	81°25'55.72"E
R	22°54'37.31"N	81°25'55.85"E
S	22°54'37.24"N	81°24'28.56"E

7. Proposed/ Planned Methodology

Detailed Geological Mapping

Geological mapping on 1:4000 scale with 2m contour interval, will be carried out in an area of 13.4 sq. kms. by taking traverses with the help of GPS and ETS. The geological map will be prepared by adding geological features & structural details etc. picked up during field mapping

Drilling:

To interpret the lithological contacts from the borehole data between various lithologies encountered. A **total 34 boreholes** are planned in block. Boreholes shall drill with an average depth of **15 m** deep. A total cumulative drilling meterage shall be about **510 m** in the proposed blocks.

Core Logging and Sampling:

The core recovered from the exploratory drilling shall be kept in the core boxes as per the standard procedure. In the log book core recovery, core recovery percentage, unit length, extrapolated length run-wise shall be recorded. Borehole cores shall be logged run-wise as per lithounits, structural features, and rock types. Samples for each borehole shall be collected and prepared for chemical analysis.

Chemical Analysis

The collected samples shall be analyzed by XRF for 5 radicals Al₂O₃, SiO₂, TiO₂, Fe₂O₃, Determination of Trihydrate Alumina (THA-140°C), Determination of Monohydrate Alumina (THA-240°C), Reactive Silica, 10% of the primary samples shall be analyzed as check samples.

ICP-OES/ICP-MS (sequential technique)

ICP-OES/ICP-MS (sequential technique) Sample package for 14 REE and 9 trace elements i.e. U, Ta, Ge, Be, Hf, Sn, As, Rb, Th.

Geotechnical study

5 Nos. of Bauxite/Aluminous laterite samples will be collected for Bulk density study.

Geological Report

Prepare a detailed report (Final G3 stage report) along with geological map/cross section etc. identifying and establishing the deposit with quality and quantity of the resources with worthy of being raised to G2 scheme of exploration as per MEMC-2015. Data generated from G-3 level of work and earlier data if any shall be presented in the report as per the guidelines laid down in provisions of Mineral (Evidence of Content) Rules 2015 in the NMET prescribed format for pre review.

8. Nature and Quantum of the work

	Item of Work	Unit	Proposed quantum
1.	Topographic Survey (1:4000) with 2m contour interval	Sq. Km	14
2.	Geological Mapping (1:4000)	Sq. Km	14
3.	Core Drilling 400x400 grid 34 BH (15m each)	M	510
4.	Chemical Analysis		
A.	Chemical Analysis;(core samples) Primary + Check for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI (per borehole 10 sample)	Nos.	340
B.	Chemical Analysis; (Surface samples) Primary for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI (BRS/Channel sample)	Nos.	60
C.	External Check sample for analysis of 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI	Nos	40
D.	ICP-OES/ICP-MS (sequential technique) Sample package for 14 REE elements + 9 trace element (U, Ta, Ge, Be, Hf, Sn, As, Rb, Th) (per borehole 5 sample)	Nos.	175
E.	Determination of Monohydrate Alumina (THA-240°C)	Nos	5
F.	Determination of Reactive Silica	Nos	5
G.	Determination of bond work index	Nos	5
H.	XRD studies for identification of minerals (Random)	Nos	5

5.	Petrographic / mineragraphic study		
A	Preparation of standard thin section of rock	Nos.	10
B	Complete Petrographic / ore microscopic study / minerographic report of rock sample (along with 5Nos. Digital photo micrographs	Nos.	10
6.	Geotechnical Study		
A	Bulk Density Determinations	Nos.	5
7.	Geological Report Preparation	Nos.	1

9. Reference

- Khandelwal, K., and Kewat, M.K. (2019–20 & 2020–21). Final Report on General Exploration for Bauxite and Laterite in Pipariya Mal Block, Bajag Tehsil, Dindori District, Madhya Pradesh. GSI Report, P. 149.
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- Mehta, D.R.S., Rao, G.V., et, al., (1969). Project Report on the Exploration of Bauxite Deposits in Mandla, Bilaspur and Shahdol Districts, Madhya Pradesh. GSI Report, P 778.
- Kinker, A.O. (2022–23). Report on Reconnaissance Survey for Bauxite and Aluminous Laterite Mineralization around Vikrampur Mal, Dhanoli Mal, Gorkhapur Mal and Mohtara, Dindori District, Madhya Pradesh. GSI Report, P 139.
- Kewat, M.K., and Mohapatra, C.K. (2023). Report on Reconnaissance Survey for Bauxite and Aluminous Laterite Mineralization around Lamsarai–Kohka–Bicharpur Areas, Anuppur District, Madhya Pradesh. GSI Report, P 56.
- NGDR Portal

PRB INFRAPROJETS PRIVATE LIMITED**(Notified Private Exploration Agency)****WORK PLAN–G3 STAGE EXPLORATION FOR LIMESTONE****IN GARJANBHIJA BLOCK****TIME SCHEDULE**

Item of Work	1	2	3	R E V I E W	4	5	6	R E V I E W	7	8	9	10
1. Pre field preparation / Camp Setting												
2. Geological Mapping (1:4000) and Sampling												
3. Topographic survey												
4. Drilling												
5. Laboratory Studies												
6. Interpretation of analytical data, finalization of lithologs, plates												
7. Review & report preparation / Peer review												
6. Final submission												

PRB INFRAPROJECTS PRIVATE LIMITED

(Notified Private Exploration Agency)

**WORK PLAN-G3 STAGE EXPLORATION FOR LIMESTONE
IN GARJANBHIJA BLOCK**

Item	Item of Work	Item	SOR Sr No & Rates		Estimated Cost	
Sr No.	Item	Unit	Sr.No.	Rates	Qty.	Amount(Rs)
A	Survey work					
a	DGPS Survey BH fixation and RL determination (34 BHP& 19 BP)	Per Point	1.3.2	24,000	53	1272000
b	Topographic Survey with 2m contour interval & Geological Mapping1:4000 scale					
i	A) Charges of 1 Surveyor for Geological mapping & Topographic survey	per day	1.3.1	10,500	40	420000
ii	B) 4 Labours for survey work;	day	5.8	556	160	88960
	Sub Total- A					1780960
B	GEOLOGICALWORK (Mapping1:4000scale)					
i	Detailed mapping 1:4000 scale with contouring	Per sq. km	1.1	18300	14	256200
ii	Charges for one Geologist-Field	day	1.2.1a	14,500	90	1305000
iii	Charges for one Geologist per-HQ	day	1.2.1a	10,500	30	315000
iv	2 labours / party	day	5.8	556	180	100080
v	Sampling-1 Samplers	day	1.5.2	7,850	62	486700
vi	Sampling 4 labours/party	day	5.8	556	248	137888
	Sub Total- B					2600868
C	LABORATORY STUDIES					
a	Chemical Analysis					
i	A. Chemical Analysis;Primary Core samples for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI (per borehole 10 sample)	Nos	4.1.17a	4,200	340	1428000
ii	B. Chemical Analysis;Primary(Surface) samples for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI (BRS/Channel sample)	Nos	4.1.17a	4,200	60	252000
iii	C. External Check sample for analysis of 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI (BRS and Core)	Nos	4.1.17a	4,200	40	168000
iv	Determination of Trihydrate Alumina (THA-140°C)	Nos	4.1.19b	5,000	5	25000
v	Determination of Monohydrate Alumina (THA-240°C)	Nos	4.1.19c	5,000	5	25000
vi	Determination of Reactive Silica	Nos	4.1.19d	5,000	5	25000
vii	Determination of bond work index	Nos	4.1.19e	15,000	1	15000
b	Physical, Petrological, Mineralogical Studies					

i	XRD studies for identification of minerals (Random)	Nos	4.5.2	4000	5	20000
ii	ICP-OES/ICP-MS(sequential technique) Sample package for 14 REE elements + 9 trace element (U, Ta, Ge, Be, Hf, Sn, As, Rb, Th) (per borehole 5 sample)	Nos	4.1.15	7400	50	370000
iii	External Check sample for analysis ICP-OES/ICP-MS(sequential technique)	Nos	4.1.15	7400	5	37000
iv	Preparation of standard thin section of rock	Nos.	4.3.1	500	5	2500
v	Complete Petrographic / ore microscopic study / minerographic report of rock sample (along with 5Nos. Digital photo micrographs	Nos	4.3.4	2800	5	14000
c	Geotechnical Laboratory					
i	Bulk Density Determinations	Nos	4.8.3	2500	5	12500
	Sub Total- C					2394000
D	DRILLING (In house					
i	Core Drilling (BH 35 Nos) x Each 15Mtr depth =Total 525 Mtrs (25m for deeper BH)	m	2.2.1.1c	5,500	535	2942500
ii	Land/Crop Compensation (As Per Requirement)	Per BH	5.6	30,000	34	1020000
iii	Construction of concrete Pillar (35 BHP + 22 BP)	Per BH	2.2.7	2,000	53	106000
iv	Borehole plugging by cement	Lumpsum per borehole	2.2.8	10,000	34	340000
v	Miscellaneous Charges (Transportation of Drilling Rig, Accommodation for Drill Camp, Camp Setting and winding, construction of Approach road	Lumpsum	2.2.9	-	-	735625
vi	Core Preservation.	m	5.3	1,590	360	572400
	Sub Total- D					5716525.00
	Total A to D					12492353.00
E	Geological Report Preparation (A minimum of Rs. 2.5 lakhs	1No.	5.2			250000.00
F	Peer review Charges	1No.		30000		30000.00
G	Preparation of Exploration Proposal (2% of the Cost or Rs.5 Lakhs whichever is lower)	1No.	5.1			249847.06
H	Total Estimated Cost without GST					13022200.06
I	Provision for GST (18%)					2343996.01
J	Total Estimated Cost with GST					15366196.07

Plate –I: Location Map of the Garjanbhija Block demarcated Google Earth

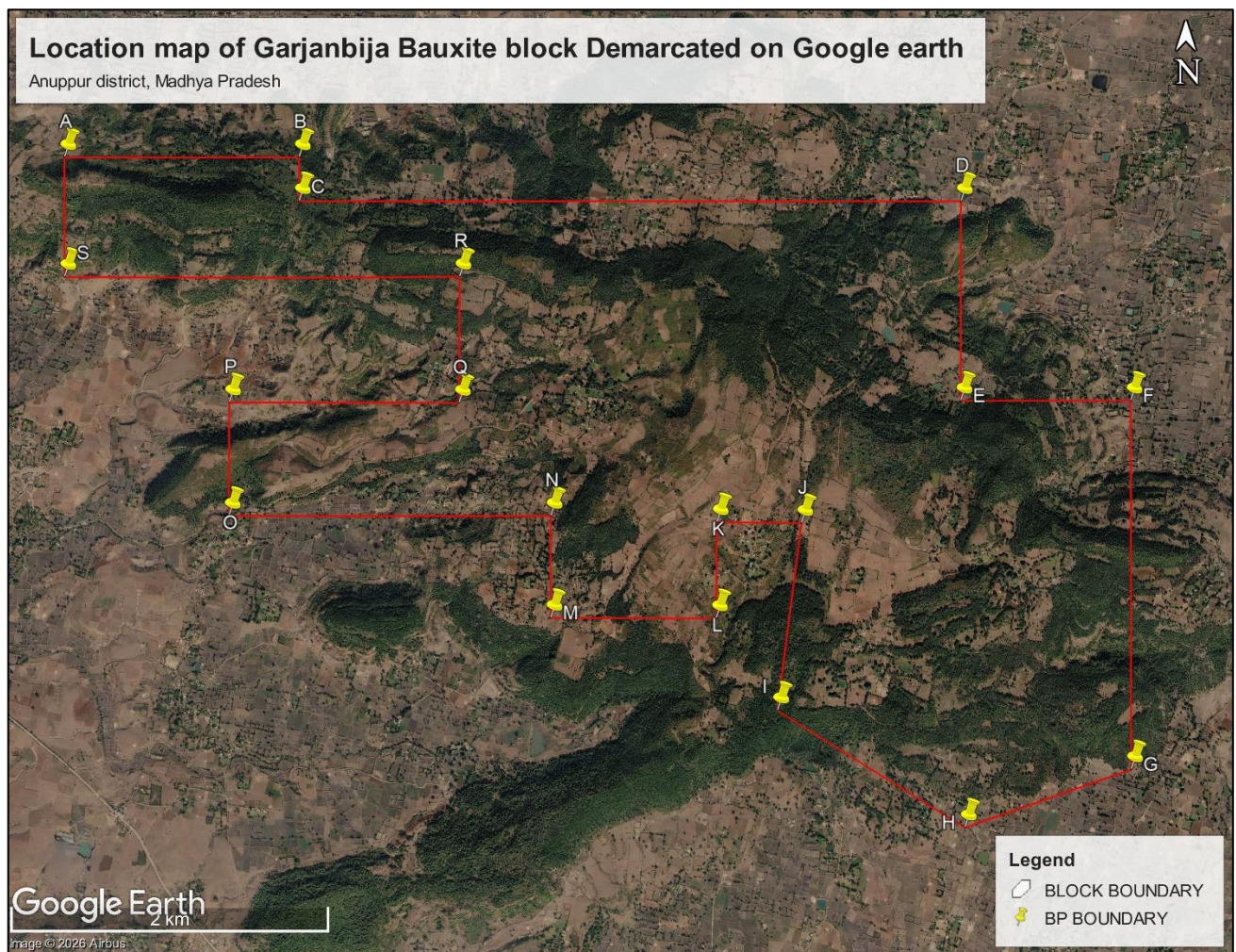


Plate-II: Location of the Garjanbhija block demarcated on Survey of India (SOI) Toposheet No. 64 F/05

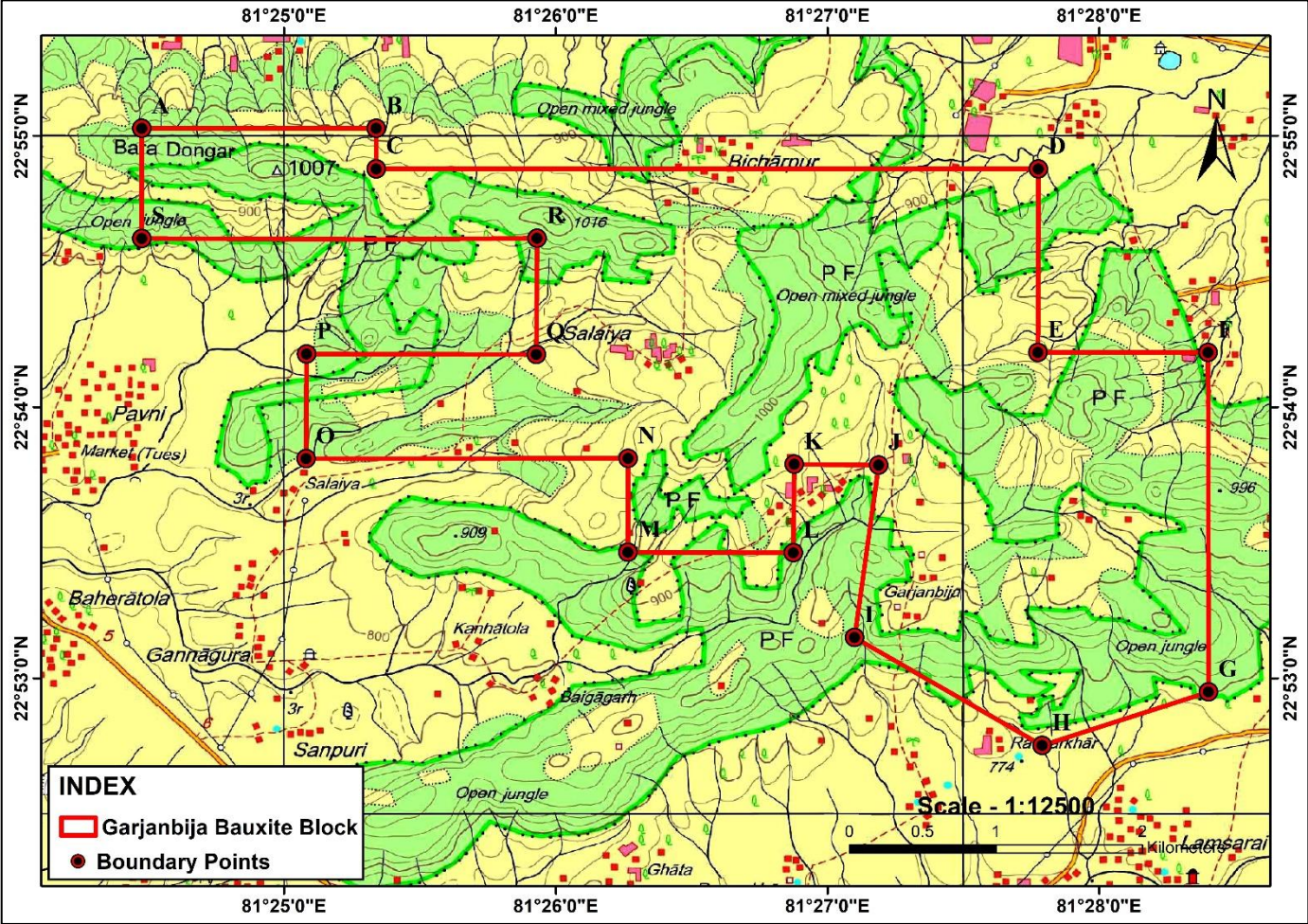


Plate-III: Tentative Borehole Plan of the Garjanbhija block on the Geological Map

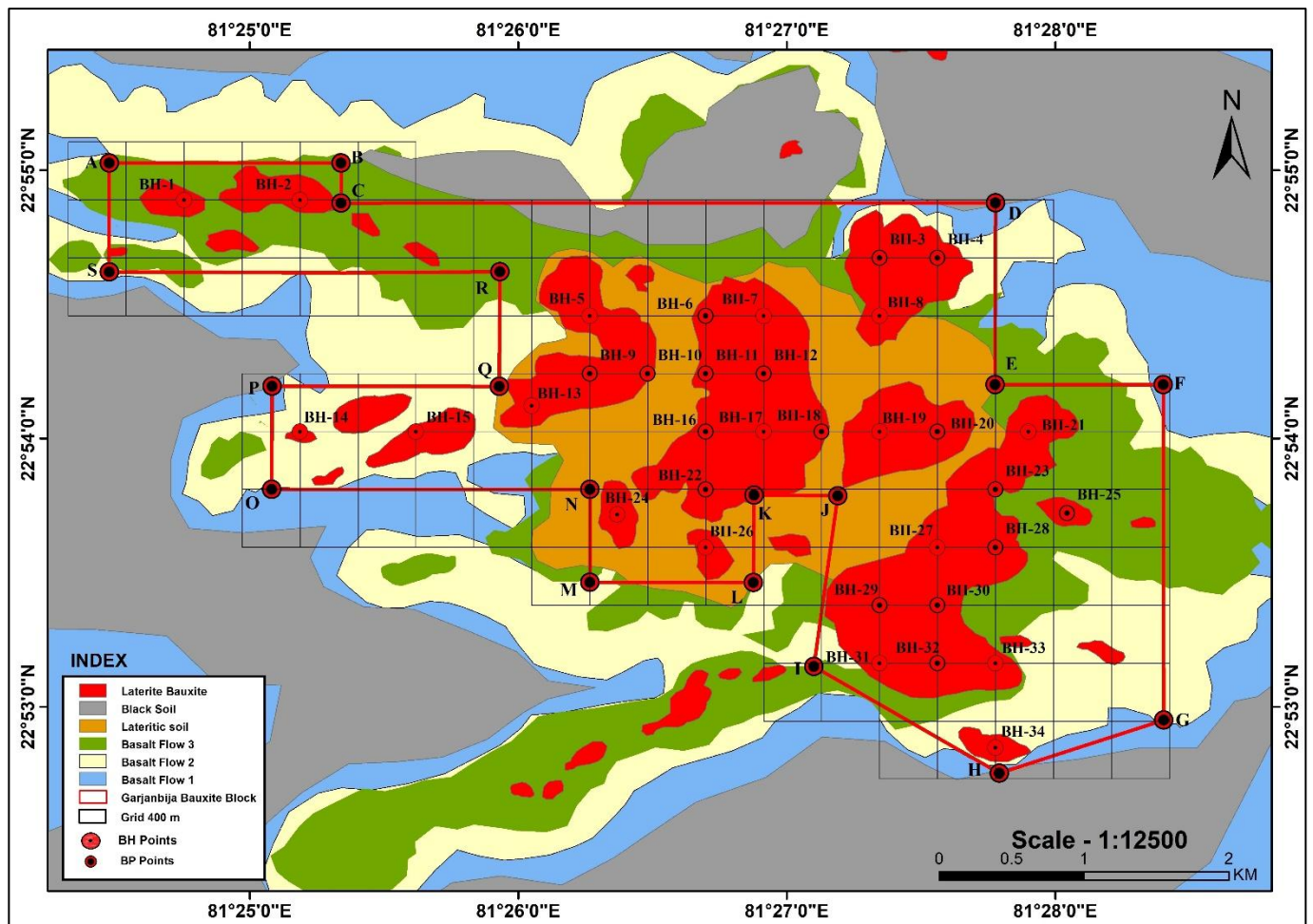


Plate-IV: Previous Exploration Near Garjanbhija block

