Dr. Dhaval Patel, IAS
Commissioner of Geology & Mining
Industries & Mines Department
Government of Gujarat

CGM/NMET/Simar block/696 to 698 / 24-25

Date: 31 JUL 2024

To,
Director,
National Mineral Exploration Trust
Ministry of Mines, Government of India.
New Delhi, Delhi-110001.

Subject: Allocation of funds Rs 55.88 lakhs (Rupees Fifty five Lakhs eighty eight Thousand) for G2 level Geological exploration for Limestone in Simar Block, Gir Somnath District, Gujarat State under NMET.

Respected Sir,

In the past, NMET has sanctioned several Geochemical analysis and Geological exploration projects proposed by CGM - Gujarat. These projects have been successfully executed by CGM - Gujarat. Currently, NMET has also provided funding for three ongoing geological exploration projects in the Kutch district.

The coastal region of Saurashtra, spanning from Okha in the west to Bhavnagar in the east, is a notable area in India characterized by the prevalent presence of Milliolite limestone. These formations extend up to 200 kilometers inland from the coastline. The entire coastal region of Saurashtra holds substantial potential for chemical grade and cement grade limestone deposits. Consequently, various private cement factories and Gujarat Alkalis have established soda ash plants in this area.

Currently, both cement and soda ash plants are encountering a shortage of raw limestone supply from the Saurashtra region. Consequently, they have resorted to importing raw limestone from other regions within the country and even overseas. Given the existing demand for limestone, it is crucial that we explore the remaining promising limestone reserves in the Saurashtra region to ensure efficient sourcing of raw materials from nearby locations.

Therefore, we are presenting a comprehensive proposal for conducting G2 level geological exploration for limestone in Simar Block with a total cost of Rs 55.88 lakhs funded by NMET. We would greatly appreciate your prompt approval of this proposal.

Thanking You.

For CGM - Gujarat

29/2/24

Dr. Dhaval Patel, IAS
Commissioner of Geology and mining.
Gujarat State, Gandhinagar

Enclosed: As above

Copy to: (1) DDG – SU, GSI – Gujarat.

(2) Joint Secretory, Industries and Mines department, New Sachivalaya, Gandhinagar.

Proposal for Simar Block, Gir Somanth District, Gujarat State for G2 Stage Mineral Exploration under NMET

Commodity: Limestone

By

Commissioner of Geology and Mining
Gujarat

Place: Gandhinagar **Date: 29 JULY 2024**

Summary of the Block for G2 stage exploration

	Features	Details		
	Block ID	CGM/NMET/Limestone/08/2024-25		
	Current Exploration Agency	Commissioner of Geology & Mining, Gujarat		
	Previous Exploration Agency	Commissioner of Geology & Mining, Gujarat		
	Commodity	Limestone		
	Mineral Belt	Miliolite Formation		
	Completion Period with entire Time schedule to complete the project	06 months		
	Objectives	To assess & identify qualitative and quantitative mineral resource of Limestone mineral at G2 stage in the proposed block area.		
	Whether the work will be carried out by the proposed agency or through outsourcing and details thereof.	The entire work will be carried out through Gujarat Mineral Research & Development society (GMRDS) working under Industries & Mines Department Government of Gujarat.		
	Name/ Number of Geoscientists	Geologist: 1 (Field) + 1(HQ)		
	Expected Field days (Geology, Geophysics, Surveyor)	25 days: Field Geologist 40 days: HQ Geologist 20 days: Surveyor		
1.	**Location**			
	Co-ordinates (Latitude, Longitude) of Block Boundary	**Block corner points**	**Latitude**	**Longitude**
		1	20°48'14.65"N	71° 7'5.30"E
		2	20°47'34.13"N	71° 7'35.47"E
		3	20°47'41.50"N	71° 8'7.21"E
		4	20°48'31.02"N	71° 7'47.32"E
	Villages	Garal, Simar, khajudra		
	Tehsil/ Taluk	Una		
	District	Gir Somnath		
	State	Gujrat		
2.	**Area (hectares/ square kilometres)**			
	Block Area	175 Hectares		
	Forest Area	Nil		
	Government Land Area	NA		
	Private Land Area	NA		
3.	**Accessibility**			
	Nearest Rail Head	Una railway station – 9.00 Km		
	Road	NH-51 – 5.5 Km		

	Airport	Diu airport – 17.00 km
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	Sub-parallel Pattern
	Rivers/ Streams	Small nallas presents in the area.
5.	**Climate**	
	Mean Annual Rainfall	824 mm
	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	Minimum – 16° C Maximum – 43° C
6.	**Topography**	
	Toposheet Number	41P/01
	Morphology of the Area	The proposed area is generally covered by dry barren and agricultural fields.
7	**Availability of baseline geoscience data**	
	Geological Map	Plate-1
	Geochemical Map	Not available
	Geophysical Map	Not available
8.	**Justification for taking up G2 stage mineral exploration**	• The region was primarily investigated by CGM in the year 1966 and 1992 to 1995 by means of Geological mapping using Remote sensing techniques, surface exposure mapping and sample collection of the proposed area. The recommendation of this report indicates Coastal areas of Saurashtra region have milliolitic limestone deposit, these deposits have very less overburden and occurred in form of low ridges and low mounds. So, it can be easily minable deposit. Also, other facilities like Roads and transport, Labour, etc. are easily available in this region. • We have collected 09 grab samples during the recent geological travers survey of CGM / GMRDS geologist, the analysis results of these samples indicated CaO% from 49.05% to 51.84% (Refer Annexure - 1) • The proposed block is surrounded by the small existing Limestone leases. • Thus, the block is suggested for G2 level of exploration.

Detailed description:

1. Block Summary

Physiography

The study area is located in the Veraval taluka, Gir Somnath district in the western region of Gujarat. The study area investigation falls in the south-central Saurashtra. The area examined is more or less flat ground with numerous low mounds and ridges surrounded by the cultivated lands. All along the sea coast, the Limestone band forms small, steep, cliffs. The area under investigation is a western plain, these plains are mainly composed of recent alluvium soil by mound region of Alluvium blown sand and part of Millliolite Limestone covering the Tertiary strata. The climate of the area is moderate with an average rainfall of 60 to 70 cms. Summer remains very hot throughout the day with an average temperature of 40^0 to 43^0 C.

Background Geology (Regional Geology & Geology of the Block).

The three major lithounits, i.e. Gaj, Dwarka and Miliolite Formations occur broadly in three linear belts parallel to the coastline. Chaya Formation, restricted near the coastline, is porous, semi-consolidated limestone rich in fossil fragments. The exposures of Gaj Formation are present farthest from the coast near the exposed Deccan Trap hillocks and Miliolite Formation along the coastline whereas the Dwarka Formation is exposed in between. The Miliolite Formation has covered all the pre-existing lithounits.

The southern coast of Saurashtra from Okha in the west to Bhavnagar in the east is unique in India, being the only place where nearly pure carbonate sedimentation has taken place during the quaternary period under warm shallow and agitating water. These limestones are known as Milliolite limestone. These occurrences are also observed inland upto 200 kms from the coastal line.

The general stratigraphic succession of the region is as follows:

Stratigraphic Unit	Lithology	Age
Recent Deposits	Coastal Sea Sand dunes, soil and alluvium	Holocene
Chhaya Formation	Shelly limestone, Coraline limestone	Holocene to late Pleistocene
Milliolite Formation	Limestones with shell of Milolina	Pleistocene
Dwarka Formation	Fossiliferous Limestone	Pliocene
Gaj Formation	Alternate sequence of clays and limestone	Miocene
Deccan Trap	Basalt dolerite dykes	Cretaceous to Eocene

Gaj Formation

Gaj formation includes an intercalated sequence of marl/clay and limestone, dominated by the former. The marl/clay is light yellow to grey and it is difficult to distinguish between the two in transitional cases. Gaj limestone is light to deep yellow to brown, compact, and cryptocrystalline. At places, this limestone contains very little free silica or is almost devoid of it. The thickness of limestone band is highly variable and often a quite thick band pinches abruptly within short distance., In almost all places, where Gaj Formation is exposed a, thin crust (less than 2 m thick) of compact, dark coloured limestone, which is a secondary leaching product, is present followed downward by Gaj clay/marl. Gaj Formation is rich in marine mega- and micro- fossils. Mega fossils include pelecypods, gastropods, cephalopods, echinoids, alcyonaria, decapoda and bryozoa. Earlier workers have assigned an Upper Miocene age to Gaj Formation but Mathur et al (1980) advocated that the Faj Formation is at least of Mid Miocene age, if not older , as it contains fossils of Taberina malabarica a Lower to Middle Miocene foraminifer.

Dwarka Formation

Dwarka Formation is equivalent to the Dwarka bed of Fedden (1884). It overlies the Gaj Formation. Although there are pebbly or conglomeratic bands at the contacts, in most places the relation is conformable. The Dwarka Formation, as exposed in this area, generally comprises grey and gritty to sandy limestone almost devoid of megafossils. Near Dwarka, the Dwarka formation was divided into Upper and Lower Dwarka Member by Jain and Agarwal (1989-90). The lower Member, which overlies Gaj Formation, is an intercalated sequence of clay and kankar, friable/compact sandstone, yellow and red marl beds and yellow ferruginous and grayish sandy limestone. The Upper Dwarka is mainly bioclastic limestone, often cavernous and contains very little silica. In the mapped area the exposed Dwarka Formation is mostly represented by Lower Dwarka Member of Jain and Agarwal (1990), although there are some pockets, which are less in free silica.

Milliolite Limestone

The consolidated Quaternary deposits are termed as Miliolite Formation because of preponderance of tests of foraminifer Miliolidae. This is the most widespread lithounit in the coastal belt overlapping in all earlier lithounits. The colour of the limestone varies from white to pale yellow to pink. In majority of places the miliolitic limestone varies from white to pale yellow, relatively soft, friable, thinly laminated with alternate bands rich in foraminiferal tests and micrite. The Milliolite occur as whitish, buff coloured, current bedded limestone in the form of coastal ridge This Limestone primarily comprise of broken shells of foraminifer-milioline around which calcite grains have been formed. However, this is not a pure limestone and thin horizons of sandstone, grit and conglomerate are also found within Milliolites. The Milliolite are thought to be windblown deposits and are also found occurring along the hill slopes further inland.

Chhaya Formation

This is a semi-consolidated highly porous limestone occurring near the present day coast line and rich in both mega and micro-fossils. The thickness shows wide variation decreasing away from the coast. It is generally a bit ferruginous particularly below the ground level.

Soil and Alluvium

Major portion of the area is covered with soil or alluvium. This can be divided as the type formed due to weathering of limestone and the type formed due to deposition of clays brought by rivers. The soil formed due to weathering of limestone is regur soil and that of river is sticky black clayey soil.

Mineral potentiality based on geology, geophysics, ground geochemistry etc.

It was noted that the Milliolite limestone is the only rock formation which is exposed as outcrops in the entire sea-coast and especially in the area of investigation. It is exposed on the surface in forms of low mounds.

The typical characteristic of this limestone formation is its erosional feature. Due to chemical and differential weathering, solution holes, channels, cavities with alternate groove and ridge formation giving the area honeycomb appearance. This topography is known as Karst topography.

The limestone found is mostly light coloured, mostly white with shades of grey, buff, brown and yellow. The presence of impurities mostly iron is responsible for this colour variation. The rock is hard and compact. The texture of rock is mostly fine to medium grained at times ranging into coarse grade also. At places false and current beddings are also observed. In this limestone deposit the thickness is variable due to its topography.

Scope for proposed exploration

1. Location: - Village: Garal, Simar, khajudra, Tehsil: Una, District: Gir Somnath, State: Gujarat.
2. Quantum of work: The approximate core drilling work is 180 meters.
3. Rock formations to be drilled: Various types of soil, sub-soil, Limestone, Marl, clay, etc.
4. The boreholes shall be in depth range of approximately 15 m. However, this is indicative only and may vary as per actual geological conditions.
5. Type of Drilling: Core drilling by Hydraulic Drilling Rigs.
6. Borehole size: The holes shall be derived in NQ sizes.
7. The core recovery in all the formation should be at least 90% except in fault zone, weathered zone, soil, sand and structurally disturbed area
8. CGM will provide proposed borehole location plan of all the areas to be covered under exploration.
9. Sampling: There will be one mineral/rock sample for every 1-meter run. Each sample should be cut by core splitter. Each run shall be marked properly by plastic cards and

the core boxes shall be numbered properly. Each sample shall be reduced to an approximate quantity by following the standard sampling procedures such as homogenizing, coning, quartering and pulverizing into 100/200 mesh and be prepared into two packets of 100-200 gm each. The final sample pockets shall be properly labelled with BH number, sample run.

Recommendations of G4 Stage Mineral Exploration Report.

A.A. Waheed, 1966-67 had concluded that in their report is High grade Limestone present in the region. Limestone occurring in the form of Low mounds and ridges. Also, this Limestone can be easily exploited by simplest method of quarrying.

S. D. Kapse, A. K. Muley, 1996 had concluded that the satellite imagery of the region was found to be extremely useful for preparing geological maps, due to its synoptic view the structural details are easily picked up on imagery. And also recommended that detailed survey need to taken up for Limestone deposit to know reserves and Geological mapping of doleritic dykes for dimensional stone potentiality.

Objectives of Exploration

- To know the continuity of the mineral body both along the strike and dip.
- To map the extent of the ore body.
- To ascertain the grade of Limestone deposit.
- Ore resource/reserve estimation in accordance with MEMC Rule-2015

2. Previous Work

Previous Exploration in adjoining area (Regional area): All the sample (bed rock/trench/ groove/soil), borehole location should be plotted on the geological map and analytical data should be discussed briefly

A A Waheed (Field Seasaon 1966-67) has done to work Sanjavapur , Khajudra, Dandi , Senjaliya , Rajpara , Amodra , Una And Nathej of the Gir Somnath District Gujarat State during the year 1966-67, was part of a project to assess the quality and quantity of Limestone for its economical utilization. During the period under report total number of 123 samples of limestone and 27 of calcareous sand have been collected systematically for analysis. Most of the samples are chip samples drawn across the strike of the by so that it could represent the whole outcrop. The area surveyed is covered by the survey of India top sheet Nos. 41 P/1 and 41 P/2. An area of 50 sq.kms. has been examined. Out of this area, outcrops of limestone were noticed in an area of about 5 sq.kms.

S.D. Kapse, A.K. Muley (Field season 1992-93, 1993-94, 1994-95) has done a total 4550 sq.km. area was mapped in 1:50,000 scale with the help of Geo-coded IRS (FCC) imagery using Remote Sensing technique in parts of Amreli, Bhavnagar and Junagadh Districts of Saurashtra Peninsula. The area falls under S.O.I.T.S. No. 41 P/1+2, 41 P/5, 41 P/9, 41 O/7, and O/8, O/11, O/12, 41 L /13 and 41 L /14. The geology of the area was interpreted with the help of Remote Sensing techniques using IRS Satellite imagery (Geocoded) on 1:50,000. The different lithounits are demarcated based on their photo characters and geotechnical elements.

CGM/ GMRDS officials has also carried out field in current year survey of the proposed area and taken grab samples 09 Nos and done the chemical analysis of that samples. So chemical analysis also suggests that good quality limestone present in the study area, it was recommended to more sampling of the area. Chemical analysis data is given as per Annexure-1.

3. Block description

Block corner points	Latitude	Longitude
1	20°48'14.65"N	71° 7'5.30"E
2	20°47'34.13"N	71° 7'35.47"E
3	20°47'41.50"N	71° 8'7.21"E
4	20°48'31.02"N	71° 7'47.32"E

4. Planned Methodology

1. Preparation of Geological map. Field traverse and collection of grab/ channel samples from outcrop/ river cutting/ old dug wells.
2. To carry out DGPS survey and identified location of Road, River, Settlement, Electric line, Telephone line or any other permanent structure.
3. Preparation of Landuse, Landpattern map along with ownership details.
4. Preparation of proposed borehole location plan based on the previous work, grab sampling report and feasibility of drilling.
5. Carry out systematic & scientific core drilling activity along with preparation of Lithounits, core drilling registers, sampling and preparation of samples for further physical, chemical and petrographic analysis.
6. Carry out physical, chemical and petrographic analysis and interpretation of their result in borehole lithology.
7. Preparation of draft Geological report as per specified format of NMET as per MEMC Rules,2015 & its amendments.
8. Submission of draft Geological report to designated Geological expert for peer review.
9. Submission of final Geological Report incorporating comments of peer review to NMET for final approval.
10. Submission of Geological reports to state auction cell for further auction process.

5. Nature Quantum and Target

Components	G2
Aerial reconnaissance	NA
Geological Survey	NA
Systematic drilling	Refer Plate-2
Petrographic and mineral graphic studies	Specific Gravity studies
Synthesis of all available data	i) Integration of regional/ detailed geophysical, geological and geochemical data, if not done earlier. ii) Synthesis of all available data and Report writing

Borehole spacing (As per MEMC, 2015)

Type of deposit	Bedded Stratiform and Tabular deposit of regular habit (Minerals to be identified)	Bedded stratiform and tabular deposits of irregular habit (Minerals to be identified)	Lenticular bodies occurring en echelon Lenses, pockets. (Different minerals)
G2 Stage	400 m	Not applicable	Not applicable
	(Vertical depth of intersection of mineralised zone for different level boreholes should be specified, number of boreholes (first, second, third), borehole spacing, approximate length of different level of boreholes may also be specified)		

6. Exploratory Drilling

- The boreholes shall be in depth range of approximately 15 m. However, this is indicative only and may vary as per actual geological conditions.
- Type of Drilling: Core drilling by Hydraulic Drilling Rigs.
- Borehole size: The holes shall be derived in in NQ sizes.
- While drilling, wherever water table is encountered, depth of the water table should be recorded and to be mentioned in the driller logs.
- The core recovery in all the formation should be at least 90% except in fault zone, weathered zone, soil, sand and structurally disturbed area.

7. Manpower deployment

Sl. No.	Activities	Unit	MONTHS					
			1	2	3	4	5	6
1	Camp Setting	Month						
2	Surface Drilling	m.						
3	Survey Party days (1 Party)	day						
4	Geologist Party days in field (1 Party)	day						
5	Sampling Party days, Core Sampling (1 party)	day						
6	Laboratory Studies	Nos.						
7	Camp Winding	Month						
8	Geologist Party days in HQ (1 Party)	day						
9	Geological Report Writing with Peer Review	Month						

Note: 1. Commencement of project may be reckoned from the day the exploration acreage is available along with all statutory clearances.

2. Time loss on account of monsoon/agricultural activity/forest clearance/local law & order problem may be additional to above time line.

8. Break-up of expenditure

The cost has been estimated based on actual schedule of rates mandated in the circular OM No. 61/1/2018/NMET dated 31st March 2020 for NMET funded projects which is **Rs.55.88 Lakhs.** The detailed cost sheet for G-2 exploration for Limestone in proposed Simar Block is given below:

SL. NO.	Item	Estimated Cost (Rs.)
1	Drilling	1219500
2	Geology and Survey	1494020
3	Laboratory	941330
	Sub Total (1 to 3)	**3654850**
4	Miscellaneous	1080474
	Total	**4735323**
	GST 18%	852358
	Grand Total (including GST)	**5587681**
	Say Rs. In Lakhs	**55.88 lakhs**

9. References

- "Report of the Limestone Deposits in the Western parts of Zafrabad (Between Una and Jafrabad)" by A. A. Waheed . Assistant Geologist, Directorate of Geology and Mining, Ahmedabad, 1966-67.
- "Geological report of Southern part of Saurashtra covered under Toposheet Nos. 41 O/7, 8, 11 & 12, 41 P/1+2, 5 & 9, 41 L/13 & 14." by S.D. Kapse, A.K. Muley, Assistant Geologist, Directorate of Geology and Mining, Ahmedabad, 1996.

List of Annexures

Annexure-1: Chemical analysis data of collected samples.
Annexure-2: Detailed Cost Estimation Sheet

List of Plates

Plate 1: Proposed block boundary over existing Geological map.
Plate 2: Proposed Borehole Location Map.
Plate 3: Proposed block boundary over topographic map.

Annexure-1

Sr. No	Sample ID	Location		Lab ref.No.	SiO2	AL2O3	Fe2o3	TiO2	CaO	MgO	Na2O	K2O	P2O5	S03	LOI	TOTAL
		Latitude	Longitude		%	%	%	%	%	%	%	%	%	%	%	%
1	SIMAR-01	20°47'55.476"	71°07'24.236"	C/D/24-25/812	3.27	0.74	1.30	0.14	51.84	0.66	0.00	0.14	0.07	0.00	41.15	99.31
2	SIMAR-02	20°47'56.986"	71°07'23.276"	C/D/24-25/813	4.36	0.69	1.31	0.15	50.48	0.83	0.25	0.15	0.07	0.09	41.07	99.45
3	SIMAR-03	20°47'56.128"	71°07'32.132"	C/D/24-25/814	3.49	0.62	1.01	0.13	51.08	0.67	0.13	0.10	0.06	0.08	42.13	99.50
4	SIMAR-04	20°47'53"	71°07'30"	C/D/24-25/815	3.84	0.69	1.29	0.16	50.74	0.62	0.18	0.11	0.07	0.09	41.61	99.40
5	SIMAR-05	20°48'06"	71°07'39"	C/D/24-25/816	3.48	0.58	1.05	0.13	50.82	0.58	0.17	0.10	0.06	0.10	42.27	99.34
6	SIMAR-06	20°48'12"	71°07'31"	C/D/24-25/817	3.54	0.63	1.01	0.14	50.93	0.58	0.14	0.09	0.06	0.09	42.26	99.47
7	SIMAR-07	20°48'17"	71°07'19"	C/D/24-25/818	3.44	0.50	0.95	0.11	51.12	0.53	0.15	0.09	0.04	0.08	42.38	99.39
8	SIMAR-08	20°48'20"	71°07'37"	C/D/24-25/819	8.08	2.40	3.68	0.31	49.05	0.69	0.13	0.32	0.06	0.02	34.90	99.64
9	SIMAR-09	20°47'54.624"	71°07'27.929"	C/D/24-25/820	4.35	0.63	1.04	0.12	51.28	0.62	0.13	0.12	0.07	0.00	42.17	100.53

Annexure-2

Sr. No.	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal	
			SoC- Item S.No.	Rates as per SoC	Qty.	Total Amount (Rs.)
A	DRILLING					
1	Surface Drilling	m.	2.2.1.1b	6775	180	1219500
	Sub Total A					1219500
B	Geological Work					
1	Survey Days	day	1.6.1a	8300	20	166000
	Labour (3 labour for survey)	day	5.7	504	60	30240
2	Geologist (Field)	day	1.3b	11000	25	275000
3	Geologist (HQ)	day		9000	40	360000
4	Core Sampling Days	day	1.5.2	5100	25	127500
	Labour (3 labour)	day	5.7	504	70	35280
5	Drilling camp setting/ winding cost	per drill	2.2.9a & 2.2.9b	250000	2	500000
	Sub-Total B					1494020
C	LABORATORY STUDIES					
a	Chemical Analysis					
1	Primary Analysis	Nos.	4.1.15a	4200	180	756000
2	External Check Samples	Nos.	4.1.15a	4200	18	75600
B	Physical Analysis					
1	Preparation of Thin Section	Nos.	4.3.1	2353	10	23530
2	Petrographic Studies	Nos.	4.3.4	4232	10	42320
3	Digital Micro Photographs	Nos.	4.3.7	280	5	1400
4	Specific Gravity	Nos.	4.1	3540	12	42480
	Sub-Total C					941330
	Total (A+B+C)					3654850
D	Miscellaneous Charges					
1	Geological Report - 5%		5.2			182743
2	Proposal Preparation- 2% of approved project cost or 3.8 lakh (whichever is lower)		5.1			83076
3	Drill Core Preservation	m.	5.3	1590	180	286200
4	Peer Review Charges			30000		30000
5	Tender Process					83076
6	Operational Charges					415379
	Total					4735323
	GST 18%					852358
	GRAND TOTAL					5587681
	Rs. In Lakhs					**55.88 lakhs**

Geological map of Simar Limestone Block, Gir-Somnath District, Gujarat

71°4'30"E 71°6'0"E 71°7'30"E 71°9'0"E 71°10'30"E 71°12'0"E 71°13'30"E

20°49'30"N 20°48'0"N 20°46'30"N 20°45'0"N

N

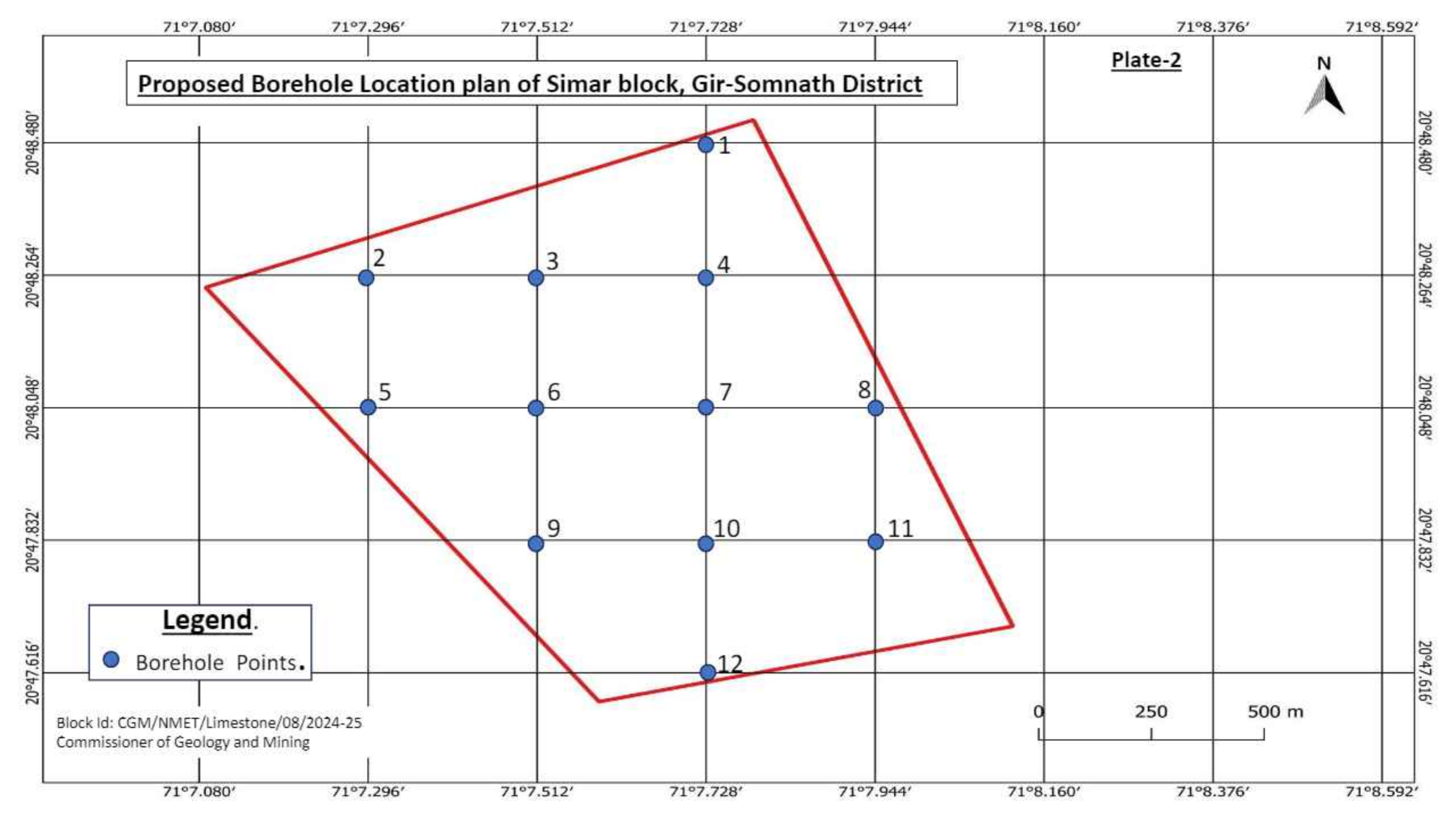
1 centimeter = 1 km

Legend

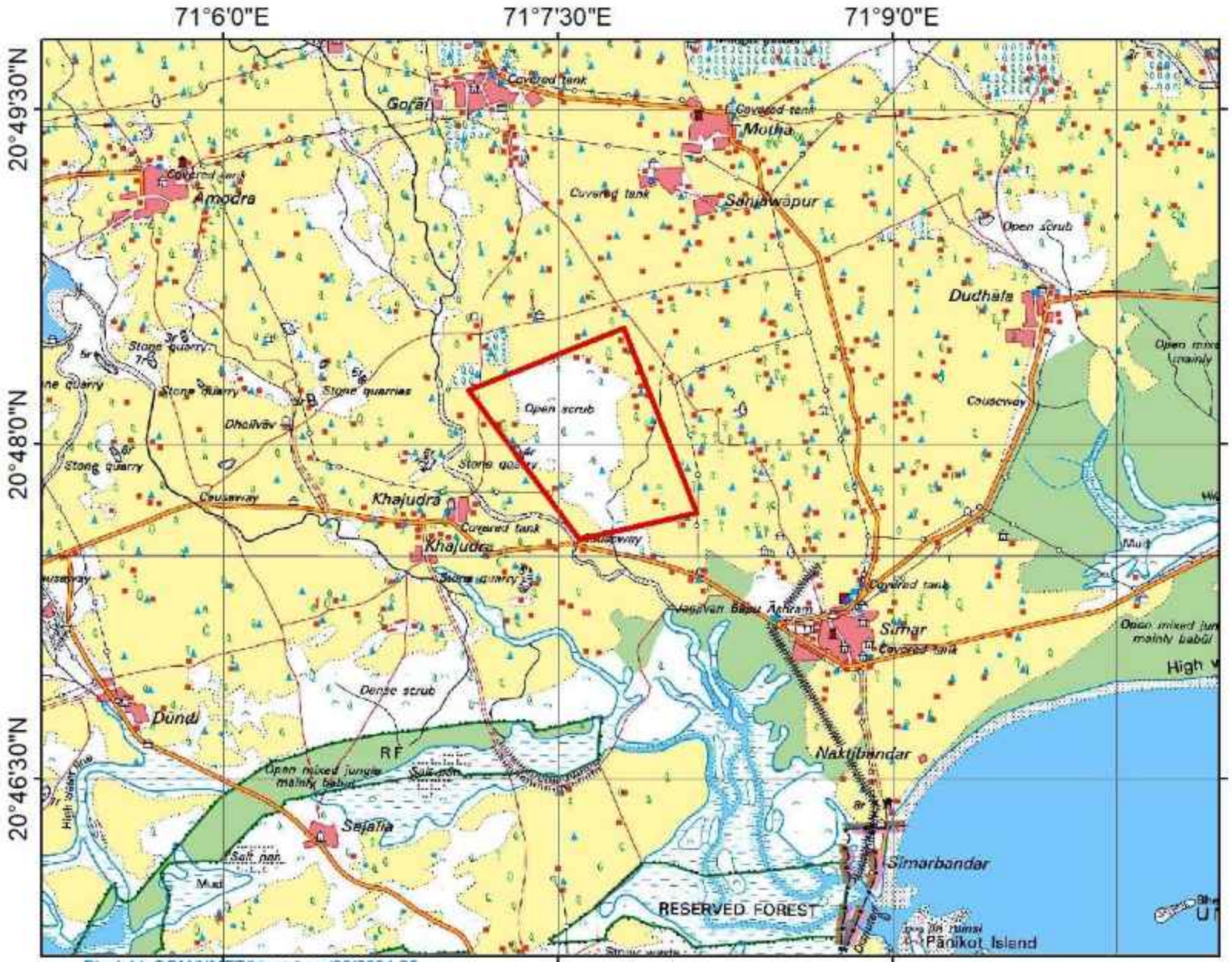
- Proposed Block Boundary
- CLAY WITH MARL, LIMESTONE AND CALCAREOUS SANDSTONE
- SHELLY LIMESTONE, CORAL REEF, OYSTER BED
- SAND, SILT AND CLAY
- CALCARENITE, MARL, GRAVEL AND CONGLOMERATE
- UNMAPPED

Block Id: CGM/NMET/Limestone/08/2024-25
Commissioner of Geology and Mining, Gujarat

Plate 2


Proposed Borehole Location plan of Simar block, Gir-Somnath District
Plate-2
N
71°7.080′
71°7.296′
71°7.512′
71°7.728′
71°7.944′
71°8.160′
71°8.376′
71°8.592′
20°48.480′
20°48.264′
20°48.048′
20°47.832′
20°47.616′
1
2
3
4
5
6
7
8
9
10
11
12
Legend.
Borehole Points.
Block Id: CGM/NMET/Limestone/08/2024-25
Commissioner of Geology and Mining
0
250
500 m

Simar Limestone Block, Gir-Somnath District, Gujarat



Block Id: CGM/NMET/Limestone/08/2024-25
Commissioner of Geology and Mining, Gujarat

N

Not to Scale

Legend

Express Highway: with toll; with bridge; with distance stone . . .
Roads, metalled; according to importance . . . . . .
Double carriageway; according to importance . . . . . .
Unmetalled Road, Cart-track, Pack-track and pass, Foot-path . . .
Streams; with track in bed; undefined, Canal . . . . . .
Dams: masonry or rock-filled; earthwork, Weir . . . . . .
River: dry with water channel; with island & rocks, Tidal river . .
Submerged rocks, Shoal, Swamp, Reeds . . . . . .
Wells: lined; unlined, Tube-well, Spring, Tanks: perennial, dry . . .
Embankments: road or rail; tanks, Broken ground . . . . . .
Railways, broad gauge: double; single with station; under constn . . .
Railways,other gauges: double; single with distance stone; do. . . .
Mineral line or tramway, Kiln, Cutting with tunnel . . . . . .
Contours with sub-features, Rocky slopes, Cliffs . . . . . .
Sand features: (1)flat, (2)sand-hills (permanent), (3)dunes(shifting) . .
Towers or Villages: inhabited; deserted, Fort . . . . . .
Huts: permanent; temporary, Tower, Antiquities . . . . . .
Temple, Church, Church, Mosque, Idgah, Tomb, Graves . . . . . .
Lighthouse, Lightship, Buoys: lighted; unlighted, Anchorage . . . .
Mine, Vine on trellis, Grass, Scrub . . . . . .
Palms; palmyra; other, Plantain, Conifer, Bamboo, Other trees . . .
Areas: cultivated; wooded, Surveyed tree . . . . . .
Boundary, International . . . . . .
" state: demarcated; undemarcated . . . . . .
" district; subdivision; tehsil or taluk; forest . . . . . .
Boundary Pillars: surveyed; unlocated . . . . . .
Heights, triangulated; station; points approximate . . . . . .
Benchmark; geodetic; tertiary; canal . . . . . .
Post office ; Overhead tank . . . . . .
Rest House or Inspection Bungalow, Circuit House, Police Station . .
Camping ground, Forest; reserved; protected . . . . . .
Spaced names: administrative; locality or tribal . . . . . .
Hospital, Dispensary, Veterinary; Hospital / Dispensary . . . . . .
Aerodrome, Heliport, Tourist site . . . . . .
Power line; with pylons surveyed; with poles unsurveyed . . . . .

Plate - 3