

**Proposal for Limestone Block, District, Alathiyur, Ariyalur District,
Tamil Nadu State for G2 Stage Mineral Exploration under NMET.**

**(Basemetals/ Ferrous/ Non-Ferrous/ Industrial/
Strategic & Critical/ Precious metals etc.,)**

By

**Mineral Exploration Corporation Limited
Dr. Babasahab Ambedkar Bhawan
Seminary Hills
Nagpur (MH)**

**Place: Nagpur
Date: 09.11.19**

Summary of the Block for G2 stage exploration

Sl.No.	Features	Details
	Current Exploration Agency	MECL
	Previous Exploration Agency	DMG, Tamilnadu
	G4 stage Geological Report (Previous stage Geological Report)	Submitted for G2 proposal
	Commodity	Limestone
	Mineral Belt	
	Completion Period with entire Time schedule to complete the project	12 Months
	Objectives	i) To demarcate the limestone occurrence within the area by drilling boreholes at 200 x200mts grid interval. ii) To estimate grade wise Limestone indicated resources in the Block area as per UNFC norms at G2 (332) level of exploration. iii) To carry out exploration as per Minerals (Evidence of Mineral Contents) Rule-2015 Mineral (Auction) Rules-2015 and MMDR Amendment Act-2015 in turn to facilitate the State Govt. (Karnataka) in Auctioning of the Block.
	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	Work will be carried out by the proposed agency.
	Name/ Number of Geoscientists	01 Number of Geoscientist
	Expected Field days (Geology, Geophysics, Surveyor)	Surveyor-06 Months Geology- 07 Months
1	Location	
	Latitude	Enclosed as Plate
	Longitude	Enclosed as Plate
	Villages	Alathiyur
	Tehsil/ Taluk	Sendurai
	District	Ariyalur
	State	Tamilnadu
2	Area (hectares/ square kilometres)	
	Block Area	131.43.00 Ha
	Forest Area	-
	Government Land Area	8.28.00 Ha
	Private Land Area	123.15.00 Ha /1.23 Sq.km
3	Accessibility	
	Nearest Rail Head	Ariyalur Railway Station
	Road	Accessible from Ariyalur – Sendurai State highway SH – 139 to Sendurai
	Airport	Tiruchirapalli

Sl.No.	Features	Details
4	Hydrography	
	Local Surface Drainage Pattern (Channels)	Radial and dendritic to sub-dendritic
	Rivers/ Streams	Vellar River, Marudaiyar River
5	Climate	
	Mean Annual Rainfall	1100 mm
	Temperatures (December) (Minimum)	23°C
	Temperatures (June) (Maximum)	42°C
6	Topography	
	Toposheet Number	58 M/7
	Morphology of the Area	The area is a plain terrain with elevations ranging from 102 m to 108 m above mean sea level.
7	Availability of baseline geoscience data	
	Geological Map (1:50K/ 25K)	Available
	Geochemical Map	Not Available
	Geophysical Map (Aerogeophysical, Ground geophysical, Regional as well as local scale GP maps)	Not Available
8	Justification for taking G2 stage mineral exploration	Applied block is falling in part of Niniyur Formation. Already proved area. Limestone mines exist nearby.

1. Block Summary:

MECL has prepared the exploration proposal involving 2830m drilling in 35 boreholes for G-2 level in Alathiyur Block. Which is falling in part of Niniyur Formation. Already proved area of Limestone mines exists nearby. Based on the existing proved area nearby to Alathiyur Block, the G-2 level exploration proposal is prepared and put up for approval of Technical cum cost committee of NMET.

1.1 Physiography:

Ariyalur District is bounded on the North by Cuddalore, South by Thanjavur, East by Cuddalore and Thanjavur and West by Perambalur and Tiruchirapalli districts. In general, the district has an undulating topography covered by black cotton soil in the Northern and Western part, the Eastern part covered by red soil and river alluvium in the Southern end. Elevation of this area ranges from 40 m to 50m from MSL and the regional slope is towards east. Denudational, structural and fluvial processes mainly control the geomorphic evolution of the area. Mainly the varying resistance of geological formations to those processes has governed the evolution of various landforms. Various land forms occurring in the area such as structural hills, erosional plains, residual hills rolling uplands and pediments of different facies belonging to the denudational and structural land forms. Fluvial landforms caused by the activity of Cauvery, Marudayar and Vellar river systems, include younger flood plains, older flood plains and buried pediments.

The top soil is black in color, fine to medium grained friable and sticky when wet (Block cotton soil) with 0.3 m to 3 m soil cover. In general, the climate is dry. Peak summer is in the month of May, maximum temperature reaching up to 46 degrees Celsius. The cold season being December, the temperature falls down to 20 Degrees Celsius. The average annual rainfall of the district is 1100 mm.

The proposed area is well connected to all major cities by rail/road, and the nearest airport Trichy at a distance of 70 km, Chennai airport is about 230 km. All basic amenities such as school, Hospital, market, etc. are available. Ariyalur is the nearest city and administrative headquarters around 15 km from the proposed block. Power, Water, Fuel, Communication are available in vicinity of the proposed block (Plate-1).

1.2 Background Geology

The stratiform and tabular limestone deposits of Sendurai area are irregular and belong to cretaceous age of Niniyur Formation. The Niniyur formations are underlain by Ariyalur beds and overlain by Recent Alluvium. The regional dip of Niniyur bed is 4 to 5 degrees towards south-east. These beds are deposited during the transgression period of Cretaceous age. Niniyur limestone beds contain Foraminifera fossil remains.

The limestone beds of Niniyur formation extends from Kavanur in the south to Vellariver near Saundaracholapuram in the north over approximately 26 Kms strike length of N25°E direction. Part of this unit is overlain by sandstone between Manakudayan and Kanjamalaipatti villages over about 4.50 km length. This formation comprises of bands of limestone, calcareous sandstone, shale, marl, soft sandstone and thin bands/lenses of white to yellowish chert having algae. The bands of limestone of this Niniyur Group of rocks are enriched with lime content which is suitable for manufacture of cement.

1.2.1 Regional Geology

- a) The Cretaceous rocks of Tiruchirapalli District has been evidencing great interest amongst several renowned geologists since it possesses immense wealth of fossils and is known as the paleontological museum of the South India. The rock formations in the district consists of Uttatur, Trichinopoly and Ariyalur Groups of Upper Cretaceous and Palaeocene and Cuddalore Formation of Mio-Pliocene. The sedimentary rocks rests over the Archean platform which are exposed along the western and south-western margins of the basin.
- b)** Limestone deposit in the captive lease area of The Ramco Cements Limited and The India Cements Limited belongs to the Niniyurformations. The contact of Niniyur formations with the underlying Kallamedu formations having sandstone & marl and overlained by Tertiary rocks. A critical examination shows that the regional dips of Niniyur formation is 4 to 5 degrees towards south-east. Niniyurformations have been deposited by the transgressional sea (deposition in deepening sea) whereas the fossiliferous Ariyalurgroup of rocks were laid down in the regressive sea. The Niniyur carbonate rocks bear foraminiferal remains while the Ariyalur carbonate rock hosts forams, miliolids, pelicy pods, gastropods, echnoides, ammonites, nautiloidsetc., Bulk of the Niniyur Formation constitutes marl and shales. Limestone mostly occurs as lenticular bands and are also nodular / bouldary.
- c) The Stratigraphic Column of the Cretaceous System (after Krishnan.M.S,1982) is furnished in Table below:

Regional Stratigraphy of Cretaceous System

Age	Group	Formation	Litho Stratigraphy
Miopliocene		Cuddalore	Ferruginous sand stone laterite and clay
-----Unconformity-----			
Palaeocene	ARIYALUR	Niniyur	Predominantly limestone with sandstone and marl parting
		Kallamedu	White sandstone and Fossilliferous
		Kallankurichi	Limestone,calcareous shale marl and sandstone
Upper Cretaceous		-----Unconformity-----	
		Sillakudi	Uppermember-sandstone dominant Lower member -limestone / calc. Sandstone dominant
-----Unconformity-----			
Upper Cretaceous	Tiruchirapalli	Anaipadi	Upper-Standstone Lower-Shale
		Kulakkantham	
-----Unconformity-----			
Upper Cretaceous	Uttattur	Karai Maruvattur	Coral limestone, Shaly limestone, sandstone and marl
-----Unconformity-----			
Upper Jurassic to Lower Cretaceous	Upper Gondwana	Thappai	Brownish, micaceous and silty ferrugenous sandstone
-----Unconformity-----			
Archaean		Crystalline	Charnockiteand Gneisses

Ref: Krishnan.M.S, 1982, Geology of India and Burma, Sixth Edition

1.2.2 Block Geology:

Niniyur Formation

The youngest limestone band belonging to the Niniyur Formation and also known as the Eastern Band extends from south of Anandavadi to Alathiyur in the North. The contact of Niniyur Formation with the underlying Ariyalur stage is mostly concealed by Recent alluvium, but is exposed east of Naniyur and southeast of Anandavadi. At this contact, white to cream coloured marls and limestone resting on coarse mottled unfossiliferous sandstones of Ariyalur stage could be noticed. The physical characteristics of the Niniyur band are different from the Kallankuruchi band. According to E.H. Pascoe (1959), the Niniyur sediments bear evidence of having been laid down in shallow water. They overlie the unfossiliferous greenish yellow sandstone and indicate a slight post-Senonian repetition of the marine transgression, which had been interrupted towards the close of the epoch represented by Ariyalur stage.

The Niniyur formation is unconformably overlain by the Cuddalore formation that is made up of ferruginous sandstones with minor clay bands.

Limestone deposit of this area is characterized by fine grained, yellow to brown color deposits. The thickness of the limestone varies between 15 m to 30 m with various grades. The strike direction of the limestone deposit is NNE-SSW and dips towards south east with dip angle varying from 4 to 5°. Limestone mostly occurs as lenticular bands and is also nodular.

1.3 Mineral Potentiality based on geology, geophysics, ground geochemistry etc.

1.3.1 The Alathiyur block is part of Niniyur formation which is potential for limestone deposit. The proposed block is also falling in the cluster of limestone belt and nearer to the limestone mines. In view of the promising and simpler deposit nature the G-2 level exploration is proposed in Alathiyur block for approval of Technical cum cost committee of NMET.

1.4 Scope of Proposed Exploration

Scope of Work Proposed is given in Table No.2

1	Topographic Survey & Geological Mapping on 1:2000 scale.
2	Drilling : Vertical boreholes
3	Laboratory Studies
	i) Chemical Analysis; Primary samples for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI
	ii) For SO ₃ &P ₂ O ₅
	iii) Check sample(5% of Primary samples) for analysis of 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI
	iv) External Check (NABL) samples(10% of Primary samples) for analysis of for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI
	v) Primary Sample Analysis for K ₂ O
	vi) Beneficiation
4	Composite Samples for 12 radicals (CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ , SO ₃ ,P ₂ O ₅ , LOI, MnO ₂ , K ₂ O, Na ₂ O and Cl.)
5	Physical Studies
	a) Petrological Studies
	a) Specific Gravity Determinations
8	Report Preparation (Digital format) with Peer Review of Report

1.5 Recommendations of G2 Stage Mineral Exploration Report

1. The Alathiyur block falls in the cluster of limestone belt in Sendurai Taluk the adjacent area of this block is already proved for the limestone and mining operation is in progress, hence MECL proposed exploration at G-2 level.

2. Resources can be estimated under indicated category (332) on higher level of confidence by drilling at 200 x 200 mts grids. Hence the level of exploration should be upgraded to G-2 level to facilitate state Government for auctioning of the block under ML.

1.6 Objectives

The exploration is proposed with the following objectives

1. To demarcate the limestone occurrence within the area by drilling boreholes at 400 x 400 mts grid interval to bring the deposit to G2 level.
2. To estimate grade wise Limestone indicated resources in the Block area as per UNFC norms at G2 (332) level of exploration.
3. To carry out exploration as per Minerals (Evidence of Mineral Contents) Rule-2015, Mineral (Auction) Rules-2015 and MMDR Amendment Act-2015 in turn to facilitate the State Govt. (Karnataka) in Auctioning of the Block.

2.0 Previous Work:

Directorate of Geology and Mining, Tamil Nadu carried out an exploration at G1 level in Adhanakurichi, Manakudayan Villages, Senduraitaluk, Ariyalur District over an extent of 49.28.50 Ha in 2015. The quality of the proposed limestone block is 48.4% of CaO, 9.20% of SiO₂, 1.51% of Al₂O₃ and 0.79% of Fe₂O₃

Further, this proposed area is contiguous to the existing mining lease of Alathiyur limestone mine of the Ramco Cements Limited in West at a distance of 0.50 Km. The opened up mine reveals that the average overburden thickness is 3 m – 7 m, thickness of the cement grade limestone is 10 m to 20 m and the quality confirms cement grade ranging 38-45% of CaO, 12- 18 % of SiO₂, 2.58% of Al₂O₃, 2.58% of Fe₂O₃ and 1.24% MgCO₃ (**Annexure-III-C**).

3.0 Block Description

The boundary coordinates of the proposed block are given in table below.

Sl.No	Latitude	Longitude
1	11°21'39.53"N	79°15'10.10"E
2	11°21'44.07"N	79°15'10.82"E
3	11°21'43.99"N	79°15'12.82"E
4	11°21'48.89"N	79°15'13.49"E
5	11°21'49.48"N	79°15'16.42"E
6	11°21'51.77"N	79°15'16.52"E
7	11°21'53.27"N	79°15'11.76"E
8	11°21'57.24"N	79°15'12.72"E
9	11°21'57.43"N	79°15'11.04"E
10	11°21'59.39"N	79°15'11.12"E
11	11°22'03.12"N	79°15'12.03"E
12	11°22'04.20"N	79°15'12.70"E
13	11°22'07.14"N	79°15'13.74"E
14	11°22'08.34"N	79°15'14.39"E
15	11°22'11.08"N	79°15'14.59"E
16	11°22'13.40"N	79°15'15.02"E
17	11°22'12.74"N	79°15'18.32"E
18	11°22'11.01"N	79°15'20.05"E
19	11°22'10.31"N	79°15'21.38"E
20	11°22'14.29"N	79°15'22.79"E
21	11°22'14.01"N	79°15'26.67"E
22	11°22'13.40"N	79°15'27.68"E
23	11°22'13.38"N	79°15'28.50"E
24	11°22'11.82"N	79°15'28.46"E
25	11°22'11.64"N	79°15'29.59"E
26	11°22'09.16"N	79°15'29.68"E
27	11°22'08.13"N	79°15'37.83"E
28	11°22'09.53"N	79°15'37.99"E
29	11°22'09.53"N	79°15'38.43"E
30	11°22'13.37"N	79°15'39.41"E
31	11°22'13.23"N	79°15'40.44"E
32	11°22'14.60"N	79°15'40.71"E
33	11°22'13.64"N	79°15'45.20"E
34	11°22'14.13"N	79°15'45.28"E
35	11°22'13.63"N	79°15'47.92"E
36	11°22'12.16"N	79°15'50.60"E
37	11°22'10.56"N	79°15'55.30"E
38	11°22'05.65"N	79°15'54.62"E

39	11°22'06.02"N	79°15'53.67"E
40	11°22'05.75"N	79°15'53.41"E
41	11°22'05.47"N	79°15'53.33"E
42	11°21'58.85"N	79°15'51.70"E
43	11°21'57.97"N	79°15'51.76"E
44	11°21'56.18"N	79°15'47.18"E
45	11°21'52.18"N	79°15'48.09"E
46	11°21'52.47"N	79°15'44.91"E
47	11°21'48.32"N	79°15'44.13"E
48	11°21'47.28"N	79°15'44.24"E
49	11°21'45.87"N	79°15'44.12"E
50	11°21'45.88"N	79°15'44.43"E
51	11°21'46.97"N	79°15'44.53"E
52	11°21'46.76"N	79°15'46.67"E
53	11°21'43.04"N	79°15'45.61"E
54	11°21'40.20"N	79°15'44.70"E
55	11°21'35.44"N	79°15'43.60"E
56	11°21'35.03"N	79°15'43.35"E
57	11°21'29.84"N	79°15'42.69"E
58	11°21'27.78"N	79°15'42.66"E
59	11°21'25.65"N	79°15'42.25"E
60	11°21'25.63"N	79°15'40.61"E
61	11°21'27.04"N	79°15'32.23"E
62	11°21'27.09"N	79°15'32.13"E
63	11°21'27.27"N	79°15'31.46"E
64	11°21'27.33"N	79°15'27.89"E
65	11°21'27.56"N	79°15'28.55"E
66	11°21'27.83"N	79°15'24.01"E
67	11°21'29.78"N	79°15'21.94"E
68	11°21'30.42"N	79°15'24.30"E
69	11°21'32.14"N	79°15'23.59"E
70	11°21'32.89"N	79°15'23.25"E
71	11°21'32.94"N	79°15'22.19"E
72	11°21'32.39"N	79°15'22.00"E
73	11°21'32.62"N	79°15'21.22"E
74	11°21'33.15"N	79°15'20.34"E
75	11°21'33.49"N	79°15'18.02"E
76	11°21'33.74"N	79°15'16.53"E
77	11°21'35.38"N	79°15'14.10"E
78	11°21'36.03"N	79°15'14.45"E
79	11°21'36.78"N	79°15'12.99"E

4.C Planned Methodology:

- i) Detailed geological mapping and topographic survey in 1:2000 scale
- ii) Core drilling: Diamond Core drilling method
- iii) Logging and sampling has to be done by the Geologist
- iv) Chemical analysis to be carried out as per the standard of NABL Accredited laboratory.
- v) DGPS Survey and preparation of final report

4.1 Topographic Survey & Geological Mapping

The prospect area will be tied up with the triangulation network of earlier MECL work and boreholes will be fixed on the ground. RLs and co-ordinates of survey and exploration points will be determined. Detailed Geological Mapping will be updated in the proposed block on 1:2000 scale. All the geological features will be recorded and litho contacts will be plotted for finalization of Geological map. This map will be used as base map for future work.

4.2 Surface Drilling and bed rock sampling

The present exploration scheme is prepared by proposing total drilling of 2670m in 33 vertical boreholes with average depth of 80m each borehole. The borehole depth is planned to close up to intersection of Phyllite or ferruginous materials as bottom. In case when dolomitic marble will continue then BH would be drilled up to 80m/100m. The Proposed borehole depth is tentative only and may vary subject to the geological and drilling conditions in the study area. The proposed borehole location is enclosed as Plate No.4. The details are given below:

Sl.No.	PBH No.	Expected Depth (m)	Sl.No.	PBH No.	Expected Depth (m)
1	PBH-1	85.00	18	PBH-18	75.00
2	PBH-2	95.00	19	PBH-19	85.00
3	PBH-3	80.00	20	PBH-20	100.00
4	PBH-4	85.00	21	PBH-21	75.00
5	PBH-5	95.00	22	PBH-22	80.00
6	PBH-6	60.00	23	PBH-23	90.00
7	PBH-7	65.00	24	PBH-24	100.00
8	PBH-8	75.00	25	PBH-25	70.00
9	PBH-9	80.00	26	PBH-26	75.00
10	PBH-10	85.00	27	PBH-27	85.00
11	PBH-11	90.00	28	PBH-28	90.00
12	PBH-12	60.00	29	PBH-29	95.00
13	PBH-13	65.00	30	PBH-30	75.00
14	PBH-14	75.00	31	PBH-31	85.00
15	PBH-15	85.00	32	PBH-32	90.00
16	PBH-16	60.00	33	PBH-33	95.00
17	PBH-17	65.00		Total:	2670.00

4.3 Borehole Core Logging: Detailed drill core logging would be done with consideration of physical characters of lithounits like weathering, color of various formations, grain size, shape, structure and type of lithounits. On the basis of these parameters, grade of magnesite can be broadly presented and it will also be helpful in sampling.

4.4 Core Sampling:

Primary samples would be drawn at about 1m interval considering lithological variation, textural & colour difference and recovery factor etc.

- i) Around 2745 nos. (2135 Primary + 107 Check + 214 External Check) samples would be generated from the magnesite and dolomitic marble intersection, so obtained from the drill boreholes. All the primary and check samples would be analysed for 6 radicals i.e. CaO%, MgO%, Fe₂O₃%, SiO₂%, Al₂O₃% & LOI%.
- ii) Composite samples would be prepared from the mineralized zones of primary drill core samples from each exploratory borehole. It has been envisaged that 100 nos. of composite samples would be generated and analysed for CaO%, MgO%, Fe₂O₃%, SiO₂%, Al₂O₃% & LOI%.
- iii) A total of about 75 no. composite samples would be analysed by X-Ray diffraction (XRD) to ascertain the presence of any other rare or gangue minerals.
- iv) Twenty numbers of Petrological Studies of thin section on drill core as well as outcrop samples would be carried out to know the detailed petrographic characteristics. These samples would be drawn from mineralized zones and from the host rocks.
- v) To determine the tonnage factors, 30 no. of samples would be subjected for specific gravity determination. These samples would be drawn from mineralized zones.

4.5 Baseline Environmental Studies

Based on satellite imageris studies environmental data around 10km radius of Selu Magnesite prospect would be studies along with base line data collection & chemical analysis and the report will be submitted separately.

5.0 Nature Quantum and Target

Scope/Quantum of work proposed for General Exploration (G-2)

S. No	Item of work	Unit	Quantum of Work
1	Topographic Survey & Geological Mapping on 1: 2000 scale	Ha	131.43
2	Surface Drilling (2 Rigs) Vertical bore holes	m.	2,670 (33 bore holes)
3	Surface bed rock samples	Nos	-
4	LABORATORY STUDIES		
a	Chemical Analysis		
1	Primary + Check Samples		
	i) for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI	Nos	2,135
	ii) for additional 2 radicals SO ₃ & P ₂ O ₅	Nos	214
	iii) Check samples for analysis of for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI	Nos	107
	iv) External Check (NABL) samples for analysis of for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI	Nos	214
2	Composite Samples		
	i) for 12 radicals (CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ , SO ₃ , P ₂ O ₅ , LOI, MnO ₂ , K ₂ O, Na ₂ O and Cl.)	Nos	75
b	Physical Analysis		
1	Preparation of thin section	Nos	20
2	Petrographic Studies	Nos	20
3	Specific Gravity determination	Nos	30
5	Baseline environmental studies 10 km radius area from centre of exploration block (along with report)	Nos	1
6	Report Preparation	Noa	1

6. Exploratory Drilling

Refer para 4.2

7. Manpower Deployment

Manpower deployment list may be provided later.

8. Backup of Expenditure

- 8.1 Cost estimated based on actual schedule of rates of promotional projects of MOM and provisional escalation as per RBI indices as on 32-03-2019 and provisional escalation of 16% points for drilling work and 25% points for Geological and Laboratory Studies for the subsequent years. The total estimated cost is 457.07 Lakhs. The summary of cost estimate is given in Table No 9 and details of cost estimate is given in Table no 10

Summary of Cost Estimates for G-2 Level of Exploration

Sl. No.	Item	Estimated cost
1	Drilling	2,27,82,602
2	Geology & Survey	40,72,080
3	Laboratory	76,47,276
4	Sub total (1 to 3)	3,45,01,958
5	Exploration Report	3,45,020
6	Preservation of core	1490000.00
7	Sub Total (4 to 7)	3,63,36,978
8	GST 18%	65,40,656
9	Total	4,28,77,634
10	Say	Say 428.78 Lakhs

COST SHEET FOR GENERAL EXPLORATION (G-2) FOR LIMESTONE IN ALATHIYUR BLOCK, SENDURAI TALUK, DISTRICT-ARIYALUR, TAMIL NADU. 19-20 & 20-21.						
S.No.	Item of Work	Unit	Base Rate as on 01-04-1990	Financial Year (2019-20)		
				Escalated Rate	Quantity	Amount (Rs)
A	DRILLING					
1	Surface Drilling (2 Rigs)	m.	1,174	7,427	2,670	1,98,30,090
2	Transportation	Km.	9	35	5,600	1,96,000
3	Accommodation	One time/ Drill	1,85,925	7,33,958	2	14,67,916
4	Camp Mobilisation / Demobilisation	Drill/month	68,606	2,70,829	4	10,83,316
5	Road Making (Flat Terrain)	Km	5,200	20,528	10	2,05,280
	Sub Total A					2,27,82,602
B	GEOLOGICAL WORK					
1	Survey Party Days (1 party)	day	1,180	6,445	180	11,60,100
2	Geologist Party days (1 party)	day	1,541	8,590	210	18,03,900
3	Core Sampling Party days(2 party)	day	525	3,078	360	11,08,080
	Sub-Total B					40,72,080
C	LABORATORY STUDIES					
a	Chemical Analysis					
1	Primary + Check Samples					
	i) for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI	Nos	490 '(110+76x5)	2,832	2,135	60,46,320
	ii) for additional 2 radicals SO ₃ & P ₂ O ₅	Nos	186 '(76+110)	1,068	214	2,28,018
	iii) Check samples for analysis of for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI	Nos	490 '(76x5+110)	2,832	107	3,02,316
	iv) External Check (NABL) samples for analysis of for 6 radicals i.e. CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ and LOI	Nos	490 '(76x5+110)	2,832	214	6,04,632
2	Composite Samples					
	i) for 12 radicals (CaO, MgO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ , SO ₃ , P ₂ O ₅ , LOI, MnO ₂ , K ₂ O, Na ₂ O and Cl.)	Nos	946 '(76x11+110)	5,478	75	4,10,850
b	Physical Analysis					
1	Preparation of thin section	Nos	100	589	20	11,780
2	Petrographic Studies	Nos	228	1,553	20	31,060
3	Specific Gravity determination	Nos	64	410	30	12,300
	Sub-Total C					76,47,276
	Total A+B+C					3,45,01,958
D	EXPLORATION REPORT - 1% of (A+B+C) or 175000 which ever is more					3,45,020
E	Preservation of Cores					
	GI core boxes	nos	0	2000	710	14,20,000
	Transportation	kms	8.8	35	2,000	70,000
	GRAND TOTAL A to G					3,63,36,978
	GST 18%					65,40,656
	Grand Total : with GST 18%					4,28,77,634
						Say 428.78 Lakhs
1	Revised Rates of Promotional Work done by MECL on behalf of Govt. of India Vide letter No. 37(I)/2006-M.I. dated- 02-07-2014 and based on actual escalation as per RBI indices as on 31-03-2019.					
2	Phosphorite rates have been considered as there is no rate for Limestone in Revised Rates of Promotional Work of MoM Schedule of Rates.					
3	*The Peer Review amount to be paid to the members of Peer Review Committee was finalised by the Executive Committee of NMET					
4	** Beneficiation rates has been considered based on IBM rates.					

Sl. No.	Item	Estimated Cost (Rs.)
1	Drilling	22782602
2	Geology	4072080
3	Laboratory	7647276
	Sub Total (1 to 3)	34501958
4	Exploration Report	345020
5	Preservation of Cores	1490000
	Sub Total (1 to 5)	36336978
7	GST 18%	6540656
	Total:	42877634
		Say 428.78 Lakhs

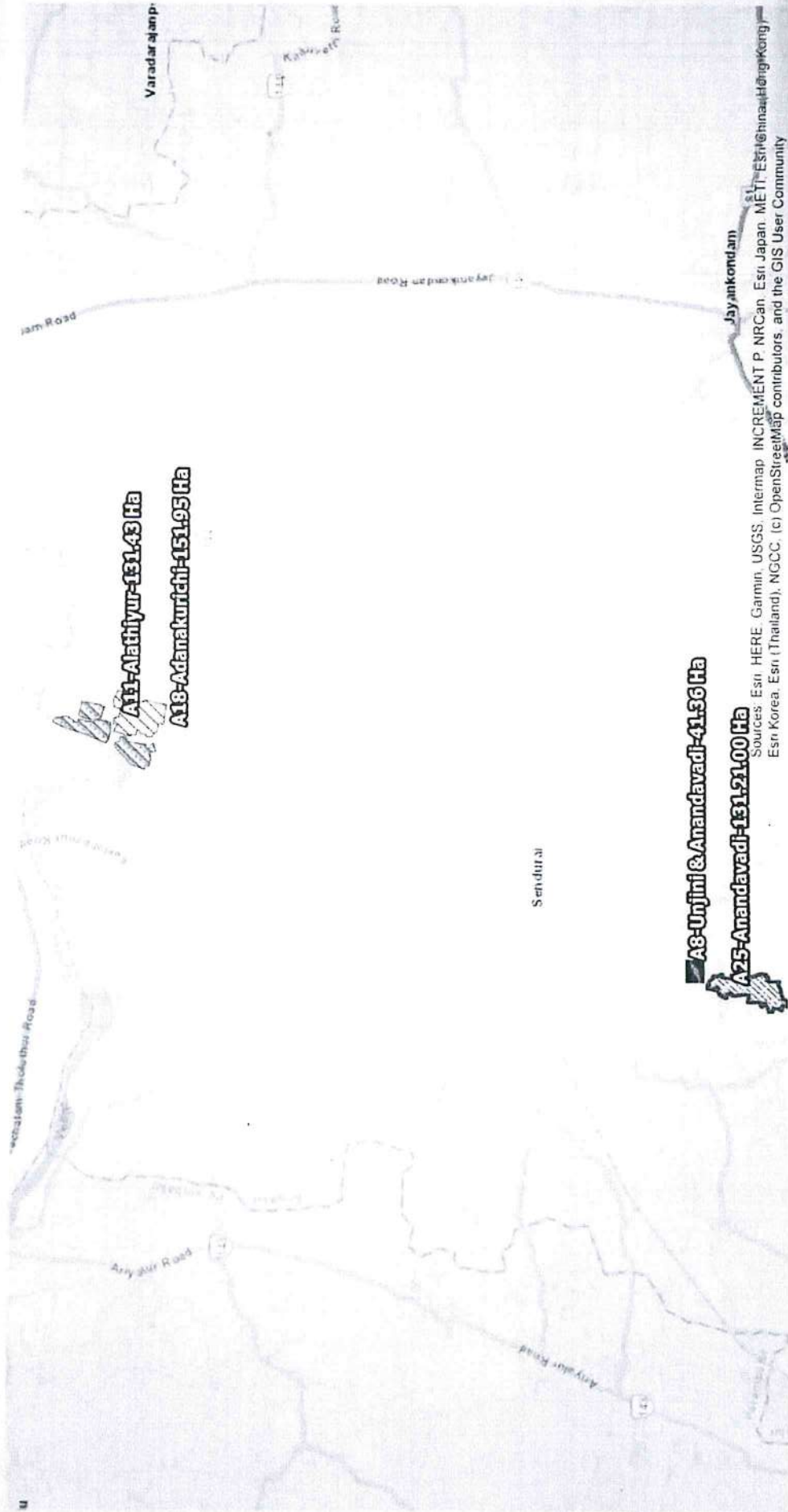
428.78



MINERAL EXPLORATION CORPORATION LIMITED

LOCATION MAP OF PROPOSED BLOCKS

PLATE 1



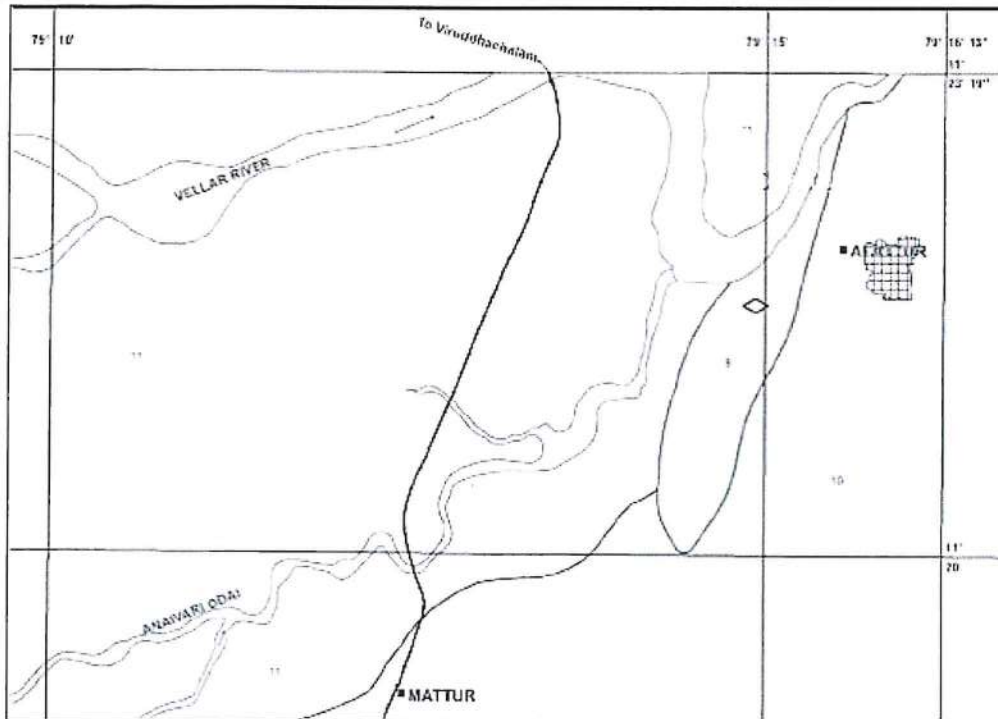
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China, Hong Kong, Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

MINERAL BELT MAP OF LIMESTONE DEPOSITS IN EASTERN PART OF ARIYALUR BASIN, ARIYALUR DISTRICT, TAMIL NADU

(PART OF TOPOSHEET Nos.58 M/3, M/4, M/7 AND M/8)

SCALE 1:50,000

0 0.5 1 2 3 Km

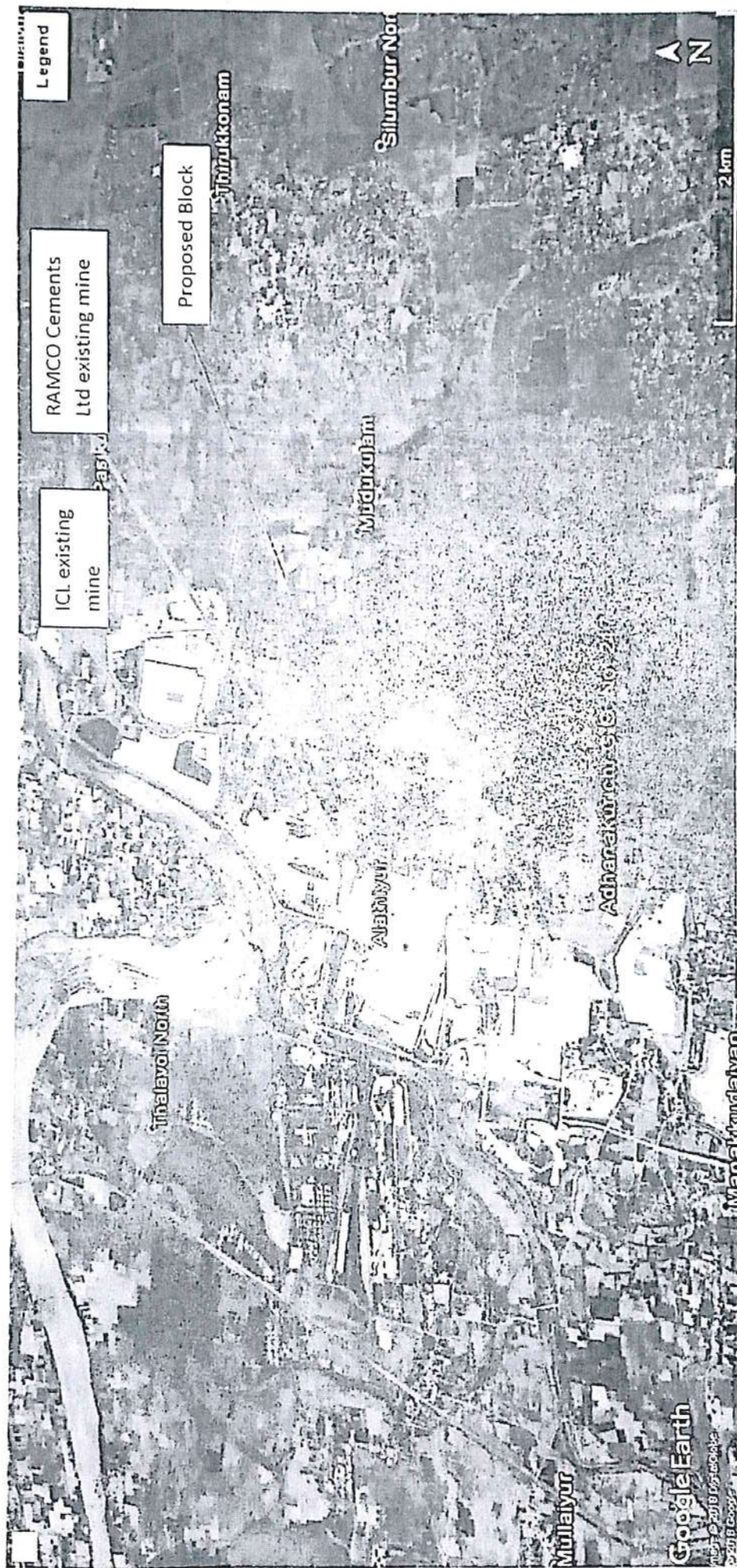


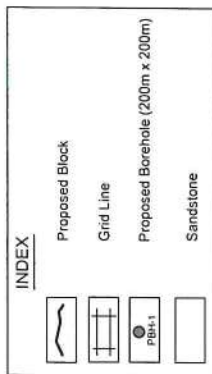
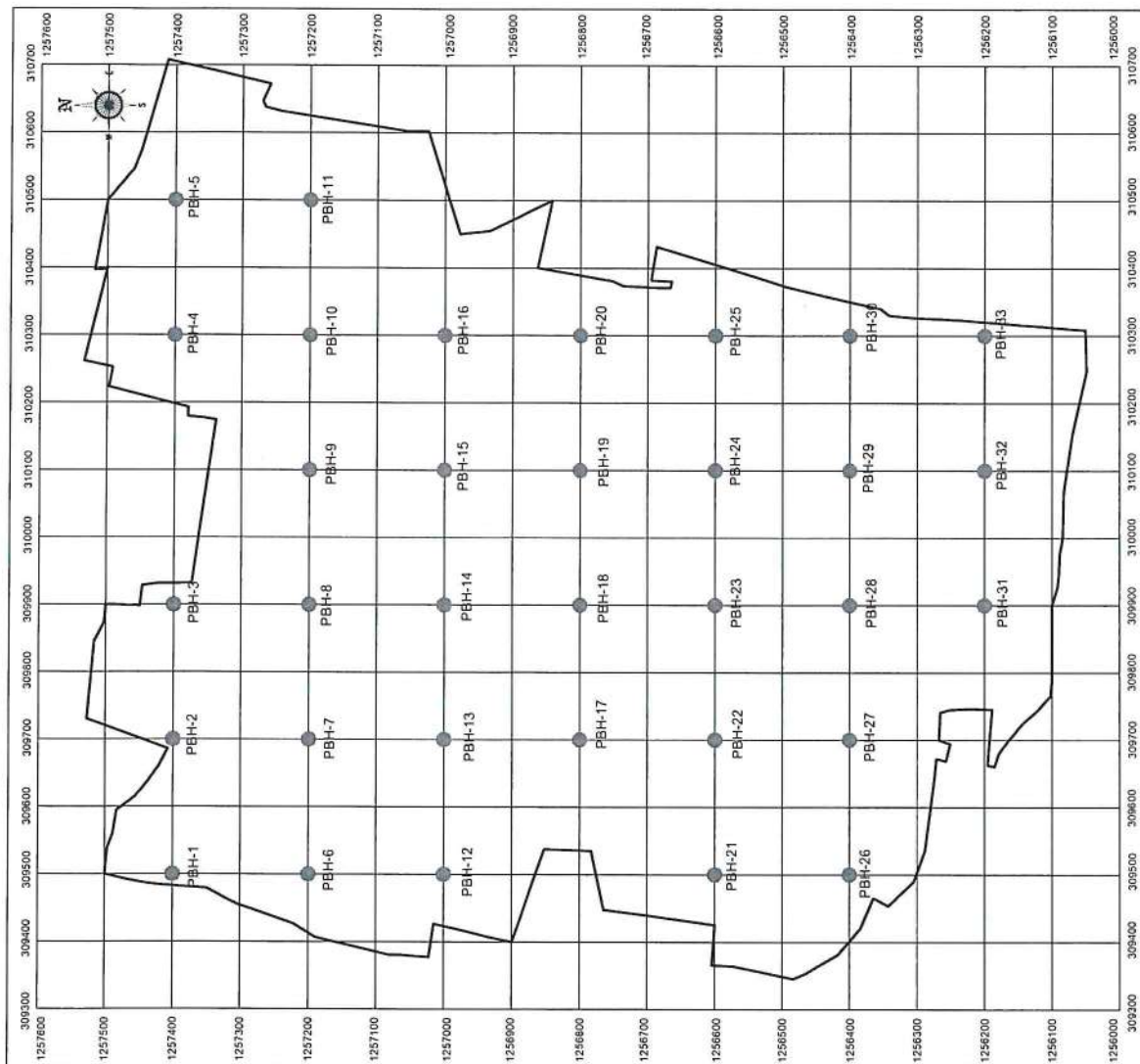
LITHOLOGY	
11	Sand (Flood Plain)
10	Sandstone
9	Limestone/Marl/Shale
	River
	Proposed Block
	400 x 400m Grid
	200 x 200m Grid

MINERAL EXPLORATION CORPORATION LIMITED

Alathiyur (Area 131.43.00 Ha) Limestone Block, Alathiyur Village,
Sendurai Taluk, Ariyalur District, Tamil Nadu, T'S NO. 58 M/7

PLATE NO 3





MINERAL EXPLORATION CORPORATION LIMITED	
PROPOSED DRILL HOLE PLAN & GEOLOGICAL MAP	
ALATHIYUR BLOCK, SENDURAI TALUK	
DISTRICT: ARRIYALUR	STATE: TAMIL NADU
RF: 1:2000	
Data Provided At:	
Mineral Exploration Corporation Limited	
M.E.C. LTD. INDIA	
MEO: LKPLR: INDIA/2019	
PLATE NO. 2	