

**Proposal for Limestone Block, District, UNJINI-ANANDAVADI,
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**

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Summary of the Block for G2 stage exploration

Sl.No.	Features	Details
	Current Exploration Agency	MECL
	Previous Exploration Agency	DGM, Tamilnadu
	G4 stage Geological Report (Previous stage Geological Report)	Enclosed
	Commodity	Limestone
	Mineral Belt	
	Completion Period with entire Time schedule to complete the project	9 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-03 Months Geology- 04 Months
1	Location	
	Latitude	
	Longitude	
	Villages	Alathiyur
	Tehsil/ Taluk	Sendurai
	District	Ariyalur
	State	Tamilnadu
2	Area (hectares/ square kilometres)	
	Block Area	41.36 Ha
	Forest Area	-
3	Accessibility	
	Nearest Rail Head	Ariyalur Railway Station
	Road	Accessible from Ariyalur – Sendurai State highway SH – 139 to Sendurai
	Airport	Tiruchirapalli

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/4
	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.

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1. **Block Summary:**

MECL has prepared the exploration proposal involving 2830m drilling in 35 boreholes for G-2 level in Unjini-Anandavadi 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 Anandavadi 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 40m 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 (Black cotton soil) with 0.3m to 3m 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 Vellar river 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.

1.3

Regional Geology

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.

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 overlain 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 regressional sea. The Niniyur carbonate rocks bear foraminiferal remains while the Ariyalur carbonate rock hosts forams, miliotids, 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.

The Stratigraphic Column of the Cretaceous System (after Krishnan.M.S,1982) is furnished in Table 1.1 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

1.4

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.

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

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.

1.3

Scope of Proposed Exploration

Scope of Work Proposed is given in Table No.1

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



2.0 Objectives

The exploration is proposed with the following objectives

To demarcate the limestone occurrence within the area by drilling boreholes at 400 x400mts grid interval to bring the deposit to G2 level.

To estimate grade wise Limestone indicated resources in the Block area as per UNFC norms at G2 (332) level of exploration.

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.

3.0 Previous Work:

Geological Survey of India has carried out an extensive geological mapping "Geology of the upper Creations Rock formations of parts of Lalgudi, Perambalur and Ariyalur Taluk, Tiruchirapally District, Tamil Nadu (Progress report for field season 1976-77)" Author R.Sundaram Geologist (JR) Geological Survey of India in July 1978.

Another report has published by Geological survey of India in 1988," A Geochemical Investigation into Cretaceous – Palaeo- Eocene boundary at Ariyalur, Trichirapalli District" in August 1988. Authors – D.K.Paul Geochronology and Isotope Geology Division R.Sundaram International Wing and M.N.Gururaja publication Division, Southern Region.

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 Hec 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.

This proposed area is contiguous to the existing mining lease of Sendurailimestone mine (Rc. No. 2390/MM1/2009 dated 17.04.2015) in North at a distance of 3.0 Km of M/s. Chettinad Cements Corporation Pvt. Ltd.

The DMG, Tamilnadu in the year 1984-85 carried out investigation at the instance of TANCEM in Anandavadi village, which is adjacent to be explored Unjini-Anandavadi block, involving 845.75m drilling in 27 diamond drill holes drill in regular grid pattern besides 753 core samples were collected and analysed. The Unjini-Anandavadi 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.

In general the grade of limestone is CaO which ranges between 46.5% and 48.5%, SiO₂ 7-9.5% and Fe₂O₃ < 1%.

The boundary coordinates of the proposed block are given in table below. The block location is also shown superimposed on Google earth (Plate-3)

LABEL	LONGITUDE (E)	LATITUDE (N)
1	79° 11' 49.46"	11° 13' 18.79"
2	79° 11' 49.44"	11° 13' 18.62"
3	79° 11' 49.40"	11° 13' 16.58"
4	79° 11' 49.40"	11° 13' 16.28"
5	79° 11' 49.23"	11° 13' 16.30"
6	79° 11' 49.19"	11° 13' 15.28"
7	79° 11' 49.36"	11° 13' 15.30"
8	79° 11' 49.31"	11° 13' 14.83"
9	79° 11' 49.33"	11° 13' 14.66"
10	79° 11' 46.96"	11° 13' 14.66"
11	79° 11' 46.85"	11° 13' 12.83"
12	79° 11' 48.19"	11° 13' 12.79"
13	79° 11' 48.23"	11° 13' 11.14"
14	79° 11' 47.44"	11° 13' 11.12"
15	79° 11' 47.37"	11° 13' 10.83"
16	79° 11' 47.18"	11° 13' 10.84"
17	79° 11' 47.12"	11° 13' 9.13"
18	79° 11' 47.24"	11° 13' 8.31"
19	79° 11' 47.12"	11° 13' 6.90"
20	79° 11' 47.01"	11° 13' 5.83"
21	79° 11' 47.30"	11° 13' 5.60"
22	79° 11' 47.30"	11° 13' 4.63"
23	79° 11' 47.13"	11° 13' 3.39"
24	79° 11' 46.91"	11° 13' 2.43"
25	79° 11' 44.20"	11° 13' 2.45"
26	79° 11' 44.01"	11° 13' 0.85"
27	79° 11' 43.51"	11° 13' 0.91"
28	79° 11' 42.65"	11° 13' 0.93"
29	79° 11' 40.95"	11° 13' 1.04"
30	79° 11' 41.14"	11° 13' 2.82"
31	79° 11' 38.69"	11° 13' 3.17"
32	79° 11' 38.29"	11° 12' 59.68"
33	79° 11' 37.13"	11° 12' 59.81"
34	79° 11' 34.75"	11° 13' 0.19"
35	79° 11' 34.91"	11° 13' 1.65"
36	79° 11' 33.05"	11° 13' 1.83"
37	79° 11' 32.92"	11° 13' 0.45"
38	79° 11' 30.57"	11° 13' 0.67"
39	79° 11' 30.38"	11° 12' 59.05"
40	79° 11' 32.56"	11° 12' 58.94"
41	79° 11' 32.39"	11° 12' 56.91"
42	79° 11' 31.71"	11° 12' 57.05"
43	79° 11' 30.72"	11° 12' 57.23"
44	79° 11' 29.19"	11° 12' 57.55"
45	79° 11' 28.70"	11° 12' 57.90"

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46	79° 11' 28.01"	11° 12' 58.21"
47	79° 11' 26.58"	11° 12' 57.55"
48	79° 11' 23.82"	11° 12' 58.14"
49	79° 11' 24.13"	11° 12' 59.46"
50	79° 11' 23.97"	11° 13' 0.12"
51	79° 11' 23.85"	11° 13' 0.77"
52	79° 11' 23.84"	11° 13' 2.32"
53	79° 11' 23.99"	11° 13' 3.82"
54	79° 11' 24.42"	11° 13' 5.09"
55	79° 11' 24.59"	11° 13' 7.38"
56	79° 11' 24.84"	11° 13' 8.46"
57	79° 11' 24.58"	11° 13' 8.94"
58	79° 11' 24.36"	11° 13' 10.86"
59	79° 11' 23.93"	11° 13' 13.44"
60	79° 11' 23.85"	11° 13' 13.82"
61	79° 11' 23.79"	11° 13' 14.16"
62	79° 11' 24.14"	11° 13' 14.65"
63	79° 11' 24.56"	11° 13' 15.15"
64	79° 11' 25.20"	11° 13' 15.50"
65	79° 11' 25.52"	11° 13' 15.57"
66	79° 11' 25.97"	11° 13' 15.65"
67	79° 11' 25.98"	11° 13' 15.51"
68	79° 11' 26.64"	11° 13' 15.57"
69	79° 11' 27.18"	11° 13' 17.13"
70	79° 11' 27.29"	11° 13' 17.40"
71	79° 11' 28.00"	11° 13' 18.75"
72	79° 11' 29.20"	11° 13' 20.17"
73	79° 11' 29.87"	11° 13' 20.63"
74	79° 11' 28.94"	11° 13' 18.45"
75	79° 11' 30.80"	11° 13' 17.84"
76	79° 11' 31.51"	11° 13' 21.03"
77	79° 11' 32.39"	11° 13' 20.81"
78	79° 11' 31.86"	11° 13' 17.39"
79	79° 11' 33.49"	11° 13' 16.93"
80	79° 11' 33.35"	11° 13' 14.84"
81	79° 11' 33.95"	11° 13' 14.83"
82	79° 11' 33.80"	11° 13' 12.26"
83	79° 11' 33.66"	11° 13' 10.10"
84	79° 11' 33.75"	11° 13' 9.44"
85	79° 11' 35.01"	11° 13' 9.52"
86	79° 11' 35.21"	11° 13' 10.55"
87	79° 11' 35.30"	11° 13' 10.96"
88	79° 11' 35.32"	11° 13' 11.32"
89	79° 11' 35.02"	11° 13' 11.38"
90	79° 11' 35.15"	11° 13' 12.45"
91	79° 11' 34.41"	11° 13' 12.52"
92	79° 11' 34.55"	11° 13' 14.35"
93	79° 11' 34.72"	11° 13' 14.69"
94	79° 11' 34.94"	11° 13' 15.87"
95	79° 11' 35.12"	11° 13' 16.50"
96	79° 11' 34.80"	11° 13' 18.12"
97	79° 11' 35.12"	11° 13' 21.48"

98	79° 11' 36.70"	11° 13' 21.41"
99	79° 11' 37.61"	11° 13' 21.42"
100	79° 11' 39.60"	11° 13' 21.42"
101	79° 11' 40.48"	11° 13' 21.46"
102	79° 11' 41.18"	11° 13' 21.50"
103	79° 11' 42.24"	11° 13' 21.53"
104	79° 11' 42.24"	11° 13' 20.12"
105	79° 11' 42.63"	11° 13' 20.09"
106	79° 11' 44.31"	11° 13' 19.90"
107	79° 11' 44.28"	11° 13' 19.39"
108	79° 11' 44.62"	11° 13' 18.68"
109	79° 11' 45.38"	11° 13' 18.66"
110	79° 11' 45.89"	11° 13' 18.60"
111	79° 11' 46.33"	11° 13' 19.01"
112	79° 11' 48.01"	11° 13' 18.97"

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5.0 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

6.0 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.

6.1 Surface Drilling and bed rock sampling

The present exploration scheme is prepared by proposing total drilling of 480m in 08 vertical boreholes with average depth of 60m 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. Proposed boreholes along with sections are given in Table No.7 and proposed borehole location map with previous drilled boreholes along with geology and sections is enclosed as Plate No.4.

Sl.No.	PBH No.	Expected Depth (m)
	PBH-1	60.00
	PBH-2	60.00
	PBH-3	60.00
	PBH-4	60.00
	PBH-5	60.00
	PBH-6	60.00
	PBH-7	60.00
	PBH-8	60.00

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.

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

Around 380 nos. (320 Primary + 20 Check + 40 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%.

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%.

A total of about 15 no. composite samples would be analysed by X-Ray diffraction (XRD) to ascertain the presence of any other rare or gangue minerals.

Ten 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.

To determine the tonnage factors, 15 no. of samples would be subjected for specific gravity determination. These samples would be drawn from mineralized zones.

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.

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

S.No.	Item of Work	Quantity
A	DRILLING	
	Surface Drilling (1 Rig)	480
B	LABORATORY STUDIES	
	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	320
	ii) for additional 2 radicals SO ₃ & P ₂ O ₅	32
	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	20
	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	40
	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.)	15
	Physical Analysis	
	Preparation of thin section	10
	Petrographic Studies	10
	Specific Gravity determination	15
C	Environmental Studies	1
	GR Preparation	1

Summary of Cost Estimates for G-2 Level of Exploration

Sl. No.	Item	Estimated Cost (Rs.)
1	Drilling	6517472
2	Geology	2164890
3	Laboratory	1220076
	Sub Total (1 to 3)	9902438
4	Exploration Report	99024
5	Preservation of Cores	260000
6	Base Line Environmental studies	1997683
	Sub Total (1 to 7)	12259145
7	GST 18%	2206646
	Total:	14465792
		Say Rs.144.66 Lakhs

COST SHEET FOR GENERAL EXPLORATION (G-2) FOR LIMESTONE IN UNJINI & ANANDAWADI 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 (1 Rig)	m.	1,174	7,427	480	35,64,960
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					65,17,472
B	GEOLOGICAL WORK					
1	Survey Party Days (1 party)	day	1,180	6,445	90	5,80,050
2	Geologist Party days (1 party)	day	1,541	8,590	120	10,30,800
3	Core Sampling Party days(2 party)	day	525	3,078	180	5,54,040
	Sub-Total B					21,64,890
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	320	9,06,240
	ii) for additional 2 radicals SO ₃ & P ₂ O ₅	Nos	186 (76+110)	1,068	32	34,176
	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	20	56,640
	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	40	1,13,280
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	15	82,170
b	Physical Analysis					
1	Preparation of thin section	Nos	100	589	10	5,890
2	Petrographic Studies	Nos	228	1,553	10	15,530
3	Specific Gravity determination	Nos	64	410	15	6,150
	Sub-Total C					12,20,076
	Total A+B+C					99,02,438
D	EXPLORATION REPORT - 1% of (A+B+C) or 175000 which ever is more					99,024
E	Environmental Studies					
	Satellite Imagery Study	Scene	99,697	5,09,013	1	5,09,013
	Base line Data Collection	(10 km radius area)	1,51,273	7,72,339	1	7,72,339
	Chemical Analysis	Nos	257400**	6,66,331**	1	6,66,331
	Report Writing	Nos	50,000	50,000	1	50,000
	Sub total E					19,97,683
F	Preservation of Cores					
	GI core boxes	nos	0	2000	95	1,90,000
	Transportation	kms	8.8	35	2,000	70,000
	GRAND TOTAL A to G					1,22,59,145
	GST 18%					22,06,646
	Grand Total : with GST 18%					1,44,65,792
	Say 144.66 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					

Time schedule (in months) for General Exploration (G-2) for Limestone in Unjini & Anandawadi Block, Sendurai Taluk, District: Ariyalur District, Tamil Nadu												
Sl. No.	Activities	Unit	MONTHS									Total
			1	2	3	4	5	6	7	8	9	
1	Camp Mobilisation	Month	↔									1 month
2	Surface Drilling (1 rig)	m.	↔	↔								475 m (in 8 BHs) 3 months
3	Survey Party days (1 Party)	day	↔	↔								90 days
4	Geologist Party days (1 Party)	day	↔	↔								120 days
5	Sampling Party days, Core Sampling (2 party)	day		↔								180 days
6	Laboratory Studies	Nos.				↔			↔			525 Samples
7	Camp Demobilisation	Month						↔				1 month
8	Base line environmental Studies		↔							↔		7 months
9	Geological Report Writing	Month								↔	↔	2 months
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.												

4

Sl. No.	Item	Estimated Cost (Rs.)
1	Drilling	6517472
2	Geology	2164890
3	Laboratory	1220076
	Sub Total (1 to 3)	9902438
4	Exploration Report	99024
5	Preservation of Cores	260000
6	Base Line Environmental studies	1997683
	Sub Total (1 to 7)	12259145
7	GST 18%	2206646
	Total:	14465792
		Say Rs.144.66 Lakhs

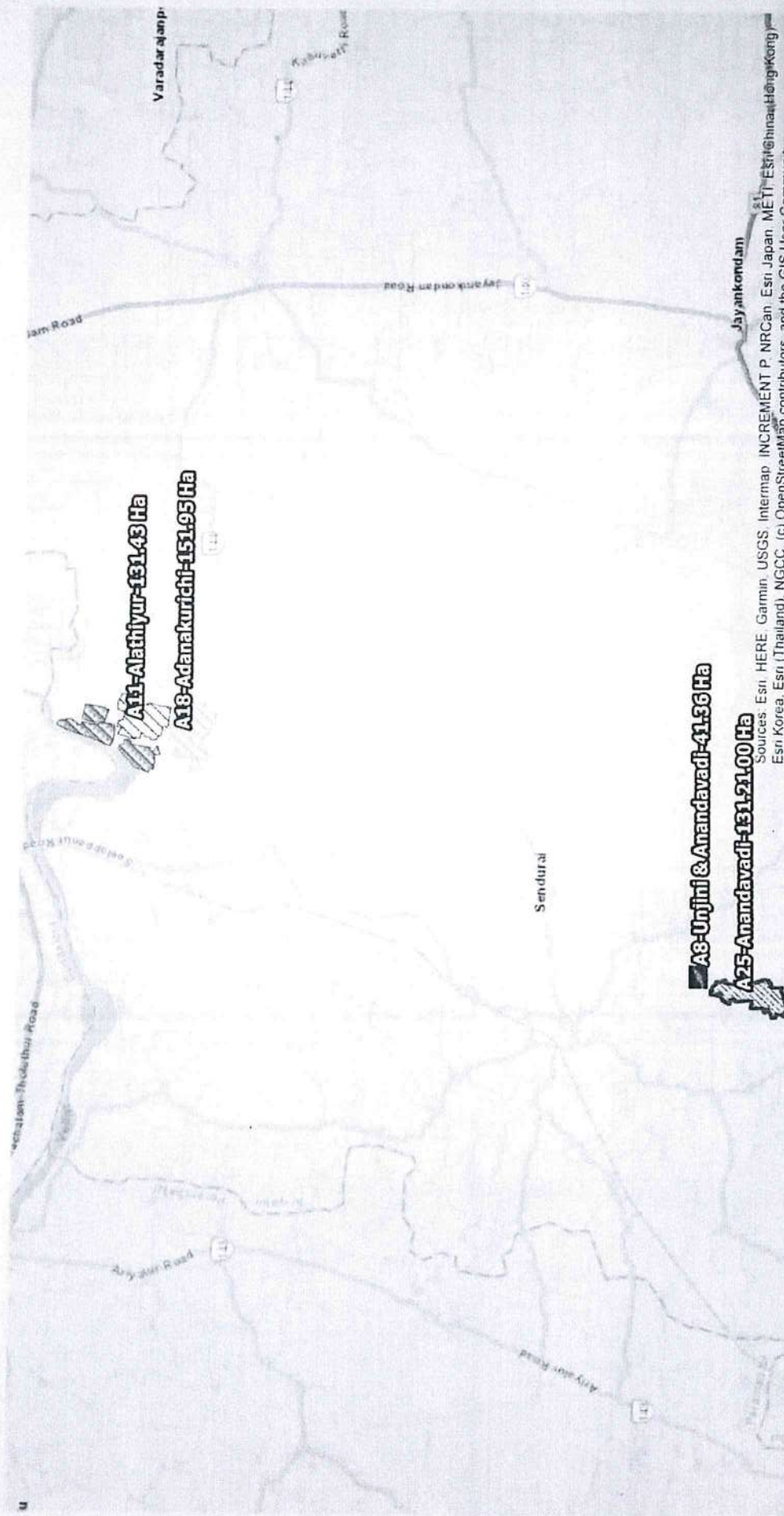
144.66



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LOCATION MAP OF PROPOSED BLOCKS

PLATE 1

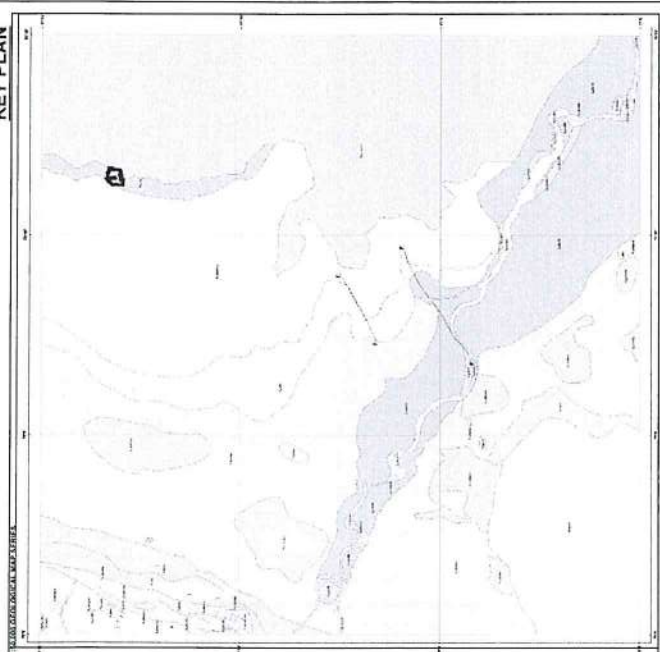
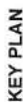


A8-Unjini & Anandavadi-41.36 Ha

A25-Anandavadi-131.21.00 Ha

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

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Existing Mines with proposed block in the

Unjini & Anandawadi villages in

Sendurai Taluk and Ariyalur District, Tamil Nadu. (Area 41.36.00Ha)

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