Proposal for Preliminary Exploration (G-3) of Limestone at Putnoor Village Palakurthy Mandal Peddapalli Distict Telangana State.

(For NMEDT)

Limestone

BY

Telangana Mineral Development Corporation Limited

Place: Hyderabad
Date:

Summary of the Block for G-3 stage exploration

	Features	Details
	Block ID	Putnoor Limestone
	Current Exploration Agency	TGMDC Ltd.,
	Previous Exploration Agency	-
	G4 stage Geological Report (Previous stage Geological Report)	-
	Commodity	Limestone
	Mineral Belt	Pakal Basin
	Completion period with entire Time schedule to complete the project	08 months
	Objectives	1. To Delineate block boundary with the help of DGPS. 2. To carry out Topographical and Geological Mapping on 1:4000 scale. 3. To Assess the quantity & quality of cement grade limestone in the blocks up to 50 m inclined depth.
	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	Exploration to be carried out by officers of TGMDC with outsourcing of survey, drilling & chemical analysis components. Outsourcing of components for identifying agencies will be done through e-tendering.
	Name / Number of Geoscientists	02
	Expected Field days (Geology, Geophysics, Surveyor)	Geology = 120 days (Geological mapping, core logging & sampling) Surveyor = 30 days (Establishing block coordinates, Topographic mapping, & locating boreholes)
1.	**Location**	
	Latitude	18°44'34.06"N
	Longitude	79°20'11.54"E
	Villages	Putnoor
	Tehsil / Taluk	Palakurthy
	District	Peddapalli
	State	Telangana
2.	**Area (Hectares / Square kilometers)**	

	Block Area	67.66 Hectares
	Forest Area	Not Available
	Government Land Area	Not Available
	Private Land Area	
3.	**Accessibility**	
	Nearest Rail Head	Ramagundam
	Road	Hyderabad to Ramagundam SH-1
	Airport	Rajiv Gandhi international Airport in Hyderabad
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	Part of the Godavari River basin, Sub-dendritic to Dendritic pattern
5	**Climate**	
	Mean Annual Rainfall	The average annual rain fall is about 1120 to 1497 mm
	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	Minimum of 25° Maximum of 47°
6	**Topography**	
	Toposheet Number	56N/06
	Morphology of the Area	
7	Availability of baseline geosciences data	
	Geological Map (1: 50K / 25k)	Available
	Geochemical Map	Available / Not Available
	Geophysical Map (Aerogeophysical, Ground Geophysical, Regional as well as local scale GP maps)	Available / Not Available
8.	**Justification for taking up G3 or G2 stage mineral exploration**	The Putnoor Limestone Block is proposed for G-3 (Preliminary) exploration due to its favourable geological setting within the Pakhal Basin of the Pranhita–Godavari Valley, a region well known for Proterozoic carbonate formations. Limestone in the block is associated with the Takkalapalle and Puntur Formations of the Penganga Group (Neoproterozoic age). Field observations indicate massive to flaggy limestone with a consistent NW–SE strike and moderate to steep southeasterly dips, suggesting continuity of mineralisation at depth. The block is located adjacent to the Kesoram Cement Limestone Mining Lease, and

		chemical analysis of representative samples has indicated CaO contents exceeding 45%, confirming cement-grade limestone comparable to the adjoining producing lease. No systematic G-4 or G-3 exploration has been carried out so far, and the existing data is insufficient for resource estimation. Therefore, G-3 stage exploration involving detailed mapping and core drilling is essential to assess the quantity and quality of limestone and to classify resources as per UNFC and MEMC Rules, 2021.

Detailed description on the following titles to be made in the proposal

1. Block Summary

A. Physiography:

The proposed block area mostly a hill land with highest elevation 230 MSL and Part of the Godavari River basin, Sub- dendritic to Dendritic pattern drainage system has been developed in this block.

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

Regional Geology:

Geologically, the rock types exposed in Peddapalli district, are grouped under Peninsular Gneissic Complex-II and Karimnagar granulite belt (KGB) of Archaean to Palacoproterozoic age, basic intrusive dykes of Palaeoproterozoic age. The sedimentaries of Pakhal Supergroup represented by Mallampalli and Mulug Groups of Mesoproterozoic age, Penganga and Unclassified Sullavai Groups of Neoproterozoic age and Gondwana Supergroup of Upper Carboniferous to Middle Triassic age.

The Peninsular Gneissic Complex-II (PGC-II) of Archaean to Palaeoproterozoic age is represented by III. pink biotite granite, pink granite, grey biotite granite and alkali feldspar granite.

The enclaves of Karimnagar granulite belt indicate granulite facies grade of metamorphism represented by banded magnetite quartzite, feldspathic quartzite, quartzite, amphibolite, chamockite, pyroxene granulite and meta ultramafite.

Basic intrusive comprise dolerite and gabbro dykes of Palaeoproterozoic age which intrudes the grey of less than 2 m bgl are noticed in small parts (10%), Medium water levels range in between 2-5 m bgl. biotite granite and trend in NE-SW, E-W, WNW-ESE and NW-SE directions.

The Proterozoic sediments of Meso and Neoproterozoic overlie the rocks of Peninsular Gneissic Complex occupy east-central and south eastern part of the area and extend in NW

direction parallel to the regional trend of the Pranahita-Godavari valley. The sediments have been classified into the Pakhal Supergroup, Penganga Group and Unclassified Sullavai Group.

The Pakhal Supergroup of Mesoproterozoic age is divided into two groups namely older Mallampalli and younger Mulug groups. The rocks of the Mallampalli group overlie the Archaean unconformity. The Mallampalli group comprises Ballapalli and Gunjeda formations. The lowermost Bollapalli formation of the group comprises arkose and sandstone. The Gunjeda formation consists of quartzite. The Mulug group is represented by Jakkaram, Enchencheruvu, Pattipalli and Laknavaram formations. The Jakkaram is mainly composed of sandstone while Enchencheruvu is a dolomite. Pattipalle is again a quartzite and Laknavaram formation is grey and white shale with interbeds of fine to medium grained quartzite which underlies the Neoproterozoic Penganga and unclassified Sullavai formation.

The Penganga group of Neoproterozoic rocks non conformably rest over the Archaean to Palacoproterozoic and the contact between the two is faulted and is represented by Takkalapalle Formation represented by arkose, and quartzite which is exposed in association with Sullavais. The Unclassified Sullavai Group comprises sandstone which is the youngest of the Proterozoic sediments and overlies all the older units with an angular unconformity, disconformity or faulted contact. In the extreme northcentral the Sullavai sandstone occurs as a patch in lower Gondwana, Talchir Formation of Upper Carboniferous to early Permian age.

Upper Carboniferous to Lower Cretaceous age of Gondwana Supergroup is divided into lower Gondwana and upper Gondwana. The Lower Gondwana Group of Upper Carboniferous to Lower Triassic age consisting of Talchir, Barakar, Barren Measures and Lower, Undifferentiated Lower to Middle, Middle, and Upper Kamti formations and Upper Gondwana Group of Lower Triassic to Middle Triassic age represented by Yerrapalli, Bhimaram and Maleri, formations.

The Talchirs are exposed in the extreme northcentral part and are represented by boulder/ pebble bed and tillite. The Barakar Formation rests unconformably on the Talchir Formation and its eastern contact with Barren measure formation is cut across by N-S, NE-SW and NW-SE faults. The Barakar formation is represented by feldspathic sandstone/carbonaceous shale and coal. The Barren Measures conformably overlies the Barakars and are represented by medium grained ferruginous sandstone with subordinate micaceous siltstone and clay, exposed in a NW-SE trending trough from southeast to northwest. The Lower Kamti overlies Barren Measures and is mainly represented by medium to coarse calcareous sandstone with few coal seams. The Middle Kamthi is represented by alternate sequence of sandstone and clay beds. It is overlain by undifferentiated Middle and Lower Kamti's which extend in a NNW-SSE direction and are an interbanded sequence of ferruginous sandstone with siltstone/clay beds. The Upper Kanti stretches in a NW-SE direction and composed of coarse ferruginous sandstone with minor cherty siltstone and pebble beds. It is overlain by red mudstone with calcareous bands of Yerapalli Formation which extends in a NW-SE direction.

Yerrapalli, is overlain by ferruginous sandstone with a few red clay beds of Bhimraram formation and red clays and lime pellets with lenses of fine to medium grained, white to grey coloured sandstone of Maleri formations of Upper Gondwana of Triassic age.

Lithostatigraphy of Peddapalli District: -

Lithology	Formation	Group	Supergroup	Age
Clay and sandstone	Maleri	Upper Gondwana	Gondwana	Middle Triassic
Ferruginous sandstone	Bhimaram			
Mudstone	Yerrapalli			Lower Triassic
Ferruginous sandstone	Upper Kamti			Upper Permian to Lower Traissic
Sandstone and clay	Middle Kamti			
Ferruginous sandstone	Undif. Lower-Middle Kamti	Lower Gondwana		Upper Permian
Calcareous sandstone	Lower Kamti			
Ferruginous sandstone	Barren Measures			
Feldspathic sandstone	Barakar			Lower Permian
Tillite	Talchir			Upper Carboniferous to Lower Permian
Sandstone		Sullavai (Unclasfd)		Neoproterozoic
Arkose	Takallapalli	Penganga		
Shale	Laknavaram	Mulug	Pakhal	Mesoproterozoic
Quartzite	Pattipalli			
Dolomite	Enchencheruvu			
Sandstone	Jakkaram			
Quartzite	Gunjeda	Mallampalli		
Akose / Sandstone	Bollapalli			
Gabbro / Dolerite	Basic intrusives			Palaeoproterozoic
Banded magnetite quartzite/ Feldspathic quartzite/Quartzite		Karimnagar granulite		Archaean to Palaeoproterozoic
Amphibolite				
Charnockite/Pyroxene granulite				
Meta - ultramafite				
Pink biotite granite / Pink granite / Grey biotite granite /Alkali feldspar granite		Peninsular Gneissic Complex-II	Peninsular Gneissic Complex	

Geology of the Block:

Regional Bedrock — Pranhita–Godavari Basin

- Takkalapally & Putnoor lie within the Pranhita–Godavari Basin — a major sedimentary basin in Telangana that formed during the Gondwana to Mesozoic geological eras.
- Sedimentary rocks in the basin include sandstones, mudstones, shales, and carbonates (limestones) deposited in rivers, floodplains, lakes and shallow water environments over long geological time. (General basin context aligns with Telangana geology — e.g., Barakar, Dharmaram and Kota formations.

  Most part of the area of is soil covered & have scanty outcrop of mostly massive to flaggy limestone & impure (Silica rich) limestone of Formation of putnoor formation. Among the primary sedimentary structures, bedding planes and laminations are common. The secondary structures observed in the area joints. The generalized strike of the strata is NW-SE with dips varying 55° to 65 ° towards southeast.

Carbonate Units (Local Possibilities)

In the broader region, Jurassic and Cretaceous units such as those related to the Kota Formation may include limestone horizons.

Stratigraphic succession of the area around Putnoor is as follows:

Lithology	Formation	Group	Era
Limestone	Puntoor Formation	Penganga Group	Neoproterozoic
Arkose	Takallapalle Formation		
Shale			

Mineral potentiality based on geology, geophysics, ground geochemistry etc.,
Scope for proposed exploration

As the area has high potential for cement grade limestone, the delineated Putnoor block in the area must be explored by G-3 stage exploration to assess the quantity & quality of cement grade limestone resources in the delineated one block and classify the resources as per UNFC and Minerals (Evidence and Mineral Contents) Rule, 2021 norms before the block is handed over to State Government for auctioning.

Recommendations of G-4 Stage Mineral Exploration Report.

No previous G-4 level exploration has been carried out in the proposed block.

Objectives:

1. To Delineate block boundary with the help of DGPS
2. To carry out Topographical and Geological Mapping on 1:4000 scale.
3. To Assess the quantity & quality of cement grade limestone in the blocks up to 50m depth.

2. Previous Work:

The block is located adjacent to the Kesoram Cement Limestone Mining Lease area**.** Chemical analysis of limestone samples collected from the block indicates a CaO content exceeding 45%**,** signifying good-grade limestone. The consistently high CaO values suggest that the limestone is suitable for cement-grade applications and is comparable with the quality of limestone in the adjoining lease area presently under mining**.** The strategic proximity to an existing cement mining lease**,** combined with favourable chemical characteristics**,** substantially enhances the mineral potential and economic viability of the block for further exploration and possible exploitation.

As per Mines IOM Dt:08.01.26,Analysis of Samples collected from Putnoor

S.No	Sample ID	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3	K_2O	Na_2O	LSF	SM	AM
1	PL1	13.69	0.35	0.63	45.26	0.58	0.56	0.18	0.10	115.57	13.97	0.56
2	PL2	15.67	0.10	0.47	45.90	0.30	0.26	0.12	0.04	103.61	27.49	0.21
3	PL3	9.13	0.60	0.70	47.28	0.82	0.40	0.21	0.13	176.82	7.02	0.86
4	PL4	10.70	0.60	0.72	46.84	0.49	0.05	0.32	0.05	150.38	8.11	0.83
5	PL5	8.33	1.87	0.82	47.88	0.59	0.09	0.37	0.02	183.44	3.10	2.28
6	PL6	57.45	7.22	2.03	17.48	0.08	0.01	2.45	0.20	10.23	6.21	3.56

3. Block description:

Block corner points / Cardinal Points	Latitude	Longitude	Location of the Block and Area in Sq. km	Toposheet No.
1	18°44'25.79"N	79°22'26.48"E	Putnoor (Vi) Palakurthy (M) Peddapalli Dist. Telangana	56 N/06
2	18°44'35.16"N	79°22'30.25"E		
3	18°44'46.79"N	79°20'54.49"E		
4	18°44'41.24"N	79°20'52.06"E		

4. Planned Methodology:

The proposed Putnoor limestone block shall be explored under the Preliminary Exploration (G-3) stage through detailed topographical and geological mapping, core drilling, and chemical analysis, in order to assess the quantity and quality of cement-grade limestone resources. Borehole spacing shall be planned at 800 X 800 meters grid (As per MEMC, 2021).

Methodology: -

a. Data Compilation

Available geological literature, regional maps, satellite imagery, and nearby mining lease data will be studied to understand the stratigraphic setting and limestone continuity.

b. Geological Mapping

Detailed topographical and geological mapping on 1:4,000 scale will be carried out to delineate limestone bands, litho-contacts, and associated formations. Structural features such as bedding, joints, and faults influencing mineral continuity will be recorded.

c. **Core Drilling**

Exploratory core drilling will be undertaken with borehole spacing of about 800 m, depending on geological conditions, to establish subsurface continuity, thickness, and grade variation. Drill cores will be logged in detail.

d. **Sampling and Chemical Analysis**

Representative samples from trenches, pits, and drill cores will be analyzed for CaO, MgO, SiO_2, Al_2O_3, Fe_2O_3, LOI, and other relevant industrial parameters to assess cement-grade limestone suitability.

e. Resource Estimation

Geological sections and plans will be prepared by integrating surface and subsurface data. Limestone resources will be estimated at G-3 level as per UNFC guidelines.

5. Nature of Quantum and Target work

Quantum of work Carried out by TGMDC Ltd., In Putnoor Village, Palakurthy Mandal, Peddapalli District, Telangana State			
S. No.	**Item Work**	**Unit**	**Quantum of work Proposed**
1	Topographic Survey (on 1:4000)	sq.km	0.68 sq.km
2	Geological Mapping (on 1:4000)	sq.km	0.68 sq.km
3	Drilling	meters	300 (06 BHs)
4	Laboratory Studies		
	i) Chemical Analysis for Primary Check samples for 6 radicals i.e. CaO,MgO, Al_2O_3, SiO_2, Fe_2O_3 and LoI	Sample	325
	ii) Internal Check Samples (10% of Primary) for 6 radicals i.e. CaO, MgO, Al2O3, SiO2, SO_3& P_2O_5, Fe2O3 and LoI	Sample	33
	iii) External Check Samples (5% of Primary) for analysis 6 radicals i.e. CaO, MgO, Al2O3, SiO2, Fe2O3 and LoI	Sample	17
	iv) Composite Samples for 12 radicals (CaO, MgO, Al2O3, SiO2, Fe2O3, SO3, P2O5, LoI, Mno2, K2O, Na2O and CI	Sample	06
5	Physical Studies		
	Petrological Studies (Petrographic Studies)	No's	06
	Bluk Density	No's	06
6	Report Preparation (Digital format)	No's	01

6. Exploratory Drilling: (Referred another document on exploratory drilling)

7. Man power deployment: - 2 Geologists

8. Break-up of expenditure

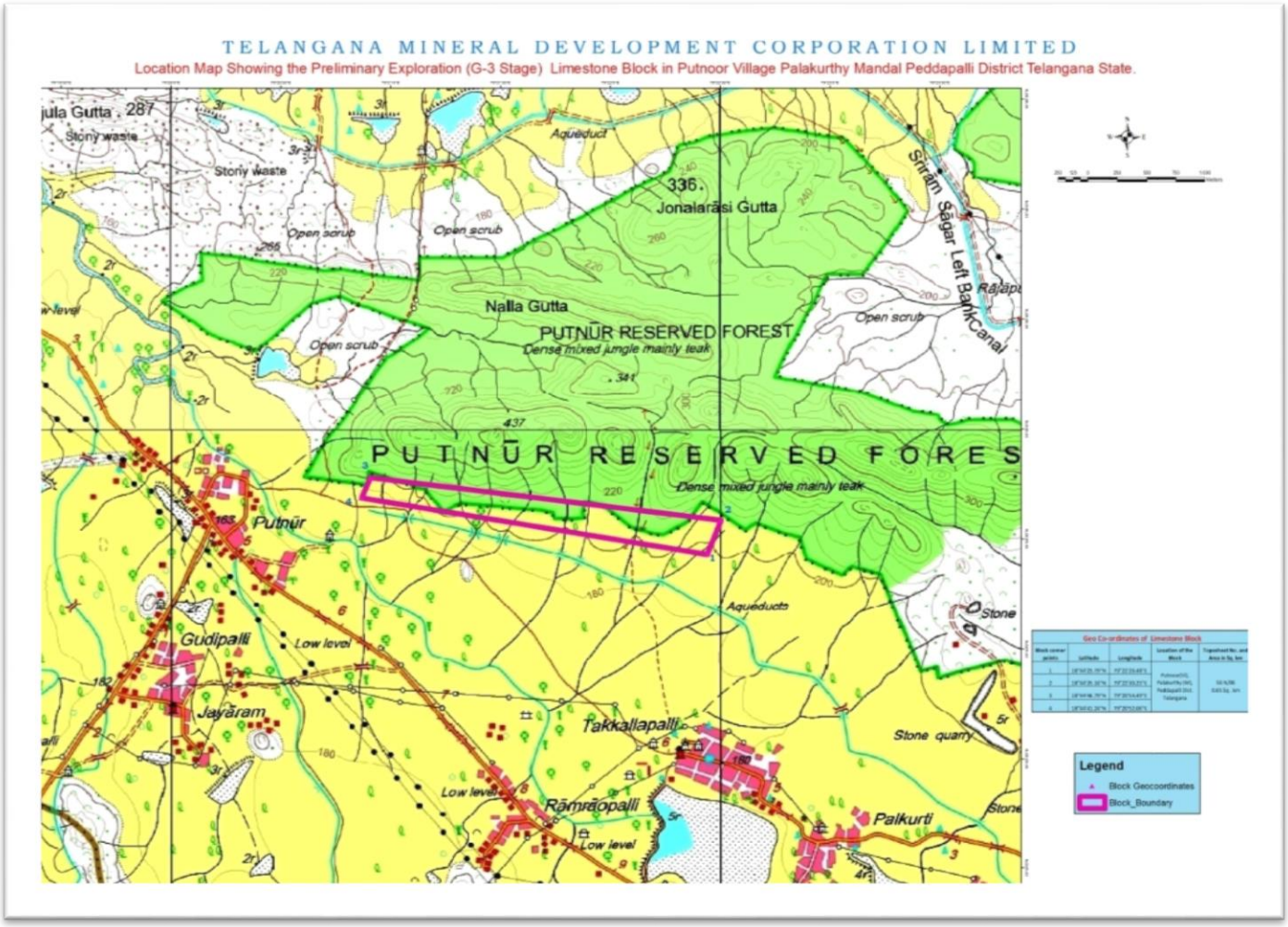
In Putnoor Block, Putnoor Village, Palakurthy Mandal, Peddapalli District, Telangana State

SUMMARY OF COST ESTIMATES		
S. No.	**Item**	**Total Estimated Cost (Rs.)**
1	Geological, Survey & Sampling work	**2581696.00**
2	Drilling	**2627400.00**
3	Laboratory Studies	**1662630.00**
4	Tendering Cost	**85800.60**
5	Operational Charges	**429003.00**
6	Preparation of Exploration proposal	**147730.59**
7	Geological Report Preparation	**369326.48**
8	Peer Review Charges	**30000.00**
9	Total	**7933586.67**
10	GST @18%	**1428045.60**
11	Grand Total	**9361632.27**
12	Rs. In Lakhs	**93.61**

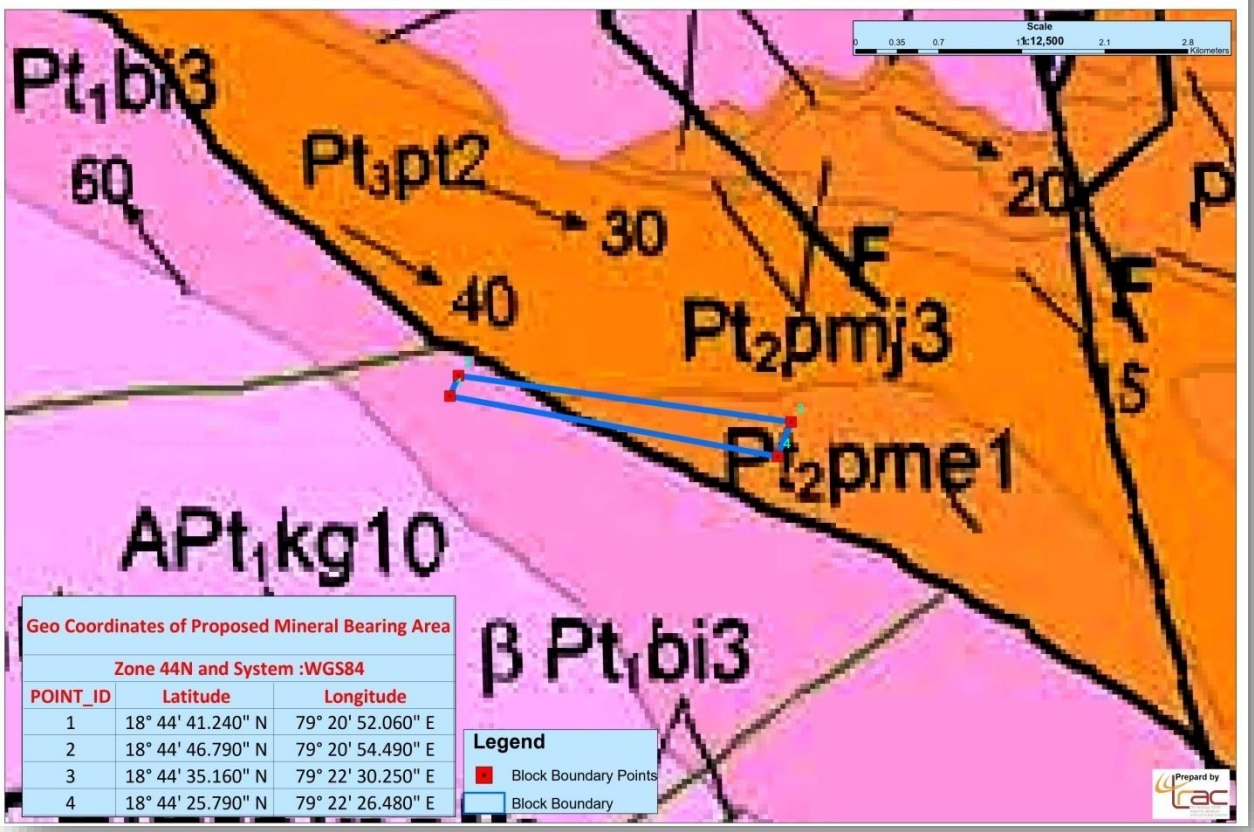
Estimate Cost For Preliminary Exploration (G-3) For Limestone In Putnoor Block, Putnoor village Palakurthy Mandal Peddapalli District, Telangana							
Area- 67.66 Hectares, Drilling- 300m , BH: 6 nos. Timeline- 08 months,							
S. N0	Item of Work	Unit	Rates as per NMET SoC 2020-21		Estimated Cost of the Proposal		Remarks
			SoC- Item- Sl. No.	Rates as per SoC	Quantity	Amount	
a	b	c	d	e	f	g	h
A	Geological work						
1	**Geological Mapping (1:4000) with Topographical Survey, Core logging, Sampling & report writing**						
	a) Survey work - Surveyor	per day	1.6.1a	8,300	30	249000.00	
	b) 4 labours / Party (Rs 541/ day / labour) (As per rates of Central Labour Commissioner)	day	5.7	541	120	64920.00	
	C) Demarcation of lease boundary, Fixation of borehole and determination of co-ordinates & Reduced Level (RL) of the boreholes by DGPS	per point of observation	1.6.2	19,200	10	192000.00	
	d) Charges for Geologist party days in field	Per day	1.5.1a	11,000	120	1320000.00	
	e) 2 labours / Party (Rs 541 / day / labour) (As per rates of Central Labour Commissioner)	day	5.7	541	240	129840.00	
	f) Charges for Geologist party days (at H Q)	Per day	1.5.1a	9,000	30	270000.00	
	e) Sample processing work	Sampler per day	1.5.2	5,100	49	249900.00	
	f) 4 labours / Party (Rs 541/ day / labour) (As per rates of Central Labour Commissioner)	day	5.7	541	196	106036.00	
	Sub total - A					**2581696.00**	
B	Drilling- Out Sourced						
1	Surface drilling	Per Mtr	2.2.1.1b	7168	300	2150400.00	
10	Drill Core Preservation	Per Mtr	5.3	1,590	300	477000.00	
	SUB TOTAL B					**2627400.00**	
C	Laboratory studies						
1	**Chemical analysis**						
	a) Primary core Samples -XRF method - Major Oxides	per sample	4.1.15 a	4200	325	1365000.00	(25 Surface + 300 Core Samples)

	b) Internal Check Samples 5 % XRF method - Major Oxides	per sample	4.1.15 a	4200	17	71400.00	
	c) External Check Samples 10 % XRF method - Major Oxides	Per sample	4.1.9	4200	33	138600.00	
	c) Composite Samples for 6 radicals CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, and LoI	Per sample	4.1.9	4200	6	25200.00	
2	**Physical analysis**					0.00	
	a) Preparation of thin sections	Nos.	4.3.1	2353	6	14118.00	
	b) Petrographic studies	Nos.	4.3.4	4232	6	25392.00	
	c) Bulk density	Nos.	4.1	3540	6	21240.00	
	Digital Photographs	Nos.	4.3.7	280	6	1680.00	
	SUB TOTAL C					**1662630.00**	
	TOTAL (A+B+C)					**6871726.00**	
D	**Total Outsourced Components (Drilling + Chemical Analysis)**					**4290030.00**	
E	**Tendering Cost**		**2.3**			**85800.60**	
F	**Operational Charges**		**6**	**1**		**429003.00**	
	Total(A+B+C+E+F)					**7386529.60**	
G	**Preparation of Exploration proposal**		5.1			**147730.59**	
H	**Geological Report Preparation**		5.2	2		**369326.48**	
I	**Peer Review Charges**		**As per EC Decision**			**30000.00**	
	TOTAL (A+B+C+D+E+F+G)					**7933586.67**	
J	**GST @ 18%**					**1428045.60**	
K	**GRAND TOTAL**					**9361632.27**	
L	**Rs. In Lakhs**					**93.61**	


Telangana Mineral Development Corpration Limited
Location Map of Preliminary Exploration (G-3 Stage) Limestone Block in Putnoor Village Palakurthy Mandal Peddapalli District Telangana
Over an Extent of 67.66 Hectares
N
1 km
1
2
3
4
Esalatakkallapalle
Ramaraopalli
Google Earth
Image © 2026 Airbus
Legend
Block boundary line
Block Boundary Geo Coordinates


TELANGANA MINERAL DEVELOPMENT CORPORATION LIMITED
Location Map Showing the Preliminary Exploration (G-3 Stage) Limestone Block in Putnoor Village Palakurthy Mandal Peddapalli District Telangana State.
Stony waste
Aqueduct
336.
Jonalarāsi Gutta
Open scrub
Nalla Gutta
PUTNŪR RESERVED FOREST
Dense mixed jungle mainly teak
Sriram Sagar Left Bank Canal
Putnūr
Gudipalli
Low level
Jayāram
Takkallapalli
Stone quarry
Rāmrāopalli
Palkurti
Stone
Legend
Block Geocoordinates
Block_Boundary

Location Map Showing the Preliminary Exploration of G-3 Stage Limestone Block in Putnoor Village, Palakuthy Mandal,Peddapalli District,Telangana State, covered under Part of Geological Map, O/E 67.66 Hect.



Geo Coordinates of Proposed Mineral Bearing Area		
Zone 44N and System :WGS84		
POINT_ID	Latitude	Longitude
1	18° 44' 41.240" N	79° 20' 52.060" E
2	18° 44' 46.790" N	79° 20' 54.490" E
3	18° 44' 35.160" N	79° 22' 30.250" E
4	18° 44' 25.790" N	79° 22' 26.480" E