PROPOSAL FOR PRELIMINARY EXPLORATION (G-3 STAGE) FOR LIMESTONE IN MUKTESWARAPURAM BLOCK (AREA 4.57 SQ. KM), DISTRICT - SURYAPET, STATE – TELANGANA

COMMODITY: LIMESTONE

BY MINEREAL EXPLORATION CORPORATION LIMITED DR. BABASAHAB AMBEDKAR BHAWAN SEMINARY HILLS

PLACE: NAGPUR

DATE: 19th June 2025

Summary of the Block for Preliminary exploration (G-3 Stage)

GENERAL INFORMATION ABOUT THE BLOCK

	Features		Details					
	Block ID		Mukteswarap	ouram block				
	Exploration Agency		Mineral Expl	Mineral Exploration and Consultancy Limited (MECL)				
	Commodity		Limestone					
	Mineral Belt		-					
	Completion Period with Time schedule to comp project		7 months					
	Objectives Whether the work will be carried out		mapping of ii. To deline by drilling iii. To carry of Contents) (Amended iv. The properties as per Ut which in the Block	 i. To carry out detailed Topographical Survey and Geological mapping on 1:4000 scale over an extent of 4.57 sq. km ii. To delineate the strike and depth continuity of the limestone by drilling vertical boreholes in 800 m X 800 m grid. iii. To carry out exploration as per Minerals (Evidence of Mineral Contents) Rule-2015 & Mineral (Auction) Rules-2015 (Amended upto 2021). iv. The proposed exploration programme will be helpful in demarcating zone of various grades of limestone in the block as per UNFC norms and estimation of limestone resources which in turn will facilitate the State Govt. for auctioning of the Block. Work will be carried out by the proposed agency. Drilling will be 				
	by the proposed agency outsourcing and details Components to be outsome of the outsource a	or through thereof.	ch outsourced.	carried out by the	proposed ag	ency. Drining win be		
	Name/ Number of Geos	-	two nos. of C	two nos. of Geoscientist (1 Field + 1 HQ)				
	Expected Field days (G Geological Party Days			rty Days: 75 Days f		30 HQ Party days		
1.	Location							
			nates of the corner p k Boundary (4.57 Sq Telar					
		Corner Point		VGS 1984 D M S system				
		1 OIIIt	Longitudes	Latitude	Area			
		A	080° 02' 48.62" E	16° 49' 43.75" N				
		В	080° 03' 49.13" E	16° 49' 38.64" N	4.57 Sq.			
		C D	080° 02' 35.85" E 080° 01' 59.0" E	16° 48' 15.89" N 16° 48' 35.9" N	Km			

	Villages	Peddaveedu, Gundlapally, Dondapadu, Mukteshwarapuram
	Tehsil/ Taluk	Mukteswarapuram block lies in Mellacheruvu mandal.
	District	Suryapet
	State	Telangana
2.	Area (hectares/ square kilometers)	
	Block Area	4.57
	Forest Area	Data Not Available
	Government Land Area	Data Not Available
	Private Land Area	Data Not Available
3.	Accessibility	
	Nearest Rail Head	Miryalaguda Railway station is 60km from the proposed block.
	Road	Block is of about 40 km away from National Highway No. 9 connecting Vijayawada- Hyderabad.
	Airport	Vijayawada airport is the main City which is at a distance of 135 km
4.	Hydrography	
	Local Surface Drainage Pattern	seasonal nalas flowing north to south and joining the rive
	(Channels)	Krishna which is located at about 3 kms to the south.
	Rivers/ Streams	Krishna river which is perennial.
5.	Climate	
	Mean Annual Rainfall	The average annual rainfall is around 800 mm rainy season from June to November
	Temperatures (December) (Minimum)	Minimum temperatures 13°C (winter),
	Temperatures (June) (Maximum)	Maximum temperatures up to 48°C (summer)
6.	Topography	
	Toposheet Number	65D/01
	Morphology of the Area	exhibits gently undulating plain marked by relatively low lying areas
7	Availability of baseline geosciences data	
	Geological Map (1:50K/ 25K)	NGDR
	Geochemical Map	NGDR data
	Geophysical Map	NGDR
8.	Justification for taking up Reconnaissance Survey / Regional Exploration	Prospecting Licences (PLs) granted before the MMD Amendment Act, 2015 included exploration stage reports (G2 G3, etc.). However, the 2021 amendments to the Act rendere these PL reports ineligible, requiring mineral blocks to g

through auction. As a result, 19 such PL reports need reevaluation under the Minerals (Evidence of Mineral Contents) Rules, 2015. To scrutinize them, the State Government formed a Scrutiny Committee (G.O.Ms.No.8, dated 12.03.2025). A meeting with GSI, MECL, and IBM on 04.06.2025 concluded that further field exploration was necessary to validate the with further exploration. 1. Proposed area is part of Prospecting license areas applicant of M/s Rain cement ltd. 2. The area hosts existing mining leases for limestone, in the vicinity of the Prospecting License (PL) blocks, the respective agencies have undertaken G-4 level exploration, confirming the presence of limestone. 3. Following the Scrutiny Committee meeting on 04.06.2025 and subsequent discussions with the Director of Geology and Mining, Telangana, it was resolved to upgrade the block over substantial areas to facilitate auction.

PROPOSAL FOR PRELIMINARY EXPLORATION (G-3 STAGE) FOR LIMESTONE IN MUKTESWARAPURAM BLOCK, DISTRICT - SURYAPET, STATE – TELANGANA

1.0.0 INTRODUCTION:

- 1.1.1 Prospecting Licences (PL) were granted prior to MMDR Amendment Act,2015 and the PL holders submitted PL Reports mentioning different stages of exploration (G4, G3 etc). In 2021 amendments were issued to MMDR Act with a stipulation that all such PL reports stand ineligible and to conduct auction. Therefore, 19 PL Reports required to be evaluated to confirm mineral contents (G4, G3 etc stages of exploration) as per the stipulations under Minerals (Evidence of Mineral Contents) Rules, 2015. State Govt. constituted Scrutiny Committee vide G.O.Ms.No.8, Dt:12.03.2025 for scrutiny of PL Reports as per the Minerals (Evidence of Minerals) Content Rules, 2015. Dept. along with GSI, MECL & IBM discussed the status of PL Reports on 04.06.2025 wherein it was opined to revisit the areas for further exploration
- 1.1.2 In view of the above, MECL has prepared the exploration proposal involving G-3 level exploration in Mukteswarapuram block covering the erstwhile PL area of M/s cement ltd.

1.2.0 LOCATION AND ACCESSIBILITY

- 1.2.1 In the proposed Mukteswarapuram block lies in Mellacheruvu mandal, (Toposheet No 65D/01) Suryapet dist, Telangana.
- 1.2.2 All the villages in the area are well connected to each other and to the highway located at a distance of about 40 km away from National Highway No. 9 connecting Vijayawada-Hyderabad, The nearest Railway Station is Miryalaguda about 60 km NNW. The nearest airport is Vijaywada Airport at 135km from the block.

1.3.0 PHYSIOGRAPHY, DRAINAGE, CLIMATE AND VEGETATION:

- 1.3.1 Physiographical, the proposed block forms a part of plain area north of Krishna River. The highest elevation of the ground is around 200 m above MSL and ground slope is towards south.
- 1.3.2 The Suryapet district is mainly drained by Krishna River and its tributary Vemuleru River.

 A few nalas originate in the block and meet Krishna River in the south.
- 1.3.3 The area experiences tropical wet and dry climate. During dry spells, maximum temperature often exceeds 45° C in May and June. In winter the temperature comes down to 9-11° C in December and January. The average annual rainfall in the area is 821mm.

2.0.0 REGIONAL GEOLOGY

2.1.0 The proposed area is a part of Palnad Sub-Basin and is located in the northeastern part of the Cudappah Basin. The major portion of the basin isoccupied by Kurnool Group of rocks

- of Neoproterozoic age. William King (1872) documented the earliest geological account of Planad basin. Ramalingaswamy, G. (1976-77) has mapped area in parts of Toposheet No.56P/10. Krupanidhi (1966-67), Nagaeswara Rao and Varaprasada Rao(1967-68), Chakradhar et al, (1980-83), Ravindra Babu et al, (1989),Ramakrishnaiah et al, (2012-13), Jagadishwar Babu. K and Tirumurugan. M. (2013) and Sugathan & Rimpal Kar (2013) have carried out investigation for limestone in parts of Palnad sub-basin.
- 2.1.1 The Cuddapah Basin extends from Nagari in the south to Amaravati in the north east over a length of about 440 km. with width ranging from 80 to 145 km. encompassing an area of about 44000 sq. km. Rocks belonging to Kumool Group are younger than rocks of Cuddapah Group and are well preserved in the Cuddapah Basin. Cuddapahs and associated younger Kumools occupy a unique position in Indian Stratigraphy because of economic interest and hence have been the subject of studies for more than seven decades. Kurnool Group of rocks are found confined to two small areas in Cuddapah viz., the area between Cuddapah and Kumool and the area west of Amaravati. The latter is also referred to as the Palnads.
- 2.1.2 The Detailed Stratigraphy after GSI is as per the table given below:

	SERIES	STAGE				
C U D	Kurnool Series	Nandyal shale Koilkuntla Limestone Paniam Quartzite Auk Shale Narji Limestone Banganapalle Quartzite				
D		Unconformity				
A P A	Kistna Series	Srisailam quartzite Kolamnala shale Irlakonda quartzite				
Н		Unconformity				
s	Nallamalai Series	Cumbum Formation Bairenkonda Quartzite				
Y		Unconformity				
S T E	Cheyair Series	Gandikota quartzite Pullampet shales (Tadpatri) Nagri/ Pulivendala quartzite				
M		Unconformity				
	Papaghni Series	Vempalle limestone and shale Gulcheru quartzite				
		Unconformity				
	Archean schist and gneisses.					

Table no 1 Regional Stratigraphy of the Cuddapah basin

3.1.0 REGIONAL STRUCTURE

3.1.1 The general strike of the formation is NNE-SSW dipping gently (20 to 50) towards ESE and the younging direction is from west to east. The variation in dip direction and amount may be attributed to warps and minor folds. Open asymmetrical synform and antiform folds

are preserved in the western part of the study area which are having trend N70⁰W–S70⁰E (axial plane) and plunging towards SE. Minor folds are formed in calcite and quartz vein within the massive grey limestone, the axial plane is trending in E-W direction.

3.2.0 GEOLOGY OF THE BLOCK

- **3.3.0** The limestone in the area forms a part of Proterozoic Palnadu Basin equivalents to Narji Limestone formation of Kurnool Group. These carbonate rocks of Narji Limestone are sub divided in to several distinct Lithological units.
- 3.4.0 Stratigraphy of the proposed block is given below

Table No 2
Stratigraphy of the Survapet cluster of blocks (After GSI)

stratigraphy of the surjupet craster of stocks (first 351)				
Group / Super Group	Lithology			
	Soil			
Narji Limestone	Grey Limestone			
	Green Limestone			
	Purple/Flaggy limestone			
	Shale			
	Banaganapalle Quartzite			
Unco	nformity			
Kistna Series				

3.5.0 The Grey Limestone is light to dark grey in color and Variegated Limestone is light greyish white to greenish grey in colour and thin bedded. In the course of drilling green and purple limestones have been encountered. The massive grey unit is devoid of any particular primary So (colour compositional) bedding. It is massive with a thickness of 20 to 50 m and breaks along sharp edged conchoidal fractures exhibiting a serrated profile.

4.0.0 MINERAL POTENTIALITY BASED ON GEOLOGY, GEOPHYSICS, GROUND GEOCHEMISTRY ETC.

4.0.1 The area hosts existing mining leases for limestone, in the vicinity of the Prospecting License (PL) blocks, the respective agencies have undertaken G-4 level exploration, confirming the presence of limestone and estimating a resource of 8 million tonnes over 12 hectares.

5.0.0 PREVIOUS WORK AND JUSTIFICATION

- 5.1.1 The block forms part of Palnad Sub-basin and is located in the north-eastern portion of the Cudappah Basin. The earliest geological account of Palnad Sub-basin was documented by William King (1872).
- 5.1.2 Mukherji and Syed Kazim(1947) of erstwhile Hyderabad Geological Survey carried out geological mapping of Palnad Basin covering parts of Nalgonda district.

- 5.1.3 Systematic geological mapping and mineral invstigation in this part of Palnad Sub-basin was carried out by Ziauddin and Sharma(1959-61) Ramalingaswamy, G. (1976-77) has mapped area in parts of Toposheet No. 56P/10. Krupanidhi (1966-67), Nagaeswara Rao and Varaprasada Rao (1967-68), Chakradhar et al, (1980-83), Ravindra Babu et al, (1989), Ramakrishnaiah et al, (2012-13), Jagadishwar Babu. K and. Tirumurugan. M. (2013) and Sugathan & RimpalKar (2013) have carried out investigation for limestone in parts of Palnad sub-basin.
- 5.1.4 MECL FY 2017-2018. Has carried out G-3 level exploration in the vicinity of this area for exploration blocks namely Sultanpur, Saidulnama and Pasupalabodu where it was established the continuity of limestone and resources were established, out of these three blocks Saidulanama and Sultanpur block are auctioned in the year 2024. Thickness of limestone intercepted are 10.5 to 36.0m
- 5.1.5 Two cluster of Blocks namely Ramapuram Cluster 5 and Dondapadu Cluster 6 were explored by TSMDC through NMET funding and these blocks are located North and South of the proposed block respectively. The GR were submitted in Jan 2020. Two boreholes were drilled in Ramapuram Cluster 5 and four boreholes were drilled in Dondapadu Cluster 6. The details and findings of the boreholes are as follows.

Table 3.1: Ramapuram Cluster-5 Borehole details

Borehole No	Latitude	Longitude	Azimuth	R.L. in (m)	Type of drill & Core size	Ground Water depth	Total depth (m)
RMPCBH-1	16°50'55.045"N	80°01' 13.394" E	Vertical	85	Diamond NX		50.0
RMPCBH-2	16°50'30.796"N	80° 01' 11.068" E	Vertical	87	Diamond NX		50.0

Cluster	BOREHOLE NUMBER	DEPTH OF CEMENT GRADE LIMESTONE ZONE IN METERS			GRADE (WEIGHTED AVERAGE)		
		FROM	то	THICKNESS	SiO ₂	CaO	MgO
	RMPCBH-1	30.75	39.75	9.00	15.96	45.34	0.36
5	KIVIFCBH-1	46.50	50.0	3.50	18.00	44.21	0.38
	RMPCBH-2	19.00	50.00	31.00	14.39	46.46	0.48

5.1.6 Resource of 675 million tonnes with average grade of 46.05% CaO (334) were estimated in Ramapuram Cluster 5.

Table 3.1: Dondapadu Cluster-6 Borehole details

Borehole No	Latitude	Longitude	Azimuth	R.L. in (m)	Type of drill & Core size	Ground Water depth	Total depth (m)
DDPCBH-1	16°47'45.901"N	80°1'20.198"E	Vertical	81.0	Diamond NX	-	50.0
DDPCBH-2	16°47'39.500"N	80°1'48.370"E	Vertical	66.0	Diamond NX	-	50.0
DDPCBH-3	16°48'2.734"N	80°2'45.196"E	Vertical	48.0	Diamond NX	-	50.0
DDPCBH-4	16°47'37.880"N	80°2'46.640"E	Vertical	49.0	Diamond NX	-	47.0

S.NO BOREHOLE		DEPTH OF		T GRADE IN METERS	GRADE (WEIGHTED AVERAGE)		
	NUMBER	FROM	то	THICKNESS	SiO ₂	CaO	MgO
	DDPCBH-1	16.00	33.00	17.00	18.00	44.06	0.45
	DDFCBH-1	40.00	49.50	9.50	16.19	45.43	0.45
1	DDPCBH-2	29.25	42.75	13.50	16.40	45.35	0.47
1	DDPCBH-2	48.00	50.00	2.00	13.36	47.38	0.43
	DDPCBH-3	34.50	36.00	1.50	16.42	43.93	0.50
	DDPCBH-4	15.00	29.00	14.00	16.65	44.53	0.62

- 5.1.7 Resource of 452 million tonnes with average grade of 44.82% CaO (334) were estimated in Dondapadu Cluster 6.
- 5.1.8 The Detail PL report of M/s Rain Industries Limited is not available.

6.0.0 BLOCK DESCRIPTION

6.1.0 The proposed block falls in Survey of India Toposheet No 65D01 and covers an area of 4.57 sq. km in around villages of, Matampally, Peddaveedu, Gundlapally of Suryapet dist, Telangana. The block location is given in **PLATE-I.** The Co-ordinates of the corner points of the block area's are given in **Table No.- 3**

Table No 3

	Coordinates of the corner points of Mukteswarapuram Block Boundary (4.57 Sq. Km), District: Suryapet, Telangana					
Corner Point	Datum: WGS 1984 Coordinate in D M S system					
1 OIIIt	Longitudes	Latitude	Area			
A	080° 02' 48.62" E	16° 49' 43.75" N				
В	080° 03' 49.13" E	16° 49' 38.64" N	4.57 C			
С	080° 02' 35.85" E	16° 48' 15.89" N	4.57 Sq. Km			
D	080° 01' 59.0" E	16° 48' 35.9" N	Kili			
Е	080° 02' 10.9" E	16° 49' 15.63" N				

7.0.0 SCOPE FOR PROPOSED EXPLORATION.

The Preliminary exploration (G-3 stage exploration) program will be comprised of Detailed Geological mapping (1:4,000 scale), systematic drilling with coring boreholes, with associated survey, chemical analysis, physical analysis and geological report preparation.

7.1.0 PLANNED METHODOLOGY

7.1.1 The exploration program is proposed in accordance to the objective set for Preliminary exploration (G-3) for the block. The Exploration shall be carried out as per Minerals (Evidence of Mineral Contents) Amendment Rules, 2021. Accordingly, the following scheme of exploration is formulated in order to achieve the objectives. The details of different activities to be carried out are presented in subsequent paragraphs.

7.2.0 GEOLOGICAL MAPPING

7.2.1 Detailed Geological mapping will be done in the entire 4.57 sq. km 1:4000 scale. Rock types, their contact, structural features will be mapped. Surface manifestations of the mineralisation available along with their surface disposition will be marked on map. On basis of geological mapping, the borehole location will be fixed after review in TCC, NMET.

7.3.0 SURVEYING:

7.3.1 Topographical survey will be carried out on 1:4000 scale, along with DGPS survey for block boundary and borehole locations.

7.4.0 **CORE DRILLING:**

7.4.1 In accordance to Amended MEMC rule, the limestone shall be explored by drilling 800 m X 800 m grid. Hence 8 Nos of vertical Boreholes with 50 m depth of each borehole, have been proposed in Mukteswarapuram (4.57 sq,km) block. Hence, cumulative 400 m of total drilling will be carried out during the G3 stage exploration in this blocks. The committee opined that the BH location will be finalized only after completion of geological mapping.

7.5.0 Drill Core Logging:

7.5.1 The drill core will be logged for rock types, structural features, textures. Rock quality designation (RQD) will also be undertaken.

7.6.0 Drill Core Sampling:

7.6.1 During geological logging of drill core, various Limestone zone will be marked. The length of each samples will be kept 1.00 m. It may be assumed that 40 Nos of samples may be generated from each of the boreholes. Total 320 no of primary and 32 nos

check (10% External Check) samples each will be generated in Mukteswarapuram block.

7.7.0 CHEMICAL ANALYSIS

7.7.1 All the samples will be analyzed for CaO, MgO, Al2O3, SiO2, Fe2O3, Na2O, SO3, P2O5, K2O by radicals XRF and LOI will be carried out on all the primary and external check samples by XRF.

7.8.0 Bulk Density

7.8.1 Two numbers of samples shall be subjected to determination of bulk density which will be used for resource estimation.

7.9.0 PETROLOGICAL & MINERAGRAPHIC STUDIES:

7.9.1 During the course of Geological mapping and core logging, a total 3 nos. of samples will be collected from all the three blocks and shall be studied under microscope.

7.10.0 PROPOSED QUANTUM OF WORK

Block wise Details of the particular, Quantum and the targets are tabulated in Table

No.-4

Table No-4
Envisaged Quantum of proposed work in Mukteswarapuram Block

Sl.	Item of Work	Unit	Target
No.			
1	Geological Mapping (on 1:4000 Scale)	Sq km	4.57
2	Topographic Survey (on 1:4000 Scale)	Sq km	4.57
3	Drilling (coring)		
	a) Drilling in 8 Nos of BH with 50 m depth each	m	400
	b) logging	m	400
4	Laboratory Studies		
	i) Primary Samples for CaO, MgO, Al2O3, SiO2, Fe2O3, Na2O, SO3,	Nos	320
	P2O5, K2O by XRF and LOI		
	ii) External Check Samples for CaO, MgO, Al2O3, SiO2, Fe2O3,	Nos	32
	Na2O, SO3, P2O5, K2O by XRF and LOI		
5	Bulk Density	Nos	2
6	Petrological Samples (Borehole Core Samples)	Nos	3
7	Report Preparation (5 Hard copies with a soft copy)	Nos.	1

5.1.1 BREAK-UP OF EXPENDITURE

5.1.1.1 Tentative Cost has been estimated based on Schedule of Charges (SoC) of projects funded by National Mineral Exploration Trust (NMET) w.e.f. 01/04/2020. The total estimated cost is **Rs. 92.94 Lakhs for Mukteswarapuram block,** The summary of cost estimates for Preliminary Exploration (G-3 Level) is given in **Table No.-5. D**etails of cost estimates is

given in **Annexures.** Tentative Time schedule/action plan for proposed G3 exploration is 7 Months.

Table No-5
Summary of Cost Estimates for G3 Stage exploration in Mukteswarapuram Block

SL. NO.	ITEM	ESTIMATED COST (Rs.)
1	Drilling	3,767,764
2	Geology & Survey	2,059,286
3	Laboratory	1,506,075
	Sub Total (1 to 3)	7,333,125
4	Exploration Report	366,656
5	Proposal Prepration	146,663
6	Peer Review Charges	30,000
	Grand Total	7,876,444
	GST 18%	1,417,760
	Total:	9,294,204
	Say Rs. in Lakhs	92.94

List of Plates

- 1. Plate-I: Location Map of Limestone blocks
- 2. Plate-II: Geological Map of proposed limestone block in Suryapet dist, Telangana.
- 3. Plate III: Borehole Plan proposed limestone block in Suryapet dist, Telangana.