PRE FEASIBILITY REPORT

Multi Colour Granite quarry

Over an extent 1.05.5 Ha
In S.F.No.511/1, 513/26(Part) & 513/33 (Part) Patta land,
Arasiramani Bit II Village of Sankari Taluk, Salem District,
Tamil Nadu.

Of
M/s. Murugan Granites,
No. 77, Tiny Sector,
SIDCO Industrial Estate,
Ekkaduthangal,
Chennai – 600032
Tamil Nadu.

Consultant

Aadhi Boomi Mining and Enviro Tech (P) Ltd.,
(NABET Accredited EIA Consultant " A" Category)
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Narasothipatti, Alagapuram -Post,
Salem – 636 004. Tamil Nadu.
Accreditation No. NABET/EIA/1518/SA-034

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1. EXECUTIVE SUMMARY

The proponent, M/s. Murugan Granites is Partnership Firm residing at. No. 77, Tiny Sector, SIDCO Industrial Estate, Ekkaduthangal, Chennai – 600032, has a mining lease vide Government Order (3D).No.21 Industries (MMB-2) Department dated 01.02.2006 for twenty years and the lease deed was executed on 11.03.2006. for quarrying Multicolor Granite located in S.F.No.511/1, 513/26(Part) & 513/33 (Part) Patta land, Extent of 1.05.5 Hectares, Arasiramani Bit II Village of Sankari Taluk, Salem District, Tamil Nadu.

The mining plan was approved by Commissioner of Geology and Mining, Guindy, Chennai vide letter No. 8307/MM5/2005 dated 27.01.2006. And the period of lease is for 20 years up to 10.03.2026. Open cast semi-mechanized method of mining is proposed for quarrying in a Patta land. There is no eco sensitive zone or wild life sanctuary as per general and specific condition of EIA notification, 2006. The project cost is about Rs.137.00 lakhs and EMP cost is Rs. 3.60 lakhs for Environment monitoring.

According to the notification S.O. 804(E) dated 14-03-2017, the project if started the work on site, expanded the production or changed the product mix without obtaining prior environmental clearance under the Environment Impact Assessment Notification, 2006, is treated as violation case and those projects even Category B which are granted environmental clearance by the State Environment Impact Assessment Authority constituted under sub-section (3) Section 3 of the Environment (Protection) Act, 1986 should be appraised for grant of environmental clearance only by the Expert Appraisal Committee and environmental clearance will be granted at the Central level, MoEF&CC, New Delhi.

1.1 SALIENT FEATURES OF THE PROJECT

S.No	FEATURE	DETAILS
1	Name of the Proponent	M/s. Murugan Granites
2	Type of Project	Multi Colour Granite
3	Site Location	Arasiramani Bit II village, Sankari Taluk, Salem District
4	Mining lease area	1.05.5Hectares
5	Type of land Patta/ forest/ PWD	Patta Land
6	Period of Lease	20 years
7	Production capacity	The maximum production in the proposed scheme of mining is 1100 m^3 per annum.
8	Method of Mining	Open cast mining by semi-mechanized method
9	Ultimate depth of Mining	23.0 m
10	Precise area communication	G.O.(3D) N0.21 Industries (MMB-2) Department,

<table>
<tr><td></td><td>approved by the District collector</td><td>dated 01.02.2006 for a period of 20 years (11.03.2006 to 10.03.2026).</td></tr>
<tr><td>11</td><td>Mining plan approved by the Deputy/Assistant Director of the District</td><td>The mining plan approved by Commissioner of Geology and Mining, Guindy, Chennai vide letter No.8307/MM5/2005 dated 27.01.2006.</td></tr>
<tr><td>12</td><td>Latitude & Longitude</td><td><table>
<tr><td>Label</td><td>Latitude</td><td>Longitude</td></tr>
<tr><td>1</td><td>11^0 33’2.81”N</td><td>77^0 48’ 27.14”E</td></tr>
<tr><td>2</td><td>11^0 33’6.59”N</td><td>77^0 48’ 27.90”E</td></tr>
<tr><td>3</td><td>11^0 33’6. 37”N</td><td>77^0 48’ 29.35”E</td></tr>
<tr><td>4</td><td>11^0 33’8. 37”N</td><td>77^0 48’ 29.64”E</td></tr>
<tr><td>5</td><td>11^0 33’7.58”N</td><td>77^0 48’ 33.64”E</td></tr>
<tr><td>6</td><td>11^0 33’5. 53”N</td><td>77^0 48’ 29.28”E</td></tr>
<tr><td>7</td><td>11^0 33’3.01”N</td><td>77^0 48’ 28.83”E</td></tr>
</table></td></tr>
<tr><td>13</td><td>Toposheet No.</td><td>58 E/14</td></tr>
<tr><td>14</td><td>Topography of MSL area</td><td>The area is a sloping ground towards south. The altitude of the area is about 330m above MSL.</td></tr>
<tr><td>15</td><td>Land Use Pattern</td><td><table>
<tr><td rowspan="2">Description</td><td colspan="2">Area of Land Use (In Hec.)</td></tr>
<tr><td>Present</td><td>Proposed</td></tr>
<tr><td>Mining (quarry)</td><td>0.32.0</td><td>0.35.0</td></tr>
<tr><td>Mineral reject dump</td><td>Nil</td><td>0.37.0</td></tr>
<tr><td>Office- Infrastructure</td><td>Nil</td><td>0.02.0</td></tr>
<tr><td>Mine Roads</td><td>0.02.0</td><td>0.03.0</td></tr>
<tr><td>Area under plantation</td><td>Nil</td><td>00.24.0</td></tr>
<tr><td>Unutilized Area</td><td>0.71.5</td><td>0.04.5</td></tr>
<tr><td>TOTAL</td><td>1.05.5</td><td>1.05.5</td></tr>
</table></td></tr>
<tr><td>16</td><td>Ground water level</td><td>Depth of water table is reported as 40m Below Ground level.</td></tr>
<tr><td>17</td><td>Climatic condition</td><td>Generally sub tropical climate condition prevails throughout the year and this district receives rain both in south west and north east monsoon.
The average rainfall: 600mm to 700.
Temperature: 30^{0}c during winter and to a maximum of 43^{0}c during the summer.</td></tr>
<tr><td>18</td><td>Nearest habitation</td><td>Mattampatti – 2.0 km</td></tr>
<tr><td>19</td><td>Nearest Town</td><td>Sankari – 13 km</td></tr>
<tr><td>20</td><td>Nearest Railway Station</td><td>Sankari – 13 km</td></tr>
<tr><td>21</td><td>Nearest Airport</td><td>Omalur – 30 kms</td></tr>
<tr><td>22</td><td>Nearest Hospital</td><td>Sankari – 13 km</td></tr>
<tr><td>23</td><td>Aerial distance to the nearest Eco sensitive areas, CRZ,</td><td>a) Suriyamalai RF is about 600 m away on the western side of the lease area</td></tr>
</table>

<table>
<tr><td></td><td>forest, wild life sanctuary, Interstate boundary, critically polluted area if the quarry site is within 500m of these areas.</td><td>b) There is no wild life sanctuary within 10 km radius from the project site under the Wildlife (Protection) Act, 1972.
c) The quarry is located far away from sea coast more than 100 km. Hence, the project doesn't attract the C.R.Z. Notification, 1991.</td></tr>
<tr><td>24</td><td>Man power</td><td>18 employees</td></tr>
<tr><td>25</td><td>Water requirement & source</td><td>Total water requirement for 5.0KLD<table><tr><th>Purpose</th><th>Quantity</th></tr><tr><td>Drinking and utilities</td><td>2.0KLD</td></tr><tr><td>Dust suppression and Green belt</td><td>3.0KLD</td></tr></table></td></tr>
<tr><td>26</td><td>Overburden/Waste</td><td>Top soil :3081 m^3
Reject (@80%): 19020 m^3
Total waste: 22101 m^3</td></tr>
<tr><td>27</td><td>Cost of the project</td><td>Project Cost = Rs. 137.75 lakh
EMP cost = Rs. 3.6 lakh</td></tr>
<tr><td>28</td><td>Defense installations</td><td>Nil within 10 km</td></tr>
<tr><td>29</td><td>Archeological features</td><td>Nil within 10 km</td></tr>
<tr><td>30</td><td>Ecological sensitive zones</td><td>Nil within 10 km</td></tr>
<tr><td>31</td><td>Interstate Boundary</td><td>Tamil Nadu – Karnataka interstate boundary is about 47 km on the north west.</td></tr>
<tr><td>33</td><td>Nearest streams/ rivers/ water bodies</td><td>There is no major river or water body, nallah and ponds are situated around 500m radius. Kavery river is about 6 km on the western side</td></tr>
<tr><td>34</td><td>Seismic zone</td><td>Zone-II, Low damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002.</td></tr>
</table>

2.0. INTRODUCTION OF THE PROJECT / BACKGROUND INFORMATION

2.1. PROJECT AND THE PROPONENT

The Scheme of Mining Plan has been Prepared In respect of Multi Colour Granite Mine Over an extent of 1.05.5 Hectare of Consent Patta lands In S.F.Nos.511/1, 513/26 (Part) & 513/33 (Part) of Arasimani Bit II Village, Sankari Taluk, Salem District, of which M/s. Murugan Granite, No.77, Tiny Sector, SIDCO Industrial Estate, Ekkaduthangal, Chennai-600 32 Has a Mining Lease vide Government order (3D).No.21 Industries (MMB-2) Department dated 01.02.2006 for twenty years and the lease deed was executed on 11.03.2006.

The period of lease is for 20 years up to 10.03.2026. The mining plan was approved by commissioner of geology and mining, guindy, Chennai vide letter no.8307/MM5/2005 dated 27.01.2006. In the previous one scheme of mining plan was not prepared (2010-11 to 2015-16).

2.2. LOCATION

The Location of the area is given in Plate I. It is represented by Survey of India Topo sheet No. 58 E/14 with geological co-ordinates of latitude from 11^0 33'2.81"N to 11^0 33'3.01"N and longitude from 77^0 48' 27.14"E to 77^0 48' 28.83"E with elevation 330m above MSL. Geographical co-ordinates of pillars are as in table 2.1. Figure 2.1.

Table 2.1.: Latitude and Longitude of all Pillars reading

Label	Latitude	Longitude
1	11^0 33'2.81"N	77^0 48' 27.14"E
2	11^0 33'6.59"N	77^0 48' 27.90"E
3	11^0 33'6. 37"N	77^0 48' 29.35"E
4	11^0 33'8. 37"N	77^0 48' 29.64"E
5	11^0 33'7.58"N	77^0 48' 33.64"E
6	11^0 33'5. 53"N	77^0 48' 29.28"E
7	11^0 33'3.01"N	77^0 48' 28.83"E

Fig 2.2: Google image showing Lease boundary of the existing quarry

2.3. NEED FOR THE PROJECT

Polished Multi colour granite are widely used for decorative purposes in building, monument, Institutional, commercial and residential buildings in the form of slabs, tiles, cut to size, markers etc., Because of its high polishing nature and strength its commercial demand is increasing steadily in the world market, particularly in Italy, Spain, Switzerland etc. The applicant's area has found a type of Grey Granite with wave pattern of pink/violet/white minerals with black minerals. Its demand is high both in domestic and international market even for the rough blocks.

2.4. EMPLOYMENT GENERATION

Management and supervisory personal

For the purpose of Mines safety under the provisions of MMR, 1961 under the Mines Act, 1952.The Mining Engineer so appointed should have First/ Second class Mine Manager certificate to act as a Manager of the Mine as per the Mining laws. To supervise daily, of all workings and the persons employed therein the First/second class Manager so appointed must be assisted by a Foreman certificate holder. Wherever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision.

A mines clerk shall also be appointed to keep the registers and record of the mine and make necessary entries for the persons employed in the mines.

The following man power is proposed for quarrying multi colour granite during the five years period to achieve the proposed production and to comply the provisions of the government norms.

1.	Skilled	Operator	2 No
		Mechanic	1 No
		Blasters /Mat	1 No
2	Semi- skilled	Driver	2 No
3	Unskilled	Musdoor / Labours	5 No
		Cleaners	3 No
		Office Boy	1 No
4	Management & supervisory staff		3 No
	Total		18 Nos

3. PROJECT DESCRIPTION

3.1 METHOD OF MINING

Open cast, semi-mechanized mining is proposed with a bench height not exceeding 6m and bench width not less than the height and the slope angle of such benches and sides shall not be exceeded 60 degree from horizontal. The granite stones are to be extricated intact, without any damage to both the extricated part and the parent rock body and therefore, line drilling and blasting with conventional low explosives is proposed.

3.1.1 DRILLING

Conventional 32mm dia. blast holes will be drilled by using portable compressor (Shown in figure 3.1) along with jack hammers perfectly parallel to each other at 30-40cm intervals without any hole deviation, all along the required plane of splitting. The holes are drilled up to a depth up to few centimeters above the required horizontal plane. The depth of each hole is 2.5m for 3m bench height and the burden from preface depends upon the size of blocks. However, it is preferred to have less than 1m burden from the preface for splitting of blocks effectively. The spacing should be adjusted less than 30 cm, in case of burden if excess of 1.5m. Details of Drilling equipments are in table 3.1.

Table 3.1. Details of Drilling Equipments

Type	Nos.	Dia. Of Hole	Size/Capacity Make	Motive Power	H.P.
Jack Hammer	6	25.5mm	Hand held Atlas Copco	Diesel	60

Figure 3.1.: a) Jack Hammer drilling b) Compressor

Diamond Wire saw cutting is an eco friendly method of quarrying with high rate of recovery, thereby the conservation aspects of GCDR, 1999 is perfectly fulfilled.

3.1.2. BLASTING

A controlled Blasting technique is adopted to open a pre-determined crack of the block from the parent body. Shot-hole with 32-40mm dia. which are drilled by line drilling and Jack hammers at a close spaced interval of 30 cms will be initiated suitably with any one or more of the following methods,

i) Pre-splitting
ii) Cushing blasting with low strength and very low dia. Cartridges axial priming or standard dia. cartridge with intermittent stemming materials.
iii) Water impulsion with Detonating cords of sufficient power, preferably 10gms per metre to develop cracks along the line of drilling,

Figure 3.2.: Shot holes with low explosives connected with Detonating Cord (Trunk Line)

In watery holes, the detonating fuse is directly used and water act as a cushion to move the blocks and form a line of crack. In other cases, small vibration created by low explosives open the artificial shear plane \tensional crack formed by a line of drilling. Sometimes wedges are used to cut the major blocks into smaller sizes after drilling of holes to a depth of 30-40 cms. Then the blocks are dressed to desire sizes.

b) TYPE OF EXPLOSIVES

Common explosives used to develop a line of crack along the line of drilling are,

i) Detonating Fuse or Cord with 5-10gms of Expl. per metre,
ii) Low explosives like Gun powder or 70 gms of slurry cartridges,
iii) Ordinary Detonator, class- 6
iv) Safety fuse, class -6.

c) POWDER FACTOR

The Powder factor for waste rock development shall be 2 m^3 or 7 tonnes per Kg. of explosives.

d) STORAGE OF EXPLOSIVES

The applicant is directly purchasing explosives from an authorized dealer and they are blasting with help of blaster certificate holders. Agreement is made with License holder in Form-22 for store, use and sale of explosives.

3.1.3 LOADING

Hydraulic Excavators into 10 tonner's tippers shall be used for clearing of waste and rejects from the working place periodically. The applicant is engaging one Hydraulic excavator with 1.2m^3 capacity and tippers of 10 tonnes capacity for internal transport of rejects from the working face to the dumps. Details of loading equipments are in table 3.2.

3.1.4 HAULAGE AND TRANSPORT EQUIPMENT

Transport of Rejects and waste are removed by Tippers of 10tonne capacity as given in table 3.2.

Table 3.2 Loading Equipment

Type	Nos.	Bucket Capacity (m^3)	Make	Motive Power	H.P.
Hydraulic	1 No	1.2 m3	L&T or Ex 200	Diesel	120
Tipper	3 No	10 M.T	Ashok Leyland	Diesel	110

Fig 3.3:a) Hydraulic Excavator LC 330

b)Tipping Truck

3.1.5 MISCELLANEOUS OPERATIONS

i) A Genset is being utilized for operation of wire-saw machine and the oil engine is engaged for dewatering purpose,

Table 3.3 Specifications of GENSET

Type	Nos.	Capacity	Make	Motive Power	H.P.
Genset	1	125 KVA	---	Diesel	-

3.1.6. EXTENT OF MANUAL MINING

Manpower will be engaged for drilling shot-holes, line drilling, smooth blasting, Jet burner operation, dressing of granite blocks, cutting and removal of small amount waste or rejects and support service labours for operation of machineries.

The materials required for manual workings are listed as under,

1. Drill rods - 450mm, 800mm, 1650mm, 3900mm and up to 7200mm.
2. Steel alloy chains of sufficient lengths with dia. of 12 - 18mm with 'D' shackles.
3. Rubber hose and clamps
4. Feather and wedges of 15 cm and 30 cm sizes utilized for splitting of blocks.
5. Crow bars of 1500 - 1800mm lengths.
6. Spades, Sludge hammers, Iron Pans and chisels.

3.1.7. PUMPING

Dewatering arrangements shall be made to pump out the rain and percolation of ground water during rainy seasons. Pump with 30 H.P. capacities is available at site.

3.2 DETAILS OF EXPLORATION

Almost the entire granite Band length on the northern side is opened for winning the deposit and therefore no further trenching and pitting are required for this area except one core drilling to prove the depth continuity, colour, texture and recovery factor. The length and width of the deposit is well established in the working pit but the depth should be proved by drilling for proper planning of the mines. The proposed two core drilling shall be vertical and 30m depth with Nx and Bx standard size, should be drilled at the centre along Section A-B and C-D to probe the depth and quality of the deposit at deeper levels.

The Multi colour granite quarry is in operation for last 9 years 2253.966M^3 Multi colour granites blocks of have been removed and exported in raw forms as well as in processed form tiles till now. There are few Multi colour granite quarries in operation in the nearby year.

3.2.1 SAMPLING

In case of core drilling, the lithology, colour, texture, cracks, joints mineral grains alignment have to be observed and manual polishing and engineering properties can also studied for decorative purposes.

3.3 RESERVES

The geological and recoverable reserves are estimated by cross sectional methods up to a depth of 23 mts, as the multi colour granite. Plans and sections gave been drawn with scale of 1:1000 and 1:500 respectively.

3.3.1. Geological reserves

The Geological reserves are estimated as **199742M³** by area cross sectional methods.

TABLE-3.4 Geological reserves

Granite geological reserves						
Section	L	W	DEPTH	VOLUME M³	RESERVES 20% M³	REJECTS 80%M³
X Y-A1B1	51	46	18	42228	8446	33782
X Y-A2B2	60	48	23	66240	13248	52992
X1Y1-A3B3	47	70	19	62510	12502	50008
X1Y1-A4B4	47	36	17	28764	5753	23011
TOTAL				199742	39949	159793

3.3.2. Mineable reserves

Top soil: the thickness of topsoil noticed in this area is 3.0mts and the total volume of top soil will be 8019M³.The mineable reserves and the recoverable reserves are 48460M³ and 9692M³

TABLE-3.5 Mineable reserves

GRANITE MINEABLE RESERVES									
section	Bench	Length in (M)	Width In (M)	DEPTH In (M)	Volume In M³	Mineable reserves in M³	Multi colour granite 20% recovery In M³	Granite waste 80% in M³	Top Soil in M³
XY A1B1	I	19	8	3	456				456
	II	44	15	5	3300	3300	660	2640	
	III	39	15	5	2925	2925	585	2340	
	IV	34	5	5	850	850	170	680	
	V	29	5	5	725	725	145	580	
TOTAL						7800	1560	6240	456

XY A2B2	I	52	33	3	5148				**5148**
	II	49	27	5	6615	6615	1323	5292	
	III	44	17	5	3740	3740	748	2992	
	IV	39	7	5	1365	1365	273	1092	
	V	34	7	5	1190	1190	238	952	
TOTAL						**12910**	**2582**	**10328**	**5148**
X1Y1 A3B3	I	23	35	3	2415				
	II	52	35	5	9100	9100	1820	7280	
	III	42	35	5	7350	7350	1470	5880	
	IV	32	30	5	4800	4800	960	3840	
	V	22	25	5	2750	2750	550	2200	
TOTAL						**24000**	**4800**	**19200**	**2415**
X1Y1 A4B4	II	30	15	5	2250	2250	450	1800	
	III	25	5	5	625	625	125	500	
	IV	20	5	5	500	500	100	400	
	V	15	5	5	375	375	75	300	
TOATL						**3750**	**750**	**3000**	**0**
GRAND TOTAL						**48460**	**9692**	**38768**	**8019**

3.4. CONCEPTUAL MINING PLAN

3.4.1 Time frame of completion of mineral exploration program in leasehold areas. Give broad description identifying potential area to be covered in the given time frame.

The mining operation has been started immediately after that the execution of mining lease. The production was achieved 20% of the estimated total mineable reserves in the mining plan period. Since the nine has been taken to the depth of 6.0m in the North to Southern side. The persistence of block granite is predicted up to 23.0m depth and the configuration of the multi colour granite deposit is family known. Hence no exploration is proposed.

3.4.2 Whether ultimate pit limit has been determine and demarcated on surface and geological plan.

The ultimate pit limit of the mine has been determine and demarcated in the respective plan i.e., conceptual mining plan (refer plat No.VI).

Table 3.6. Ultimate pit dimension

Pit	Bench	Length in (M)	Width in (M)	Depth in (M)
I	I	19	8	3
	II	44	15	5
	III	39	15	5
	IV	34	5	5
	V	29	5	5
II	I	52	33	3
	II	49	27	5
	III	44	17	5
	IV	39	7	5
	V	34	7	5
III	I	23	35	3
	II	52	35	5
	III	42	35	5
	IV	32	30	5
	V	22	25	5
IV	II	30	15	5
	III	25	5	5
	IV	20	5	5
	V	15	5	5

3.5 YEAR WISE DEVELOPMENT FOR THE ENSUING FIVE YEARS PERIODS:

The year –wise development for the ensuing five years periods is shown in the plates with cross sections. In view of the development, the pits would have been widened and deepened by extending on Northern direction. Details of overburden/ minerals production proposed for five years**:**

3.6 A TOP SOIL / OVERBURDEN PRODUCTION DETAIL FOLLOWS:

Top soil: the thickness of topsoil noticed in this area is 3.0 mts and the total volume of topsoil will be 3081m^3

Table 3.7: Production

Granite production & development								
	L	W	D	Volume M^3	Reserves 20%M^3	Rejects 80% M^3	Top soil	Total rejects M^3
2016-2017	19 44	8 25	3 5	456 5500	- 1100	- 4400	456 -	4856
2017-2018	39 34	15 5	5 5	2925 850	585 170	2340 680	- -	3020
2018-2019	35 35	25 30	3 5	2625 5250	- 1050	- 4200	2625 -	6825

2019-2020	35	25	5	4375	875	3500	-	3500
2020-2021	30 25	20 15	5 5	3000 1875	600 375	2400 1500	- -	3900
TOTAL				26856	4755	19020	3081	22101

Table 3.8 year-wise production for the ensuing five year periods

Year	Total excavation Of ROM (in cum)	Percentage of recovery	Production for granite ROM (in cum)	Minerals rejects (in cum)
2016-2017	5500	20%	1100	4400
2017-2018	3775	20%	755	3020
2018-2019	5250	20%	1050	4200
2019-2020	4375	20%	875	3500
2020-2021	4875	20%	975	3900
TOTAL	**23775**		**4755**	**19020**

Table 3.9 Year – wise development for the ensuing five year period

Year	Minerals rejects (in cum)	Total waste (in cum)
2016-2017	4400	4856
2017-2018	3020	3020
2018-2019	4200	6825
2019-2020	3500	3500
2020-2021	3900	3900
Total	**19020**	**22101**

The recovery percentage for the ensuing mining scheme periods has been calculated based on the practical experience gained during the mining operation.

3.7. WASTE GENERATION

The waste / rejects materials are generated during these periods are also proposed to dumping to the waste & southeastern side of the 7.5m boundary barrier & non – mineable lease area. The temporary dumping details are furnished below for the next five years.

Table 3.6 Granite Rejects/Waste

	Overburden	**Minerals rejects**
Length (m)	246.0	48.0
Width (m)	7.5	29.0
Height (m)	2.0	4.0
Volume (m)	3081	19020

4. SITE ANALYSIS

4 .1 PHYSIOGRAPHY

The area is a sloping ground towards South. The altitude of the area is about 330m above MSL. Ti has a gentle towards South.

It is dry land and is found to be unfit for even seasonal cultivation. In some area in this region, agriculture is done with fit irrigation. The main crops are coconut, paddy, groundnut, maize, cereals etc., there are few villages located within the 5kms radius of lease area and approximate distance with direction & population are given below.

Direction	Village	Distance in kms	Population
North	Malaiyanur	3.5kms	600
West	Arasiramani Bit-II	2.0kms	350
East	Samukkalakkattu	4.0kms	250
South	Mattampatti	2.0kms	200

Water table is found at a depth of 50m, I summer and at 40m in rainy season. The area receives rain fall of about 600 to 700 mm/per annum and the rainy period is mainly from Oct-Jan during North East monsoon. The summer is hot with maximum temperature up to 43^0 C. the area experiences climate and cold during rainy seasons. The average rainfall 700mm per annum. There are no national parks, historical monuments, place of public interest, place of worship; wild life sanctuary etc. electric power lines are available for electrification of mine. M/s. Gogul Granites is located to the Northern side of the area.

4.2 GEOLOGY:

Regional Geology:

Precambrian rocs of Tamil Nadu in their mutual interactions and intercalations and younger intrusive granite given rise verities of dimensional stone granite deposits which are well known in world market.

Younger intrusive granite mainly of white pegmatoidal granite in the garnetiferous hornblende biotite gneiss occurs as lensoidal boby in between idappadi and trichengode is commercially known as Tippu white/ Imperial white. Subsequent introduction of pink granite in to the white pegmatoidal granite has added pinkish colour to the granite. When the pegmatoidal granite is white, is commercially known as Tippu white and when it is pinkish it is commercially known as Imperial white. Granite is only a popular commercial term. Granite in pertrology is the group name for a family of Hypobyssal igneous rocks having an ophitic texture characterized essentially by pyroxene (Augite) and some ferro-magnesium minerals (Pyroxenre).

Granite was formed from molten rock referred to as 'Magma' formed at great depths within the crest of the earth. During the cooling process, some of the minerals grow into larger crystals of colors peculiar to those minerals or get-aligned along certain preferred directions giving rise to beautiful colors and patterns. Such rocks that were formed at great depths during the Achaean

age and now exposed at the surface of the earth as a result of the combined and continued actions of wind, air, sun and water weathering and denudating them over the past several million years. Due to the emplacement of dolerite dykes along narrower planes of weakness, the rock on solidification develops cracks and fractures mostly along the contracts with the country rock. The dolerite is mostly emplaced as 'Swarms' in an area.

4.3. CLIMATIC CONDITIONS

Generally sub tropical climate condition prevails throughout the year and this district receives rain both in south west and north east monsoon. The average rainfall is about 600mm to 700mm and the temperature ranges from 30^0c during winter and to a maximum of 43^0c during the summer.

4.4 LAND USE PATTERN

4.4.1 Existing land use pattern:

The area is a sloping ground towards south. The altitude of the area. Is about 330m above MSL. It has a gentle towards south.

Table 4.1 Land Use Pattern

S.No	Description	Present Area (H)	Area in use during the quarrying period (H)
01	Mining (Quarry)	0.32.0	0.35.0
02	Minerals reject dump	Nil	0.37.0
03	Office-infrastructure	Nil	0.02.0
04	Mine Roads	0.02.0	0.03.0
05	Area under plantation	Nil	00.24.0
06	Unutilized Area	0.71.5	0.04.5
	TOTAL	**0.71.5**	**1.05.5**

4.5. SOCIO ECONOMIC

Table 4.2. shows the villages found in the buffer zone with population as per 2011 census.

Table 4.2.: Population of the nearby habitation

Name of Village	Direction	Distance from Mines (Approx)	Population
North	Malaiyanur	3.5km	600
West	Arasiramani Bit-II	2.0km	350
East	Samukkalakkattu	4.0km	250
South	Mattapattu	2.0km	200

4.5.1 Population Characteristics – Arasiramani Village

Table 4.3Population Characteristics-Arasiramani Village, Sankari Taluk, Salem District (2001-2011)

S. no	Characteristics	2001	%	2011	%
1	Total Household	3631		3970	
2	Total Population	13815		14834	
3	Male Population	7262	52.57	7665	51.67
4	Female Population	6553	47.43	7169	48.33
5	Total Literacy	5918	42.84	8634	58.20
6	Male Literacy	3893	53.61	5226	68.18
7	Female Literacy	2025	30.90	3408	47.54
8	Sex Ratio		902.4		935.3

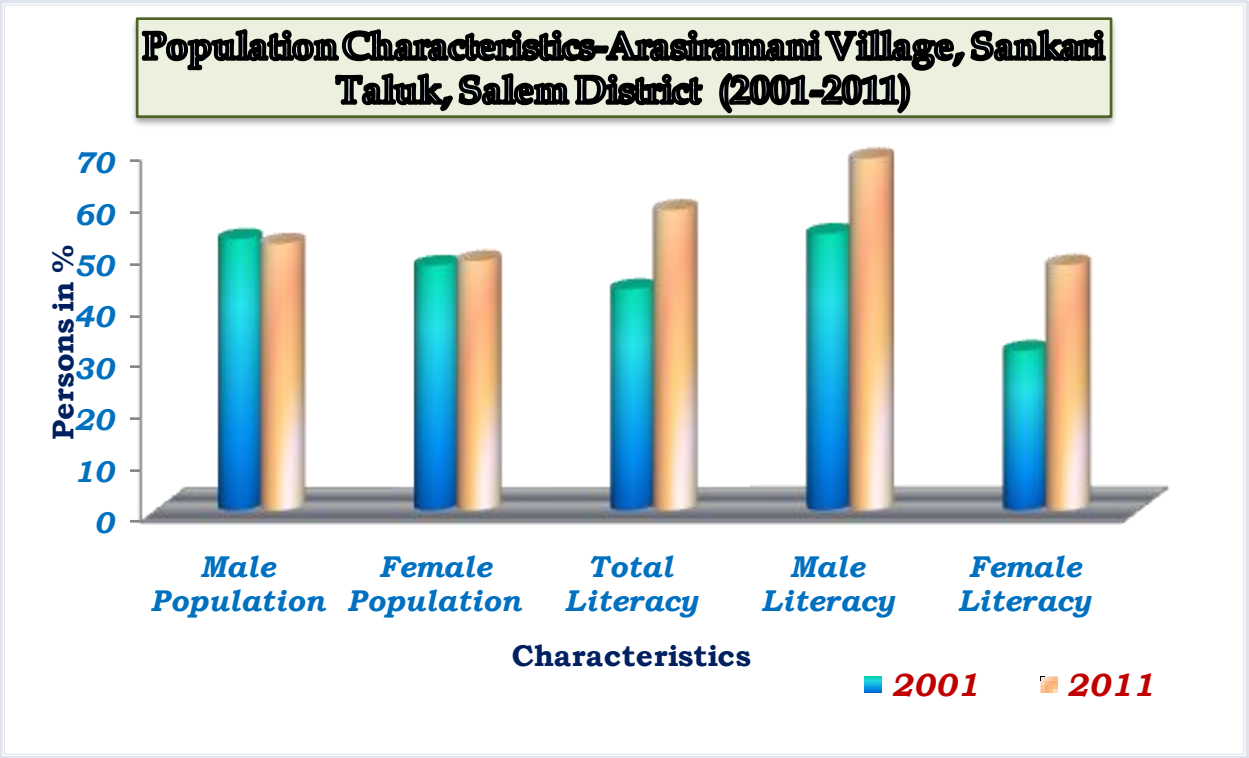

Fig No.4.1: population Characterics – Arasiramani Village, Sankari Taluk, Salem District

4.5.2. Occupational Characteristics- Arasiramani Village

Table 4.4 Occupational Characteristics of Population -Arasiramani Village, Sankari Taluk, Salem District (2001-2011)

Sno	Characteristics	2001	%	2011	%
1	Total Population	13815		14834	
2	Male Population	7262	52.57	7665	51.67
3	Female Population	6553	47.43	7169	48.33
4	Total Workers	8699	62.97	8660	58.38
5	Male Workers	4591	63.22	4777	62.32
6	Female Workers	4108	62.69	3883	54.16
7	Total Main workers	8245	59.68	7486	50.47
8	Male Main workers	4458	61.39	4169	54.39
9	Female Main Workers	3787	57.79	3317	46.27
10	Total Cultivators	2886	33.18	1585	18.30
11	Male Cultivators	1525	33.22	825	17.27
12	Female Cultivators	1361	33.13	760	19.57
13	Total Main Agricultural Labourers	3895	44.78	3185	36.78
14	Male Agri.Labourers	1850	40.30	1567	32.80
15	Female Agri.Labourers	2045	49.78	1618	41.67
16	Total Main HHI	151	1.74	381	4.40
17	Male HHI	91	1.98	159	3.33
18	Female HHI	60	1.46	222	5.72
19	Total Main Other Tertiary workers	1313	15.09	2335	26.96
20	Male OT	992	21.61	1618	33.87
21	Female OT	321	7.81	717	18.47
22	Total Nonworkers	5116	37.03	6174	41.62
23	Male Nonworkers	2671	36.78	2888	37.68
24	Female Non workers	2445	37.31	3286	45.84

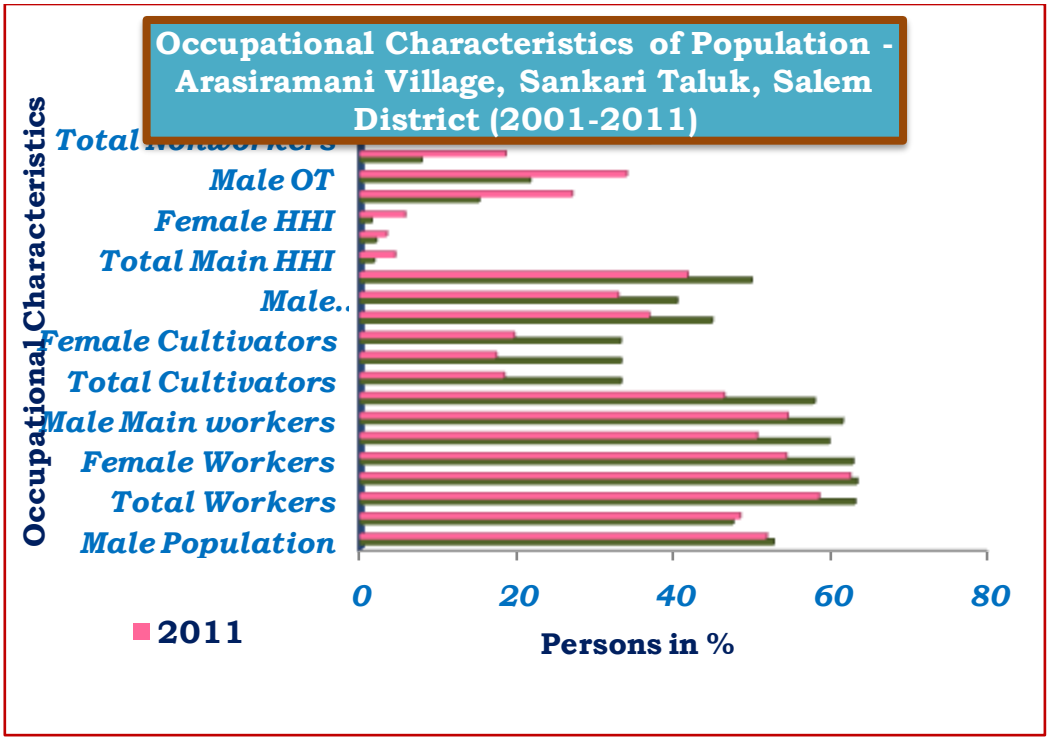

Fig No.4.2: occupational characterics of population – Arasiramani Village, sankari Taluk, Salem District.

4.6. INFRASTRUCTURE AND ACCESSIBILITY

Figure 4.3. Shows the route to site and table 4.5. Gives the infrastructures available from the lease area with distance and direction

Figure 4.3.: Accessibility to the site

Table 4.5.: Infrastructures

S. No.	Particulars	Location	Approximate Distance in Km	Direction
1.	Post office	Kullampatti	5	West
2.	Town	Sankari	13	South
3	Road	Sankari to Salem	2.5	West
3.	Police Station	Sankari	13	South West
4.	Fire Station	Sankari	13	South
5.	Govt. Hospital	Sankari	13	West
6.	School	Kumampatti	5	West
7.	DSP Office	Sankari	22	South
8.	Railway Station	Sankari	13	South
9.	Nearest Airport	Omalur	30	North
10.	Union	Sankari	22	South
11.	Villages			
	i)	Malaiyanur	3.5	North
	ii)	Arasiramani Bit-II	2.0	West
	iii)	Samukkalakkattu	4.0	East
	iv)	Mattampatti	2.0	South

4.7. FLORA AND FAUNA

Since the sub-seed area is a stony waste, it does not contain much vegetation and villages. There is no report of existence of wild animals in this region.

4.8. POWER LINES (HT / LT)

There is no HT or LT line found in the lease area.

4.9. WATER BODIES

The ground water table is reported as 40m below ground level in nearby wells of this area. The present quarry is proposed above the water table and hence, quarrying may not affect the ground water.

4.10. ARCHAEOLOGICAL / HISTORICAL MONUMENTS

No infrastructures and places of interest like archeological monuments, Sanctuaries, bridges etc are found within 500m radius.

4.11. ROAD (NH, SH OTHERS)

A state highway from Sankari to Salem is about 2.5 km in west direction from this mine.

4.12. RESERVED FOREST/FOREST/SOCIAL FOREST/WILD LIFE SANCTUARY ETC...

There is no public building places of worship or archaeological or national monuments near the area. The area does not fall under Hill Taluk as notified by Hill Area Conservation Authority. There is no wild life or bird sanctuary or no reserves or any protected social forest closer to the area. Suriyamalai reserved forest is at a distance of more than 600 m from the lease area

5. PLANNING BRIEF

5.1. PLANNING CONCEPT

Excavation of the granite blocks is planned and described in section 3.1 and 3.4. Proposed land is a Patta land which does not come under Residential, Forest or any other sensitive land classification. As a small project, it is not demanding any town or country planning. However, approach roads and haul roads will be laid for the transportation of excavated materials to the market and to the dump.

5.2. POPULATION PROJECTION

Populations of the nearby villages are as in table 4.2. Population characteristics and Occupational characteristics of the Arasiramani Village, sankari Taluk, Salem District is given in table 4.3 and 4.4 respectively. The proposed project will not affect the village population, and hence population projection is not significant. However, it provides occupation to about 18 persons of which 80% of them will be from the local villages. Other than mine employment, workshops, spare parts, tyres and tubes and related several self-employment opportunities.

5.3. LAND USE PLANNING

Existing and proposed land use pattern is given in clause 15 of Table 1.1. About 16% of the area will be left un-worked land after 5 years.

5.4. INFRASTRUCTURE DEMAND

Labour shed, Surface latrines and urinals are required to be constructed easily accessible from the working area. Green belt is proposed which is given in afforestation plan (Table 5.1). No other infrastructures required. 50 neem trees per year were planted as proposed in the mining plan. The survival rate is less than 80% due to scarcity of rainfall. In the ensuing five years period 30 Neem trees per annum is proposed to be planted.

5.5. ENVIRONMENTAL MANAGEMENT PLAN

There would not be any adverse impact in the existing environment arising from this mining activity. To protect the environment, the proponent would do adequate afforestation program and spend CSR at a rate of 2.5% of the turnover to the local panchayat.

Salient Items	Proposal as per Approved Mining	Position at the end of five years	Proposal for the next five years
1. Topsoil belt storage and preservation	Top soil was proposed to use for dump afforestation	A little amount top soil and spread over the same dump for plantation	A little amount top soil
2. Reclamation and Rehabilitation	No land reclamation and rehabilitation proposed	Does not arise	No proposal
3. Waste dump Management :	Separate dumps proposed for top soil, rejects and waste.	Waste shall be dumped over along lease boundary	Waste shall be dumped over the along lease boundary
4. Afforestation Programme	20 trees per annum proposed for plantation	Totally 20 trees were planted along the mine road	40 trees will be planted per year as per Plate VI
5. Quality of Air	Small mine	No proposal is given	--
6. Quality and Make up of water	Drinking water is provided through public source only. No major seasonal drainages.	No effect for surface or ground water sources.	As per the previous Mining Plan
7. Noise Level	No machineries	No Impact	No proposal
8. Vibration	Does not arise	No impact	No proposal
9. Treatment of Mine Water	Does not arise	No impact	No proposal

5.6. AMENITIES/ FACILITIES

List of equipments and materials required are discussed in Chapter 3 and listed in Table 3.1 to 3.3.

6. INFRASTRUCTURES AND WELFARE MEASURES

6.1. GREEN BELT

Afforestation plan is proposed to develop a green belt around the mining lease as in table 5.5 of chapter 5.

6.2. EMPLOYMENT POTENTIAL

The proposed project will enhance the socio-economic activities in the adjoining areas. Several shops and service providers shall grow in the public adjacent to mines. Schools and city development shall also be possible owing to the fact of economic growth in the village. This will result in following benefits

- Improvements in physical infrastructure.
- Improvements in Social Infrastructure.
- Increase in Employment Potential
- Contribution to the Exchequer.
- Prevention of illegal mining.
- During and Post-mining enhancement of green cover.

6.3. ROADS

The mine is conveniently located for transporting labours and materials to quarry. A state highways from sankari to Salem are located about 2.5 km is west direction from this mine. In the mine area the operating pits are well connected with ramps/roads for transporting granite blocks, materials.

6.4. DRINKING WATER

Whole some drinking water shall be provided as per the Mines Rules, 1955. Quantity for Drinking and utilities is 2.0KLD. Dust suppression and Green belt of water is 3.0KLD.Minimum quantity of 5.0KLD has to be maintained as per the Rule. And the lessee is getting from bore well, for drinking and cleaning blocks.

6.5. SANITARY FACILITIES

Surface latrines and urinals shall be constructed at convenient places for use of labours as per the provisions of Rule (33) of the Mines Rules, 1955 separately for males and female. The scale of latrine shall be one for every 50 employees for the purpose of calculating the number of latrines. Washing facilities shall also be arranged as per the Rule (36) of the MR, 1955.

6.6. FIRST AID FACILITY

First Aid station as per provisions under Rule (44) of the Mines Rules 1955 will be provided with facilities as prescribed in third schedule. Qualified First Aid personnel

should be appointed or nominated to attend emergency first aid treatment.

6.7. LABOUR HEALTH

Periodic medical examination has to be arranged for occupational health once in a year in addition to attending medical treatment of occupational injuries under the Rule 45 (A) of MR, 1955.

6.8. PRECAUTIONARY SAFETY MEASURES TO THE LABOURERS

Safety provisions like helmet, goggles, safety belt, safety shoes etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS.

6.9. CHILD LABOUR EMPLOYMENT

As per the Mines Act, 1952, no child labour below 18 years of old shall be engaged for any work in the quarry.

6.10. SOLID WASTE MANAGEMENT

All top soil shall be dumped along lease boundary for plantation purposes over inactive dumps after the end of mining operation. Dump dimensions are given in table 6.1.

Table 6.1.: Dump Dimensions (m)

Description	Volume (m^3)
Top soil (Earth bund)	3081
Reject	19020
Total	**22101**

All the rejects materials shall be dumped on the lease boundary. Being a working mine, the approach road is already available on the northern side and the exiting road within the mines shall be used for proper transport of materials by tippers\dumpers. For convenience of operation and increase of production together with safety and environment, it is designed parallel to the strike length over the good quality portion for the next five years.

6.11. POWER REQUIREMENT AND SOURCE

Details of the power requirement for the equipments are given in table 3.1 to 3.3. Fuel required will be outsourced. Presently no electrical power given to the office or any other part of the leased area. So, they are not working in shifts. No work is allotted to anybody in the mine area after 5.30 pm.

7. RECLAMATION AND REHABILITATION PLAN

No much disturbance was observed in area a respect of fauna, flora and human settlement of the villages. The applicant has to rehabilitate the old dumps and stabilize it with local inhabitants. Similarly the workings should be safe guarded from the inadvertent entry by proper fencing (S1 type). After completion of mining the land will be used as storage of rain water to percolation that the ground water will be charged to increase ground water level. And fish culture will be developed with aesthetic planting around mines like park. Top Soil, a precious product of mother earth will be made used for this rehabilitation and land reforming. Resettlement plan is not required since no shifting of existing settlements.

8. PROJECT COST

8.1. PROPOSED FINANCIAL ESTIMATE

a) Project cost / investment

i)	Land Cost	:	Rs	15,00,000
ii)	Machinery to be used	:	Rs	1,20,00,000
iii)	Refilling / Fencing	:	Rs	75,000
iv)	Labourers Shed	:	Rs	75,000
v)	Sanitary facility	:	Rs	50,000
vi)	Other items	:	Rs	75,000
	Total		**Rs**	**137.75 lakhs**

b) EMP Cost

i)	Drinking water facility for the labourers	= Rs 70,000
ii)	Sanitary arrangement	= Rs 70,000
iii)	Safety Kits,	= Rs 75,000
iv)	Water sprinkling for dust control	= Rs 75,000
v)	Afforestation etc	= Rs 50,000
	Total	**Rs. 3.60 lakhs**

8.2. ABANDONMENT COST

Being a deep dipping deposit and depth persistence is yet to be established by proposed exploration and therefore program of back filling or reclamation of Land will be considered after completion of exploration to ascertain the cut-off limit of Mining. However budgetary provisions for Afforestation program and rehabilitation of the Area shall be carried out with cost as given below,

i) Budgetary Provisions under abandonment

Particulars	At the end of 5th year	At the End of Life of Mine
i) Afforestation (Planting and Securing)	Rs.20,000	Rs.1,00,000
ii) Backfilling	---	Rs.3,00,000
iii) Rehabilitation of Area (Dump Grading)	---	Rs1,50,000
iv) Construction of Parapet	---	Rs.50,000
	Rs.20,000	**Rs.6,00,000**

ii) Year wise break up details are given as below,

S.No.	Budget for EMP		
	Description	Area covered (Hec)	Expenditure (Rs)
1	Reclamation & Rehabilitation of mined out area	Nil	Nil
2	Stabilisation & Rehabilitation of dumps	Nil	Nil
3	Afforestation	Nil	Rs.10000/year

Total budget for Afforestation for 1 year = Rs 10,000

iii) Budget provision for Environmental monitoring (under EIA & EMP)

Air sampling SPM & gaseous matter (Rs)	Water Analysis (for 23 elements) (Rs)	Noise (Rs)	Ground vibration (Rs)
4000 per station x4 = Rs. 16000 x 2 season =Rs. 32000/year (Core zone only)	7000 x 2 = Rs. 14000\year (Core zone only)	3000 x 2 = Rs. 6000/year (Core zone)	Not required

Totally **Rs.52,000** per year shall be allotted for monitoring of EMP. No abandonment during next three years and therefore no budget are allotted for the one year. Total budget for Afforestation and EMP shall be,

Expenditure = Rs 10000+ 52000 = Rs.62,000 per year
Period = 5 years
Budget Amount = Rs. **3, 10,000** for three years

9. ANALYSIS OF PROPOSAL

The quarrying activities in this belt will benefit to the local people both directly and indirectly. The direct beneficiaries will be those who get employed in the mines as skilled and un-skilled workers.

There will be no environmental impact from the project since the scale of operation is very minimum. This operation doesn't need relocation of any habitats.

CSR shall be provided by the applicant at the rate of 2.5% of the turnover to the society of the Arasiramani Bit-II village.

The mined out area shall be used partly for storage of rainwater and rest for horticultural developments. The applicant shall plant sufficient number of trees around the lease boundary as well as along the village road to keep the environment green.

Date: 6.07.2017

Place: Salem

For Aadhi Boomi Mining & Enviro Tech (P) Ltd.,

Director

(M/s.Murugan Granites)
Applicant

(S.SURIYAKUMAR)
M.Sc., M.Phil, F.C.C. (Min) PGDBA, DIPC.
Signature of EIA coordinator (Mining)