BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,

SOUTHERN ZONE, CHENNAI

APPEAL NO. 45 OF 2024 (SZ)

M/s.Stone Trust Enterprises,

Rep. by its Partner Mr.K.P.Mithun Kumar,

... Appellant

Versus

Ministry of Environment, Forest and Climate Change (MoEF & CC),

Rep. by its Secretary (EF & CC),

& 2 Others

... Respondents

INDEX
COMPILATION VI

Sl. No.	**Date**	**Description of Documents**	**Annexure**	**Page No.**
1	**30.04.2019**	Approved Mining Plan along with Google Images	**A135**	**1300 - 1337**

Dated at Chennai on this 21st day of October, 2024

K. Priyanka

COUNSEL FOR APPELLANT

MINING PLAN FOR SEMMEDU BLACK GRANITE (DOLERITE)

(Under Rule 19A of TNMMCR 1959 & Rule 12, 13 & 16 of Granite Conservation and Development Rules, 1999)
Patta Land/ Lease Period: 20 Years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT	:	3.06.0 HECTARES
S.F.Nos.	:	22/1, 23/1,2, 24/7,8,25/1 and 25/2
VILLAGE	:	SEMMEDU
TALUK	:	VIKRAVANDI
DISTRICT	:	VILUPPURAM
STATE	:	TAMIL NADU

FOR

APPLICANT/LESSEE

M/s. STONE TRUST ENTERPRISES,

No. 7/4, 8th Street,
Nandanam Extension,
Chennai,
Tamil Nadu – 600 035.

PREPARED BY

S. ILAVARASAN, M.Sc.,
Recognised Qualified Person
RQP/MAS/253/2013/A

New No.17, Advaitha Ashram Road,
Alagapuram,
Salem – 636 004.
Cell: Cell: +91 94422 78601, 94433 56539
E-mail: ifthiahmed@gmail.com, geothangam@gmail.com

M/s. STONE TRUST ENTERPRISES,
No. 7/4, 8th Street,
Nandanam Extension,
Chennai,
Tamil Nadu – 600 035.

DIRECTOR OF GEOLOGY AND MINING * GUINDY, CHENNAI - 600 032.

CONSENT LETTER FROM APPLICANT

The Mining Plan in respect of Semmedu Black Granite over an extent of 3.06.0 Hectares of Patta Lands in S.F.Nos. 22/1, 23/1, 23/2, 24/7, 24/8, 25/1 and 25/2 of Semmedu Village, Vikravandi Taluk, Viluppuram District, Tamilnadu State has been prepared by

S. ILAVARASAN, M.Sc.,
Recognised Qualified Person
RQP/MAS/253/2013/A

I request the Director, Department of Geology and Mining, Chennai to make further correspondence regarding the modification of the Mining Plan with the said Recognised Qualified Person at his following address.

S. ILAVARASAN, M.Sc.,
New No: 17, Advaitha Ashram Road,
Alagapuram,
Salem – 636 004.
Cell: 94422 78601, 94433 56539.

I hereby undertake that all the modifications, if any made in the mining plan by the Recognised Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of the applicant
For M/s. Stone Trust Enterprises,

(K.P. Mithun Kumar)
Partner

Place: Chennai

Date: 05.02.2019.

M/s. STONE TRUST ENTERPRISES,
No. 7/4, 8th Street,
Nandanam Extension,
Chennai,
Tamil Nadu – 600 035.

DECLARATION OF APPLICANT

The Mining Plan in respect of Semmedu Black Granite over an extent of 3.06.0 Hectares of Patta Lands in S.F.Nos. 22/1, 23/1, 23/2, 24/7, 24/8, 25/1 and 25/2 of Semmedu Village, Vikravandi Taluk, Viluppuram District, Tamilnadu State has been prepared in full consultation with me by

S. ILAVARASAN, M.Sc.,
Recognised Qualified Person
RQP/MAS/253/2013/A

I have understood its contents and agree to implement the same in accordance with Laws applicable to Mines.

Signature of the applicant
For M/s. Stone Trust Enterprises,

(K.P. Mithun Kumar)
Partner

Place: Chennai

Date: 05.02.2019.

S. ILAVARASAN, M.Sc.,
New No: 17, Advaitha Ashram Road,
Alagapuram,
Salem – 636 004.
Cell: 94422 78601, 94433 56539.

CERTIFICATE FROM THE RECOGNISED QUALIFIED PERSON

This is to certify that the Provisions of Granite Conservation and Development Rules, 1999 as amended in Tamil Nadu Minor Mineral Concession Rules, 1959 have been observed in the preparation of Mining Plan for Semmedu Black Granite over an extent of 3.06.0 Hectares of Patta Lands in S.F.Nos. 22/1, 23/1, 23/2, 24/7, 24/8, 25/1 and 25/2 of Semmedu Village, Vikravandi Taluk, Viluppuram District, Tamilnadu State has been prepared for

M/s. STONE TRUST ENTERPRISES,
No. 7/4, 8th Street,
Nandanam Extension,
Chennai,
Tamil Nadu – 600 035.

Whenever specific permissions/exemptions/ relaxations and approvals are required, the applicant will approach the concerned authorities of Director of Geology and Mining, Government of Tamilnadu, Guindy, Chennai– 600 032 for such permissions/ exemptions/ relaxations and approvals.

It is also certified that information furnished in the above Mining plan are true and correct to the best of my knowledge.

Signature of the RQP

S.ILAVARASAN, M.Sc.,
RQP/MAS/253/2013/A

Place: Salem

Date: 08.02.2019.

S. ILAVARASAN, M.Sc.,
New No: 17, Advaitha Ashram Road,
Alagapuram,
Salem – 636 004.
Cell: 94422 78601, 94433 56539.

DIRECTOR OF GEOLOGY AND MINING

CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations made there under have been observed in the preparation of Mining Plan for Semmedu Black Granite over an extent of 3.06.0 Hectares of Patta Lands in S.F.Nos. 22/1, 23/1, 23/2, 24/7, 24/8, 25/1 and 25/2 of Semmedu Village, Vikravandi Taluk, Viluppuram District, Tamilnadu State has been prepared for

M/s. STONE TRUST ENTERPRISES,
No. 7/4, 8th Street,
Nandanam Extension,
Chennai,
Tamil Nadu – 600 035.

Whenever specific permissions/exemptions/ relaxations and approvals are required, the applicant will approach the concerned authorities of the Director of Mines Safety (DGMS), No. 5, IInd Street, Block – AA, Anna Nagar, Chennai, Tamil Nadu for such permissions/ exemptions /relaxations and approvals.

It is also certified that information furnished in the mining plan are true and correct to the best of my knowledge.

Signature of the RQP

S.ILAVARASAN, M.Sc.,
RQP/MAS/253/2013/A

Place: Salem
Date: 08.02.2019.

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MINING PLAN FOR SEMMEDU BLACK GRANITE (DOLERITE)

(Under Rule 19 A of Tamil Nadu Minor Mineral Concession Rules, 1959 and Rule 12, 13 & 16 of Granite Conservation and Development Rules, 1999)

I. INTRODUCTION:

The present mining plan has been prepared to quarry Black granite (Dolerite) belonging to **M/s. Stone Trust Enterprises,** having an office at No. 7/4, 8th Street, Nandanam Extension, Chennai, Tamil Nadu – 600 035, for which precise area communication has been granted as per Govt. letter No.118/MMB.2/2019-1, dated 04.02.2019 with the conditions to provide:-

1. A Safety zone of 7.5 meters should be left out for the adjacent patta lands.
2. A Safety distance of 50 meters should be provided to the Eri in S.F.No. 34 situated on the west and southern side of the applied area.
3. The boundaries of the proposed area for the grant of Black granite quarry lease over an extent of 3.06.0 hectares in S.F.Nos. 22/1(0.70.5), 23/1(0.58.5), 23/2(0.61.5), 24/7(0.28.5), 24/8(0.18.5), 25/1(0.28.0) and 25/2(0.40.5) of Semmedu Village, Vikravandi Taluk, Viluppuram District should be fixed and the District Administration/ Geology and Mining Department should ensure that the quarrying operation should be restricted in the area granted on lease.
4. Barbed wire fencing or compound wall should be erected all along the boundary of the lease granted area.
5. Quarrying activity should be carried out from 7.00 A.M. to 5.00 P.M. only.
6. As per rule 12(v) of Mineral (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at his own expense, erect, maintain and keep in repair all boundary pillars.
7. The applicant firm should fence the lease granted area with Barbed wire before the execution of lease deed as follows:
   - ❖ The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters and the distance between two pillars shall not be more than 3 meters.
   - ❖ The applicant firm shall incorporate the DGPS reading for the entire boundary pillars of the area and the same should be clearly shown in the mining plan and submit in CD/DVD form to the Assistant Director of Geology and Mining, Viluppuram.
   - ❖ A soft copy of the map with DGPS readings should be submitted in the CD form.

8. Environment Clearance should be obtained from the competent authority/ DEIAA, Viluppuram in respect of the area applied for quarry lease as per the orders of the Hon'ble Supreme Court of India, dated 27.02.2012 in IA. No. 12-13/2011 in SLP(C) No.19629/2009 and Office Memorandum No.L.11011/47/2011-1A II(M) dated 18.5.2012 of the Ministry of Environment and Forests, Government of India and as per Rule 42 of the Tamil Nadu Minor Mineral Concession Rules, 1959.
9. The applicant firm shall strictly adhere to the statutory and safety requirements.
10. Quarrying shall be done as per the approved mining plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
11. The applicant firm shall submit scheme of mining; mine closure plan and other statutory requirement within the time stipulated for submission of the above, as per rules.
12. The child labour should not be engaged in the quarry works.
13. No hindrances shall be caused to the adjacent patta lands and no damage shall be caused to the adjoining Government poramboke lands while quarrying and transportation of granite.
14. The conditions imposed in G.O. (Ms) No.79, Industries Department, dated 06.04.2015 should be complied with.
15. The applicant firm should use mild explosives during quarrying.
16. The waste material generated during the time of quarrying should be dumped only within the lease hold area that will be earmarked for the purpose in the mining plan as per Rule 31 of Granite Conservation and Development Rules, 1999.
17. The District Collector, Viluppuram shall obtain a sworn-in-affidavit from the appellant containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No. 12789/MMB2/2002-7 Industries Department dated 9.1.2003 are complied with.

(Please refer Annexure – I).

The applicant ensures to comply all the conditions stipulated by the Government before the execution of lease deed and during the course of quarry operations.

This mining plan has been prepared by keeping and considering all the parameters stipulated by the Government of Tamilnadu before and during the course of quarry operations.

2.5 NAME AND ADDRESS OF THE PROSPECTING AGENCY

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the Regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping of the commercial granite deposits of Tamil Nadu. If any drilling program carried out in the granite formations, there is defects like cracks and fractures will generated and developed during drilling time. Besides, the qualified person and his team members made a detailed geological study of the area and demarcated the deposit clearly with a mine surveyor. The Black granite deposit is clearly visible right from the surface outcrops and detached black granite boulders are randomly spread out within the applied area.

Address of the prospecting Agency:

(i) STATE GEOLOGICAL DEPARTMENT
O/o The Director of Geology and Mining
Tiru Ve Ka industrial Estate,
Guindy, Chennai – 32.

2.6 DETAILS OF THE AREA:

a. The area is marked in the Geological Survey of India, Topo sheet no. 57–P/ 08.

b. The details of the land covered by the area are given below.

Table -2

District & State	Taluk	Village	S.F.No.	Area in Ha.	Patta No	Ownership occupancy
Viluppuram & Tamilnadu	Vikravandi	Semmedu	22/1	0.70.5	595	Company's own Patta land (Annexure No. IV –VI)
			23/1	0.58.5		
			23/2	0.61.5		
			24/7	0.28.5		
			24/8	0.18.5		
			25/1	0.28.0		
			25/2	0.40.5		
Total				**3.06.0**		

The area lies between the Latitudes of 12°02'34.75"N to 12°02'42.20"N and Longitudes of 79°24'33.23"E to 79°24'40.69"E on WGS datum-1984. (Plate No. I & II).

2.7 WHETHER THE AREA RECORDED TO BE IN FOREST DEPARTMENT:

The area does not falls under forest land of any category. It is a patta land.

2.8 PERIOD FOR WHICH THE MINING AREA IS REQUIRED:

Twenty years only.

2.9 INFRASTRUCTURE:

The lease applied area is situated around 700m north of Semmedu hamlets and 350m west of Siruvalai - Vellaiyampattu Road (Major District Road – 807).

The nearest town is Viluppuram which is located at 15km southeastern side of the area where all basic facilities like Hospital, Communication centre, Schools, Police Station, Bus terminus, District head-quarters and District Administrative office are available at Viluppuram which is located at 15km on the southeastern side of the area.

There is good approach (cart track) road is already existence on the northern side which leads to Siruvalai - Vellaiyampattu Road to a distance of 350m. There is no other patta land encountered for the haulage of Black Granite (Please refer Plate No. IA to IC).

Table – 3

Particulars	Location	Approximate aerial distance from lease applied area(km and direction).
Nearest Post Office	Anniyur	3-NW
Nearest School	Anniyur	3-NW
Nearest Dispensary	Anniyur	3-NW
Nearest Police Station	Anniyur	3-NW
Nearest govt. Hospital	Viluppuram	15-SE
Nearest Town	Viluppuram	15-SE
Nearest D.S.P. Office	Viluppuram	15-SE
Nearest Railway Station	Viluppuram	15-SE
Nearest Airport	Chennai	150-NE
Nearest Seaport	Chennai	150-NE

There is no permanent structure like National monument, Place of worship and place of Archaeological interest recorded within 300m radius of the area.

WATER:

Packaged drinking water is available from the water vendors in Viluppuram town, also ground water is potable without adverse any health effects. The water table is situated about 51m in summer and 47m in rainy season below from ground level this is observed from the nearby bore wells.

RIVERHEAD:

There is an Eri situated on the south and western side of the area. A safety distance of 50m has been provided for the Eri except this, no major water body like River, Reservoir, Canal, etc., located within 50m radius of the area.

3.0 GEOLOGY AND RESERVES

3.1 PHYSIOGRAPHY

The area is situated in flat terrain. The gradient is gentle towards southwest and altitude of the area is about 75m above from MSL. The Black granite is mostly concealed under reddish soil. The black granite exposures and detached boulders are observed with Spheroidal weathering and cuboidal joints (which is the characteristic feature of the Dolerite). The Dolerite dyke is intruded between the batholithic formations of Hornblende Biotite Gneiss. This black granite is widely used for slabs, Tiles and Monuments after cutting and polishing.

Topographical View of the Semmedu Black Granite (Dolerite) Quarry Lease Applied Area

The area receives rainfall about 750 - 1060mm/per annum and the rainy season is mainly from Oct – Jan during North East monsoon. The summer is hot with maximum temperature of 42°C and winter records a minimum temperature of 21°C. The water level is found to occur at a depth of 51m in summer and 47m in rainy season below from the ground level.

3.2 GEOLOGY

a) Regional Geology

The hard rock terrain of Archaean to Late proterozoic comprises of predominantly Granite, Gneiss, Charnockite, Khondalite group of rocks and their magmatic derivatives, supracrustual sequences intruded by ultramafic complexes, basic dykes, granites.

The northern part of Tamilnadu, north of Noyil – Cauvery River is characterized by the occurrences of a number of Dolerite dykes in contrast to the areas south of Noyil – Cauvery River where the dykes are absent. The dolerite dykes in general trending is in WNW- ESE and NNE – SSE directions and rarely in N-S and NNW – SSE directions.

In central part of Tamilnadu, ENE – WNW to NE- SW trending dolerite dykes (Black granite) are seen transecting the Charnockite in Kalrayan & Kolli Hills. Palaeo magnetic studies of some of these dykes indicate Mid-Proterozoic age.

Due to emplacement of Dolerite Dykes along narrower plains of weakness, the rock on solidification develops cracks and fractures mostly along the contacts with the country rocks. The dolerite dykes are mostly emplaced as 'swarms" in an area.

Granites were formed from molten rock referred to as "Magma" formed at great depths within the crust of the earth. During the cooling process, some of the minerals grow into larger crystals of colours 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 Archaean age are now exposed at the surface of the earth as a result of the combined actions of wind, air, sun and water and weathering and denudation over the past several million years.

The granitic group ranges in composition from granite, through granodiorities to adamellite, augite-diorite, monzonite, etc., and contains inclusions of hornblendic rocks. To what extent they represent intrusive of different ages is yet to be determined, but their very complex nature is unquestionable since they include composite gneisses, migmatites, granitised older crystalline rocks and true granites with their aplitic and quartz vein systems.

The black granite is a basic igneous rock formed from ulltramafic magmas by partial melting. The composition of the rock is plagioclase (Labradorite) and pyroxene (Augite). The texture is ophitic i.e., large oligoclase of Augite enclose the laths of plagioclase feldspar. The colour is termed as Leucocratic. Free silica is rare or absent. The rock is holocrystalline, black colour, hardness-5 to 6, prismatic cleavage.

b) Geological succession of Viluppuram District:

In the Viluppuram district of Tamil Nadu is characterized by the occurrences of Numerous Dolerite dykes, especially in Kunnam Black granite is a world famous. The dolerite dykes are general trending in NNE- SSW direction and rarely in NNW– SSE directions.

STRUCTURAL SETTINGS OF THE AREA

AGE		FORMATION
Pleistocene to Recent	-	Soil
---------Unconformity--------		
Late Archean to Proterozoic		Dolerites, Hornblende Biotite Gneiss Peninsular Gneissic Complex -II Charnockite.

c) Geology of the lease applied area

The black granite mostly concealed under reddish soil having an average thickness of 2m and followed by fresh black granite. The Hornblende Biotite Gneiss forms the country rock of the area with trending of N20°E-S20°W with a dip of 60°SE and **"Black Granite" (Dolerite)** intruded between the batholithic formation of pre-existing country rock of Hornblende Biotite Gneiss discordantly with trending of N70°W-S70°E with Vertical dipping with an average width of **50 meters** which stretches about the entire area (Please refer Plate No-III and IV). The black granite is clearly exposed at surface and few small detached boulders are observed with linear strike direction of the dyke with spheroidal weathering and cuboidal joints.

The black granite (Dolerite dyke) rock is sub-ophitic, brownish black in color, equigranular, medium to fine grained texture. The color of the rock changes depending upon the texture of the rock. The Dykes is fine grained at the contact of country rock. The Dolerite is composed of laths of plagioclase embedded in the plates of Augite (Ophitic texture), Apatite, magnetite and pyrite forms the secondary mineral.

Strike and dip joints are observed at the surface level which is likely to decrease in deep seated condition. The recovery of black granite is 20%, taking in to consideration of the above geological factors, an average recovery of 20% upto 37m depth (2m Topsoil + 35m Black granite) has been computed as economically viable at present market scenario. This mining plan is discussed based on 20% recovery factor. If there is considerable increase or decrease in the recovery factor a modified mining plan will be prepared and will be submitted to relevant authorities for subsequent clearance and approval.

The Physical attitude of the Black Granite deposit in this area is given below:-

Strike Direction	=	N70°W – S70°E
Dip direction and amount	=	Vertical dip.

3.3 DETAILS OF EXPLORATION

3.3.1 ALREADY CARRIED OUT

As far as Black granite deposits are concerned, the only practical method is the systematic geological mapping, delineation of commercial black granite (Dolerite dykes) bodies within the field and careful evaluation of body luster, physical properties, commercial aspects etc.

Such an exploration study has already been conducted regionally by the Geological Survey of India (GSI) in 1966 and by the Department of Geology and Mining of Govt. of Tamilnadu in the year 1992 to 1993.

Based on the valuable geological information and by the field experience, the estimation of geological resources, mineable reserve is arrived at considering to waste and market potential.

3.3.2 PROPOSED STUDY TO BE CARRIED OUT

Even though the depth persistence of the Black granite rock may be beyond 37m depth from the petrogenetic character of the rock, only 37m (2m topsoil + 35m black granite) depth persistent has been taken as economically viable depth to calculate all the categories of proved, probable and possible reserves at present scenario.

The average recovery of saleable Black Granite stones has been taken as 20% and if the recovery percentage is good or bad, it may enhance or decrease respectively.

If any drilling program carried out in the granite formations, there is defects like cracks and fractures will be generated and developed during drilling time. Hence, no definite programs for future exploration have been drawn. The quarrying activities for the next 5 years with deep cut as envisaged in the mining plan may render additional data as may be required for future planning. The total depth persistence and recovery percentage of commercially viable granite deposit will be discussed in ensuing scheme periods.

3.4 METHOD OF ESTIMATION OF RESERVES

The Geological plan demarcating the commercially viable granite body has been prepared in 1:1000 scale (Plate No. IV). Totally four sections have been drawn, one along the strike direction length wise as (X-Y) and other three cross sections are drawn perpendicular to strike width wise as (A-B, C-D and E-F) which is suitably chosen to cover the maximum area, in the scale of 1:1000 (Plate No-IV).

The cross sectional area for the proved depth persistence of 37m (2m topsoil + 35m black granite) has been worked out for each section. The cross sectional area multiplied by its length of influence on the longer axis gives the volume (insitu) in the cross sectional area. The sum total of the insitu reserves available within the individual cross sectional area gives the Geological Resources of the quarry lease applied area.

From the total Geological insitu Resources, the quantity of saleable granite stones and quantity of granite waste generation are computed by applying recovery factor of about 20% by its volume.

As the salable black granite stone are in terms of cubic meters (Volume) only and not in terms of tonnage as in the case of major industrial mineral, the geological resources, mineable reserves and quantum of waste generated etc, are given only in terms of cubic meters (Volume).

The details of estimation of geological resources and mineable reserves with reference to the geological plan & cross section and Conceptual Plan & Section as shown in Plate No-IV and IX respectively have been furnished.

3.5 GEOLOGICAL RESOURCES:

Maximum Length : 228m
Maximum Width : 151m (Black Granite + Side Burden)
Maximum Depth : 37m

Table – 4

Section	Bench	Length (m)	Width (m)	Depth (m)	ROM (m^3)	Recovery @ 20% (m^3)	Granite Waste @ 80% (m^3)	Side burden (m^3)	Topsoil (m^3)
XY-AB	i	121	104	2	-	-	-	-	25168
	ii	121	50	5	30250	6050	24200	-	-
	ii	121	54	5	-	-	-	32670	-
	iii	121	50	5	30250	6050	24200	-	-
	iii	121	54	5	-	-	-	32670	-
	iv	121	50	5	30250	6050	24200	-	-
	iv	121	54	5	-	-	-	32670	-
	v	121	50	5	30250	6050	24200	-	-
	v	121	54	5	-	-	-	32670	-
	vi	121	50	5	30250	6050	24200	-	-
	vi	121	54	5	-	-	-	32670	-
	vii	121	50	5	30250	6050	24200	-	-
	vii	121	54	5	-	-	-	32670	-
	viii	121	50	5	30250	6050	24200	-	-
	viii	121	54	5	-	-	-	32670	-
	Total				**211750**	**42350**	**169400**	**228690**	**25168**
XY-CD	i	50	145	2	-	-	-	-	14500
	ii	50	50	5	12500	2500	10000	-	-
	ii	50	95	5	-	-	-	23750	-
	iii	50	50	5	12500	2500	10000	-	-
	iii	50	95	5	-	-	-	23750	-
	iv	50	50	5	12500	2500	10000	-	-
	iv	50	95	5	-	-	-	23750	-
	v	50	50	5	12500	2500	10000	-	-
	v	50	95	5	-	-	-	23750	-
	vi	50	50	5	12500	2500	10000	-	-
	vi	50	95	5	-	-	-	23750	-
	vii	50	50	5	12500	2500	10000	-	-
	vii	50	95	5	-	-	-	23750	-
	viii	50	50	5	12500	2500	10000	-	-
	viii	50	95	5	-	-	-	23750	-
	Total				**87500**	**17500**	**70000**	**166250**	**14500**
XY-EF	i	57	151	2	-	-	-	-	17214
	ii	57	50	5	14250	2850	11400	-	-
	ii	57	101	5	-	-	-	28785	-
	iii	57	50	5	14250	2850	11400	-	-
	iii	57	101	5	-	-	-	28785	-
	iv	57	50	5	14250	2850	11400	-	-
	iv	57	101	5	-	-	-	28785	-
	v	57	50	5	14250	2850	11400	-	-
	v	57	101	5	-	-	-	28785	-
	vi	57	50	5	14250	2850	11400	-	-
	vi	57	101	5	-	-	-	28785	-
	vii	57	50	5	14250	2850	11400	-	-
	vii	57	101	5	-	-	-	28785	-
	viii	57	50	5	14250	2850	11400	-	-
	viii	57	101	5	-	-	-	28785	-
	Total				**99750**	**19950**	**79800**	**201495**	**17214**
Grand Total					**399000**	**79800**	**319200**	**596435**	**56882**

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Available Geological Resources in ROM	=	3,99,000m^3
Total Recoverable Reserves @ 20%	=	79,800m^3
Granite Waste @ 80%	=	3,19,200m^3
Side burden (SB)	=	5,96,435m^3
Total waste (Granite Waste+ SB)	=	9,15,635m^3
Topsoil	=	56,882m^3
Granite: waste ratio	=	1:11.5

The geological resources computed based on the geological cross sections up to the economically workable depth of 37mts (2m topsoil + 35m black granite) below from the ground level at the rate of 20% recovery yields 79,800m^3 and 3,99,000m^3 of ROM. The total geological resources are computed as 37m depth for economically viable at present market scenario.

3.6 MINEABLE RESERVES:

Maximum Length : 166m
Maximum Width : 91m (Black Granite + Side Burden)
Maximum Depth : 37m

Table – 5

Section	Bench	Length (m)	Width (m)	Depth (m)	ROM (m^3)	Recovery @ 20% (m^3)	Granite Waste @ 80% (m^3)	Side burden (m^3)	Topsoil (m^3)
XY-AB	i	67	43	2	-	-	-	-	5762
	ii	64	37	5	11840	2368	9472	-	-
	iii	58	27	5	7830	1566	6264	-	-
	iv	53	17	5	4505	901	3604	-	-
	v	42	7	5	1470	294	1176	-	-
	Total				**25645**	**5129**	**20516**	**-**	**5762**
XY-CD	i	50	69	2	-	-	-	-	6900
	ii	50	50	5	12500	2500	10000	-	-
	ii	50	12	5	-	-	-	3000	-
	iii	50	50	5	12500	2500	10000	-	-
	iii	50	1	5	-	-	-	250	-
	iv	50	40	5	10000	2000	8000	-	-
	v	50	29	5	7250	1450	5800	-	-
	vi	50	17	5	4250	850	3400	-	-
	vii	39	6	5	1170	234	936	-	-
	Total				**47670**	**9534**	**38136**	**3250**	**6900**
XY-EF	i	49	91	2	-	-	-	-	8918
	ii	46	50	5	11500	2300	9200	-	-
	ii	46	35	5	-	-	-	8050	-
	iii	41	50	5	10250	2050	8200	-	-
	iii	41	25	5	-	-	-	5125	-
	iv	36	50	5	9000	1800	7200	-	-
	iv	36	15	5	-	-	-	2700	-
	v	31	49	5	7595	1519	6076	-	-
	v	31	6	5	-	-	-	930	-
	vi	26	45	5	5850	1170	4680	-	-
	vii	21	35	5	3675	735	2940	-	-
	viii	15	25	5	1875	375	1500	-	-
	Total				**49745**	**9949**	**39796**	**16805**	**8918**
Grand Total					**123060**	**24612**	**98448**	**20055**	**21580**

Available Mineable Reserves (ROM)	=	1,23,060m^3
Total Recoverable Reserves @ 20%	=	24,612m^3
Granite Waste @ 80%	=	98,448m^3
Side burden (SB)	=	20,055m^3
Total waste (Granite Waste +SB)	=	1,18,503m^3
Topsoil	=	21,580m^3
Granite: waste ratio	=	1:4.8

Mineable reserves have been computed as 24,612m^3 at the rate of 20% recovery and 1,23,060m^3 of ROM. The mineable reserves are calculated by deducting the mineral locked up area under safety distance, bench loss and existing pit. Hence the remaining area is taken for calculation of mineable reserves upto 37m depth (Refer plate No.IV).

The Black granite body occurring in this area exhibits more or less uniform color, texture and sold in par with commercial granite deposit. If any variations occur locally during quarrying such as cracks flaws and patches, the defective area is removed during dressing & marketed. The deposit is uniform and no gradational change is noticed except shear and cracks.

4.0 MINING

Open cast mechanized mining with 5.0m vertical bench with a bench width of 5.0m has been proposed.

Under the regulation 106 (2) (b) of the metalliferous Mines Regulation 1961, in all open cast mining, the bench height should not exceed 5.0mtrs and bench width should not be less than bench height. The slope of the bench should not exceed 60° from horizontal.

But as far as the mining of granite dimensional stones are concerned, observance of the provisions of Regulation 106(2) (b) as above is seldom possible due to various inherent petrogenetic & mining difficulties. Hence, it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety, Chennai for which necessary provision is available with the Regulation 106 (2) (b).

The production of Black granite dimensional stone in this Quarry involves the following method typical for granite stone mining in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock formation is carried out by carefully removing and by avoiding any visible seen defects such as cracks, Patches, veins etc., and adopting the method of diamond wire cutting along the horizontal as well as two vertical sides of the front face of the formation.

This liberation of huge volume of granite body from the parent rock is called "primary cutting". This huge portion is further split into several blocks of desirable dimension as per customers requirement.

The blocks thus splitted are removed from the pit to the dressing yard, by using hydraulic cranes, for further fine dressing.

Removing the defective portions and dressing them in to dimensional blocks are done manually using feather and wedges and chiseling respectively by the skilled labours.

The defects free, dimensional stone of different sizes as acceptable in market are thus produced by the method as described above, and the process is continuously supervised by the applicant's experienced personnel.

The waste material generated during quarrying activity includes rock fragments of different sizes and waste chips during dressing of the blocks.

These waste materials are taken in tippers by loading machines and dumped in the respective places ear-marked for the purpose (Plate No. V and VI). When the quarry reach its ultimate pit limit or at the end of life of quarry, quarried out waste will be backfilled.

The excavated top soil is spread out all along the safety barrier and will be utilized for construction of bund, spread out over the inactive waste dump and afforestation purpose.

4.1 YEAR WISE DEVELOPMENT AND PRODUCTION FOR THE FIRST FIVE YEARS:

Total Length : 135m
Maximum Width : 57m
Maximum Depth : 7m

Table – 6

Year	Section	Bench	Length (m)	Width (m)	Depth (m)	ROM (m^3)	Recovery @ 20% (m^3)	Granite Waste @ 80% (m^3)	Topsoil (m^3)
I	XY-EF	i	30	56	2	-	-	-	3360
		ii	24	50	5	6000	1200	4800	-
	Total					**6000**	**1200**	**4800**	**3360**
II	XY-EF	i	19	56	2	-	-	-	2128
		ii	22	50	5	5500	1100	4400	-
	XY-CD	i	5	57	2	-	-	-	570
		ii	2	50	5	500	100	400	-
	Total					**6000**	**1200**	**4800**	**570**
III	XY-CD	i	24	57	2	-	-	-	2736
		ii	24	50	5	6000	1200	4800	-
	Total					**6000**	**1200**	**4800**	**2736**
IV	XY-CD	i	21	57	2	-	-	-	2394
		ii	24	50	5	6000	1200	4800	-
	XY-AB	i	3	43	2	-	-	-	258
	Total					**6000**	**1200**	**4800**	**2652**
V	XY-AB	i	33	43	2	-	-	-	2838
		ii	33	37	5	6105	1221	4884	-
	Total					**6105**	**1221**	**4884**	**2838**
Grand Total						**30105**	**6021**	**24084**	**12156**

Total Proposed ROM = 30,105m^3

Total Recoverable Reserves @ 20% = 6,021m^3

Granite Waste @ 80% = 24,084m^3

Topsoil = 12,156m^3

Granite: waste ratio = 1:4

Estimated Life of the quarry

Mineable ROM = 1,23,060 m^3

Mineable Recoverable Reserves @ 20% = 24,612m^3

Average production per year @ 20% = 6,021m^3/5 years = 1,204m^3

Estimated Life of the Quarry = 24,612/ 1,204m^3 = 20 years

The average annual production per year would be 1,204m^3 and 6,021m^3 during the first five year plan period at the rate of 20% recovery. (Refer Plate No. V.).

The proposed year wise quantum of excavation and the details of estimation of production quantity and generation of wastes are furnished with reference to Year wise Development and Production plan and sections (Plate No.V). For achieving this rate of production per annum for first five years will be taken up every year. More details of the year wise production parameters are explained with bench length, width and height in Plate No. V.

4.2 PROPOSED RATE OF PRODUCTION WHEN THE QUARRY IS FULLY DEVELOPED

The proposed rate of production when the quarry is fully developed is 1,204m^3 per annum at the rate of 20% recovery. The production schedule for the subsequent five year is drawn mainly in consideration of reserves position, market demand, and the cost of production.

4.3 MINEABLE RESERVES AND ANTICIPATED LIFE OF QUARRY

The dolerite dykes are deep seated in nature as they have been formed by basic intrusions from depth as dyke. The depth persistence of the dyke will be beyond the economically workable depth. The method of extraction of rock mass from dyke sheet rock is highly expensive affair at greater depths.

An optimum depth of 37m has been established as economically viable depth. Eventually this depth is the optimum depth for safe and scientific quarrying at present scenario.

The mineable reserves are calculated by excluding the quarry loss due to formation of benches, ultimate depth of quarry, the mineral reserve held up within the safety distance all along the area boundary.

The mineable reserve for this black granite quarry is thus arrived as **24,612m^3** @ 20% recovery and **1,23,060m^3 of ROM** for an assumed depth of **37m** below from the general ground profile. The details of estimation of five years development and production plan and sections are furnished in plate No.V. The average rate of production of black granite from this quarry is **1,204m^3 per year** and mineable recoverable reserves **24,612m^3** considering **20%** recovery for the entire life of the quarry.

Based on the above, and taking into consideration of the available Mineable Reserves, **the life of quarry will be about 20 years,** (considering all the safety factors) at 20% recovery, if the quarry is being worked continuously with an average annual production of **1,204m^3**. This calculation is based on the plan approved by Director of Mines Safety leaving Benches and Safety barriers. If the annual production increases considerably and consistently or substantial change in the recovery percentage a modified mining plan will be prepared under Granite Conservation and Development Rules-1999 the same will be submitted to the relevant authorities for subsequent clearance and approval.

4.3.1 CONCEPTUAL MINING PLAN

Conceptual mining plan is prepared with an object of long term systematic development of benches; lay outs, selection of permanent ultimate pit limit, depth of quarrying and ultimate pit, selection of sites for construction of infrastructure etc.

The ultimate pit size is designed based on certain practical parameters such as economical depth of quarrying, safety zones, permissible area etc.

The ultimate pit dimensions of the quarry are given below.

ULTIMATE PIT DIMENSIONS

Table - 7

Dimensions in meters (Maximum)		
Length	Width	Depth
166	91	37

However, during extraction of blocks each bench will be of 5 mts height with vertical slope for proper dimensional cutting. The quantum of excavation is estimated to be 1,64,695m^3 (ROM 1,23,060m^3+ Topsoil 21,580m^3 + Side Burden 20,055m^3) up to a depth of 37m during the entire lease period. The generation of total waste is estimated about 1,18,503m^3 (Granite waste + Side Burden) and marketable granite blocks as 24,612m^3 during the entire life of quarry.

The excavated waste (24,084m^3) will be proposed to dump on the northwestern side with dimensions of (L)91mx (W)20m x (H)13.23m for the first five years, which will act as temporary waste dump. The excavated topsoil will be spread out all along the safety barrier and will be utilized for construction of bund and afforestation purpose.

When the quarry reach its ultimate pit limit or at the end of life of quarry, quarried out waste will be backfilled and commercial plantation will be carried out in the backfilled area. The quarry pit will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Please refer plate No. IX).

4.4.0 METHOD OF MINING

4.4.1 OPEN CAST WORKING

In accordance with the Regulation 106 (2) (b) of the Metalliferous Mines Regulations 1961, in all open cast working where the ore body forms hard rock, the working faces and sides should be adequately benched and sloped; a bench height not exceeding 5m and a bench width not less than the bench height has to be maintained. The slope angle of such benches and sides should not exceed 60° from horizontal. However, observance of these statutory provisions in granite dimensional stone mining is seldom possible due to the field difficulties and technical reasons as below:

1. Recovery of the granite mineral is to be as undamaged rectangular dimensional blocks. In the attempt to form the benches and sides with the above statutory parameters haphazard blasting may be involved. In this case the commercial granite body may get spoiled unsuitably due to generation of blasting cracks.
2. In the exercise of forming the benches with 60° slope within the granite deposit, the portion confined within the 60° as well as its complimentary part in the extricated block will become as mineral waste while shaping then into rectangular blocks.

3. The granite industry need blocks as huge as a few cubic metre volumes with measurements up to 3 m x 2 m x 2 m. Production of such huge blocks with a moving bench of 5m height is not possible. Production of such huge blocks in turn increases the recovery and reduces the mineral waste during dressing. Blocks of smaller size of certain varieties of granite are not marketable now-a-days (or) has a less commercial value.

4. Formation of too many benches with more height and the width equal to the height may lead to mineral lock up.

Hence in order to avoid granite waste and to facilitate economical mining operations, it is proposed to obtain relaxation to the provisions of Regulation 106 (2) (b) up to a bench parameter of 5.0 mtr height & 5.0 mtr width with vertical faces. Such a provision of relaxation of the Regulation has been provided within the regulation 106 (2) (b). Further, it is to be noteworthy that open cast granite mining operations with the above proposed bench parameters may not be detrimental to Department of mines safety, since the entire terrain is made up of hard rock, compact sheet and possess high stability on slope even at higher vertical angles.

4.4.2 EXTENT OF MECHANIZATION

The following machineries are proposed to utilize for the development and production work at this quarry.

I. DRILLING MACHINE

Table - 8

S.No.	Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power
1	Jack hammer	6	32	1.2m to 6m	Atlas Copco	Compressed air
2	Compressor	2	-	400 psi	Atlas Capco	Diesel Drive
3	Diamond Wire saw	1	-	30m^3/ day	Optima	Diesel Generator
4	Diesel Generator	1	-	125kva	Powerica	Diesel

II. LOADING EQUIPMENT

Table - 9

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Crawler Crane	1	855	Tata P&H	Diesel Drive
2	Excavator	1	300	Tata Hitachi	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT

a)

Table - 10

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Tippers	2	10 tonns	Tata	Diesel Drive

b) Transport from the quarry head to destination

Transport from quarry head to desired destination is done by trucks or by trailers.

c). Miscellaneous:

Apart from the above the following tools and tackles are required for quarry operation.

A. For operation

The operation of granite quarry requires the following loose tools material and have to be kept sufficiently in stock for non - interruption of the quarry work.

1. Drill rods - 0.3m, 0.5m, 0.75m, 1.65m, 2.25m, 3m and upto 7m.
2. Steel Alloy chains of sufficient length of 12mm, 16mm, 18mm, etc., sizes.
3. 'D' shackles to link the chain lengths.
4. Rubber hose of required length.
5. Hose clamps to link the compressor delivery hoses.
6. Feather and wedges of 6" and 12" dia sizes utilize for splitting the block from the parent rock. This is an important tool in the operation of a quarry.
7. Crow bars.
8. Spades.
9. Sludge Hammer
10. Iron Pans
11. Pitcher Hammer
12. Chisels.
13. Consumables, such as diesel, Hydraulic oil, grease, abrasive wheels, welding Machines, etc.
14. Stock of essential spare parts of machinery.
15. Explosive as per the licensed quantity 'M' type portable explosive Magazine with accessories.
16. Besides diamond wire saw equipment and new innovative machine specifically designed for granite with accessories are required to liberate the rock from to parent body rapidly to minimize damage and to obtain good recovery.

Splitting the sheet rock by Diamond wire sawing which increases substantial recovery potential. Hence it is proposed to follow "Diamond wire saw cutting" for best recovery.

The above machineries are adequate to meet out the simultaneous development and production schedule drawn out in this mining plan.

5. BLASTING

During future development of quarrying, removal of over burden will be done by Excavator and mild blasting with explosives in holes drilled by Jack hammer of 32mm dia especially. No deep hole blasting is proposed.

Portable magazine has been proposed to install in the ear marked places, and the applicant is advised to get necessary license for storing explosives in the above area after the grant of quarry lease.

The explosive that will be used are D-Cord and Gelatin Sticks which are indicated below. This is a very low intensity explosive.

D Cord - 5mg

Gelatin Sticks.

6.0 MINING DRAINAGE

The water table in this area is 51mts as observed in nearby Bore wells. The quarry operation confined to well above the water table. If water is encountered at due to rain water seepage, the same will be drained out by 5HP motor pumps and the drained out water will be utilized for afforestation.

7.0 STACKING OF MINERAL WASTE AND DISPOSAL OF WASTE

a) Topsoil:

There is generation of topsoil is about 12,156m^3 during the first five year it will be preserved all along the safety barrier and utilized for construction of bund and afforestation purpose.

b) Waste:

The total quantity of waste generated during the first five years will be around 24,084m^3. The total waste will be proposed to dump on the northwestern side with dimensions of (L)91mx (W)20m x (H)13.23m, which will act as temporary waste dump.

c) Manner of disposal of waste:

As and when there is accumulation of waste, the same is loaded into the tipper by loading machines and dumped in the respective places ear-marked for the purpose.

The waste management plan with reference to the quantum of waste generated is shown in quarry layout and Afforestation plan (Plate No.VI).

8.0 USE OF THE GRANITE STONE

The quarried black granite blocks are either exported as raw blocks or processed as value added products such as slabs, tiles, fancy items, Monuments, precision surface plates for engineering applications.

The export market for granite is china, European Country, North America, Middle East, Far East, Japan, Taiwan & Canada besides catering local markets.

9.0 QUALITY CONTROL

The Black granite deposit occurring in this quarry shows uniform quality throughout and hence quarried and marketed as a single variety.

The excavated blocks are carefully inspected for any natural defects such as joints, cracks, xenoliths growth etc and such defects is removed manually using feather and wedges and the blocks are then shaped into perfect rectangular dimensional stone blocks by chiseling. Different price for each quality material have been fixed and the entire production quantity is marketed accordingly.

10. SURFACE TRANSPORT

The mode of transport of the granite blocks produced and marketed is by road to various customer destinations and granite processing units located at different parts of the country. The black granite blocks approved for export market are shipped from Chennai Port to various countries and if required the blocks may be shifted to Tuticorin Port which depend upon the exporter's destination from time to time.

11. SITE SERVICES

The simple methods adopted and the limited scale of activities involved in granite dimensional stone quarrying does not require high tension electric power supply or huge workshop facilities. The quarry operation is restricted to one general shift during day time only. Machinery repair works are attended at Viluppuram town (15km-SE). Minor repairs carried out by company's personnel at the quarry site itself.

Potable drinking water is supplied from the water vendors in Viluppuram town also potable water from the company's bore well can be transported to the work site through tanker placed on tippers. Quarry office, first-aid room, store room, rest shed, toilet etc, will be provided on semi - permanent structures within the quarry lease area (Plate No - V - VII).

12. EMPLOYMENT POTENTIAL

The following man power is proposed for the black granite quarry to look after and carryout the day-to-day quarrying activities, aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous Mines Regulations, 1961.

1. Mines manager (with valid statutory qualification) : 1
2. Mines foreman (with valid statutory qualification) : 1
3. Machinery operators (Certified) : 3

WORKERS:

a. Skilled labour : 6

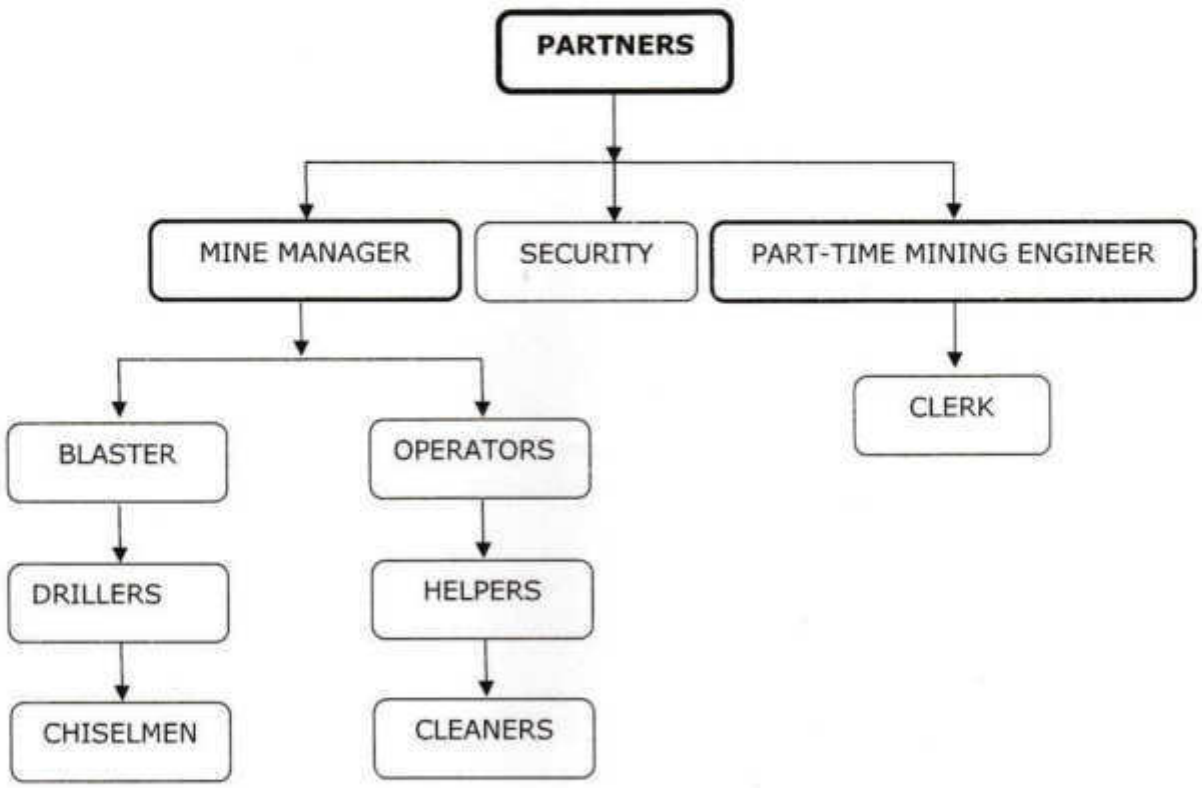
b. Semi-skilled : 18

c. Unskilled : 3

Total **: 32**

Allowing for 10% absenteeism, the no. of men of roll will be around 29.

ORGANIZATION CHART



The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations.

13.0 ENVIRONMENTAL MANAGEMENT PLAN

13.1 BASELINE INFORMATION

The following observations are made for environmental management plan.

I. EXISTING LAND USE PATTERNS:

The area is situated in flat terrain. The gradient is gentle towards southwest and altitude of the area is about 75m above from MSL. The Black granite is mostly concealed under reddish soil with small detached boulders are observed in few places of the lease applied area. There are few Neem, Palm, thorny bushes, Calotropis and shrubs are observed within the lease applied area. The region experiences semi – humid climate and there is scanty growth of vegetation around the area (seasonal vegetation is mostly practiced) and in some places agricultural activities are carried out by utilizing well water (lift irrigation).

Existing Land use pattern

Table - 11

Description	Present Area (Ha.)	Area utilized in %
Area under Quarry	Nil	-
Waste dumps	Nil	-
Infrastructure	Nil	-
Road	Nil	-
Green Belt	Nil	-
Unutilized area	3.06.0	100
Grand Total	**3.06.0**	**100**

II. WATER REGIME:

Ground water occurrence in this area is 51m in summer and 47m in rainy season below from ground level. The quarry operation confined to well above the water table for the entire lease period; hence the quarry operation will not be affected by the ground water in any manner. There is an Eri situated in S.F.No. 34 on the south and western side of the area, a safety distance of 50m has been provided. There no major water body like river, dam, Canal, etc., located within 50m radius of the area.

III. FLORA AND FAUNA:

The main crops are Paddy, Sugarcane, Gingally, Maize, Cereals and trees like Coconut, Neem, Palm, Banyan, Teak trees are observed around the area and Faunas like Squirrel, Rat, Rabbit, Dog, Parrot, Crow, Cow and Goat are living around the area. No plants of botanical interest or animals of zoological interest are recorded within 500m radius.

IV. CLIMATIC CONDITIONS:

The area receives rainfall of about 750-1060mm per annum and the rainy season is mainly from Oct - Jan during North East monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 21°C.

V. HUMAN SETTLEMENT:

There is no approved habitation situated within 300m radius of the area. There are few villages located within 5km radius the approximate distance with direction and population are furnished below.

Table - 12

S.No.	Name of the Village	Direction	Approximate Distance	Approximate population
1.	Ezhusempon	NE	2km	2,600
2.	Velleripattu	NW	1km	850
3.	Anniyur	NW	3km	5,000
4.	Semmedu	South	700m	1,170
5.	Siruvalai	SE	2km	2,500
6.	Ariyalur Thirukkai	SW	4km	5,500
7.	Kedar	SW	4km	6,000

Basic human welfare amenities such as health center, schools, communication facilities, commercial centers etc., are available in Viluppuram town located at 15km southeastern side of the area.

VI. PUBLIC BUILDINGS, MONUMENTS AND PLACES OF WORSHIPS:

There is no Public building, Archaeological or National Monument and place of worship situated within 300m radius of the area.

VII. WEATHER THE AREA FALLS UNDER NOTIFIED AREA UNDER WATER ACT, 1974.

The area falls under notified area under water Act, 1974.

13.2 ENVIRONMENT IMPACT ASSESSMENT STATEMENT

The mining plan proposed is for a very small production of black granite dimensional stone without involving deep hole drilling and heavy blasting. Such limited quarrying activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned.

Table – 13

S. No.	Salient Features at Presently bounded the quarry site	Prescribed safety distance	Actual Distance and Direction from the site
1.	Railways, Highways, Tank, Lake, Odai, Canal, Stream, River and Reservoir	50m	There is an Eri situated on the West and southern side in S.F.No. 34, a safety distance of 50m has been provided for the Eri. Except this None of the above is situated within 50m radius of the area.
2.	Village Road	10m	There is no village road located within 10m radius of the area.
3.	Habitation / Village	300m	There is no approved habitation situated within 300m radius of the area.
4.	Adjacent Land Patta / Govt.	7.5m / 10m	North – Patta land, 7.5m safety zone. East – Patta land 7.5m safety zone. South – Govt. land, 50m safety distance has been provided for the Eri. West – 7.5m safety zone to the Patta land and 50m safety distance to the Eri. (Please refer Plate No. II)
5.	Housing area, EB line (HT & LT Line)	50m	There is no EB(LT/HT) line or Housing area located within 50m radius of the area.
6.	Boundaries of the permitted area	7.5m	North - S.F.Nos. 26, 24/3B, 24/4, 6 and 24/9. East - S.F.No. 22/2. South - S.F.No. 34. West - S.F.No.34. (Please refer Plate No. II)
7.	Reserve forest / protected area / ECO sensitive area/State or National border	10Km	The following reserved forest situated within 10km radius of the area. 1. Udaiyanattam R.F. - 7.7km West 2. Tandavasamudram R.F. - 9.4km NW 3. Gangavaram R.F. – 9.2km NW There is no Wildlife sanctuary/ Eco sensitive zone/ CRZ/ HACA/ Critically polluted area State or National border located within 10km radius of the area.

Proposed Financial Estimate for Quarry operations and Environment Management(EMP).

Table - 14

A. Fixed Asset Cost		
S.L.No	**Description**	**Amount (Rs)**
1	Land Cost	21,40,000
2	Labour Shed	2,00,000
3	Sanitary Facility	1,00,000
4	Fencing Cost	1,00,000
Total Cost		**25,40,000**

B. Operational Cost		
S.No.	**Description**	**Approximate Cost (Rs.)**
1.	Excavator (1No.)	56,00,000
2.	Crane (1No.)	72,00,000
3.	Tippers (2No.)	30,00,000
4.	Wire Saw (1No.)	4,00,000
5.	Compressor with loose tools (2Nos.)	20,00,000
6.	Jack Hammer (6 Nos.)	6,00,000
7.	Diesel Generator (1No.)	7,50,000
8.	Drinking Water Facility	50,000
9.	Safety Kits	50,000
Total Operational Cost		**1,96,50,000**

C. EMP Cost		
S.No.	**Description**	**Approximate Cost (Rs)**
1.	Afforestation	40,000
2.	Water Sprinkling	50,000
3.	Water Quality test	25,000
4.	Air Quality test	25,000
5.	Noise/Vibration test	25,000
6.	Cost towards Charity (CSR)	5,60,000
Total EMP Cost		**7,25,000**
TOTAL PROJECT COST (A+B +C)		**2,29,15,000**

(Total project cost including EMP cost is about rupees two crore twentynine lakh and fifteen thousand only).

13.3.0 ENVIRONMENT MANAGEMENT PLAN

13.3.1 PROPOSAL FOR WASTE MANAGEMENT

The waste in the quarry includes top soil, rock fragments, rubbles generated as waste during production work.

The total waste to be produced during the mining plan period (five years) of quarry will be around 24,084m^3. The excavated waste will be proposed to dump on the northwestern side with dimensions of (L)91mx (W)20m x (H)13.23m.

The generated top soil during the entire life of the quarry will be preserved all along the safety zone and utilized for construction of bund and afforestation purpose.

The waste management plan with reference to the quantum of waste generated is shown in quarry layout plan (Plate No. VI).

13.3.2 PROPOSAL FOR RECLAMATION OF LAND AFFECTED BY MINING ACTIVITIES DURING & AT THE END OF QUARRYING

Due to nature of occurrence of dykes, the depth persistence of the granite body in this area is beyond the workable limits. In the proposed mining plan only 37m depth has been envisaged as workable depth for safe, systematic & economic quarrying. When the quarry reach its ultimate pit limit or at the end of life of quarry, quarried out waste will be backfilled and commercial plantation will be carried out in the backfilled area. The quarry pit will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle. (Please refer plate No. IX).

13.3.3 PHASED PROGRAMME OF PLANTING TREES

The safety distance along the south and western side has been identified to be utilized for Afforestation. Appropriate species of Neem, Pongamia pinnata, Casuarina, etc., trees will be planted in a phased manner as described below.

Table -15

Year	No. of tress proposed to be planted	Name of the species	Area to be covered m^2	Survival rate expected in %	No. of trees expected to be grown
I	50	Neem, Pongamia pinnata, Casuarina, etc.,	480	80	40
II	50		480	80	40
III	50		480	80	40
IV	50		480	80	40
V	50		480	80	40

Nearly 2,400m^2 area is proposed for afforestation by planting 50 number of trees during every year and expected growth is around 40 number of trees at a survival rate of 80%. The afforestation plan is shown in Plate No.VI.

13.3.4 MEASURES FOR DUST SUPPRESSION:

As the granite rocks are mined as undamaged dimensional stones without involving deep hole drilling and heavy blasting, fragmentation and generation of lumps, fines or dust is negligible. This quantum of quarrying activity will not generate the dust which is detrimental to the health of the persons employed. Water will be sprinkled for the suppression air borne dust from quarry approach roads and waste dumps on regular intervals using water tankers. Drilling of blast holes of 32 mm dia will be always under wet conditions to prevent flying of dusts. In the unloading points, water will be sprinkled through tippers to suppress dust. The drillers are provided with respirators in accordance with the Mines safety Regulations.

13.3.5 MEASURES TO MINIMIZE GROUND VIBRATION DUE TO BLASTING AND CHECK NOISE POLLUTION

Shallow holes of 32 mm diameter will be drilled and conventional low explosives such as D-Cord and Gelatin sticks will be used for removal of over burden. Hence ground vibration and noise pollution will be minimal and restricted with the quarry workings. The blasting will be taken up at appointed timing and with sufficient caution to the public under the advice of qualified and competent personals. The noise produced by diamond wire saw cutting will be negligible.

13.3.6 STABILIZATION AND VEGETATION OF DUMPS

As the waste generation in the quarry includes hard rock fragments of considerable size and irregular shape with varying angularity, the waste dump will be stable on its own even at higher slopes of the sides. However, suitable soil type will be brought from outside the same is spread out over and sides of the inactive waste dump also tree sapling will be carried out for increasing the stability and to prevent erosion during rainy season.

14.0 PROGRESSIVE QUARRY CLOSURE PLAN

In the Black Granite quarry operations proposed depth of 7m for the first five years and 37m during the entire life of the quarry hence, the ground water will not be disturbed in any manner. Afforestation will be carried out and maintained in the safety barriers till the plants reach the stabilize level. Office room toilet store room will be well maintained. The sludge from the toilet will be periodically removed and the same will be used as a manner for afforestation.

Sentries will be posted in the night to prevent the inadvertent entry of public. Sufficient caution and sign boards will be kept in and around the quarry to induct public for awareness. Blasting will be carried out in a specific time after giving sufficient caution to the public, sentries will be posted on a 1km radius with whistle and flags during small amount of blasting (blasting is carried out only for secondary fragments and not to liberate the Granite body from the parent rock mass).

The quarried out waste will be proposed to dump on the northwestern side with dimensions of (L)91mx (W)20m x (D)13.23m(h) for the first five years, which will act as temporary waste dump. When the quarry reach its ultimate pit limit or at the end of life of quarry, quarried out waste will be backfilled and commercial plantation carried out in the backfilled area.

The quarry pit will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Please refer plate No. VII and IX). Garland drains with check dam will be constructed around the quarry to prevent the surface run-off of rain water.

Afforestation and Green belt development will be maintained in all the boundaries, till the trees attain the stabilize level. At present the area is virgin.

Land use pattern

Table - 16

Description	Area to be required during the mining plan period (Ha.)	Area at the end of life of quarry (Ha.)
Area under quarry	0.75.5	1.17.6
Waste dump	0.18.0	Backfilled
Infrastructure	0.01.0	0.01.0
Roads	0.01.0	0.02.0
Green Belt	0.24.0	0.77.8
Stocking Blocks	1.86.5	1.07.6
Grand Total	**3.06.0**	**3.06.0**

15.0 MINERAL CONSERVATION AND DEVELOPMENT

The mining plan proposed has fully covered the aspects of Granite Conservation and development with a future plan to extend the proposed working of the quarry to the maximum possible workable depth of the deposit. Extreme care is taken to ensure proper supervision of quality control of the granite dimensional stone aimed at the recovery of the maximum saleable quality and quantity of black granite dimensional stones suitable for full utilization of the consumers.

Care is been taken for each process just to safeguard the material quarried in an economical and efficient manner by adopting systematic and scientific quarrying with consultation and supervision of well experienced quarry masters.

16.0 STATUTORY PROVISIONS

The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied with, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety, Chennai. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the department.

Certified that this Mining Plan has been Prepared in Accordance with the Mines Act, Rules and Regulations and orders made there under and also in Conformity with the Provisions Sub Rule (13) of Rule 19A of Tamilnadu Minor Mineral Concession Rules, 1959 and 12,13 and 16 of Granite Conservation and Development Rules 1999 and Rule 15(I)(a) and (b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Prepared by

S. ILAVARASAN, M.Sc.,
Recognised Qualified Person
RQP/MAS/253/2013/A

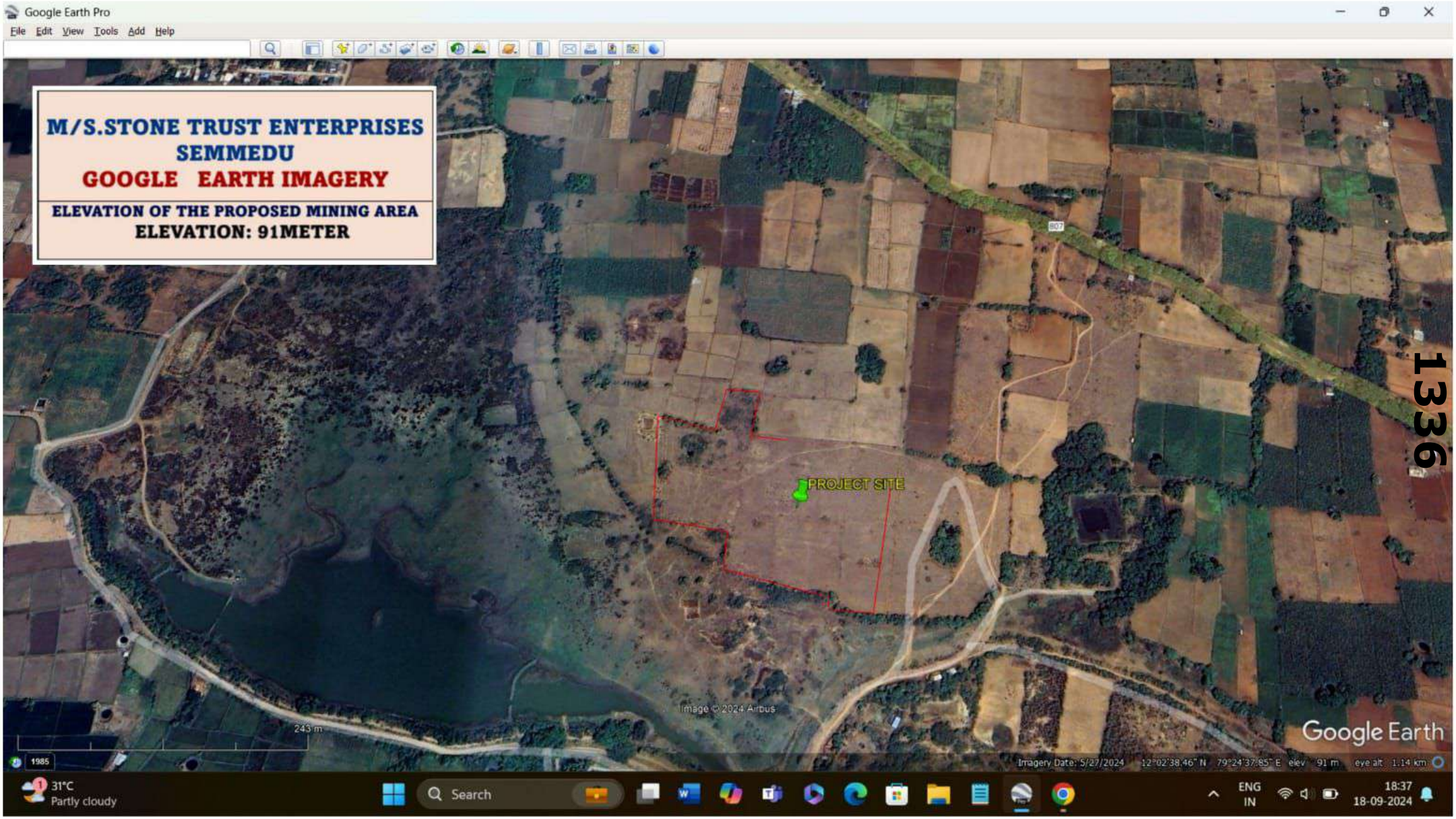
Place: Salem
Date: 08.02.2019

DONATE RED
SPREAD GREEN
SAVE BLUE

This Mining Plan is approved based on incorporation of the particulars specified under sub rules (I) (II) (III) (IV) (V) and (VI) of rule 15 of Granite Conservation and Development Rules, 1999 and subject to further fulfillment of the conditions laid down under rule 18 of Granite Conservation and Development Rules, 1999.

Director of Geology and Mining

This Mining Plan is Approved Subject to the Conditions/ Stipulation Indicated in the Mining Plan Approval Letter No./ 9455/MM5/18 Dated .04.19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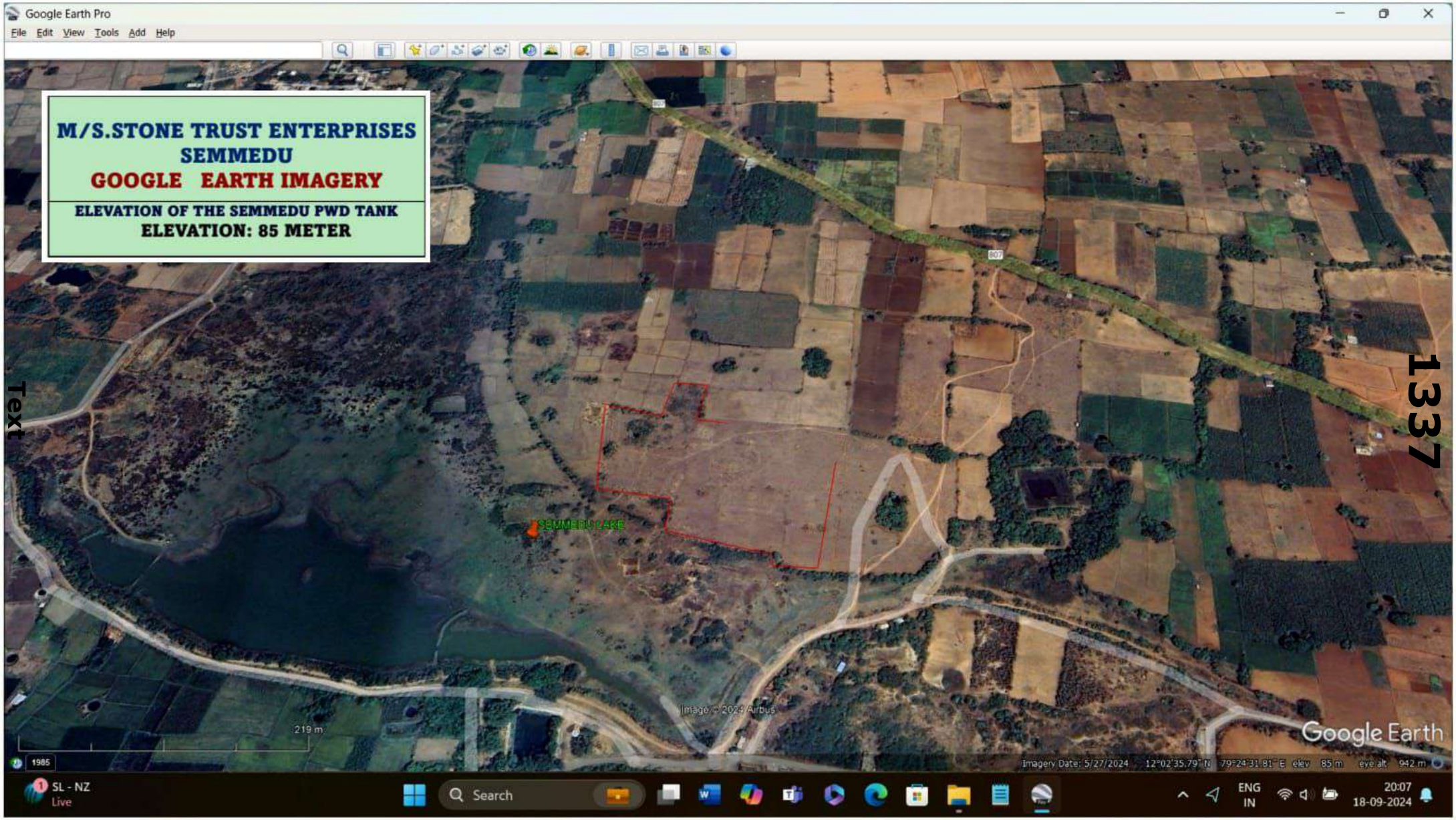
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BEFORE THE HON'BLE

NATIONAL GREEN TRIBUNAL,

SOUTHERN ZONE, CHENNAI

Appeal No. of 2024 (SZ)

M/s. Stone Trust Enterprises
… Appellant

-Versus-

Ministry of Environment Forest and Climate Change (MoEF & CC), & 2 Others
… Respondents

COMPILATION - VI

M/s. P. K O K I L A
KPRIYANKA
B. G I R I J A
K. M O K S H A V A T H Y
C O U N S E L F O R A P P E L L A N T

(Mobile No.96001 37731)