EXECUTIVE SUMMARY

For
PROPOSED COLOUR GRANITE QUARRY

Extent : 5.58.5Ha
Survey No :37/15B2
Village :Kommedu
Taluk : Gingee
District : Villupuram

TAMIL NADU MINERALS LIMITED
No. 31, Kamarajar Salai,
Chepauk, Chennai–600 005

Environmental Consultant

ABC Techno Labs India Private Limited
An ISO : 9001:2008, ISO:14001:2004 & OHSAS:18001:2007 Certified Company
(Accrediated by NABL, NABET, MoEF)
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1 INTRODUCTION

Tamil Nadu Minerals Ltd, also called as TAMIN (An Undertaking of Government of Tamil Nadu) has been established in the year 1978. It entered the international granite market in the year 1979 and has secured a steady market for dimensional blocks of black and other color Granite in countries like Japan, Germany, Italy, Australia, UK, Switzerland, Holland, USA etc. TAMIN is the only organization recognized by Bureau of Indian Standard for manufacture and supply of I.S. Sand all over the country. TAMIN has developed expertise in the mining of granite dimensional stones of different varieties including black granite (Dolerite), Kashmir white (Leptynite), Paradiso (Migmatite gneiss), Green onyx (Syenite - porphyry) Red wave (Pink Feldspathic gneiss) Colombo Juparana (Pegmatitic granite gneiss of migmatitic origin), Raw silk (Yellow feldspathic Leptynite) and a number of other coloured granite varieties apart from other industrial minerals viz. quartz and feldspar, graphite, lime stone, silica sand, vermiculite, etc. The Company is having its Registered Office at **M/s. Tamil Nadu Minerals Limited,** No. 31, Kamarajar Salai, Chepauk, Chennai – 600 005.

The Government of Tamil Nadu has granted Granite quarrying lease over an extend of 5.58.5Ha in S.F.NO.37/15B2 of Kommedu village, Gingee Taluk, Villupuram District, Tamil Nadu vide G.O. (3D) No.63, Industries(MME.1) Department, dated: 05.12.2011, for the period of 30 years from 09.03.2012 to 08.03.2042.

The Mining Plan for Colour Granite of Kommedu S.F.No. 37/15B2, Gingee Taluk, Villupuram District, Tamil Nadu State was approved by the commissioner of Geology and Mining, Chennai vide Letter No. 11791/MM5/2007, dated: 23.11.2011.

Further, Modified Scheme of Mining in respect of the subject area was prepared and submitted to the authority concerned vide this office letter No.4549/ML2/2016, dated: 23.10.2017 and the same was approved by the Director of Geology and Mining, Chennai vide Letter No. 3850/MM5/2008, dated: 31.07.2018.

As per Environmental Impact Assessment Notification, dated 14thSeptember 2006 and 14.08.2018 and its subsequent amendments from time to time, this

project falls under ***"1(a) Mining of Minerals.*** The Total extent of lease area of proposed project is 5.58.5ha it categorized as 'B2'.

Initially, Environmental Clearance was granted for this project for the production quantity of 9,072.585M^3 for the 5 years period of Environmental Clearance period vide SEIAA.TN/F.No.795/EC/1(a)/1175/2013, dated:27.03.2014 and same is valid up to 26.03.2019. Now, the demand for this material is getting increased in the granite industries. Hence, TAMIN has proposed to increase the production capacity to 3,432M^3 Per annum. Accordingly, necessary Modified Scheme of Mining has been prepared and submitted to the authority vide this office Letter No.4549/ML2/2016, dated: 23.10.2017 and the same was approved by the Director of Geology and Mining, Chennai vide Letter No.3850/MM5/2018, dated:31.07.2018.

Table 1-1: Project Summary & Salient Features within 10 km

S.No	Particulars	Details
1.	Latitude	12°10'11.93"N to 12°10'24.74"N
2.	Longitude	79°27'38.38"E to 79°27'50.31"E
3.	Site Elevation above MSL	80m above MSL
4.	Topography	The lease area generally manifests undulating topography.
5.	Land use of the site	5.58.5 Ha of Government Poramboke Land
6.	Survey No.	S.F.No. 37/15B2
7.	Topo Map	57P/8 & 12
8.	Location	Kommedu village, Gingee Taluk, Villupuram District, Tamil Nadu State.
9.	Extent of lease area	5.58.5 Ha
10.	Quarry Lease period	30 Years
11.	Peak yearly production capacity	22,881 M^3 of ROM Colour Granite per Annum and 3,432 M^3 of recoverable production of granite per annum
12.	Updated Mineable reserves	9,04,010 M^3 of ROM (1,35,602 M^3 of recoverable reserves)
13.	Waste generation	Granite Waste:3,75,143 M^3 ; O.B:1,43,742 M^3 for 5 years
14.	Granite waste ratio	1:0.85(M^3: M^3)
15.	Method of mining	Open cast semi mechanized mining method
16.	Bench parameters Bench Height & width Bench slope	10m & 6m Vertical slope is proposed
17.	Life of Mine	39 Years subject to the continuous mining operation / Production
18.	Water Requirement & Source	Water Requirement:- Drinking water & Domestic purpose : 0.5 KLD

S.No	Particulars	Details
		Wire Saw cutting : 0.3 KLD Dust suppression: 0.3 KLD Green belt:0.4 KLD Total:1.5 KLD Source : From vendors and Kommedu Village Panchayat
19.	Manpower	Direct:35 , Indirect about 20
20.	Project Cost	100 Lakh
21.	Nearest highway	NH66 : 9.50Km, N. NH66 : 14.50Km, SE. SH4 :4.50Km, W.
22.	Nearest railway station	Perani R.S : 13Km, SE Mailam R.S : 15Km, SE
23.	Nearest airport	Chennai Airport : 110.80 Km, NE
24.	Nearest town / city	Town: Gingee 15km, NE
25.	Reservoir/Lake/River/Sea	Veedur Dam 17.40Km, SE. Thiruvampattu lake : 1.40Km, NE. Erampattu lake : 2.50Km, SE.
26.	Reserved/Protected Forests	Karai R.F 4.30Km, W & Muttukkadu R.F 10.20Km, NW
27.	State Boundary	Pondicherry Union territory 38.6km, SE
28.	National parks/Wildlife Sanctuaries	Nil
29.	Archaeological Important Places	Nil with 10 km Radius
30.	Defense Installations	Nil with 10 km Radius
31.	Nearest Port	Nil with 10 km Radius
32.	Seismic Zone	Zone-II (Least Active)

1.1 ENVIRONMENTAL SENSITIVE AREAS

There are no notified ecologically sensitive areas within 10km from project boundary. The Tamil Nadu state/Puducherry Union territory runs in South East direction at about 38.6km from the project boundary. Project doesn't attract the special conditions and general conditions as per EIA Notification.

1.2 PROJECT LOCATION

The total extent of Colour Granite Quarry is 5.58.5 Ha located in S.F.No.37/15B2 of Kommedu Village, Gingee Taluk, Villupuram District, Tamil Nadu State, lies in the latitude from 12°10'11.93"N to 12°10'24.47"N and longitude from 79°27'38.38"E to 79°27'50.31"E. The area is marked in the Survey of India Topo sheet No. 57 P/8 & 12. The altitude of the area is above 80m above MSL.

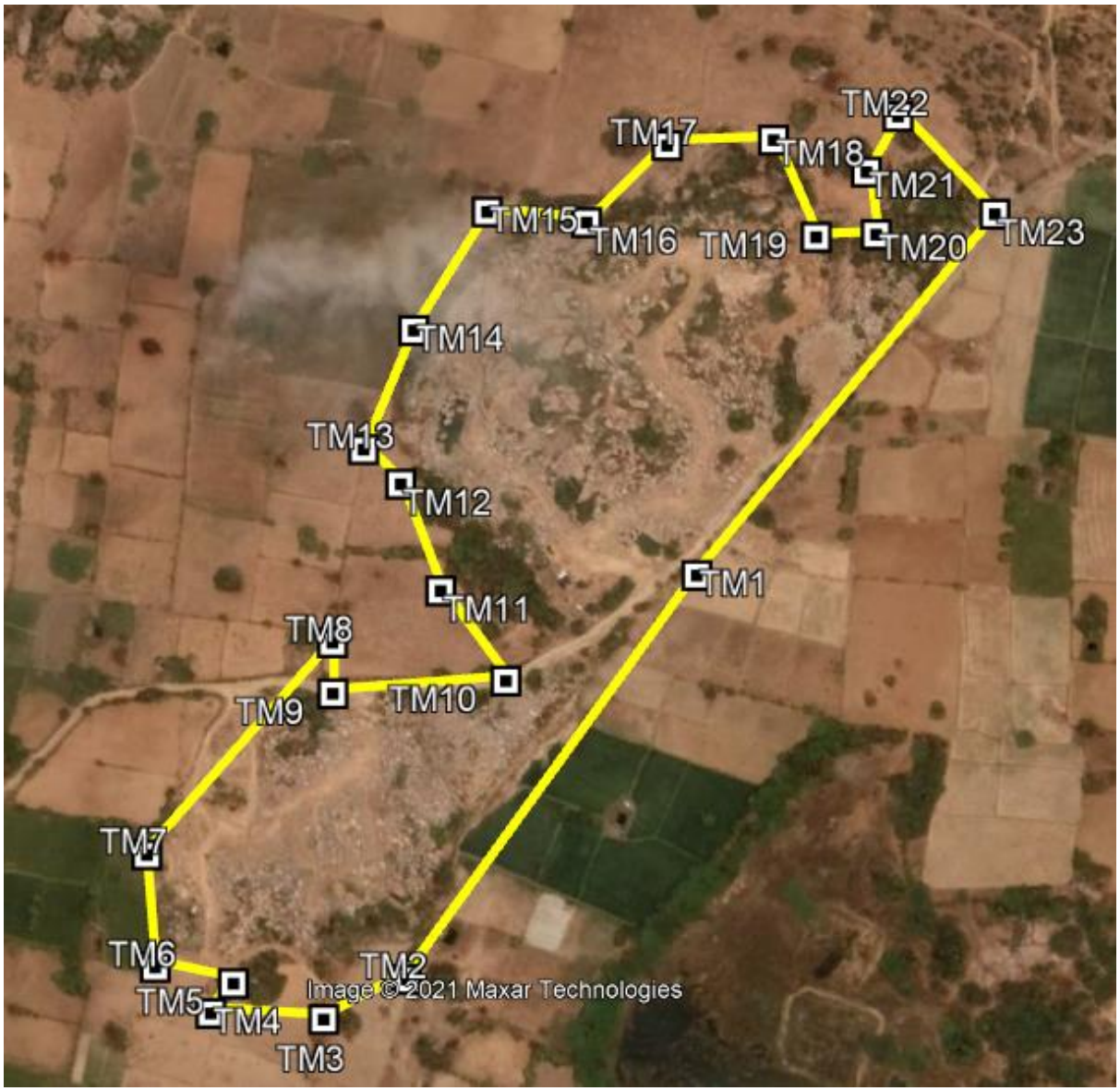

Figure 1-1: Google Image showing lease boundary

2 PROJECT DESCRIPTION

2.1 METHOD OF MINING- OPEN CAST MINING

In accordance with the Regulation 106(2) (a) of the Metalliferous Mines Regulations 1961, in all open cast workings where the ore body forms hard rock, the working faces and sides should be adequately benched and sloped; a bench height not exceeding 6m and a bench width not less than the 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 into in granite dimensional stone mining is seldom possible due to the field difficulties and technical reasons as given below:

1. Recovery of the granite mineral should 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 which case, the commercial granite body may get damaged due to generation of blasting cracks.

2. In the exercise of forming the benches with 60° slope within the granite deposit, the portion confined between vertical and 60° as well as its complimentary part in the extricated block will become mineral waste while shaping into rectangular blocks.
3. The granite industry needs blocks as huge as a few cubic meters in volume with measurements up to 3m x 2m x 2m. Production of such large blocks in turn increase the recovery and reduce the mineral waste during dressing. Blocks of smaller size of certain varieties of granite are not marketable now-a-days.
4. Formation of too many benches with less height and the width equal to the height may lead to large volume of mineral locked up. Hence, in order to avoid mineral locked-up and to facilitate economical and convenient mining operations, it is proposed to obtain relaxation to the provisions of Regulation 106(2) (a) up to a bench parameter of 6m height and 6m width with vertical faces. Such a provision for relaxation of the Regulation has been provided within the regulation 106(2). Further, it is to be noteworthy that opencast granite mining operations with the above proposed bench parameters may not be detrimental to 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.

It is proposed not to back fill the pit in as much as good quantities of the reserve's ore underlying the pits. The stock yard for the granite quarry produced and dressing yard where the manual dressing and shaping of the blocks are carried out or located near the working pit in order to minimize the lead from the pit to the dressing yard and stockyard. A mine office storeroom, first aid room and workers rest shelters will be provided within the lease area where the mine is not proposed due to technical reasons and quality considerations.

2.1.1 YEAR-WISE DEVELOPMENT FOR SCHEME OF MINING-II

The year- wise development for the Scheme of Mining-II period i.e from 2022-2023 to 2026-2027 is shown in the Year-wise Production/Development Plan and Sections.

Table 2-1: Year-Wise Development for Scheme of Mining-II

Year	ROM (M^3)	Recovery @ 25% (M^3)	Total Waste Generation (M^3)			
			OB	SB	Granite Rejects	Total
2022-2023	13,723	3,431	--	--	10,292	10,292
2023-2024	13,728	3,432	--	--	10,296	10,296
2024-2025	13,727	3,432	--	--	10,295	10,295
2025-2026	13,728	3,432	--	--	10,296	10,296
2026-2027	13,725	3,432	--	--	10,293	10,293
Total	**68,631**	**17,159**	**Nil**	**Nil**	**51,472**	**51,472**

- Total Proposed ROM : 68,631 M^3
- Total Recoverable Reserves @ 25% : 17,159 M^3
- Granite Waste @ 75% : 51,472 M^3
- Over Burden/ Side Burden : Nil
- Total Waste : 51,472 M^3
- Granite: Waste Ratio : 1:0.75

Table 2-2: Updated Mineable Reserves as on 30.06.2021

Bench	Average Measurements (m)			ROM (M^3)	Saleable Reserves @25% (M^3)	Granite waste @ 75% (M^3)
	Length	Width	Depth			
Sections PQ-AB & CD						
Ist Bench	122.00	(62+70)/2	10.00	81,740		
IInd Bench	110.00	(52+58)/2	10.00	60,500		
IIIrd Bench	98.00	(40+46)/2	10.00	42,140		
Sections PQ-EF,GH & JK						
Ist Bench	222.00	(89+136+107)/3	10.00	2,45,687		
IInd Bench	210.00	(77+124+95)/3	10.00	2,07,207		
IIIrd Bench	198.00	(65+112+83)/3	10.00	1,71,607		
Total Mineable Reserves				**8,08,881**		
(-) Past working upto 30.06.2021				(-) 32,840		
Updated Mineable Reserves as on 30.06.2021				**7,76,041**	**1,94,010**	**5,82,031**

2.1.2 YEARLY PIT-WISE DEVELOPMENT PLAN

The Year-wise development for the Scheme of Mining-II are as follows and shown in Table 2-3

Table 2-3: Yearly Pit-wise development plan

Year	Section	Dimensions (Average) in M			ROM (M^3)	Recovery @ 25% (M^3)	Granite Waste @ 75% (M^3)	OB / SB (M^3)
		L	W	D				
2022 - 2023	PQ & AB	**Colour Granite:** First Bench: 21.00	17.40	(7.5+1.6) / 2	1,663	416	1,247	--
		Second Bench: 45.35	29.00	(10+10+7.5) / 3	12,060	3,015	9,045	--
Total Production for the year 2022-2023					**13,723**	**3,431**	**10,292**	--
2023 - 2024	RS& CD	**Colour Granite:** First Bench: (11.4+44.4) / 2	6.00	6.50	1,088	272	816	--
		Second Bench: 40.00	31.60	10.00	12,640	3,160	9,480	--
Total Production for the year 2023-2024					**13,728**	**3,432**	**10,296**	**--**
2024 - 2025	RS & EF	**Colour Granite:** First Bench: 16.60	24.40	3.00	1,215	304	911	--
		Second Bench: 34.00	46.00	8.00	12,512	3,128	9,384	--
Total Production for the year 2024-2025					**13,727**	**3,432**	**10,295**	--
2025 - 2026	PQ & GH	**Colour Granite:** First Bench: 8.25	43.40	(3.3+6.3+8.1+7) / 4	2,213	553	1,660	--
		Second Bench: 46.40	44.00	5.64	11,515	2,879	8,636	--
Total Production for the year 2025-2026					**13,728**	**3,432**	**10,296**	--
2026 - 2027	RS & JK	**Colour Granite:** First Bench: 17.20	24.00	3.70	1,527	382	1,145	--
		Second Bench: 42.80	28.50	10.00	12,198	3,050	9,148	--
Total Production for the year 2026-2027					**13,725**	**3,432**	**10,293**	**--**

Table 2-4: Details of depth and benches for Scheme of Mining-II

Year	Section	R.L Proposed(m)	Depth Details (m)				No. of Benches
			Present	Proposed	Remaining	Total	
2022-2023	PQ-AB	119.765 to 116.045	--	13.72	16.28	30	2Nos
2023-2024	RS-CD	112.545 to 96.045	--	16.50	13.50	30	2Nos
2024-2025	RS-EF	111.401 to 100.401	--	11.00	19.00	30	2Nos
2025-2026	PQ-GH	112.221 to 100.401	1.00	11.82	17.18	30	2Nos
2026-2027	RS-JK	109.745 to 96.045	--	13.70	16.30	30	2Nos

2.2 PROJECT REQUIREMENTS

2.2.1 LAND REQUIREMENT

The total extent Colour Granite Mine is over an Extent of 5.58.5 ha located in S.F.No. 37/15B2, Kommedu Village, Gingee Taluk, Villuppuram District, Tamil Nadu State, lies in the latitude from 12°10'11.93"N to 12°10'24.47"N and longitude from 79°27'38.38"E to 79°27'50.31"E. The area is marked in the survey of India Topo sheet No.57P/8 & 57P/12. The altitude of the area is above 80m above MSL. Quarry Land is classified as Government Poramboke land and leased to Tamil Nadu Minerals Limited (TAMIN).

Table 2-5: Land use pattern of the lease area

Description	Present Area (Ha.)	Area to be required during the Mining Plan period (Ha.)	Area at the end of life of the quarry (Ha.)
Area under Quarry	0.65.0	0.60.0	3.44.0
Waste Dump	0.40.0	0.45.0	1.99.0 (including Afforestation area of 0.82.0Ha)
Infrastructure	0.00.5	--	0.00.5
Roads	0.15.0	--	0.15.0
Green Belt	0.01.0	0.01.0	--
Un-utilized Area	4.37.0	3.24.0	--
Total	**5.58.5**	**4.37.0**	**5.58.5**

2.2.2 MAN POWER REQUIREMENT

As per MMR 1961, Mines officials & other competent persons are deployed for effective supervision of mines. Mostly supervisors & skilled persons are required for looking after various aspects of operations including mining, loading & quality control etc. Details of manpower deployed in mine are as given below in Table: 2-6

Table 2-6 Man Power Requirement

S.No.	Designation	No's
1.	Manager (Second class Manager certificate of competency restricted)	1
2.	Mine Foreman	1
3.	Operators & Drivers	7
4.	Workers (Skilled, semiskilled & unskilled)	26
Total		**35**

2.2.3 WATER REQUIREMENT

Total water requirement for the mining project is 1.5 KLD. Total water required for the mine will be met from tankers. Water will be required for the Domestic purpose, Dust Suppression & Green belt development etc.

Table 2-7: Water Requirement

S.No.	Description	Quantity (KLD)
1	Drinking and domestic	0.5
2	wire saw cutting purpose	0.3
3	Dust suppression	0.3
4	Green belt/plantation	0.4
Total		**1.5 KLD**

2.2.4 SOLID WASTE MANAGEMENT

Total Solid waste generation is 12 Kg/day. The Biodegradable waste of 7.2Kg/day which will be disposed to the local municipality and the about 4.8Kg/day of non-biodegradable will be disposed to the PCB authorized vendors.

2.3 PROJECT COST

Table 2-8 Project cost

S.No	Description of the Cost	Cost in Lakhs
I. Fixed Asset Cost		
1	Land Cost (Lease)	Nil (Govt. land)
	Labours Shed	50,000
	Sanitary facilities	50,000
	Fencing Cost	1,25,000
	Sub Total	2,25,000
II. Variable cost		

		Operational Cost
1	Machineries	95,67,000
	Sub Total	95,67,000
2	EMP Cost	
	Afforestation	30,000
	Water Sprinkling	50,000
	Water Quality Test	25,000
	Air Quality Test	25,000
	Noise/Vibration Test	25,000
	Sub Total	1, 55, 000
3	CSR Activities	50,000
Grand Total		**99,97,000/ @ Rs. 1 Crore**

3 BASELINE ENVIRONMENT

3.1 METEROLOGICAL ENVIRONMENT

The micro-meteorological conditions during the study period for hourly data of wind speed, wind direction and temperature were recorded at the project site. The nearest Indian Meteorological Department (IMD) station is Salem, the annually determined wind direction during the July, August & September is South East & East.

During the study period (July 2021 – September 2021), maximum temperature is 35°C. Minimum temperature is 25°C. Relative humidity is 42 % to 92 %. Average wind speed in study period is 4.77 m/s, predominant wind direction is from South East.& East.

3.2 AMBIENT AIR QUALITY

Maximum concentrations of PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, Pb, O_3, NH_3, C_6H_6, C_{20} H_{12}, As, Ni, are well within the National Ambient Air Quality Standards for Industrial, Commercial and Residential areas at all monitoring locations during the study period. The ambient air quality has been monitored at 6 locations for 12 parameters as per NAAQS, 2009 within the study area. The average baseline levels of PM_{10}(38 – 61 µg/m³), $PM_{2.5}$(18 – 25.63 µg /m³), SO_2 (5.2 – 9.74 µg/m³), NO_x (11.6 – 19.3 µg/m³), CO (BDL <0.1 mg/m³) and some are BDL, all the parameters are well within the National Ambient Air Quality Standards for Industrial and Residential areas at all monitoring locations during the study period.

3.3 NOISE QUALITY

The existing ambient noise levels were monitored using precision noise level meter in and around the project site at 10 km radius at 6 locations during study period (July to September 2021).

- In residential area day time noise levels varied from 47.1 dB (A) to 53.1 dB (A) and night time noise levels varied from 40.4 dB (A) to 44.2 dB (A) across the sampling stations.
- The field observations during the study period indicate that the ambient noise levels in residential area are within the limit prescribed by MoEF&CC (55 dB(A) Daytime & 45 dB(A) Night time).

3.4 WATER QUALITY

Surface water quality:-

Water sampling results are compared with Surface water standards IS 2296:1992. The results indicate that the pH ranges between 7.88, TDS ranges from 237 mg/l. The total hardness ranges from 106.6 mg/l, BOD ranges from <2 mg/l, COD ranges from 17.3 mg/l and DO ranges from 5.46 mg/l. The concentration of heavy metals within detectable limits and within the limits of IS2296:1992.

Ground water Quality:-

Water sampling results are compared with IS 10500:2012 standard.

- The average pH ranges from 7.23 – 7.91
- TDS value varied from 376 mg/l to 516 mg/l.
- Sulphate ranges within & exceeds the permissible limit (21 mg/l – 60 mg/l) in all 6 locations.
- Total hardness ranges are between 152 mg/l – 292 mg/l.
- Total alkalinity ranges from 110 mg/l to 248 mg/l.
- Calcium carbonate, Magnesium and Chloride are well within the permissible limits.
- Most of the heavy metals concentrations in the study area samples are below detection limits and all are well within the limits.

3.5 SOIL QUALITY

Soil sampling was carried out at six (6) locations within the study area. It has been observed that the pH of the Soil ranging from 7.48 – 8.23.indicating the moderate and ideal of plant growth properties.

The soil is pre-dominantly of loam type and clayey loam in some locations.

- Conductivity of the soil samples ranged from 0.075 – 0.256 mS/cm.
- As the EC value is less than 2000 µS/cm, the soil is found to be non-saline in nature
- Nitrogen content ranged from 129 kg/Ha to 234 kg/Ha,
- Potassium content ranges from 232 Kg/Ha to 378 Kg/Ha.

3.6 Ecological Environment

No Wildlife Sanctuary is located in 10Km from the project site. The area did not record the presence of any critically threatened species. The floral diversity is grouped into trees, shrubs, climbers, herbs, aquatic plants and phytoplankton. Similarly, the faunal diversity is grouped into mammals, birds, reptiles, amphibians and zooplankton. The study area has good vegetation cover in the western and northern western regions. Large tracts of the land are under paddy, sugarcane, and coconut and groundnut cultivation.

3.7 Socio Economic Environment

The baseline data includes the socio economic status of the area. The data about the human settlements in and around the project site, health status of the community, existing infrastructure facilities for social welfare, job opportunities, safety and security of the workers and the surrounding population. Total population in the study region (Census 2011) is worked out as 1,39,580 out of which 70,390 are male and 69,190 female. The literacy rate of the total population is worked out to 88,601(71.9%). Male literacy 49,737(80.55%) and female literacy is 38,864(63.15%) and the total population of main worker 44,376(31.8%) and non-worker category are 62,134(44.5%).

4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 Air Environment

The emissions mainly generated from the mining activities are blasting, drilling, scrapping, excavation, loading, unloading, and transportation etc. Machinery like compressors and jackhammers are used for drilling. Fugitive dust control in mine is given in Table 4-1.

Table 4-1: Fugitive dust control in mine

S.No	Activities	• Best practices
1	Drilling	• Drills should be provided with dust extractors (dry or wet system)
2	Blasting	• Water spray before blasting • Water spray on blasted material prior to transportation • Use of controlled blasting technique
3	Transportation of mined material	• Covering of the trucks/dumpers to avoid spillage • Compacted haul road • Speed control on vehicles • Development of a green belt of suitable width on both sides of road, which acts as wind break and traps fugitive dust

4.2 NOISE ENVIRONMENT

Noise will be generated during drilling, blasting and transportation processes. However, the noise is not anticipated to affect any of the surroundings since there is no habitation within 1Km nearby vicinity. The advancements in blasting techniques are also expected to bring down noise levels further. All mining operations including blasting processes will be done during the day time to avoid disturbing any of the local communities surrounding the mining site.

4.3 WATER & WASTE WATER MANAGEMENT

The accumulation of water inside the mines would be mainly due to the surface water entering the mines the mines during rainy season. A pump will be installed & pumping will be done to dewater the mine seepage. The excess water pumped out during rainy season will be discharged into the nearby water course. During rest of the year, the water accumulated in the mine sump area would be utilized for green belt development & for dust suppression measures.

Sewage (0.4 KLD) is being sent to septic tank followed by soak pit. The septic tank will be cleaned regularly. There is no process effluent generation in quarry project.

4.4 BIOLOGICAL ENVIRONMENT

To reduce the adverse effects on flora/fauna in mine area due to deposition of dust generating from mining operations, water sprinkling and

water spraying will be ensured in all dust prone areas to arrest dust generation.

4.5 Solid/Hazardous waste Management

Municipal solid wastes including food waste are being disposed to municipal bin.

4.6 Occupational Health & Socio Economic Environment

Impacts to health can be caused due to exposure to dust in large quantities or accidents that happen during the mining processes like drilling, blasting etc. The impacts can be nullified if safety measures like personnel protection equipment are worn and adequate safety procedures are followed during the mining operations. In terms of socio-economic impacts, there will be a positive impact since jobs will be created for the local community.

5 ENVIRONMENTAL MONITORING PROGRAMME

During the operation of mining, it is important in terms of evaluating the performance of pollution control equipments installed in the project. A monitoring schedule with respect to Ambient Air Quality, Water & Wastewater quality, Noise quality as per Tamil Nadu State Pollution Control Board (TNPCB) will be maintained.

6 ENVIRONMENTAL MANAGEMENTAL PLAN

The Environmental Management Plan (EMP) for the proposed mining operation has to ensure that the residual environmental impacts are minimized, by adopting best possible economically viable techniques. The environmental Management Plan during the operation of the mine shall be directed to the following:

- It should be ensured that all the pollution control/environment management systems are commissioned as part of main equipments, before the commencement of operation.
- Regular monitoring of various components of environment should be undertaken to ensure effective functioning of pollution control measures as well as to safeguard against any unforeseen changes in the environment.
- The recommendations for Disaster Management Plan / Occupational Health and safety Plan should also be implemented along with the commissioning of the project.

6.1 BUDGET FOR ENVIRONMENTAL PROTECTION

It is necessary to include the environmental cost as a part of the budgetary cost component. Total of Rs.1,55,000/- allocated for environmental protection activities. Environmental Management cost is given in Table 6-1.

Table 6-1 Environmental Management cost

S. No	Details	Cost in Rs.
1	Afforestation	30,000
2	Water Sprinkling	50,000
3	Water Quality Test	25,000
4	Air Quality Test	25,000
5	Noise/Vibration Test	25,000
Total		**1,55,000**

7 GREENBELT DEVELOPMENT

The green belt plantation programme will be continued till the end of the mining operation in the area. In framing out this programme on a sustainable and scientific base, due consultation and coordination with the forest department will be sought. Plants are chosen to provide aesthetic, ecological and economical value. Trees will help to arrest propagation of noise and help to lessen dust pollution due to dust arresting action. The plantation will be developed inside and around the lease area is 0.82.0 Ha, out of 5.58.5 Ha. The soil dumps, are planted to prevent erosion and for stabilization of the soil.

8 DISASTER MANAGEMENT PLAN

The on-site and off-site emergency plans recommend various preventive and protective systems. A protective system includes Site controller, Incident controller and coordinators. Personnel protective equipment to be deployed at the site, control systems and mock drill and simulation exercises, mutual aid schemes, and procedures for Communications, Medical facilities to be provided and procedure for reporting to external agencies.

9 PROPOSED CORPORATE ENVIRONMENTAL RESPONSIBILITY (CER)

TAMIN will comply with the 1st May 2018 OM w.r.t. CER and the cost will be assessed on actual project capex expenditure of that particular financial year.

CER Expenditure outlay shall be spent in various social development cost based on the assessed needs @ 2% of the estimated project cost i.e, Rs.2 Lakhs over a period of 5-10 years.

10 PROJECT BENEFITS

- Proposed greenbelt outside mine lease area will minimize air pollution, also act as noise barrier to reduce noise levels and prevents soil erosion.
- Water will be sprinkled at regular intervals during quarry operation will minimize air pollution
- No groundwater withdrawal

Social Benefits:

The quarrying activities will benefit to the local people directly (35 persons) and indirectly (20 persons).

Economic Benefits:

- Improve in per capita income of the people.
- Financially viable and would be in the interest of construction industry thereby indirectly benefiting the masses.

Revenue generation to State government by way of taxes, royalties and DMF.

11 CONCLUSION

Assessment of the impacts due to various emissions and discharges from the mining indicate that the environmental quality will remain within the stipulated standards even after commissioning and operation of the project. All the impacts due to the operation of the mine shall be mitigated by adopting state of art technologies and management systems. In addition, the benefits of the project in terms of utilization of barren land, improvement of living standards of the local population, improvements in infrastructure etc., will add positive impacts of the project.