



EXECUTIVE SUMMARY
OF
ENVIRONMENTAL IMPACT ASSESSMENT REPORT
For
PERUMBAKKAM BLACK GRANITE QUARRY
OVER AN EXTENT OF 6.09.0 Ha.

(Salable Production capacity 7163m³/5 years)

At

Survey no.: 11(P)
Perumbakkam Village
Vanur Taluk
Villupuram District
Tamil Nadu State

By



M/s. Tamil Nadu Minerals Limited
No. 31, Kamarajar Salai,
Chepauk,
Chennai – 600 005

(Project termed under Schedule of 1(a) Mining of Minerals 'B1' category as per EIA Notification 2006 and its Amendments & Project falls under Violation category as per S.O. 804 (E) dated 14th March 2017)

EIA Consultant

HUBERT ENVIRO CARE SYSTEMS (P) LTD, CHENNAI

NOVEMBER 2021



EXECUTIVE SUMMARY

I. Background

The total extent of the quarry is 6.09.0 Ha, at S.F.No. 11 (P), Perumbakkam Village, Vanur Taluk, Villupuram District, Tamil Nadu State. Quarry Land is classified as Government Poramboke land and is lease obtained by Tamil Nadu Minerals Limited (TAMIN).

The lease area exhibits Hilly terrain topography covered by massive black granite formation. First Mining lease was approved vide G. O. Ms. No.773, Industries (H2) department, and valid up to 28.03.2007. The Renewal of quarry lease was obtained vide G.O. (3D) No. 2, Industries (MME-1) dept dated 12.01.2009 for 20 years & the lease period valid upto 18.06.2029. Lease documents are enclosed as **Annexure –I**.

The Mining plan was approved with 2% recovery by the Commissioner of Geology & mining, Chennai vide letter No. 4524/MM9/2004, dated 27.12.2004. Subsequently, TAMIN submitted the Scheme of Mining-I pertaining to the years 2009-2010 to 2013-2014 over an extent of 6.09.0 Ha. for the said area with 5 % recovery vide Letter No. 14841/ML3/2009, dated: 10.09.2009. Further, Scheme of Mining-II for period from 2014-2015 to 2018-2019 was submitted with 5% recovery Letter No. 14841/ML3/2009, dated: 07.08.2014 and it was under process with Directorate of Geology and Mining for approval.

Taking in to consideration of deemed approval of Scheme of Mining – I and Scheme of Mining– II under Rule 18 (5) of GCDR 1999, the Scheme of Mining –III pertaining to the years 2019-2020 to 2023-2024 was submitted with 5% recovery for approval vide Letter No. 14841/ML3/2009, dated: 02.05.2019.

Project Site Elevation is above 80 m AMSL. The project falls under B₂ Category, Schedule 1(a) Mining of Minerals as per MoEF&CC Notification and its amendment. Initially, Environmental Clearance was granted for this project by State Level Environmental Impact Assessment Authority, Tamil Nadu, for the production quantity of 523.800 m³ over the period of five years vide SEIAA. TN/F.No.1260/EC/1(a)/1834/2014, dated: 27.03.2015 and same is valid up to 26.03.2020.

During the EC period TAMIN exceeded the production quantity against the quantity permitted in the EC. The production quantity of 523.800 m³ was allowed as per EC but, actual quantity of 632.211 m³ has been produced as per Assistant Directors measurement. The EC Application submission under violation (Category B1, Schedule 1(a)) at MoEF&CC (Proposal No IA/TN/MIN/72208/2018) dated: 11.01.2018.

As per MoEF&CC Gazette Notification No.S.O.804 (E) dated 14thMarch, 2017 and its subsequent amended gazette notification no. S.O. 1030(E) dated 8thMarch, 2018 and OM F.No. Z-11013/22/2017-IA. II (M) dated 15th& 16th March, 2018, MoEF directed to appraise by SEAC/SEIAA. The EC application submission under violation (Category B1, Schedule 1(a)) at TN SEIAA vide Proposal No.SIA/TN/MIN/24539/2018 & File No. SEIAA-TN/F.No. 1260/2020).



The proposal was appraised under violation during 125thSEAC meeting held on 02.02.2019 and 339thSEIAA meeting held on 27.02.2019 and Scheme of Mining was revised and submitted as per query raised by SEIAA and appraised again in 420th SEIAA meeting held on 04.02.2021. ToR was issued Lr No. SEIAA-TN/F.No.1260/ToR-853/2020 dated: 18.02.2021 for the preparation of EIA/EMP report with ecological damage assessment, remediation plan, natural resource augmentation plan and community resource augmentation plan.

TAMIN as part of the compliance from SEIAA has appointed M/s Hubert Enviro Care systems (P) Ltd, Chennai as Environmental Consultants who are accredited by National Accreditation Board for Education and Training (NABET), Quality Council of India (QCI), New Delhi. Project Summary & Salient Features within 15km radius of the project boundary is given in **Table-1**.

Table-1 Project Summary & Salient Features within 15km radius of the project boundary

S. No	Particulars	Details
1.	Latitude	12°05'53.67"N to 12°06'04.52"N
2.	Longitude	79°39'12.36"E to 79°39'22.44"E
3.	Site Elevation above MSL	80 m AMSL
4.	Topography	Hilly terrain
5.	Land use of the site	Government land
6.	Extent of lease area	6.09.0 Ha
7.	Quarry Lease (G. O. Ms. No.21)	20 Years from 12.01.2009 to 18.06.2029.
8.	Saleable Production details for the period of (2006 to 2013-2014)m ³	1038.289
9.	Proposed Saleable Production Mining Plan(2014-2015 to 2018-2019)m ³	3689
10.	Actual Saleable Production(2014-2015 to 2018-2019) m ³	1046
11.	Proposed Saleable Production (SOM-III 2019-2020 to 2023-2024) m ³	7163
12.	Actual Production(SOM-III 2019-2020 to 2023-2024) m ³	Nil
13.	Water Requirement	1.5 KLD



14.	Power requirement through DG Set	60 (DG Set 1*125 kVA)			
15.	Fuel requirements (Lts/Day)	200			
16.	Manpower	35			
17.	Municipal Solid waste Generation (Kg /day)	16			
18.	Waste Oil generation (Lts/Y)	3.0			
19.	Project Cost in Lakh	99.97			
20.	Nearest highway	1. SH 136(Mailam-Karasanur-Puducherry) \approx 1.49 km (WSW) 2. NH 32(Chennai-Puducherry-Tuticorin) \approx 7.60 km (NE)			
21.	Nearest railway station	Mailam Railway Station \approx 7.80 km (NW)			
22.	Nearest airport	Chennai International Airport \approx 110.94 km (NNE)			
23.	Nearest town / city	Nearest Town: Tindivanam \approx 11.98 km (N) Nearest City-Puducherry \approx 21.06 km (SE)			
24.	Water body	S. No	Water bodies	Distance (km)	Direction
		1	Vidur Branch Canal	3.87	SSW
		2	Vidur Dam	6.89	WSW
		3	VarahaNadi/Sankar aparani R/Gingee R	7.86	S
		4	SuttukanniVaykkal	10.24	SSE
		5	Kondamur/NallavurAr	5.72	NE
		6	TondiAr	7.28	W
25.	Hills / valleys	Nil in 15 km radius			
26.	Archaeologically places	S.No	Monuments	Distance (km)	Direction
		1	Urn burial site Kadagambattu	8.38	S
		2	Megalithic cairns and stone circles Sengamedu	8.82	SSE
		3	Megalithic stone circles Tiruvakkarai	6.82	S
		S.No	Heritage	Distance (km)	Direction
		1	Chandra Mouleeswarar Temple	7.74	S
		2	Arasaleeswarar	13.73	ESE



			Temple		
27.	National parks / Wildlife Sanctuaries	Nil within 15 km radius			
28.	Reserved / Protected Forests	S.No	Reserve Forests	Distance (km)	Direction
		1	Kumalumpattu RF	14.54	ENE
		2	Melkondai RF	12.02	WSW
29.	Seismicity	Seismic zone-III			
30.	Defense Installations	Nil within 15 km radius			
31.	State Boundary	S.No	State Boundary	Dist (km)	Direction
		1	TN-PY State Boundary(As per SOI Toposheet)	7.83	SSW
		2	TN-PY State Boundary(As per Google)	7.85	SSE

II. Management Commitment

The company is assigning prime importance for environmental protection. The company will comply the environmental laws. The project will maintain well developed Greenbelt. Also, all the environmental statutory requirements will be implemented and maintained continually.

III. Environmental Sensitive Areas

There are no notified ecologically sensitive areas within 15km from project boundary. There is TN-PY State boundary at 7.83 (SSW) from the mine lease boundary. Project doesn't attract the special conditions and general conditions as per EIA Notification. Environmental sensitive areas within the 15 Km from project boundary are given in **Table-2**.

Table-2 Environmentally Sensitive Areas within 15km from Project Boundary

S. No.	Areas	Distance & Direction from project boundary			
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Monuments			
		S. No	Places	Distance (~km)	Direction
		1	Urn burial site Kadagambattu	8.38km	S
		2	Megalithic cairns and stone circles	8.82km	SSE



			Sengamedu		
		3	Megalithic stone circles Tiruvakkarai	6.82km	S
		Heritage:			
		S. No	Places	Distance (~km)	Direction
		1	Chandra Mouleeswarar Temple	7.74km	S
		2	Arasaleeswarar Temple	13.73km	ESE
2	Water bodies	Water Bodies:			
		S. No	Places	Distance (~km)	Direction
		1	Vidur Branch Canal	3.87	SSW
		2	Kondamur/NallavurAr	5.72	NE
		3	Vidur Dam	6.89	WSW
		4	TondiAr	7.28	W
		5	VarahaNadi/Sankaraparani R/Gingee R	7.86	S
		6	SuttukanniVaykkal	10.24	SSE
		7	VarahaNadi	10.51	SW
		Reserved Forests:			
		S. No	Places	Distance (~km)	Direction
		1	Melkondai RF	12.02	WSW
		2	Kumalumpattu RF	14.54	ENE
3	State, National boundaries	TN-PY State Boundary(As per SOI Toposheet)≈ 7.83km , SSW			
		TN-PY State Boundary(As per Google)≈ 7.85km, SSE			



4	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	SH 136(Mailam-Karasanur-Puducherry)≈ 1.49km, WSW NH 32(Chennai-Puducherry-Tuticorin)≈ 7.60km, NE			
5	Defence installations	Nil			
6	Densely populated or built-up area (Nearest Town, City, District)	S. No	Name of the Village	Distance in km & direction	Population(census 2011)
		1	Parikkalpattu	≈0.02 (E)	900
		2	Perumbakkam	≈0.34 (SSE)	1000
		3	Taludali	≈0.98 (W)	1500
		4	Parikkalpattu	≈1.00(NE)	2257
		5	Veliyanur	≈2.08 (N)	1267
7	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Perumbakkam ~0.34km(SSE) is the nearest village and Tindivam≈ 11.98 km (N) is the nearest town with all the facilities.			
8	Areas already subjected to pollution or environmental damage (those where existing legal environmental standards are exceeded)	Nil			
9	Areas susceptible to natural hazard which could cause the project to present environmental problems, (earthquakes, subsidence, landslides, erosion or extreme or adverse climatic conditions)	Project site located at seismic zone-III (Low Damage Risk Zone)			

IV. Black Granite Reserves

Table-3 Updated Geological reserves as on 31.03.2019

S. No	Details	ROM m ³	Recovery Quantity (m ³)
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1	Total Geological Reserves in the area	5, 22, 405	
2	Depletion of Reserves before Mining Plan period	(-)7, 233	
3	Depletion of Reserves during the Mining Plan Period (from 2004-2005 to 2008-2009)	(-)24,000	
4	Depletion of Reserves during the Scheme of Mining- I Period (from 2009-2010 to 2013-2014)	(-)12,900	
5	Depletion of Reserves during the Scheme of Mining- II Period (from 2014-2015 to 2018-2019)	(-)20,930	
Updated Geological Reserves as on 31.03.2019		4, 57, 342	45,734 @10%

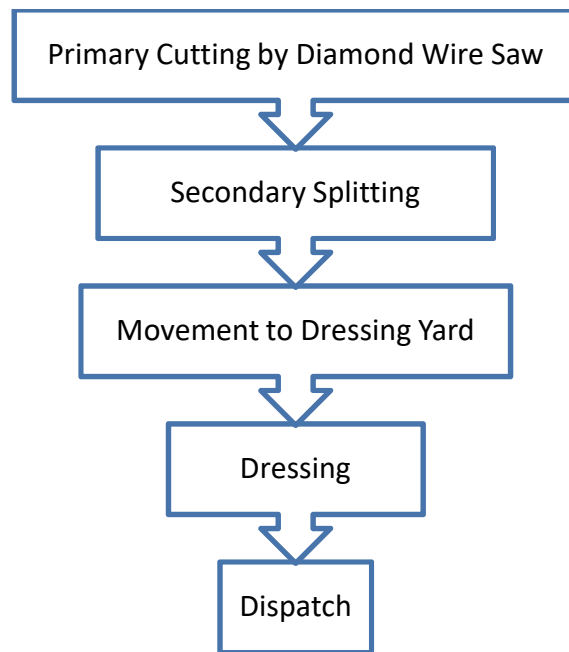
Table-4 Updated Mineable reserves as on 31.03.2019

S. No	Details	ROM m ³	Recovery Quantity (m ³)
1	Total Mineable Reserves in the area	2, 12, 593	
2	Depletion of Reserves before Mining Plan period	(-)7,233	
3	Depletion of Reserves during the Mining Plan Period (from 2004-2005 to 2008-2009)	(-)24,000	
4	Depletion of Reserves during the Scheme of Mining- I Period (from 2009-2010 to 2013-2014)	(-)12,900	
5	Depletion of Reserves during the Scheme of Mining- II Period (from 2014-2015 to 2018-2019)	(-)20,930	
Updated Mineable Reserves as on 31.03.2019		1, 47, 530	14, 753 @10%

Table-5 Granite Quarry Reserves

S. No	Description	Granite in m ³
1	Total Reserves in the area	5,22,405
2	Updated Geological Reserves as on 31.03.2019	4,57,342
3	Total Mineable Reserves in the area	2,12,593
4	Updated Mineable Reserves as on 31.03.2019	1,47,530

Mining methodology:



During the mining operation necessary mitigation measures will be taken for taking corrective actions, as and when needed as follows.

- Using State of Art diamond saw cutter and drill machines, bits of good condition
- Use of water for dousing the cuttings during cutting
- Adoption of only mild blasting as and when required
- Secondary splitting using rock breaking power [Ca(OH)₂] or by way of splitting and overturning cushion operational procedure using compressed air
- Proper maintenance of haul road and other roads
- Water sprinkling at haul road
- Proper maintenance of HEMM which avoids excessive noise and vibration
- Imparting sufficient training to operators on safety and environmental parameters

- Development of green belt/ barriers wherever possible

V. Summary of the Magnitude of Operation

The Mining plan was approved by the Commissioner of Geology & mining, Chennai vide letter No. 4524/MM9/2004, dated 27.12.2004. TAMIN submitted the mining plan under rule 17 of GCDR 1999 and was approved vide Lr. No.4524/MM9/2004 dated 27.12.2004. Subsequently, TAMIN submitted the Scheme of Mining –I pertaining to the years 2009-2010 to 2013-2014 for the said area of 6.09.0 Ha by the office Lr. No. 14841/ML3/2009, dated: 10.09.2009. Further scheme of mining –II for the period 2014-2015 to 2018-2019 was submitted with 5% recovery vide this office Lr. No. 14841/ML3/2009, dated 07.08.2014. By taking in to consideration deemed approval of both mining plan under under Rule 18 (5) of GCDR 1999, the scheme of mining –III pertaining to the years 2019-2020 to 2023 -2024 was submitted with 5% recovery for approval vide this office Lr. No. 14841/ML3/2009, dated 02.05.2019.

The production details for the period of 2009 to 2014 are summarized in **Table 6** Proposed and Actual year wise Production details (SOM-I 2009-2010 to 2013-2014) is given **Table 7** Proposed production details (SOM-II 2014-2015 to 2018-2019) is summarized in **Table 8** Year wise production details (SOM-III 2019-2020 to 2023-2024) is summarized in **Table 9**

Table -6 Proposed and Actual year wise Production details (SOM-I 2009-2010 to 2013-2014)

S. No	Year	ROM Proposed in the SOM –II (m ³)	Saleable Quantity proposed @ 5 % (m ³)	Actual ROM production achieved (m ³)	Actual salable production achieved @5 % (m ³)
1	2009-2010	4,935	99	--	--
2	2010-2011	5,010	100	--	--
3	2011-2012	5,040	101	388	19.388
4	2012-2013	4,700	94	3,230	161.481
5	2013-2014	5,130	103	9,280	463.983



Table-7 Proposed and Actual year wise Production details (SOM-II 2014-2015 to 2018-2019)

S. No	Year	ROM Proposed in the SOM -II (m ³)	Saleable Quantity proposed @ 5 % (m ³)	Actual ROM production achieved (m ³)	Actual salable production achieved @5 % (m ³)	Permit obtained quantity(m ³)
1	2014-2015	13,065	653	13,368	668	713.676
2	2015-2016	15,093	755	2,920	146	418.628
3	2016-2017	15,057	753	1,952	98	63.832
4	2017-2018	15,313	766	2,690	134	149.761
5	2018-2019	15,231	762	Nil	Nil	--
Total		73,759	3,689	20,930	1,046	1345.897

Table -8 Proposed and Actual year wise Production details (SOM-III 2019-2020 to 2023-2024)

S. No	Year	Production of ROM (m ³)	Recovery @10%(m ³)	Granite rejects (m ³)
1	2019-2020	13,065	1,307	11,758
2	2020-2021	13,970	1,397	12,573
3	2021-2022	14,502	1,450	13,052
4	2022-2023	15,313	1,531	13,782
5	2023-2024	14,784	1,478	13,306
Total		71,634	7,163	64,471

Note:

- As per MoEF & CC Notification dated 14.09.2006 and 14.03.2017 production details have to be taken from 2006 onwards only from minor minerals. Such productions from 2006 are provided above.
- Quarry closed on 30.11.2017.

Table -9Year wise Waste Generation (SOM-III 2019-2020 to 2023-2024)

S. No	Year	Generation of waste in Mining Scheme Period –III (m ³)			Total (m ³)
		Over Burden	Side Burden	Granite rejects	
1	2019-2020	--	--	11,758	11,578
2	2020-2021	--	1,848	12,573	14,421
3	2021-2022	--	--	13,052	13,052
4	2022-2023	--	6,390	13,782	20,172
5	2023-2024	--	4,440	13,306	17,746
Total		Nil	12,678	64,471	77,149

VI. Land Requirement

The black granite mine is over an extent of 6.09.0 Ha at S. F. No. 11/(Part) located at Perumbakkam Village, Vanur Taluk, Villupuram District, lies in the latitude of 12°05'53.67"N and longitude of 79°39'22.44"E. The area is marked in the survey of India Topo sheet No.57P/12.

Site Elevation is above 80 m from MSL. Land use Pattern is given in **Table-10**.

Table-10 Land use Pattern

S. No.	Land Use	Present Area (Ha.)	Area required at the Present Scheme Period (Ha.)	Area at the end of life quarry (Ha.)
1.	Quarrying Pit	0.91.0	0.58.0	1.61.0
2.	Infrastructure	0.00.5	Nil	0.00.5



3.	Roads	0.26.0	--	0.20.0
4.	Green Belt	0.09.0	0.07.0	0.25.0
5.	Waste Dump	0.95.0	0.65.5	2.26.0
6.	Unutilized	3.87.5	2.57.0	1.76.5
Total		6.09.0	3.87.5	6.09.0

VII. Water Requirement

Table -11 Water requirement breakup

S. No	Description	Water Requirement(KLD)
1	Drinking water & Domestic purpose	0.5
2	Wire saw cutting purpose	0.3
3	Dust suppression	0.3
4	Green belt	0.4
Total		1.5

VIII. Power & Fuel Requirement

The Power requirement is 60kVA met through one DG Set with a capacity of 125kVA. The Power requirement & fuel details are given in **Table-12**.

Table-12 Power & Fuel Requirement

S. No	Details	Existing
1	Power requirement(kVA)	60
2	DG Set capacity(kVA)	1*125
3	Diesel (Liters/day)	200

IX. Manpower

Manpower details are given in **Table-13**.

Table -13 Man power details of the quarry

S. No	Description	No of persons
1	Manager	1
2	Mine Foreman	1
3	Operators & Drivers	7



4	Chiseling workers	26
Total		35

X. Solid Waste Generation & Management

Municipal Solid Waste Management

Table -14 Municipal Solid Waste generation & Management

S. No	Type	Quantity Kg/day	Disposal method
1	Organic	6.0	Municipal bin including food waste
2	Inorganic	10.0	TNPCB authorized recyclers
Total		16.0	16.0

Note: As per CPCB guidelines: MSW per capita/day =0.45

XI. Hazardous Waste Management

The type of hazardous waste and the quantity generated are given in **Table-15**.

Table -15 Hazardous Waste Generation and Management

Waste Category No	Description	Quantity (L/Year)	Mode of Disposal
5.1	Waste Oil	3.0	Will be Collected in leak proof containers and disposed TNPCB Authorized Agencies for Reprocessing/Recycling

XII. Analysis of Alternatives Sites Considered

Since the quarry is an existing Black Granite quarry alternate sites are not considered.

XIII. Project Cost

The total capital investment on the project is 99.97 Lakhs. The Capital investment of the Project is given in **Table-16**.

Table-16 Capital Investment on the Project

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

XIV. Baseline Study

Meteorological 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 located to project site is Pondicherry the annually determined wind direction is South East.

The site specific meteorological data of study period during the study period (June -August 2021). Maximum temperature is 40°C. Minimum temperature is 24°C. Average Relative humidity is 67.65%. Average Wind Speed is in study period is 3.34 m/s Study period predominant wind pattern is from West.

Ambient Air Quality

Maximum concentrations of PM₁₀, PM_{2.5}, SO₂, NO₂, CO, Pb, O₃, NH₃, C₆H₆, C₂₀ H₁₂, 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 8 locations for 12 parameters as per NAAQS, 2009 within the study area. The baseline levels of PM₁₀ (42-65 µg/m³), PM_{2.5} (18-35 µg/m³), SO₂ (6 – 13µg/m³), NO₂ (13 – 25 µg/m³), CO (0.21 - 0.58 mg/m³), all the parameters are well within the National Ambient Air Quality Standards for Industrial, Commercial and Residential areas at all monitoring locations during the study period from June 2021 to August 2021.

Noise Environment

The existing ambient noise levels were monitored using precision noise level meter in and around the project site at 10 km radius at 8 locations during study period (June-August 2021). In Industrial area day time noise levels was about 59.2 dB (A) and 53.8 dB(A) during night time, which is within prescribed limit by MoEF & CC (75 dB (A) Day time & 70 dB(A) Night time). In residential area day time noise levels varied from 50.4 dB (A) to 53.4dB (A) and night time noise levels varied from 40.3 dB(A) to 43.7 dB(A) across the sampling stations. The field observations during the study period indicate that the ambient noise levels in Residential area are all well within the limits.

The field observations during the study period indicate that the ambient noise levels in Industrial area, Commercial and in Residential area are slightly exceeding the limit prescribed by CPCB.

Water Environment

The prevailing status of water quality at 08 locations for surface water and 8 locations for ground water have been assessed during June 2021. The standard methods prescribed in IS were followed for sample collection, preservation and analysis in the laboratory for various physiochemical parameters.

Surface water quality

- pH varies between 7.08 -8.22.
- The Total Dissolved Solids range from 361 mg/l to 1129 mg/l.
- The chloride content in the surface water for study area ranges from 98.6 mg/l to 371.4 mg/l highest from location SW6.
- The sulphate content in the surface water of the study area varies between 38.17 mg/l – 126.9 mg/l.
- The Total hardness ranges between 176 mg/l – 465 mg/l.
- The concentration of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se at all locations are within the limits of IS 2296:1992.

Ground Water Quality

- The average pH ranges from 6.6 -8.03.
- TDS value varied from 534 mg/l to 1259 mg/l
- Chloride ranges 105.8 mg/L to 359.2 mg/L
- Total alkalinity as calcium carbonate values ranges from 149 mg/l to 248mg/l
- Sulphates ranges within permissible limit (39.2 mg/l – 142.8 mg/l) in all 8 locations
- Total hardness ranges are between 247 mg/l – 474 mg/l.

Land Environment

Assessment of soil characteristics is of paramount importance since the vegetation growth, agricultural practices and production is directly related to the soil fertility and quality. Soil sampling was carried out at eight (08) locations in the study area. It is observed that,

- The pH of the soil samples ranged from 6.84 to 8.02
- Conductivity of the soil samples ranged from 129 – 457 $\mu\text{S/cm}$
- Nitrogen content ranged from 159.7 mg/kg to 286.4 mg/kg.
- Phosphorous ranged from 13.8 mg/kg to 31.2 mg/kg.
- Potassium content ranges from 153.4 mg/kg to 311.2 mg/kg.

Biological Environment

The species observed in the study area are mostly commercial crops and plantation crops and breaks were also observed throughout the semi-evergreen and moist deciduous forest types. There is no extinct flora and fauna species found in the study area.

Socio Economic Environment

A socio-economic study was undertaken in assessing aspects which are dealing with social and cultural conditions, and economic status in the study area. The study provides information such as demographic structure, population dynamics, infrastructure resources, and the status of human health and economic attributes like employment, per-capita income, agriculture, trade, and industrial development in the study area. The study of these characteristic helps in identification, prediction and evaluation of impacts on socio-economic and parameters of human interest due to proposed project developments. The parameters are:

- Demographic structure
- Infrastructure Facility
- Economic Status
- Health status
- Cultural attributes

Socio Economic profile of the study area:

- The population of the district is 3,458,873.
- The male and female population is 1,740,819 and 1,718,054 respectively.
- The average literacy rate is 71.88.
- The project area of 10 Km is fully rural and the main occupation is agricultural and allied activities.

XV. Anticipated Environmental Impacts

Air Environment

The emissions mainly generated from the mining activities are Blasting, Drilling, Scrapping, Excavation, Loading, Unloading, and transportation etc. Machinery like compressors and jack hammers are used for Drilling. Fugitive dust control in mine is given in **Table-17**.

Table-17 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	<ul style="list-style-type: none"> ➤ Water spray before blasting ➤ Water spray on blasted material prior to transportation ➤ Use of controlled blasting technique
3	Transportation of mined material	<ul style="list-style-type: none"> ➤ 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

Noise Environment

Baseline study showed that the noise levels in both Industrial area and in Residential area are slightly exceeded the limit prescribed by CPCB. The designed equipment with noise levels not exceeding beyond the requirements of Occupational Health and Safety Administration Standard will be employed.

Land Use

The quarry is in operations since 1984 and extent of lease area is 6.09.0 Ha. The mining operation is in operation since 1984 and extent of lease area is 6.09.0 Ha and Land classifies as a Government poramboke land. The quarry lease was applied quarry lease vide G.O. (3D) No. 2, Industries (MME-1) dept dated 12.01.2009 for 20 years & the lease period is valid up to 18.06.2029.

Wastewater Management

Sewage (0.42 KLD) is being sent to septic tank followed by soakpit. There is no process effluent generation in quarry project.

Biological Environment

To reduce the adverse effects on flora/fauna status that are found in project area due to deposition of dust generating from mining operations, water sprinkling and water spraying systems will be ensured in all dust prone areas to arrest dust generation.

Solid/ Hazardous Waste Management

Municipal Solid Wastes including food waste are being disposed to municipal bin.

Environmental Monitoring Program

A monitoring schedule with respect to Ambient Air Quality, Water & Wastewater Quality, Noise Quality as per Tamil Nadu State Pollution Control Board (TNPCB), shall be maintained.

XVI. 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. The existing plantation will be developed inside the mining lease is about 0.25.0 ha, out of 6.09.0 ha. 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.

XVII. Disaster Management Plan

The salient features of Disaster Management Plan include

- Emergency shutdown procedure
- Electrical Power Failure & Key Utility failures
- Fire protection system
- Emergency safety equipment & Reporting and response to emergency
- Emergency Help from nearby industries and tie up with nearby industries
- Emergency Control Room - is the focal point in case of an emergency from where the operations to handle the emergency are directed and coordinated. It will be equipped with P & T telephones, Paging system and Emergency siren.

XVIII. Corporate Environmental Responsibility

- TAMIN Perumbakkam site had no Relocation and Rehabilitation.
- Most villages have benefitted mutually at Perumbakkam where the mining industry has provided indirect jobs for labor and villages provide accommodation for the labor and staff.
- Supportive industries like food supply and essential shops are economic growth in the villages. The site has provided road access to a few nearby village sites.
- TAMIN Provision for CSR activities are summarized as follows.

Corporate Environmental Responsibility

TAMIN Perumbakkam site had no Relocation and Rehabilitation. Most villages have benefitted mutually at Perumbakkam where the mining industry has provided indirect jobs for labor and villages provide accommodation for the labor and staff. Supportive industries like food supply and essential shops are economic growth in the villages. The site has



provided road access to a few nearby village sites. TAMIN Provision for CSR activities are summarized as follows:

CER Fund allocation:

S.No	CER Activity	Beneficiary	Amount Allocated(INR)	Remarks
1	Providing Computers (2 No's) & Solar Panel (2 No's)	Perumbakkam Village	99,970	--

XIX. Benefits of the Proposed Project

- The quarrying activities in this belt will benefit to the local people directly 35persons.
- The direct beneficiaries will be those who get employed in the mines as skilled and unskilled workers.
- Improvement in Per Capita Income.
- The socio - Economic conditions of the village and distance will enhance due to the project, hence the project should be allowed after considering all the parameters.
- It can thus be concluded that the project is environmentally compatible, financially viable and would be in the interest of construction industry thereby indirectly benefiting the masses.
