EXECUTIVE SUMMARY

OF

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

For

JAMMANAHALLI BLACK GRANITE QUARRY

OVER AN EXTENT OF 6.59.91 Ha

At

Survey no. : 83 (Part)
Village : Jammanahalli
Taluk : Pappireddipatti
District : Dharmapuri
State : Tamil Nadu

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 'B2' 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 PRIVATE LIMITED, CHENNAI
(NABET Accredited vide Certificate No. NABET/EIA/1619/RA0083)

November 2019

EXECUTIVE SUMMARY

I. Background

The total extent of the Area is 6.59.91 Ha, Government land at S.F. No 83 (Part) of Jammanahalli Village, Pappireddipatti Taluk, Dharmapuri District, Tamil Nadu State. Quarry Land is classified as Government Poramboke land and lease obtained by Tamil Nadu Minerals Limited (TAMIN).

Mining lease was approved for a period of 20 years vide G.O (3D) No. 50, Industries (MME-I) dated 08.11.2011. The lease is valid upto 15.02.2032.The lease area exhibits hilly terrain topography and is covered by black granite.

The Mining plan was approved by the Commissioner of Geology & Mining, Chennai vide letter No.2585//MM9/2003, dated 04.10.2004.

Project site elevation is above 406 m from AMSL. The project falls under B2 category, schedule 1(a) Mining of Minerals as per EIA notification 2006 and its subsequent amendments. The project falls under violation category due to operation without Environmental Clearance as per MoEF&CC Gazette Notification No. S.O.804 (E) dated 14th March, 2017. The EC Application was submitted under violation Category B1, Schedule 1(a)) at MoEF&CC (Proposal No. IA/TN/MIN/68262/2017) dated: 09.09.2017.

As per MoEF&CC Gazette Notification No.S.O.804 (E) dated 14th March, 2017 and its subsequent amended gazette notification no. S.O. 1030(E) dated 8th March, 2018 and OM F.No. Z-11013/22/2017-IA.II (M) dated 15th & 16th March, 2018, MoEF directed to appraise in SEAC/SEIAA. The EC application submission was done under violation Category B2, Schedule 1(a)) at TN SEIAA vide Proposal No.SIA/TN/MIN/24900/2018 & File No. SEIAA-TN/F-1193/2018

The proposal was appraised under violation during 112th SEAC meeting held on 30.05.2018 and 311th SEIAA meeting held on 05.06.2018 and ToR was issued vide Lr No. SEIAA-TN/F.No.1193/ToR-467/2018 dated: 05.06.2018 for the preparation of EIA/EMP report including ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation.

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	Units	Details
1	Latitude	--	12°00'22.83" to 12°00'37.47" N
2	Longitude	--	78°25'22.88" to 78°25'36.93" E
3	Site Elevation above MSL	m	≃406
4	Topography	--	Hilly terrain
5	Land use of the site	--	Government poramboke land
6	Extent of lease area	Ha.	6.59.91
7	Quarry Lease (G. O. (3D) No.50)	--	20 Years from 16.02.2012 to 15.02.2032.
8	Before Mining Plan production (2003-04)	m^3	1732.56
9	Proposed Production in Mining Plan (2004-15 to 2008-09)	m^3	80796
10	Actual Production in Mining Plan (2004-05 to 2008-09)	m^3	18184
11	Proposed Production in SOM-I (2009-10 to 2013-14)	m^3	17940
12	Actual Production in SOM-I (2009-10 to 2013-14)	m^3	1343.64
13	Proposed Production in Modified SOM-I(2014-15 to 2018-19)	m^3	91782
14	Actual Production in Modified SOM-I(2014-15 to 2018-19)	m^3	5583 up to 2017.
15	Water Requirement	KLD	25.0
16	Power Requirement through DG Set	kVA	(60 KVA) 1*125
17	Fuel Requirements	Lts/Day	200
18	Manpower	Nos	35
19	Municipal Solid waste Generation	Kg/day	16.0
20	Waste Oil generation	Lts/Y	3.0
21	Project Cost in Lakh	Rs.	99.97 (Say 1.0 Crore)
22	Nearest Habitation	--	• Jammanahalli village- ≃1.56 km (S)
23	Nearest Highway	--	• SH 18 (Salem - Tirupattur - Vaniyambadi) ≃1.97km (SE) • NH-66 (Krishnagiri – Nattur – Kiliyanur - Pondicherry road) ≃31.85 km (NE)
24	Nearest Railway station	--	• Buddireddypatti Railway station ≃12.5 km (W)
25	Nearest Airport	--	• Salem Airport at Omalur ≃43 km (SW)
26	Nearest town / city	--	• Town : Harur ≃6.86 km (SE) • Nearest City: Dharmapuri ≃33 km (NW)
27	Water body	--	• Vaniyar River ≃3.50 km (SE) • Paraiyapatti pudur lake ≃1.54 km (SSE) • Lake near Varasettipatti ≃4.17 km (NE)
28	Hills / valleys	--	Nil in 15 km radius
29	Archaeologically places	--	Nil in 15 km radius

S. No	Particulars	Units	Details
30	National parks / Wildlife Sanctuaries	--	Nil in 15 km radius
31	Reserved / Protected Forests	--	• Morappur R.F ≃ 9.42 km (NNE) • Poyyapatti R.F ≃ 13.98 km (NE) • Harur R.F ≃ 5.43 km (NNE) • Veppampatti Ex R.F≃ 13.53 km (ESE) • Tombakal R.F ≃ 6.19 km (ESE) • Pallipatti R.F ≃ 5.73 km (SSE) • Bothakkad R.F ≃ 13.74 km (SSE) • Mavuttu R.F ≃ 32 km (SSW) • Kavaramalai R.F ≃ 3.51 km (W)
32	Seismicity	--	Seismic zone-III (Moderate risk)
33	Defense Installations	--	Nil in 15 km radius
34	State Boundary	--	Nil in 15 km radius

II. Management Commitment

The company is assigning prime importance for environmental protection. The company will comply the all environmental laws. The company 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 no State and National boundary within the 15km from the mine lease boundary. Project doesn't attract the special conditions and general conditions as per EIA Notification. Environmental Sensitive areas and salient features of the project are given in Table-2.

Table-2 Environmentally sensitive areas within 15km from project boundary

<table>
<tr><th>S. No</th><th>Areas</th><th>Name/ identity</th><th>Aerial distance (within 15 km.)
Proposed project location boundary</th></tr>
<tr><td>1</td><td>Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value</td><td>No</td><td>Nil</td></tr>
<tr><td>2</td><td>Areas which are important or sensitive for ecological reasons - wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests.</td><td>Yes</td><td>
<table>
<tr><th>S. No</th><th>Envi Sensitive</th><th>Distance(~km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Turinihalli Ar</td><td>1.05</td><td>NW</td></tr>
<tr><td>2</td><td>Vaniyar River</td><td>2.29</td><td>SE</td></tr>
<tr><td>3</td><td>Paniyar River</td><td>3.47</td><td>SE</td></tr>
<tr><td>4</td><td>Karukkampatti Ar</td><td>4.77</td><td>SE</td></tr>
<tr><td>5</td><td>Kavaramalai RF</td><td>3.51</td><td>W</td></tr>
<tr><td>6</td><td>Kavaramalai Extn RF</td><td>12.27</td><td>W</td></tr>
<tr><td>7</td><td>Mavuttu RF</td><td>14.32</td><td>SSW</td></tr>
<tr><td>8</td><td>Kuttar RF</td><td>12.81</td><td>SSW</td></tr>
<tr><td>9</td><td>Bothakkadu RF</td><td>13.74</td><td>SSW</td></tr>
<tr><td>10</td><td>Pallippatti RF</td><td>5.73</td><td>SSE</td></tr>
<tr><td>11</td><td>Tombakal Extn RF</td><td>6.19</td><td>ESE</td></tr>
<tr><td>12</td><td>Veppampatti Extn RF</td><td>13.53</td><td>ESE</td></tr>
<tr><td>13</td><td>Nochikuttai Extn RF</td><td>12.70</td><td>SSE</td></tr>
<tr><td>14</td><td>Poyyappatti RF</td><td>13.98</td><td>NE</td></tr>
<tr><td>15</td><td>Harur RF</td><td>5.43</td><td>NNE</td></tr>
<tr><td>16</td><td>Morappur RF</td><td>9.42</td><td>NNE</td></tr>
<tr><td>17</td><td>Varatta Ar</td><td>8.84</td><td>NE</td></tr>
</table>
</td></tr>
<tr><td>3</td><td>Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration</td><td>No</td><td>Nil</td></tr>
<tr><td>4</td><td>Inland, coastal, marine or underground water</td><td>No</td><td>Nil</td></tr>
<tr><td>5</td><td>State, National boundaries</td><td>No</td><td>No interstate or international boundary falls within 15 km radius.</td></tr>
<tr><td>6</td><td>Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas</td><td>Yes</td><td>Nil</td></tr>
<tr><td>7</td><td>Defence installations</td><td>No</td><td>Nil</td></tr>
<tr><td>8</td><td>Densely populated or built-up area</td><td>Yes</td><td>
<table>
<tr><th>S. No</th><th>Name of the village</th><th>Distance(~km) & Direction from site</th><th>Population (Census 2011)</th></tr>
<tr><td>1.</td><td>Jammanahalli</td><td>1.57(SW)</td><td>2363</td></tr>
<tr><td>2.</td><td>Parayapatti</td><td>1.53(SSE)</td><td>4612</td></tr>
<tr><td>3.</td><td>Devarajapalayam</td><td>1.7(E)</td><td>2747</td></tr>
<tr><td>4</td><td>Gopinathampatti</td><td>2.37(SE)</td><td>2822</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>S. No</th><th>Areas</th><th>Name/ identity</th><th>Aerial distance (within 15 km.)
Proposed project location boundary</th></tr>
<tr><td>9</td><td>Areas occupied by sensitive man-made land uses(hospitals, schools, places of worship, community facilities)</td><td>Yes</td><td>Harur having all the facilities which are at a distance of ~6.86 km NE side from the project area</td></tr>
<tr><td>10</td><td>Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)</td><td>Yes</td><td>
<table>
<tr><th>S. No</th><th>Area</th><th>Distance(~km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Kavaramalai RF</td><td>3.51</td><td>W</td></tr>
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<tr><td>13</td><td>Varatta Ar</td><td>8.84</td><td>NE</td></tr>
</table>
</td></tr>
<tr><td>11</td><td>Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)</td><td>No</td><td>Nil</td></tr>
<tr><td>12</td><td>Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)</td><td>No</td><td>The area comes under seismic Zone-III (Moderate Risk). There is no susceptible to natural hazards like subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions.

Note :
Seismic Zone-II : Low risk
Seismic Zone-III : Moderate Risk
Seismic Zone-IV : High Risk
Seismic Zone-V Very high Risk</td></tr>
</table>

IV. Method of mining-Open Cast Working

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 the horizontal. Schematic Diagram of Mining Process is shown in **Figure-1.**

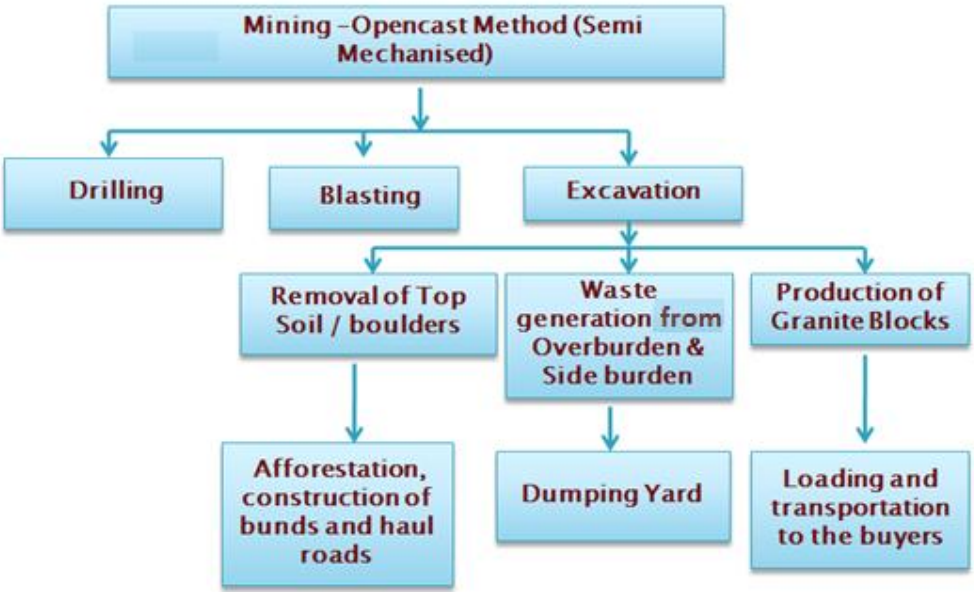

Figure-1 Schematic Diagram of Mining Process

V. Black Granite Quarry Reserves

The available mineable reserve is calculated by deducting 7.5m safety distance and bench loss & quarry mining is proposed up to depth of 30m in AGL. Summary of total quarry reserves is shown in **Table-3.** Updated details of geological reserves & total mineable Reserves as on 31.3.2017 is given in **Table-4**

Table-3 Summary of total quarry reserves

S. No	Description	Granite in m^3
1	Total geological reserves in the area	13,79,175
2	Updated geological reserves as	13,48,592
3	Total mineable reserves in the area	10,22,861
4	Updated mineable reserves	9,92,278

Table-4 Updated details of geological reserves as on 31.3.2017

S. No	Details	Reserves (m^3)	Recoverable reserves @3 % (m^3)
Total geological reserves		13,79,175	41,375
1	Depletion of reserves during the mining plan period	(-) 25,000	(-) 750
2	Depletion of Reserves during the first two years of Scheme of Mining-I period (from 2009-2010 to 2013-14)	Nil	Nil
3	Depletion of Reserves during the first three years of Scheme of Mining-II period (from 2014-2015 to 2016-17)	(-) 5583	(-) 168
4	Geological Reserves as on 31.03.17	13,48,592	40,457
Total mineable reserves		10,22,861	30,686
1	Depletion of reserves during the mining plan period	(-) 25000	(-) 750
2	Depletion of Reserves during the first two years of Scheme of Mining-I period (from 2009-10 to 2013-14)	NIL	NIL
3	Depletion of Reserves during the first two years of Scheme of Mining-I period (from 2014-15 to 2016-17)	(-) 5583	(-) 168
4	Mineable Reserves as on 31.03.17	9,92,278	29,768

VI. Summary of the Magnitude of Operation

The Mining plan for black granite was approved by the Commissioner of Geology and Mining Chennai vide letter No.2585/MM9/2003, dated 04.10.2004. TAMIN submitted the mining plan under rule 16(3) of GCDR 1999, the present scheme of mining is submitted.

Subsequently, TAMIN submitted the Scheme of Mining–I pertaining to the years 2009-2010 to 2013-2014 vide Lr.No 5760/ML3/2009 dated 28.05.2009 and same was approved by the Commissioner of Geology and Mining, Chennai vide Lr. No 7485/MM5/2010, dated 09.11.2010. The scheme of mining-II pertaining to the years 2014-2015 to 2018-2019 was submitted vide Lr.No.5735/ML3/2014, dated 27.05.2014 and it is pending with CGM for approval.

VII. Production details from 2003 to 2017:

Production details for the year 2003-2004 (before Mining Plan) are given in **Table-5**. Proposed and actual year wise production details (Mining Plan 2004-2009) are summarized in **Table-6.** Proposed and actual production details (SOM-I 2009-2014) are given in **Table-7.** Proposed and Actual Production details (Modified SOM-I 2014-2019) is shown in **Table-8.**

Table-5 Actual Production details from 2003-2004 (before Mining Plan)

YEAR	Proposed production as per MP/ SOM (M^3)					Actual production against MP/SOM (M^3)				
	ROM	Saleable	Mineral Rejects	OB/ IB	Total Waste	ROM	Saleable	Mineral Rejects	OB/IB	Total Waste
2003-2004	0	0	0	0	0	1732.56	86.628	1645.932	0	1645.932
Total	**0**	**0**	**0**	**0**	**0**	**1732.56**	**86.628**	**1645.932**	**0**	**1645.932**

Table-6 Proposed and actual year wise production details (Mining Plan 2004-2009)

Year	Proposed production (MP/ SOM (m^3))					Actual production (MP/SOM (m^3)				
	ROM	Saleable	Mineral rejects	OB/ IB	Total waste	ROM	Saleable	Mineral rejects	OB/IB	Total waste
2004-2005	16240	487	15753	3000	12753	4818	145	4673	890	5563
2005-2006	16004	480	15524	3720	19244	11033	331	10702	2565	13267
2006-2007	16260	488	15772	9180	24952	2200	66	2134	1240	3374
2007-2008	16188	486	15702	2232	17934	133	4	129	20	149
2008-2009	16104	483	15621	0	15621	0	0	0	0	0
Total	**80796**	**2424**	**78372**	**18132**	**90504**	**18184**	**546**	**17638**	**4715**	**22353**

Table-7 Proposed and actual production details (SOM-I 2009-2014)

YEAR	Proposed production (MP/SOM (m^3)					Actual production (MP/SOM (m^3)				
	ROM	Saleable	Mineral rejects	OB/ IB	Total waste	ROM	Saleable	Mineral rejects	OB/IB	Total Waste
2009-2010	3612	108	3504	1800	5304	0	0	0	0	0
2010-2011	3600	108	3492	0	3492	0	0	0	0	0
2011-2012	3600	108	3492	0	3492	0	0	0	0	0
2012-2013	3528	106	3422	0	3422	1343.64	67.182	1276.458	0	1276.458
2013-2014	3600	108	3492	0	3492	0	0	0	0	0
Total	**17940**	**538**	**17402**	**1800**	**19202**	**1343.64**	**67.182**	**1276**	**0**	**1276.458**

Table-8 Proposed and actual production details (Modified SOM-I 2014-2019)

YEAR	Proposed Production (MP/SOM (m^3)					Actual Production (MP/SOM (m^3)				
	ROM	Saleable	Mineral rejects	OB/ IB	Total waste	ROM	Saleable	Mineral rejects	OB/IB	Total waste
2014-2015	3000	100	2900	1512	4412	0	0	0	0	0
2015-2016	3600	108	3492	0	3492	585	18	567	0	567
2016-2017	4998	150	4848	0	4848	4998	150	4848	0	4848
2017-2018	40104	1203	38901	7919	46820	0	0	0	0	0
2018-2019	40080	1202	38878	2508	41386	0	0	0	0	0
Total	**91782**	**2763**	**89019**	**11939**	**100958**	**5583**	**168**	**5415**	**0**	**5415**

VIII. Land Requirement

The Black granite mine is over an extent of 6.59.91 Ha at S. F. No. 83(Part) at Jammanahalli Village, Pappireddipatti Taluk, Dharmapuri District, lies in the latitude of 12°0'22.83" to 12°00'37.47"N and longitude of 78°25'22.83 to 78°25'36.93"E. The area is marked in the survey of India Topo sheet No.57 L/8, 57 L/12, 58 I/5, 58 I/9. Site Elevation is above 406 m from MSL. Land use Patterns is given in **Table-9**.

Table-9 Land use pattern of the lease area

S. No.	Land Use	Present Area (Ha.)	Area in use during the quarrying period (Ha.)
1.	Quarrying Area	1.88.20	28.5
2.	Infrastructure	0.00.60	0.1
3.	Roads	0.20.00	3.0
4.	Green Belt	0.15.00	2.3
5.	Waste Dump	0.67.00	10.2
6.	Unutilized	3.69.11	55.9
	Total	**6.59.91**	**100**

IX. Water Requirement

Table -10 Water requirement breakup

S. No	Description	Water Requirement (KLD)
1	Domestic purpose	1.5
2	Dust suppression on roads	11.0
3	Green belt	12.5
	Total	**25.0**

The water requirement will be met from tanker suppliers.

X. 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-11.**

Table-11 Power & Fuel Requirement

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

XI. Manpower

Manpower details are given in **Table-12.**

Table-12 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**

XII. Solid Waste Generation & Management

Municipal Solid Waste Management

Table-13 Municipal solid waste generation & management

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

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

XIII. Hazardous Waste Management

The type of hazardous waste and the quantity generated are given in **Table-14.**

Table-14 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 to TNPCB Authorized Agencies for Reprocessing / Recycling

XIV. Analysis of Alternatives Sites Considered

Since the quarry is an existing black granite quarry. Alternate sites are not considered.

XV. Project Cost

The total capital investment on the project is 99.97 Lakhs. The Capital investment of the project is given in **Table-15.**

Table-15 Capital Investment on the Project

S. No	Description of the Cost	Cost in Lakhs
I. Fixed Asset Cost		
1	Land Cost (Lease)	--
	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**
	EMP Cost	
	Afforestation	30,000
	Water Sprinkling	50,000
2	Water Quality Monitoring	25,000
	Air Quality Monitoring	25,000
	Noise/Vibration Monitoring	25,000
	Sub Total	1,55,000
3	**CSR Activities**	50,000
	Grand Total	**99,97,000/- ≃ Rs. 1 Crore**

XVI. 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 is Dharmapuri (12°8' N and 78° 02' E), the annually determined wind direction is South West.

During the study period (June - August 2018), maximum temperature is 29ºC. Minimum temperature is 20.33ºC. Relative humidity is 76%. Average wind speed in study period is 2m/s, predominant wind pattern is from South West.

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 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 and free Silica within the study area. The average baseline levels of PM_{10} (44.5 - 57.1 µg/m³), $PM_{2.5}$ (19 - 26 µg/m³), SO_2 (5.2 - 9 µg/m³), NO_2 (15.8 - 24.1 µg/m³), CO (0.35 - 0.62 mg/m^3), O_3 (10.41-11.57 µg/m^3) were observed within the study area. Others parameters were Below Limit of Quantification. All the parameters are well within the National Ambient Air Quality Standards at all monitoring locations during the study period.

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 2018).

- within the mine area, day time noise level was about 52.1 dB(A) and 43.2 dB(A) during night time, which is within prescribed limit by MoEF&CC (55 dB(A) Day time & 45 dB(A) Night time).
- In other monitoring locations, day time noise levels varied from 51.1dB (A) to 54.1 dB (A) and night time noise levels varied from 41.6 dB (A) to 43.6 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) Day time & 45 dB (A) Night time).

Water Environment

The prevailing status of water quality at 03 locations for surface water (Even though 8 locations, were identified,due to unavailability of water only 3 surface water samples were collected and analyzed) and 8 locations for ground water were assessed during June 2018.The standard methods prescribed in IS were followed for sample collection, preservation and analysis in the laboratory for various physiochemical parameters.

Surface water quality

- Water sampling results are compared with Surface water standards IS 2296:1992. The range of parameter as follows:
- pH : 6.8 - 7.21.
- Total Dissolved Solids: 410 mg/l - 583 mg/l.
- The chloride: 49mg/l - 85 mg/l.
- The sulphate: 20 mg/l - 41 mg/l.
- The total hardness: 256.1 mg/l - 332.4 mg/l.
- BOD: 5.7-7.4 mg/l.
- COD: 17.2 to 24 mg/l.
- The concentration of heavy metals within detectable limits and within the limits of IS 2296:1992.

Ground Water Quality

All values are within the limits of IS 10500 :2012 standard. The range of parameter were as follows:

- pH: 6.7 – 8.02.
- TDS : 543 mg/l - 702 mg/l
- Total hardness: 177 mg/l - 307 mg/l.
- Total Alkalinity: 123- 165 mg/l.
- Sodium: 48-122 mg/l.
- Potassium: 3.1-6.8 mg/l.
- Calcium: 43.5 – 84 mg/l.
- Magnesium: 16.5 – 41.2 mg/l.
- Fluoride : 0.21 – 0.51
- Most of the heavy metals concentrations in the study area samples are below detection limits and all are well within the limits.

Land Environment

Soil sampling was carried out at eight (08) locations within the study area. It is observed that range of parameters were as follows:

- The pH: 6.74 -8.21.
- Conductivity: 78 – 141 mS/cm.
- The water holding capacity: 12.5-21.4 (%).
- Nitrogen : 64 kg/ha to 95 kg/ha,
- Phosphorous: 16.3 kg/ha to 23.4kg/ha.
- Potassium: 70 kg/ha to 94 kg/ha.

Biological Environment

There are no National parks /Wildlife Sanctuaries/Elephant/ Tigre Reserves within 10km radius of 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. Discussions were held with local people to gather related information on the richness of plant and animal resources, employment opportunities, facilities for education, health and socio-economic condition.

XVII. 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:

- Total families : 25975
- Population: 99554.
- Female population: (49.09%)
- Male population: (50.9%).
- The average family size: 3.83.
- Scheduled caste population : 28.09 %
- Scheduled tribe population is 0.04%.
- Main workers: 93.83%.
- marginal workers : 6.16%
- The agricultural workers from both main and marginal are 75.66% of total workers.
- The mine area is located far away from human settlements.

A few villages are located within a vicinity of 5 km from the mine site (Demographic details of the study area is shown in **Table-16**

Table-16 Demographic details of the study area

S.No	Name of the Village	Approximate distance from mine site (in ~ km)	Population (Census 2011)
1	Jammanahalli	1.56	2363
2	Chinnakuppam	1.97	1139
3	Erumiyampatti	3.96	1925
4	Kokkarapatti	3.57	3013
5	Nambiyapatti	3.52	1947

Source: District Primary Census Hand Book, 2011

XVIII. Anticipated Environmental Impacts and Mitigation Measures

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	➢ 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

Noise Environment

Baseline study showed that the noise levels in mine area, industrial area and residential areas are within 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 2003 and extent of lease area is 6.59.91 Ha. Land classified as a Government Poramboke land, Mining Lease was obtained from Tamil Nadu Government for 20 years vide G.O.(3D) No 50 Industries (MME-1) department, dated 08.11.2011 for 20 years & the lease period is valid up to 15.02.2032. Hence there is no change in land use.

Wastewater Management

Sewage (1.27 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.

Biological Environment

To reduce the adverse effects on flora/fauna found in project 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.

Solid/ Hazardous Waste Management

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

XIX. 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), will be maintained.

XX. 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 developed inside the mining lease is about 0.15.00 ha (2.3%), out of 6.59.91 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.

XXI. Disaster Management Plan

The salient features of Disaster Management Plan includes

- Fire protection system
- Emergency safety equipment & Reporting and response to emergency

XXII. .Corporate Environmental Responsibility

- TAMIN Jammanahalli site had no Relocation and Rehabilitation.

- Most villages have benefitted mutually at Jammanahalli where the mining industry has provided indirect jobs for labour and villages provide accommodation for the labour and staff.
- Proposed CER activities are provided in **Table-18**

Table-18 Corporate Environment Responsibility_ Plan (2019 To 2025)

S. No	Beneficiary Village	Activities	Year and Amount					Total in Rs
			2019-20	2020-21	2022-23	2023-24	2024-25	
1	Jamanahalli VILLAGE	Facilities for Govt Schools	Drinking Water Dispensing unit (1 units) 2 Nos x 15, 000 **30,000**	PC with Printer 1 Nos 35,000x 1 **35,000**	Construction of Toilet **50,000**	Drinking Water Dispensing unit (1 units) 2 Nos x 15, 000 **30,000**	Construction of Toilet **55,000**	**2,00,000**
Total(Per Year) Rs			**30,000**	**35,000**	**50,000**	**30,000**	**55,000**	**2,00,000**

XXIII. Benefits of the Proposed Project

1. Environmental 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 ground water withdrawal.

2. Social Benefits:

- The quarrying activities will benefit to the local people directly (35 persons) and indirectly (10 persons).

3. 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.

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