SUMMARY

OF

DRAFT EIA / EMP REPORT

FOR

ROUGHSTONE AND GRAVEL QUARRY

A. Project Proponent Details	
Name	**TMT. J. DHAVAMANI**
Address	**81/3B,DD Road, NGGO Colony,Srivilliputhur Taluk, Virudhunagar District – 626125**
B. Location Details	
Extent	**6.65.00 Ha**
Survey No.	**916/4A,8 & 918/1,2,3,4**
Location	**Nathikudi Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu**
C. Production Details	
Production	**Roughstone 9,95,142 m3, Gravel 2,00,816 m3**
Depth	**44m**
Lease Period	**10 years**
D. EIA/EMP details	
ToR reference	**TO24B0108TN5863521N dated 11.01.2025**
Baseline Monitoring	**Winter Season (Dec 2024 – Feb 2025)**

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

9B/4, Bharathwajar Street, East Tambaram, Chennai-600059.

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MARCH 2025

SUMMARY

1.1 INTRODUCTION:

Tmt. J. Dhavamani propose to operate Rough Stone and Gravel Quarry in S.No- 916/4A,8 & 918/1,2,3,4 over an area of 6.65.00 Ha in Nathikudi Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu. It involves the production capacity 9,95,142 m3 of Rough Stone & 2,00,816 m3 of Grave for 10 years with the peak production capacity of 1,93,800 m3 of Rough stone and 83,808 m3 of Gravel. Entire land is patta land owned by the proponent.

Besides, **Thiru. P.Jeyaraman** also propose to operate Rough Stone and Gravel Quarry within 500m radius and received Terms of Reference (TOR) already.

The individual lease area of **Tmt. J. Dhavamani** project is more than 5 Ha and it is considered under Category – B1.

As such combined draft EIA report with separate EMP measures is prepared for the above two mentioned projects based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan. The impact assessment and management plan is studied for the peak production of the mine lease period and the entire area of quarry operation and can be construed to be applicable for the entire lease period.

Salient details of the EIA/ EMP report prepared for **Tmt. J. Dhavamani** (6.65.00 ha)project is provided below:

Table 1: Salient Details of the Project

Details	
A. Statutory Clearances	
Precise Area Communication	Issued by Department of Geology & Mining vide KV1/698/2024 dated 07.10.2024
Mining Plan Approval	Approved Department of Geology & Mining vide KV1/698/2024dated 24.10.2024
Details of Quarries within 500m radius	Approved Department of Geology & Mining vide KV1/698/2024dated 24.10.2024
B. Application for Environmental Clearance	
Terms of Reference	TO24B0108TN5863521N dated 11.01.2025
Baseline Data Collection	Carried out by Creative Engineers & Consultants, Chennai for Winter Season (Dec 2024 – Feb 2025)
Location	Nathikudi Village, Vembakottai Taluk, Virudhunagar District
Coordinates	Latitude: : 9° 26’ 22.03”N to 9° 26’ 09.75”N Longitude: 77° 41’ 30.48”E to 77° 41’ 35.30”E
Nearest Village	Nathikudi – 1.1km (SW) side
Nearest Town	Sivakasi-11km - NE
Nearest Highway	SH-183-4.9Km– SE
Nearest Railway Station	Sivakasi-11km - NE
Nearest Airport	Madurai-62km-NE
Accessibility	Lease lies south of the Sivakasi to Srivilliputhur SH road. Existing road from the quarry to main road is already available and the same road will be maintained and utilised .
Topography	Almost Plain terrain 100m RL.
C. Environmental Setting of the Study Area	
Nearest Water Bodies	Odai-187m-W, Odai-270m-E, Kanmai -300m-S, Kayalkudi River -1.4km (SW), Marugal odai - 8.5km-(SW)
Nearest Reserve Forests	Nil within 10 km radius
Notified Archaeologically important places, Monuments	Nil within 10km radius
Local Places of Historical and Tourism Interest	Nil within 10km radius
Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*	Nil within 10km radius
Other industries	Other than crushers, Rough stone quarries, match box, fire works factories no other major industries are located in the study area.

1.2 Technical details:

<table>
<tr><td>Past production details</td><td>Earlier worked by Muthu Gomathi in survey no.918/1& 918/2 in Vembakottai & Nathikudi prior to 2003. Existing pit dimension – 103m x56mx10m (Max)</td></tr>
<tr><td>Geological Reserves</td><td>Roughstone - 29,60,772 m3
Gravel - 2,43,184 m3</td></tr>
<tr><td>Mineable Reserves</td><td>Roughstone - 9,95,142 m3
Gravel - 2,00,816m3</td></tr>
<tr><td>Mining Method</td><td>Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.</td></tr>
<tr><td>Production</td><td>
<table>
<tr><th>Year</th><th>Rough stone (m3)</th><th>Gravel (m3)</th></tr>
<tr><td>1</td><td>66,690</td><td>64,904</td></tr>
<tr><td>2</td><td>86,192</td><td>83,808</td></tr>
<tr><td>3</td><td>1,06,380</td><td>52,104</td></tr>
<tr><td>4</td><td>1,91,500</td><td>--</td></tr>
<tr><td>5</td><td>1,93,800</td><td>--</td></tr>
<tr><td>Sub total (1 to 5)</td><td>6,44,562</td><td>2,00,816</td></tr>
<tr><td>6</td><td>1,06,090</td><td>--</td></tr>
<tr><td>7</td><td>86,130</td><td>--</td></tr>
<tr><td>8</td><td>67,450</td><td>--</td></tr>
<tr><td>9</td><td>56,980</td><td>--</td></tr>
<tr><td>10</td><td>33,930</td><td>--</td></tr>
<tr><td>Sub total (6 to 10)</td><td>3,50,580</td><td>--</td></tr>
<tr><td>Total (1 to 10)</td><td>9,95,142</td><td>2,00,816</td></tr>
</table>
</td></tr>
<tr><td>Waste Generation and Management</td><td>There is no waste generation anticipated in these quarries since the entire excavated material will be utilized.</td></tr>
<tr><td>Ultimate Depth</td><td>44m</td></tr>
<tr><td>Manpower</td><td>16 persons directly and 50 people indirectly.</td></tr>
<tr><td>Water Requirement and Source</td><td>Water Requirement: 8 KLD
Source: The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.</td></tr>
<tr><td>Power Requirement</td><td>No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.</td></tr>
<tr><td>Site Services</td><td>This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.</td></tr>
<tr><td>Project Cost</td><td>Rs. 82,09,528</td></tr>
</table>

Figure 1: Location Map

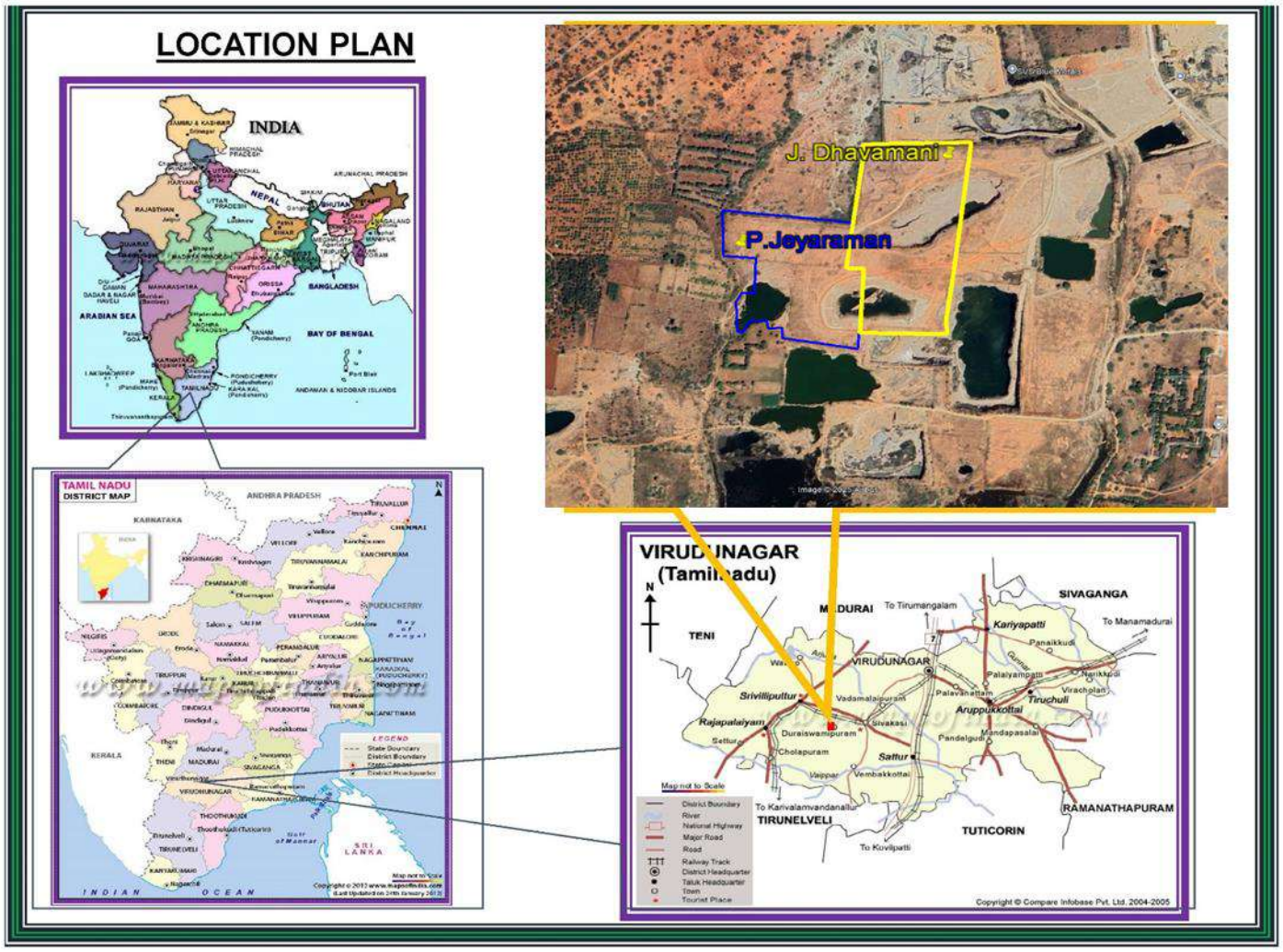


Figure 2: Lease Plan Rough stone and Gravel Quarry

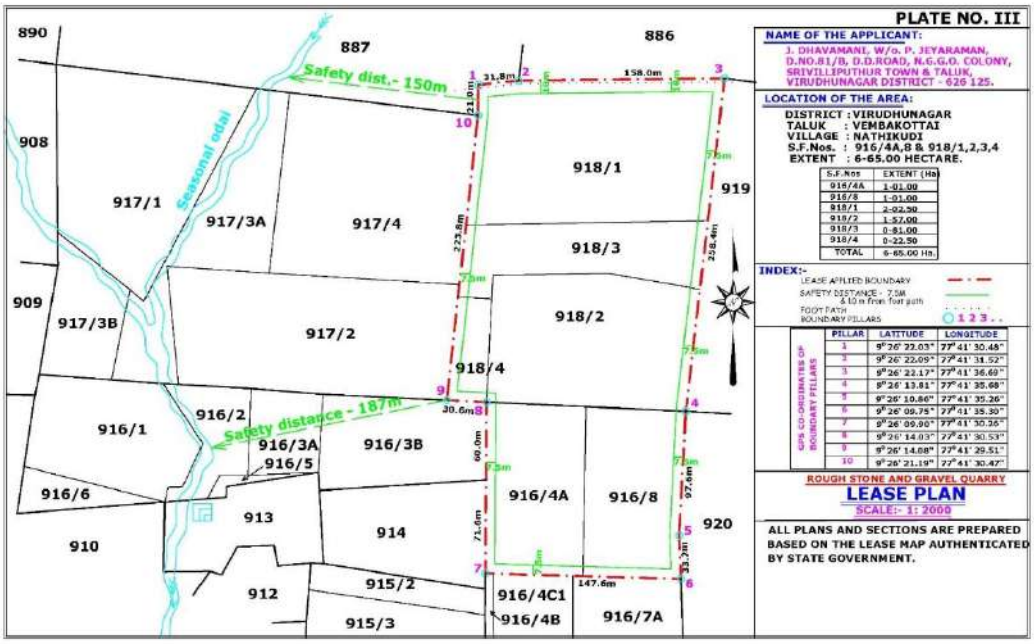
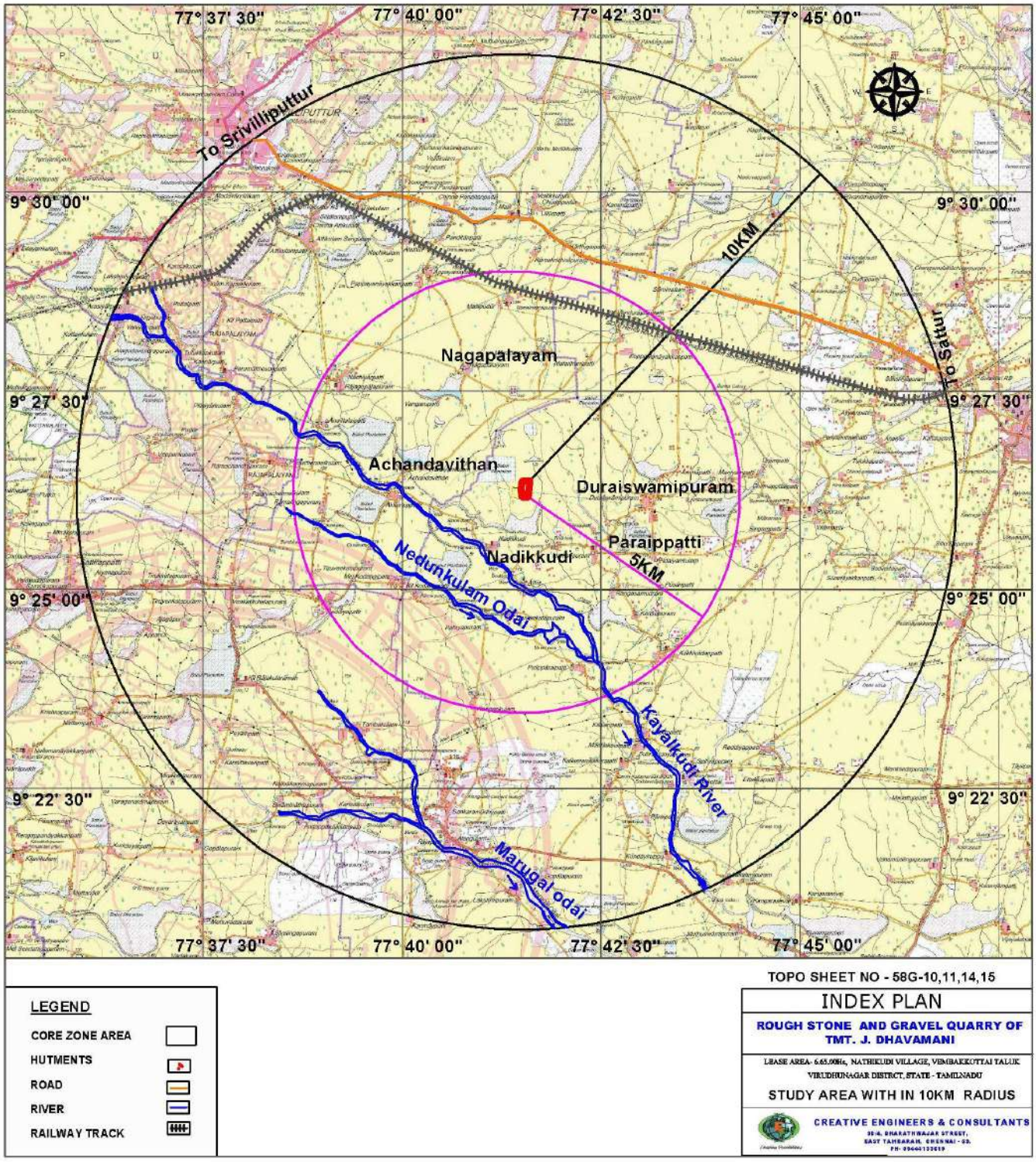


Figure 3: Satellite Imagery Showing Corner Co-ordinates – Rough stone and Gravel Quarry

Figure 4: Study Area Map



1.3 EXISTING ENVIRONMENTAL SCENARIO:

The studies and data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MoEF&CC guidelines and as per approved ToR during **Winter Season (December 2024 to February 2025)** For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. The combined lease area is considered to be the core zone while the buffer zone encompasses a 10km radius from the periphery of the core zone.

The proposed Rough stone and gravel quarry is located in in Nathikudi Village, Vembakottai Taluk, Virudhunagar District. Based on 2011 census data, in the 10km radius there are 28 Rural villages and 7 urban areas from Three Taluks namely Rajapalayam, Sivakasi, Srivilliputhur.. The demographic profile of the study area is given below:

Table 2: Social, Economic And Demographic Profile of the Study Area

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	134570	49.67
Female Population	136384	50.33
Total	**270954**	**100**
B. Caste-wise population distribution		
Scheduled Caste	48390	17.86
Scheduled Tribes	292	0.11
Other	222272	82.03
Total	**270954**	**100**
C. Literate and Illiterate population		
Literate Males	107012	39.49
Literate Females	91000	33.59
Total Literate Population	**198012**	**73.08**
Others Males	27558	10.17
Others Females	45384	16.75
Others Population	**72942**	**26.92**
Total	**270954**	**100**
D. Occupational structure		
Main workers	119491	44.10
Marginal workers	10992	4.06
Total Workers	**130,483**	**48.16**
Total Non-workers	**140471**	**51.84**
Total	**270954**	**100**

Further developments in this area with respect to these various facilities has occurred over the years.

1.3.1 EXISTING ENVIRONMENTAL QUALITY:

Table 3: Baseline Data

A. AMBIENT AIR QUALITY	**Monitoring Location –** 6 locations		
Parameter	**Result (µg/m3)**		***LIMIT (µg/m3)**
Location	**Core Zone**	**Buffer Zone**	
Particulate Matter (Size <10 µm)	54.6 – 76.7	41.8 – 61.4	100
Particulate Matter (Size <2.5 µm)	26.9 – 37.0	19.8 – 30.2	60
Sulphur Dioxide (as SO_2)	6.0 – 8.0	4.9 – 8.7	80
Nitrogen Dioxide (as NO_2)	7.8 – 10.8	5.7 – 11.6	80
Conclusion: The existing Ambient Air Quality levels for PM10, PM2.5, SO2 and NO2, are within the NAAQ standards prescribed CPCB limits of 100 µg/m3, 60 µg/m3, 80 µg/m3 & 80 µg/m3. The CO values in all the locations were found to be below detectable limit.			
B. WATER QUALITY	**Monitoring Location –** 6 locations		
Parameter	**Result**		***LIMIT (µg/m3)**
pH at 25 ˚C	7.42 – 7.92		**6.5-8.5**
Total Dissolved Solids, mg/L	94 – 620		**2000**
Chloride as Cl-, mg/L	35.80 – 348		**1000**
Total Hardness (as CaCO3), mg/L	184 – 432		**600**
Total Alkalinity (as CaCO3), mg/L	151– 332		**600**
Sulphates as SO42-, mg/L	32.30 – 245		**400**
Iron as Fe, mg/L	0.04 – 0.12		**0.3**
Nitrate as NO3, mg/L	1.97 – 4.37		**45**
Fluoride as F, mg/L	0.21 – 0.58		**1.5**
Conclusion: The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.			
C. NOISE LEVELS	**Monitoring Location – 6** locations		
Parameter	**RESULT dB(A)**		***LIMIT (µg/m3)**
	Day Equivalent	**Night Equivalent**	
Core Zone	51.8	46.0 – 50.9	**90**
Buffer Zone	39.5	38.3 – 43.1	**Day Equivalent - 55dB(A), Night Equivalent - 45dB(A)**
*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time). While comparing with the MoEF&CC Norms, the monitored ambient noise levels are generally within the limit values.			
D. SOIL QUALITY	**Monitoring Location –** 4 locations		
Parameter	**Core Zone**		**Buffer Zone**
pH	6.98 – 7.86		6.98 – 7.86
Electrical Conductivity (µmho/cm)	106.4 – 174		106.4 – 174
Organic matter (%)	1.27 – 1.65		1.27 – 1.65
Total Nitrogen (mg/kg)	324 - 705		324 - 705
Phosphorus (mg/kg)	1.02 – 1.58		1.02 – 1.58
Sodium (mg/kg)	212 – 307		212 – 307
Potassium (mg/kg)	589-764		589-764
Soil is of Slit loam type.			

E. LAND ENVIRONMENT:

Land use pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 49.97% of the buffer area is classified under fallow land, 19.91 % of Agriculture/ Plantation land, 19.99 % constitutes land with scrub, 3.52 % constitutes land without scrub and the balance falls under other land use categories.

BIOLOGICAL ENVIRONMENT:

Flora: Lease area is a non forest, private land partly mined & exposed with rock. Unmined area is mostly barren interspersed with thorny bushes only.

Buffer Zone comprise of agricultural land, rocky waste land, barren land and mined out pits. The Dominated species in the buffer zone are Prosopis juliflora, Sygygium cumuni, Borassus flabellifer, Albizia lebbeck, Acacia auriculiformis, Azadirachta indica, etc. Patches of coconut and casurina farms are also observed.

Fauna: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals are commonly found. The lease and 10 Km buffer zone does not fall in the Western Ghats ESA boundary. From the study it observed that the area in general consists of species of least concern only.

F. HYDROLOGICAL STUDY:

The area applied for mining lease is a gentle plain terrain. Part of the lease area is already mined. There are no perineal water courses in both the lease areas. There is a seasonal drainage channel located on the western side of the lease (187 m). Due to scanty rainfall this drainage channel remains dry for most of the year.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels. Rain water collected in the tanks in the region acts as a good source of water during post monsoon. The water in the wells are available mainly after post monsoon and it reduces during summer. Bore wells are deep and it reflects that the yield is only better at deeper water levels.

The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. From the nearby working mines, no such seepage is also observed.

1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The identified impacts due to the mining operation of both the leases individually as well as cumulatively during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc.,

1.4.1 AIR ENVIRONMENT:

The principal sources of air pollution in general due to mining and allied activities will be Excavation, Drilling, Movement of HEMM such as Excavators, tippers etc., Loading and unloading operation and transportation. In case of this mine, the following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

- Regular wetting of transport road using mobile water tanker.
- Wet drilling / Covering of drill holes with wet clothes
- Use of controlled blasting techniques with Nonel to keep the dust generation low.
- Proper maintenance of roads.
- Avoiding overloading of tippers
- Transportation of material by tarpaulin covered trucks
- Proper maintenance of HEMM to minimize gaseous emission
- Setting up of tyre washing facility in the lease area exit.
- Vehicular emission tests with digital smoke meter.
- Provision of green netting around the lease periphery on all sides.
- Development of green belt/ plantation in various areas within the mine lease area etc.

By adoption of all these measures, no adverse impact on air quality is envisaged due to this proposed opencast mining operation.

The impact on air quality through model simulations are done using AERMOD View Gaussian Plume Air Dispersion Model for the air pollutant arising from the mining operations, namely, PM_{10}, $PM_{2.5}$. **Ground Level Concentration** (GLC) have been computed

It can be seen that on individual basis for **Thirumathi Dhavamani project** , the resultant added concentrations with baseline figures with respect to PM10 is in the range of 54.5 μg/m3 to 80.3

μg/m3 and with respect to PM2.5 are in the range of 26.8μg/m3 to 38.8 μg/m3 which are within the stipulated statutory limits.

Additionally, cumulative impact due to working of these 2 proposed projects and also another proposed project of Thiru **S. Soundararajan** on ambient air quality is also assessed. The cumulative post project concentration with respect to PM10 is in the range of 54.5 μg/m3 to 82.8 μg/m3 and with respect to PM2.5 are in the range of 26.8μg/m3 to 40.7 μg/m3 which are also within the statutory limits in each case.

.For preservation of environment in this mine strict enforcement of management schemes will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

1.4.2 WATER ENVIRONMENT:

The total water requirement for this project will be 8.0 KLD. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose.

The domestic effluent to be generated from the project will be collected in septic tank with soak pits arrangements. This being a mining project there will not be any process effluent. Towards surface runoff management, a garland drain of length 1100 m will be constructed and will be connected to settling ponds with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users..

There are no perineal water courses in both the lease areas. There is no proposal to discharge any effluent into this waterbody. As such no major impact is envisaged on the nearby water bodies due to project operations. The groundwater resource data of Virudhunagar district was obtained from CGWA brochure, Virudhunagar District.' Based on the report it is seen that that the stage of groundwater development of Vembakottai where the study area falls is 58% and as such this area can be categorized as 'Safe' from ground water development point of view. Thus there is scope for further ground water development.

Good rainwater harvesting measures for augmenting the ground water level in the region will be implemented.

1.4.3 NOISE ENVIRONMENT:

During mining operation there will be noise generation due to working of excavators, movement of vehicles, etc. However, it will be felt near the active working area only and at away from its source it will get reduced. There will also be attenuation due to vegetation, tin sheet/ green netting to be erected by the proponent all around the lease and as such there will not be any adverse noise propagation outside the lease boundary Due to natural attenuation effects, by proper green belt development, design / maintenance of machines, etc., the impact on noise levels will be negligible and are expected to be well within the prescribed limits.

1.4.4 VIBRATION:

In the proposed mine workings, blasting & vibration effects will be controlled by adopting following measures.

- Carrying out controlled blasting using Nonel delay detonator.
- Optimum design for burden and spacing.
- The peak particle velocity (PPV) of ground vibration will be kept very low through optimally controlled blasting techniques, after necessary field trials.
- Reducing explosive charge per delay to minimum.
- Using rock breaker wherever possible
- Proper care and supervision during blasting by a competent and experienced person to be carried out.
- Besides, different blasting time for both the projects is suggested and the timing is to be mentioned in the display board in the mines entrance.

By adoption of above measures, it will be ensured that ground vibrational levels due to blasting will be maintained within the prescribed DGMS conditions of 10 mm/s for the domestic houses/structures.

1.4.5 IMPACT ON LAND ENVIRONMENT:

In the post mining stage 5.76.00 Ha mined out area will be left as water body. 0.03.0 Ha will be the mine roads, 0.01.0 Ha will be the infrastructure, 0.72.0 Ha will be covered with vegetation, 0.02.00Ha will be undisturbed area and 0.11.0 will be fencing.Effective post closure monitoring will be done to ensure that there will be no adverse impact due to mining operations.

1.4.6 BIOLOGICAL ENVIRONMENT:

Leased and its nearby area is of dry rocky type with very little vegetation. Necessary mitigative measures like dust suppression, proper maintenance of equipment's, greenbelt and plantation etc., will be carried out to prevent dust generation & any further impact on the vegetation.There will be positive impacts will arise due to well-planned green belt development activities.

1.4.7 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is a private patta land owned by the applicant. There are no habitations or hutments in the core zone area and no rehabilitation or resettlement is involved. The mining operations in the proposed mines will each employ about 18 persons directly and about 50 persons. Besides through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service-related activities connected with the project operations.

Towards the socio-economic development of the surrounding area, Rs.5.0 Lakhs is allocated for this project. The activities identified under CER will be implemented in a phased manner in provision of facilities in nearby Government School.

1.4.8 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

The material mined out from this lease area will be directly transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. During the combined project operations, there will be 10 trips/hr. The transport route will be properly maintained to absorb this traffic due to this project. The following mitigative measures are suggested for mitigation of adverse impacts on the logistical aspect of the project:

- Water sprinkling on material in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- Plantation on either side of the transport road in consultation with the concerned department.
- Proper maintenance of transport roads and vehicles
- Avoiding overloading of material
- Covering of loaded vehicles with tarpaulins sheet if warranted.
- Installation of barriers at vulunerable locations

- Provision of tyre washing facility at the mine outlet

1.4.9 WASTE MANAGEMENT:

Since the entire mined out material will be used there will not be any solid waste generation from this project. There is no process effluent generation from both mines. Hence no liquid waste is generated.

The hazardous waste generated will be stored in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc. It will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

1.5 ENVIRONMENTAL MONITORING PROGRAME:

Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area. The Mines Manager in the mine project site will be directly responsible for various environmental activities in the mine and will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. Towards implementation of the environmental control measures, Rs.38.82 Lakhs is allocated under capital cost and Rs.25.40 Lakhs per per annum will be spent under recurring cost.

1.6 ADDITIONAL STUDIES:

The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarries. The cumulative impacts of the proposed Rough stone and Gravel Quarries of **TMT. J. Dhavamani, THIRU. P.Jeyaraman & Thiru Soundarajan** are provided in detail in the EIA/EMP Report. From the study it is observed that by ensuring systematic mining with proper mitigative measures as suggested in the report no adverse impact on the surrounding environment is envisaged on cumulative basis also. It is also worth mentioning here that, these

proposed quarry leases are more of a substitute for the recently expired quarry leases and as such cumulatively no major additional pollution load is expected.

1.7 CONCLUSION:

By systematic and scientific mining adhering to all the statutory norms and enforcing and strictly implementing the above said mitigation measures mentioned in this report, no adverse impact is envisaged. The proposed mining project will benefit this region in the fields of potential employment opportunities, improved income for local people, improved social welfare facilities in respect of education, medical healthcare systems, etc. in its own way and also revenue to Government through royalty, taxes etc. Besides, it will meet the raw material requirement of the construction industry also.

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