SUMMARY

OF

DRAFT EIA / EMP REPORT

FOR

ROUGH STONE AND GRAVEL QUARRY

A. Project Proponent Details	
Name	**THIRU S. DEVARAJ**
Address	**19/29, G2, Krishnan Colony, Nerkundram Pathai, Vadapalani, Chennai. – 600 026.**
B. Location Details	
Extent	**4.04.0 HA**
Survey No.	**502/1,2(P), 510/1,2 & 511/1,2**
Location	**GOPALAPURAM VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**
C. Production Details	
Production for 5 Years	**ROUGH STONE - 7,07,060 m3 GRAVEL - 1,90,060 m3**
Depth	**35 m**
Lease Period	**10 YEARS**
D. EIA/EMP details	
ToR reference	**TO25B0108TN5581105N dated 08.04.2025**
Baseline Monitoring	**SUMMER SEASON (MAR - MAY 2025)**

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

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SEPTEMBER- 2025

SUMMARY

1.1 INTRODUCTION:

Thiru. S. Devaraj propose to operate Rough Stone and Gravel Quarry at Survey No. 502/1,2(P), 510/1,2 & 511/1,2 over an area of 4.04.0 hectares in Gopalapuram Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu and has initiated action towards obtaining environmental clearance. Production Capacity is 7,07,060 m3 of Rough Stone & 1,90,060 m3 of Gravel up to depth of 35 m for the period of ten years (Peak production capacity of 84,400 m3 of rough stone & 29,500 m3 of Gravel). Entire lease area is private patta land in applicants possession.

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing.

This EIA/EMP report for Thiru. S. Devaraj is prepared based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu vide TOR Identification No. TO25B0108TN5581105N dated 08.04.2025 and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining.

Salient details of the EIA/ EMP report prepared and given below:

Table 1: Salient Details of the Project

Details	
A.Statutory Clearances	
Precise Area Communication	Issued by Department of Geology & Mining vide KV1/848/2021, Dated: 28.02.2022.
Mining Plan Approval	Approved Department of Geology & Mining vide Roc. KV1/848/2021, dated 05.04.2022
Details of Quarries within 500m radius	Approved Department of Geology & Mining vide Roc. KV1/848/2021, dated 05.04.2022
B. Application for Environmental Clearance	
Terms of Reference	TO25B0108TN5581105N dated 08.04.2025
Baseline Data Collection	Carried out by Creative Engineers & Consultants , Chennai for Summer Season (Mar 2025 – May 2025)
C.Site Details	
Location	Gopalapuram Village, Vembakottai Taluk, Virudhunagar District
Coordinates	Latitude : 9°21‘08.4" N to 9°21‘16.4" N Longitude: 77°37‘14.5" E to 77°37‘23.7" E
Nearest Village	Mettuvadakarai – 500m (S) side.

Nearest Town	Rajapalayam - 13.0km - NW
Nearest Railway Station	Rajapalayam - 13.0km - NW
Nearest Airport	Madurai -74km -NE
Accessibility	The area applied for quarry lease lies 17km south side of Srivilliputhur & joins at Srivilliputhur to Vadakarai main road and 0.6km south of Gopalapuram
Topography	The lease area is a plain terrain.
D. Environmental Setting of the Study Area	
Nearest Water Bodies	Kanmai -20m-SW, Seasonal Drainage – 10m-W, Vaippar River - 1.6km – SE, Cholapuram River - 3.3km – W, Solasseri River - 3.7km – W, Karuva Nadi - 8.8km – SW, Marugal Odai - 1.8km – NE. Nedunkulam Odai - 8.6km – NE.
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 10 km 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.
E. Technical Description	
Past production details	Fresh Lease
Geological Reserves	**13,96,800** m^3 of rough stone & **2,32,800** m^3 of gravel
Mineable Reserves	Rough stone - **7,07,060** m3 Gravel - **1,90,060** m3
Mining Method	Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.
Production	Production capacity of 7,07,060 m3 of Rough Stone & 1,90,060 m3 of Gravel up to depth of 35 m for the period of ten years. Production capacity for first 5 year is 3,43,500 m3 of Rough Stone & 1,15,600 m3 of Gravel up to depth of 30m.
Waste Generation and Management	There is no waste generation anticipated in these quarries since the entire excavated material will be utilized.
Ultimate Depth	35 m
F. Project Requirements	
Manpower	16 persons directly and 50 people indirectly.
Water Requirement and Source	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.
Power Requirement	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.

Site Services	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.
Project Cost	Rs.**63,17,780/-**

Figure 1: Location Map

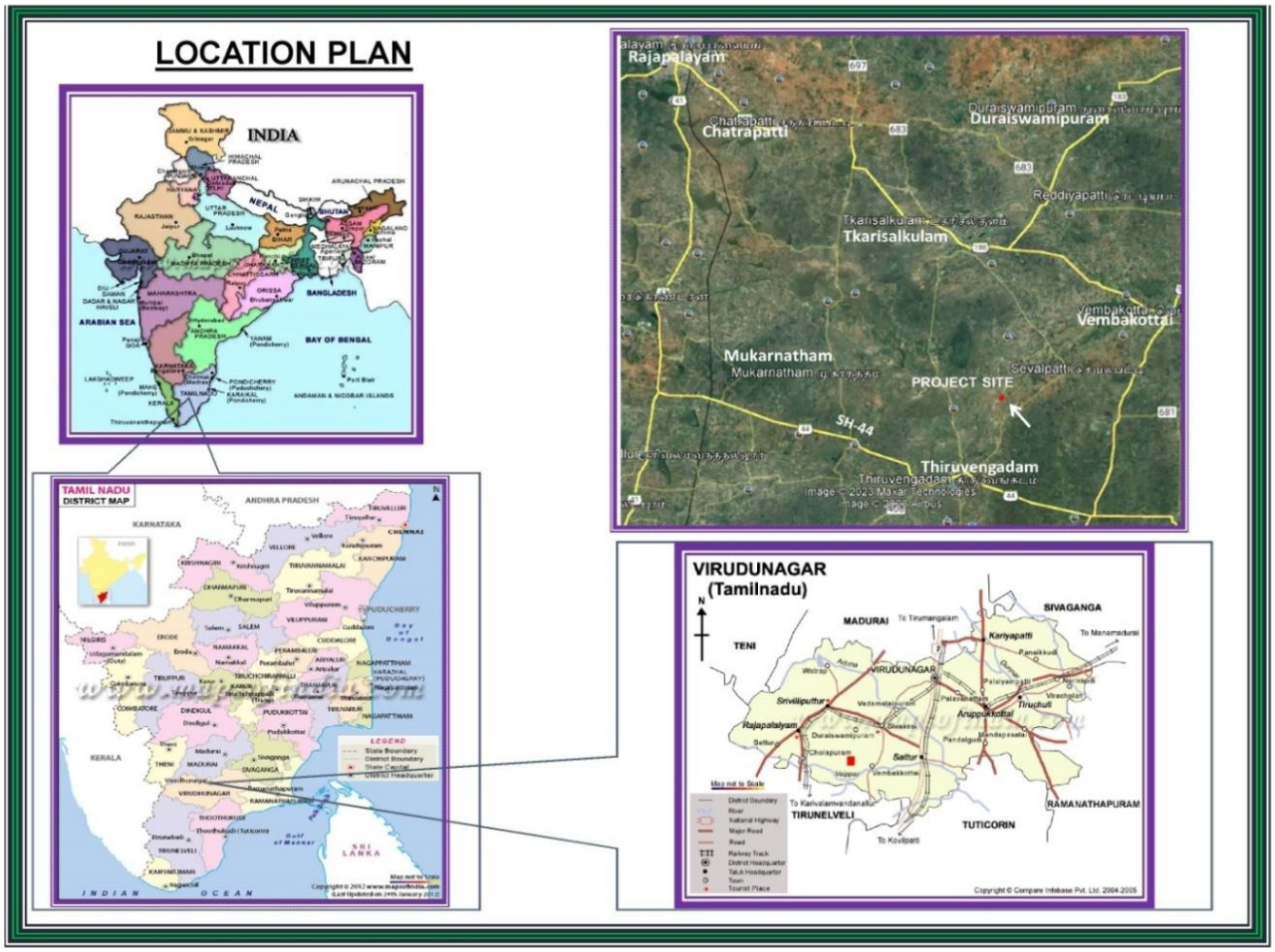
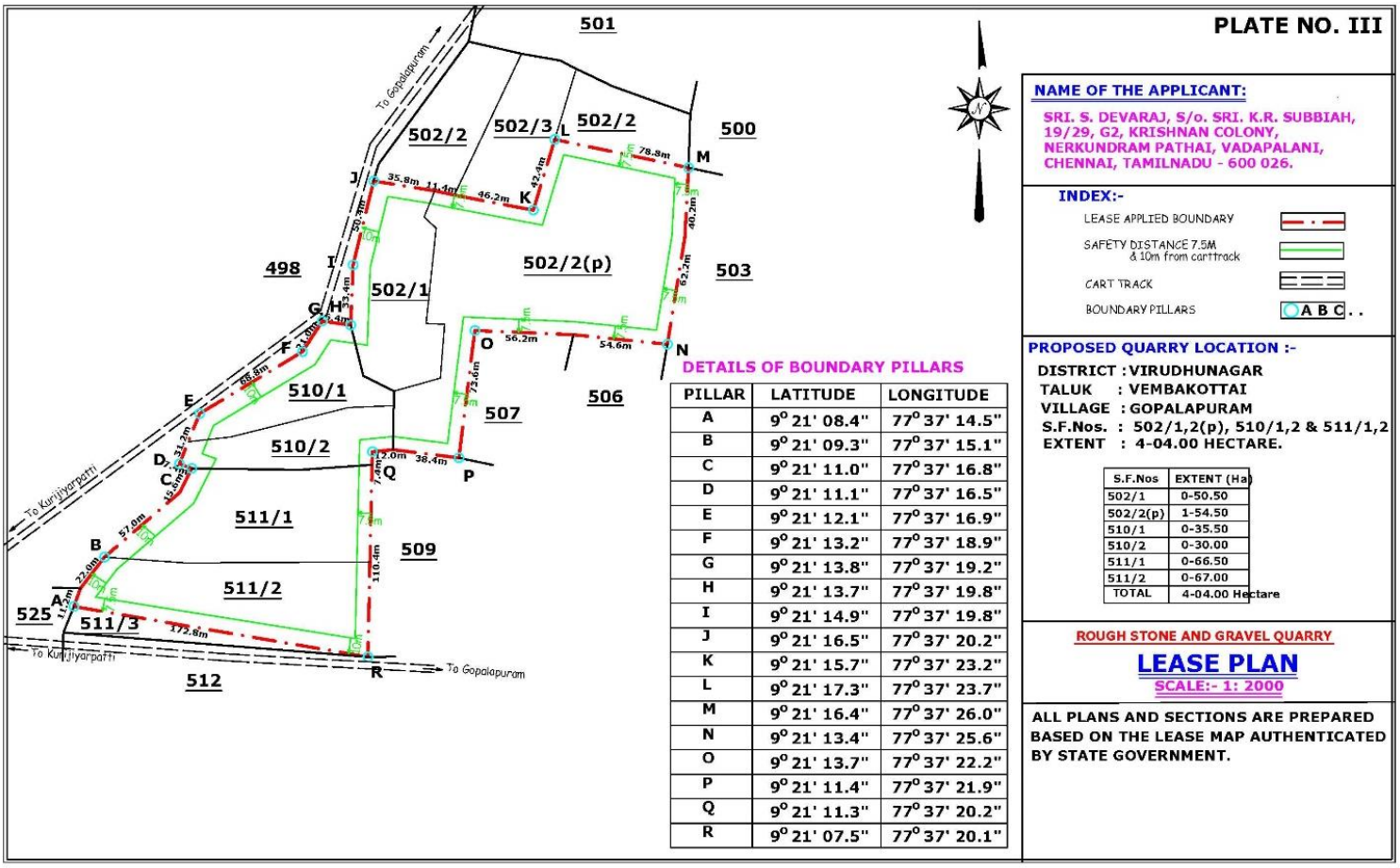


Figure 2: Lease Plan Rough stone and Gravel Quarry



PILLAR	LATITUDE	LONGITUDE
A	9° 21' 08.4"	77° 37' 14.5"
B	9° 21' 09.3"	77° 37' 15.1"
C	9° 21' 11.0"	77° 37' 16.8"
D	9° 21' 11.1"	77° 37' 16.5"
E	9° 21' 12.1"	77° 37' 16.9"
F	9° 21' 13.2"	77° 37' 18.9"
G	9° 21' 13.8"	77° 37' 19.2"
H	9° 21' 13.7"	77° 37' 19.8"
I	9° 21' 14.9"	77° 37' 19.8"
J	9° 21' 16.5"	77° 37' 20.2"
K	9° 21' 15.7"	77° 37' 23.2"
L	9° 21' 17.3"	77° 37' 23.7"
M	9° 21' 16.4"	77° 37' 26.0"
N	9° 21' 13.4"	77° 37' 25.6"
O	9° 21' 13.7"	77° 37' 22.2"
P	9° 21' 11.4"	77° 37' 21.9"
Q	9° 21' 11.3"	77° 37' 20.2"
R	9° 21' 07.5"	77° 37' 20.1"

Figure 3: Satellite Imagery Showing Corner Co-ordinates

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 Summer Season (March 2025 to May 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 Gopalapuram Village, Vembakottai Taluk, Virudhunagar District. Based on 2011 census data, in the 10km radius there are 34 Rural villages from Five Taluks namely Rajapalayam, Srivilliputhur, Sivakasi, Sivagiri, and Sankarankoil and 2 urban areas of Rajapalayam Taluk namely Samusigapuram (CT), Sivakasi Taluk namely Alangulam (CT). 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	89,852	49.90
Female Population	90,208	50.10
Total	**180,060**	**100**
B. Caste-wise population distribution		
Scheduled Caste	41483	23.04
Scheduled Tribes	311	0.17
Other	138,266	76.79
Total	**180,060**	**100**
C. Literate and Illiterate population		
Literate Males	70076	38.92
Literate Females	56671	31.47
Total Literate Population	**126747**	**70.39**
Others Males	19776	10.98
Others Females	33537	18.63
Others Population	**53313**	**29.61**
Total	**180,060**	**100**
D. Occupational structure		
Main workers	85582	47.53

Details	Population	Percentage
Marginal workers	6873	3.82
Total Workers	**92455**	**51.35**
Total Non-workers	**87605**	**48.65**
Total	**180,060**	**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 Data – 6 Locations			
Parameters	**Core Zone**	**Buffer Zone**	**Limits**
Particulate Matter (Size <10 µm)	51.9 – 64.7	44.4 – 68.0	100
Particulate Matter (Size <2.5 µm)	24.3 – 39.4	18.4 – 33.3	60
Sulphur Dioxide (as SO_2)	5.3 – 8.7	3.9 – 8.8	80
Nitrogen Dioxide (as NO_2)	7.6 – 11.3	6.6 – 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. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m3)			
B. Water Quality – 6 Locations			
pH at 25 ˚C	7.24 – 7.72	**6.5-8.5**	
Total Dissolved Solids, mg/L	250 – 590	**2000**	
Chloride as Cl-, mg/L	22.3 – 102	**1000**	
Total Hardness (as CaCO3), mg/L	184 – 312	**600**	
Total Alkalinity (as CaCO3), mg/L	125– 292	**600**	
Sulphates as SO42-, mg/L	12.1 – 186	**400**	
Iron as Fe, mg/L	0.03 – 0.07	**0.3**	
Nitrate as NO3, mg/L	2.34 – 7.21	**45**	
Fluoride as F, mg/L	0.22 – 0.63	**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 – 6 Locations			
Parameter	**Core Zone**	**Buffer Zone**	**Limit**

Day Equivalent	51.0	47.1 – 50.6	55
Night Equivalent	39.2	36.3 – 42.0	45
Comparing with the MOEF&CC Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were within the limit values for Residential areas.			
D. Soil Quality – 3 Locations			
Parameter	**Buffer Zone**		
pH	6.58 – 7.57		
Electrical Conductivity (µmho/cm)	89.74 – 106.5		
Organic matter (%)	2.54 – 3.12		
Total Nitrogen (mg/kg)	606 - 1125		
Phosphorus (mg/kg)	2.2 – 3.5		
Sodium (mg/kg)	765 – 1036		
Potassium (mg/kg)	570-775		
Soil is of Clay loam type.			

A. LAND ENVIRONMENT:

Land use pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 32.89 % of the study area is agriculture land and 30.27 % are fallow land. Land with scrub constitutes 23.83 %, lands without scrub constitute 6.21%, and waterbodies constitute 3.22%.

BIOLOGICAL ENVIRONMENT:

Flora: Lease area is a non forest, private land exposed with rock and 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 Sygygium cumuni, Azadirachta indica Borassus flabellifer, Albizia lebbeck, Acacia auriculiformis, Prosopis juliflora, etc. 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.

B. HYDROLOGICAL STUDY:

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater study 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 very 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.

The stage of groundwater development of Vembakottai where the study area falls is 58%. In view of this, this area can be categorized as 'Safe' from ground water development point of view.

1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The identified impacts due to the mining operation in 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, the resultant added concentrations with baseline figures on individual basis with respect to PM10 is in the range of 52.2 μg/m3 to 69.0 μg/m3 and with respect to PM2.5 are in the range of 25.6μg/m3 to 40.4 μg/m3, which are within the stipulated statutory limits for the projects. 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 water requirement for this project is expected to be 8 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 1050 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.

By proper surface runoff management, the rainwater from the lease periphery will be channelized through the peripheral garland drain all around the lease area and then through settling pond to be located in the southern side of the lease area. There is a Kanmai around 20m in southwest side and a seasonal drainage for which 10m safety has been left in West side of the lease area. Due to scanty rainfall the kanmoi and the drainage channel remains dry for most of the year. Protective measure like embankment with plantation & Fencing will be carried out to ensure that there is no disturbance to these water bodies.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 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 entire 3.80.0 Ha will be used as mined out area up to 35m depth and will be left as water body. 0.02.0 Ha will be the mine roads & infrastructure, 0.18.0 Ha will be covered with vegetation and 0.04.00 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. 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 16 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 by 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. Since the production from this lease is very low there will be hardly 4 trips/hr of material transportation. 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.
- 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 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. 24.49 Lakhs is allocated under capital cost and Rs. 21.88 Lakhs/annum under recurring cost per will be spent under recurring cost.

1.6 CONCLUSION:

Since the production from this lease is low, the equipment's to be used and the magnitude of operation is also less. As such no adverse impact on the surrounding environment is expected. 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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