

EXECUTIVE SUMMARY

ACHAMAPURAM SAND QUARRY

(For Resorting the Functional Efficiency of Cauvery River)

Achamapuram Village, Manmangalam Taluk, Karur District

In S.F.No 265/1 (Part)

Extent: 24.00.0 Ha

NON-FOREST LAND/ **GOVERNMENT LAND** / FRESH MINE/ MINOR MINERAL/ **'BI' CATEGORY**

As per TOR vide

Lr No. SEIAA-TN/F.No.9270/SEAC/ToR-1207/2022 Dated: 14.07.2022

Project Proponent

The Executive Engineer

Water Resources Department

Mining and Monitoring Division,

Tiruchirappalli District, Tamil Nadu State - 620 020.

Environmental Consultant

GEO EXPLORATION AND MINING SOLUTIONS



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Accredited for sector 1 Category 'A' & 38 Category 'B'
Certificate No : NABET/EIA/2225/RA 0276



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Baseline Monitoring Season – October – December 2022

ENVIRONMENTAL LAB

CHENNAI METTEX LAB PRIVATE LIMITED

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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APRIL 2023

● INTRODUCTION

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

Whenever floods and consequent damages occurred it was resorted to increase the bund level to restore the carrying capacity of river. It was never thought of quarrying river due to the enormous cost, it require and the problem of ways and means to dispose the desilted sand. Consequence of this Change in river regime and reduction in carrying capacity of the Cauvery River, the shoals in the rivers, divert the flow of water resulting in bund erosion and consequent breaches, which lead to loss of property and lives.

Solution to the above problem is to desilt the sand and shoals in Cauvery River by expending huge amount. Alternatively, the economical solution to this problem is to quarry the sand to remove the shoals. This option would not yield net revenue to the state Exchequer apart from making available the important construction material for infrastructure development at a reasonable price to the common people.

The project proponent, Executive Engineer, Water Resources Department, Mining and Monitoring division applied for Sand quarry lease over an extent of 24.00.0 Ha in Achamapuram Village, Manmangalam Taluk, Karur District, Tamil Nadu. The application was processed by the Department of Geology and Mining, Karur and passed precise area communication letter vide Rc.No 392/Mines/2021, Dated 19.01.2022 to obtain Mining plan and Environmental Clearance from the SEIAA, Tamil Nadu. The mining plan was prepared and got approval from the Deputy Director, Department of Geology and Mining, Karur vide Rc.No 392/Mines/2021, Dated 29.04.2022.

The proponent has obtained necessary statutory clearances from the Department of Geology and Mining, Karur District, Tamil Nadu (Statutory Clearance Documents are enclosed along with Mining plan as Annexure No III).

Proponent applied for ToR for Environmental Clearance to SEIAA, Tamil Nadu and obtained ToR vide letter no. SEIAA-TN/F.No.9270/SEAC/ToR-1207/2022 Dated: 14.07.2022 for carrying out EIA and EMP studies.

The proponent has engaged M/s. Geo Exploration and Mining Solutions, Salem, Tamil Nadu for carrying out EIA / EMP Study. The Baseline Monitoring study has been carried out during post-monsoon season (October – December 2022). This EIA Report is prepared in compliance with ToR obtained vide Lr No. SEIAA-TN/F.No.9270/SEAC/ToR-1207/2022 Dated: 14.07.2022.

PURPOSE OF THE REPORT

The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14th August 2018, Mining Projects are classified under two categories i.e., A (> 100 Ha) and B (\leq 100 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix–XI.

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B- 1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed project is categorized under category “B1” Activity 1(a) (Total Extent of the area is >5 Ha) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of **Environmental Clearance**.

“Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu”

1.1 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT –

Name and Location of the project	Project proponent address
Achamapuram Sand Quarry S.F.No.265/1(Part) Achamapuram Village Manmangalam Taluk, Karur District, Tamil Nadu state	The Executive Engineering, Water Resource Department, Mining and Monitoring Division, Thiruchirappalli – 620 020

1.1 BRIEF DESCRIPTION OF THE PROJECT

TABLE 1.2 SALIENT FEATURES OF THE PROPOSAL PROJECT

DESCRIPTION	DETAILS
Name of the project	Achamapuram Sand Quarry
Name of Mineral	Sand
S.F. No's and Village	S.F.No 265/1 (Part), Achamapuram Village
Extent	24.00.0 ha
Classification of Land	Government Land Water Resource Department, Mining and Monitoring Division, Thiruchirappalli
Taluk	Manmangalam
District	Karur

State	Tamil Nadu	
Latitude Between	10°58'09.7255"N to 10°58'37.4311"N	
Longitude Between	78°10'48.2644"E to 78°11'17.8825"E	
Toposheet No	58- J/01	
Topography of the area	The topography of the area is almost plain topography with shoals of Sands having gentle slope towards South East side. Highest Elevation between: 100.40m to 105.88m AMSL	
Life of Mine	2 years	
Geological Reserves	7,20,000m ³ of Sand	
Mineable Reserves	4,80,000m ³ of Sand	
Yearwise Production (2 Years)	1st Year	2,40,000m ³
	2nd Year	2,40,000m ³
Mining Method	Opencast Mechanized Method of Mining without Drilling and Blasting	
Proposed depth of mining for this plan period	2m (1m abl + 1m bbl)	
Ultimate Pit Dimension	1000m (Length) X 240m X 2m (Depth)	
Employment Potential	38 Nos	
Ground Water table	21-26 m BGL	
Ground Water Table Intersection	Quarrying operation will be carried out well above the ground water table, hence ground water will not be affected by proposed mining.	
Drainage Pattern	The drainage pattern of the area is dendritic.	
Water Requirement & Source	Total water requirement for dust suppression, Greenbelt and drinking is 2.5 KLD. Water will be sourced from nearby villages by water tankers and drinking water will be sourced from approved water vendors.	
500m Radius Letter from the Assistant Director, Karur District	Existing Quarries	- Nil
	Expired/Abandoned Quarries	- Nil
	Proposed Quarry	- 1 No (24.00.0ha)
Project Cost	Rs 86,60,000 /-	

1.2 STATUTORY DETAILS

- Gazette No.110, Public Works Department Dated: 06.07.2006
- Precise Area Communication letter issued by District Collector, Karur vide Letter No. 392/Mines/2021 Dated 19.01.2022 for preparation of Mining Plan and for Obtaining Prior-Environmental Clearance.
- The Mining Plan was prepared under Rule 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the approved by Deputy Director of Geology and Mining, Karur District vide Letter No: 392/Mines/2021 Dated 29.04.2022
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018

* The proponent applied for ToR for Prior Environmental Clearance vide online Proposal No. No.SIA/TN/MIN/ 76972/2022 dated: 18.05.2022

2 PROJECT DESCRIPTION

This project is proposed to excavate 4,80,000m³ of Sand by Opencast Mechanized Mining Method without drilling and blasting. Sand will be transported by 10/20 Tonnes. The sand will be loaded directly to the trucks/ lorries to nearby approved Government Sand Depot for Transportation to the needy customers, hence no mineral processing is involved.

The Trucks are loaded by excavators in direct supervision of the Assistant/ Junior Engineers Water Resources Department. The Competent Statutory Mines foreman will also be deployed for the Safety movement of vehicles inside the quarry. The sand is soft and fragile in nature and proposed to excavate 2m (1m abl + 1m bbl)..

Opencast method of shallow mining is proposed. Initially to approach the proposed site a temporary road will be formed by using of Gravel mixed with bio-degradable materials and formed a grit around the sand desilting site to move the vehicles easily. During forming the approach road and grit, necessary temporary pipes will be provided wherever necessary for free flow of water to downstream. After forming this approach roads, the trucks/ lorries are allowed for transportation after paying the necessary fees to the Government bodies. In this process contract labours from neighbouring villages are engaged for the purpose of maintaining the approaches. Regulating the vehicle movements, assisting to take levels, issuing of permits etc., to regulate the desilting operation in a scientific and systematic manner. The sand will be loaded directly to the trucks / Lorries for transportation to the needy customers and the Silt will be directly loaded to the trucks / Lorries for transportation to the nearby Farmers for Agriculture purpose with free of cost. Hence, no mineral processing is involved.

The trucks are loaded by excavators in direct supervision of the Assistant / Junior Engineers Public Works Department. The competent statutory mines foreman will also be deployed for the safety movement of vehicles inside the quarry.

2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	Nearest National Highway (NH-44) Salem – Madurai – 9.0km -SW The Nearest State Highway (SH-95) Namakkal – Mohanur – 5.4km-NW
Nearest Village	Senappadi – 700m - NW
Nearest Town	Manmangalam - 10km- West
Nearest Railway	Veerarakiyam Railway station - 4.0km - SW
Nearest Airport	Trichy Airport – 64 km – SE
Seaport	Tuticorin – 250 Km-SE

2.2 OPERATIONAL DETAILS OF LEASE APPLIED AREA

Description	Sand Quantity in m3
Geological Resources	7,20,000
Mineable Reserves	4,80,000
Yearwise Production	4,80,000
Peak Production Proposed	2,40,000
Peak Production per Day	960

Source: Approved Mining plan of respective quarry leases

FIGURE – 1: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA

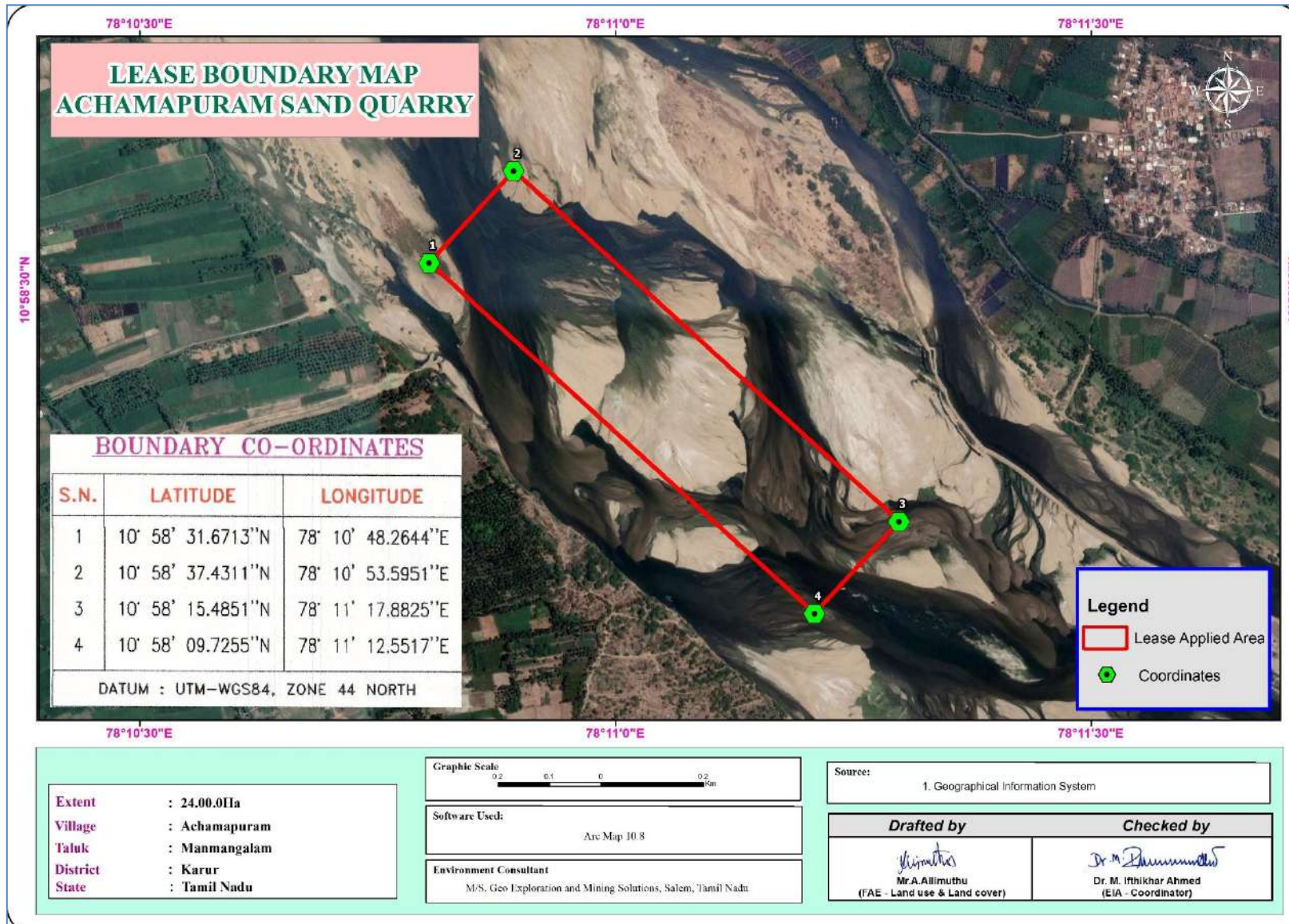


FIGURE –2: GOOGLE IMAGE SHOWING CLUSTER (500 m QUARRIES)

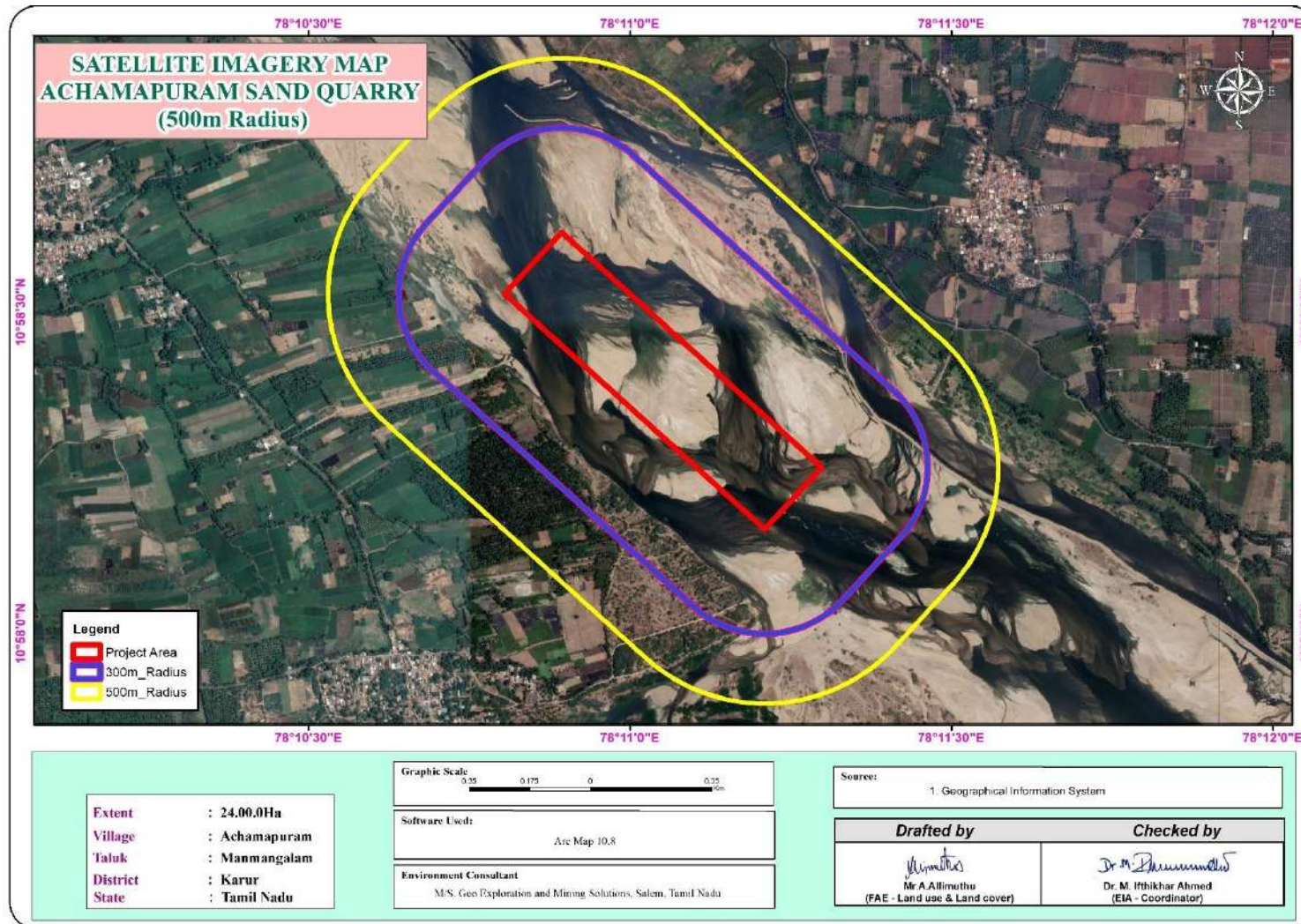


FIGURE – 3: TOPOSHEET MAP COVERING 10 KM RADIUS

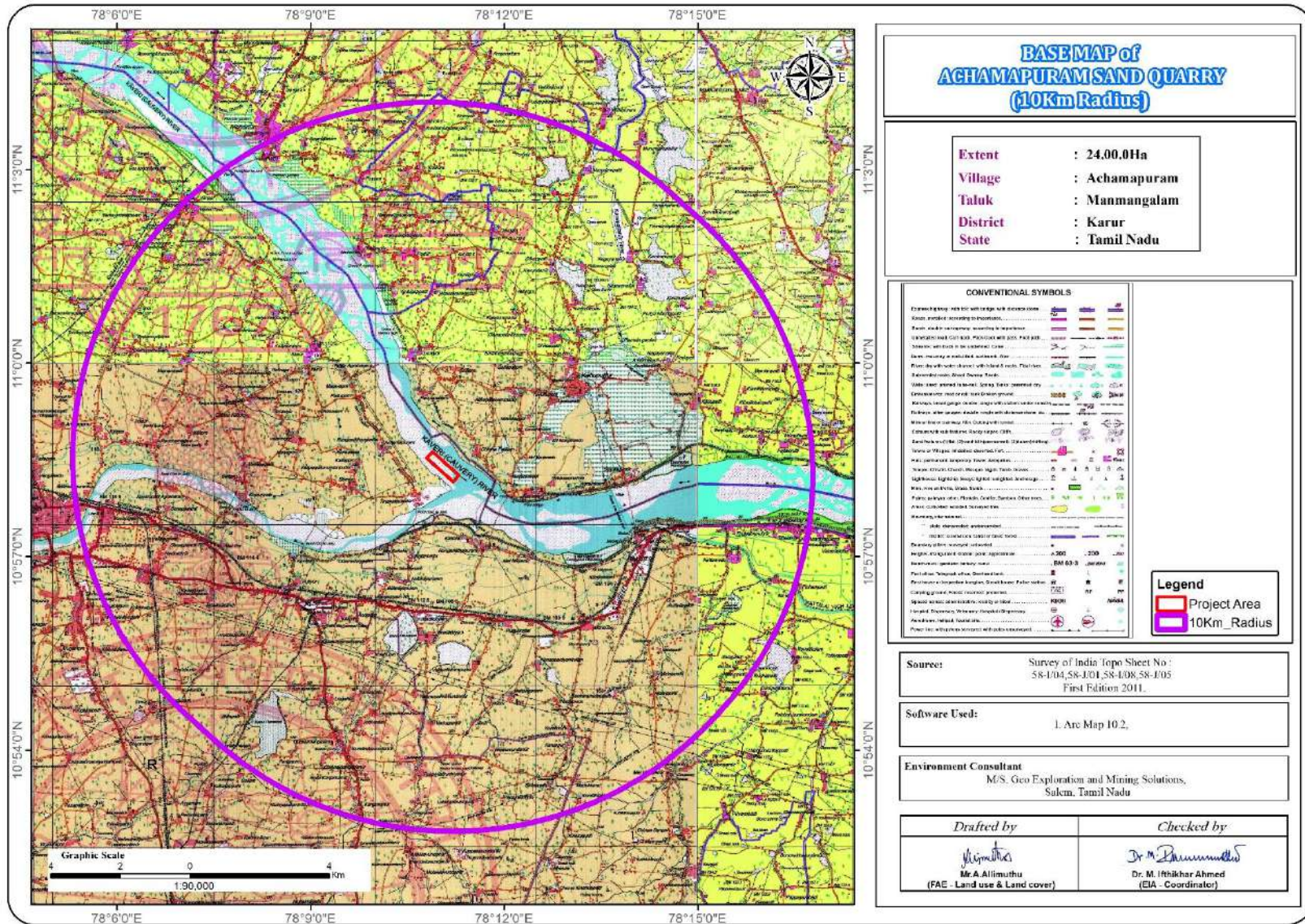


FIGURE – 4: QUARRY LEASE PLAN & SURFACE PLAN

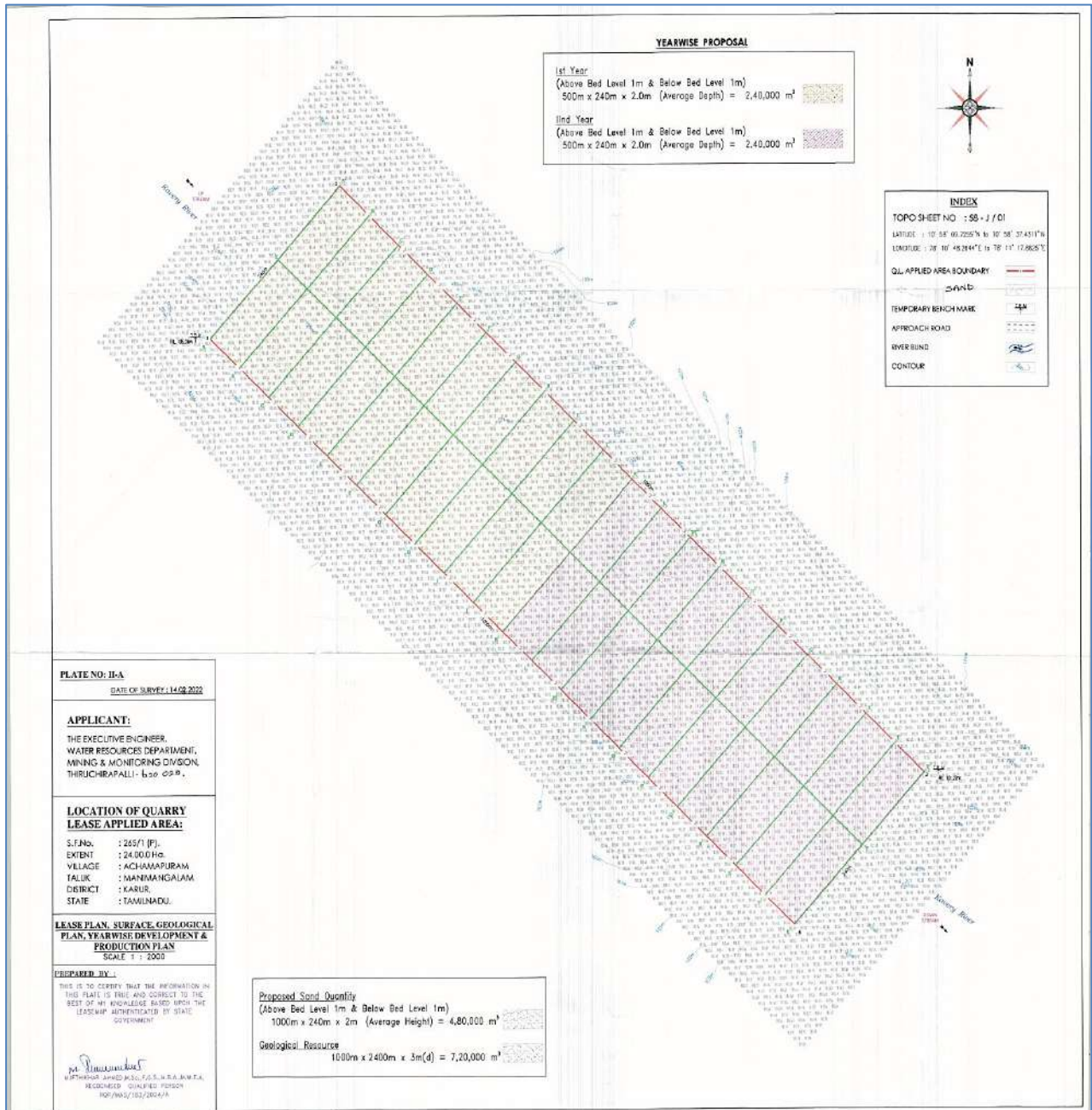


FIGURE –5: PHOTOGRAPHS OF THE PROJECT AREA

2.4 METHOD OF MINING

Opencast method of shallow mining is proposed. Initially to approach the proposed site a temporary road will be formed by using of Gravel mixed with bio-degradable materials and formed a grit around the sand desilting site to move the vehicles easily. During forming the approach road and grit, necessary temporary pipes will be provided wherever necessary for free flow of water to downstream. After forming this approach roads, the trucks/ lorries are allowed for transportation after paying the necessary fees to the Government bodies. In this process contract labours from neighbouring villages are engaged for the purpose of maintaining the approaches. Regulating the vehicle movements, assisting to take levels, issuing of permits etc., to regulate the desilting operation in a scientific and systematic manner. The sand will be loaded directly to the trucks / Lorries for transportation to the needy customers and the Silt will be directly loaded to the trucks / Lorries for transportation to the nearby Farmers for Agriculture purpose with free of cost. Hence, no mineral processing is involved.

The trucks are loaded by excavators in direct supervision of the Assistant / Junior Engineers Public Works Department. The competent statutory mines foreman will also be deployed for the safety movement of vehicles inside the quarry.

After that the loaded vehicles are allowed to go out only after covering the sand and silt load properly by tarpaulin to avoid any spillage. .

2.3 PROPOSED MACHINERY DEPLOYMENT

Sl.No.	Machinery	Numbers of Units	Capacity	Make	Motive Power
1	Excavator attached with bucket	3	0.90m3	TATA Hitachi	Diesel Drive
2	Tipper	15	10/20 tons	Tata	Diesel Power

2.5 CONCEPTUAL MINING PLAN/ FINAL MINE CLOSURE PLAN

The sand deposit is soft & fragile in nature and occurring as a layer of around 3 thickness it is proposed to excavate 2m (1m abl + 1m bbl). After the completion of quarrying operation the land will be got natural replenishment in the upcoming rainy seasons.

3.0 DESCRIPTION OF THE ENVIRONMENT

Field monitoring studies to evaluate the base line status of the project site were carried out covering March 2022, April 2022 & May 2022 as per CPCB guidelines. Environmental Monitoring data has been collected with reference to proposed mine by CHENNAI METTEX LAB PRIVATE LIMITED LABORATORIES Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD

3.1 ENVIRONMENT MONITORING ATTRIBUTES

Attribute	Parameters	Frequency of monitoring	No. of locations	Protocol
Land-use	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
Soil Characteristics	Physio-Chemical Characteristics	Once during the study period	6 (1 core & 5 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (2 surface water & 4 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data& Secondary Data from IMD Station

Ambient Air Quality	PM10 PM2.5 SO2 NOX CO	24 hourly twice a week (October – December 2022)	8 (1 core & 7 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	8 (1 core & 7 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrant & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio–Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited Laboratories in association with GEMS

* All monitoring and testing are been carried out as per the Guidelines of CPCB and MoEF & CC.

3.2 LAND ENVIRONMENT

The total project area is 24.00.0 ha is proposed for quarrying activity (Excavation). The proposed area is Cauvery River land. The mining activity is proposed to a maximum depth of 2m (1m abl + 1m bbl).

Due to mining operation, there is no remarkable impact on environment, except land degradation within project area. No release of toxic elements into the ground. No adverse impact is anticipated on land use of buffer zone associated due to the mining activity, as all the activities will be confined within the project area. The quarrying operations will impact the land usage and land aesthetics of project area. The land degradation is unavoidable during quarry activities like excavation, mineral handling etc.

Table 3.2: Land Use / Land Cover Table 10 Km Radius

S.No	Classification	Area_Ha	Area_ %
BUILTUP			
1	Builtup Urban	714.64	2.23
2	Builtup Rural	2343.38	7.30
3	Builtup Mining	601.13	1.87
AGRICULTURAL LAND			
4	Crop Land	16792.73	52.29
5	Agricultural Plantation	3743.66	11.66
6	Fallow Land	3380.22	10.53

FOREST			
7	Forest Plantation	127.92	0.40
BARREN/WASTELAND			
8	Scrub Land	580.63	1.81
9	Sandy Area	256.32	0.80
10	Barren Rocky	97.47	0.30
WATERBODIES			
11	Waterbodies	3476.45	10.83
Total		32114.54	100.00

The area falls in the Achamapuram Village Manmangalam Taluk, Karur District. Total land required for the project is 24.00.0 ha and the area is devoid of major vegetation

Land use refers to “man’s activity and the various uses which are carried on land.” Land Cover refers to “natural vegetation, water bodies, rock/ soil, artificial cover and others resulting due to land transformation.”.

3.3 SOIL ENVIRONMENT

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay to Sandy Soil and Bulk Density of Soils in the study area varied between 0.96 – 1.26 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 42.5 to 46.1 %.

- The nature of soil is slightly alkaline to strongly alkaline in nature with pH range 8.03 to 8.61
- The available Nitrogen content range between 380 mg/kg to 600.1 kg/ha
- The available Phosphorus content range between 1.03 to 2.21 kg/ha
- The available Potassium range between 23.0 to 56.4 mg/kg

Whereas, the micronutrient as zinc (Zn), iron (Fe) and copper (Cu) were found in the range of 1.05 to 4.4 mg/kg; 1.44 to 2.36 mg/kg and ND

Wilting co efficient in significant level would mean that the soil would support the vegetation. The soil properties in the buffer zone reveal that the soil can sustain vegetation. If amended suitability the core area can also withstand plantation.

3.4 WATER ENVIRONMENT

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

3.2.1 Surface Water

The project area lies in the Cauvery River. The area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks.

3.2.2 Ground Water Conditions

Karur district is underlain entirely by Archaean Crystalline formations with Recent alluvial deposits occurring along the river and streams courses and colluvium of valley-fills. The important aquifer systems in the district are constituted by weathered, fissured and fractured crystalline rocks and the recent alluvial deposits.

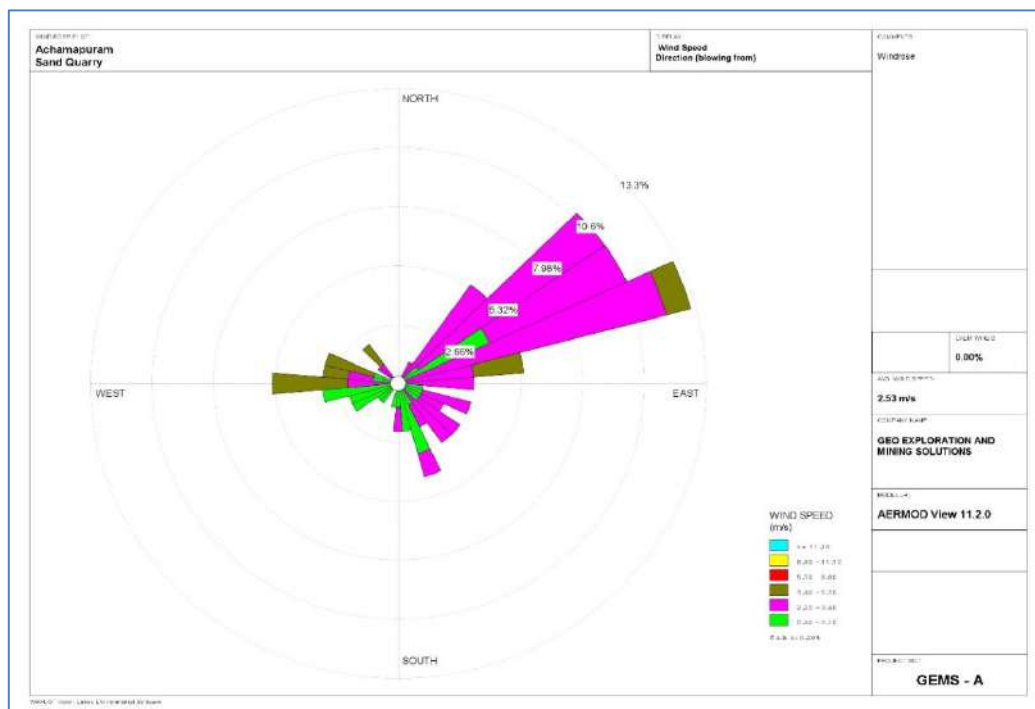
Ground water occurs under phreatic conditions. The maximum saturated thickness of these aquifers is upto 5 m depending upon the topographic conditions. The study area falls in the Karur which is categorized as Safe (< 70%) as per G.O (MS) No 113 dated 09.06.2016.

There are Seven (7) bore well Seven (7) open wells within the radius of 2km Most of the wells are almost in dry conditions in the summer season. The details of the well and depth in monsoon and non-monsoon is described below

3.5 AIR ENVIRONMENT

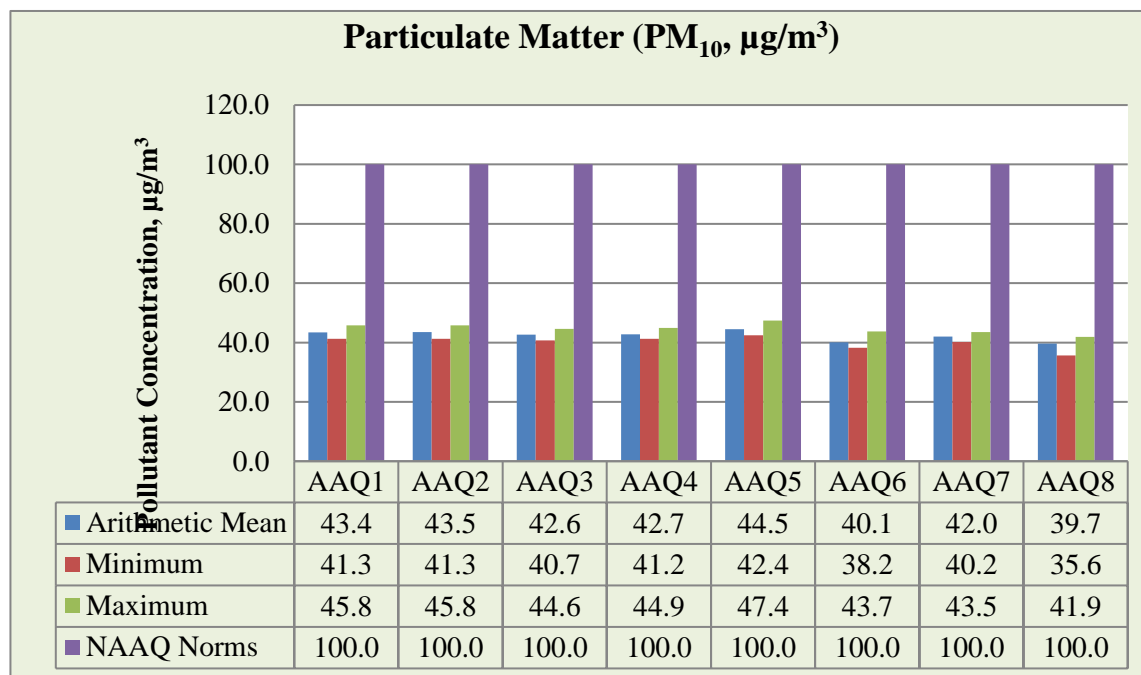
The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the proposed quarry forms the baseline information.

FIGURE – 6: WIND ROSE DIAGRAM



3.6 SUMMARY OF AMBIENT AIR QUALITY

The results of ambient air quality monitoring for the period (October – December 2022) are presented in the report. Data has been compiled for three months.



As per monitoring data, PM₁₀ is ranges from 50.1 µg/m³ to 69.9 µg/m³, PM_{2.5} data ranges from 20.0 µg/m³ to 39.9 µg/m³, SO₂ ranges from 8.7 µg/m³ to 10.3 µg/m³ and NO₂ data is ranges from 20.0 µg/m³ to 23.8 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.7 NOISE ENVIRONMENT

Ambient noise levels were measured at 8 (Eight) locations around the proposed project area. Minimum and maximum noise levels recorded in core zone during day time were from 61.8 – 64.2 dB (A) Leg and during night time were from 49.7 – 51.3 dB (A) Leq. Minimum and maximum noise levels recorded in buffer zone during day time were from 49.7 – 51.4 dB (A) Leg and during night time were from 39.2 – 41.7 dB (A) Leq. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.8 ECOLOGICAL ENVIRONMENT

There is no Forest land, National Parks, Eco sensitive areas, Wild life sanctuaries within the radius of 10 km. An ecological survey of the study area was conducted particularly with reference to the listing of species and assessment of the existing baseline ecological (terrestrial) condition in the study area.

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small operation over short period of time will not have any significant impact on the surrounding flora and fauna.

3.9 SOCIO ECONOMIC ENVIRONMENT

socio-economic impacts of quarrying operation are many. Impacts of a mine project may be positive or Negative. The adverse impacts attribute to physical displacement due to land acquisition, which is followed by loss of livelihood, mental agony, changes in social structure, and risk to food security etc.,

The villages and their inhabitants in the buffer zone will not be disturbed from their settlements due to the mining operations. There is no habitation within the project area and within the radius of 500m from the periphery of the project site. Therefore, neither villages nor any part of village or any hamlet will be disturbed during the short period of the mine. Regular medical checkup / eye-camps will be organized for the villagers. This quarry project will provide job opportunities to 38 workers directly and 20 workers indirectly. Employed for mining work earning wages as per the minimum wages act applicable for unskilled, semi-skilled and highly skilled categories.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

4.1 LAND ENVIRONMENT: ANTICIPATED IMPACT

The total project area is 24.00.0 ha is proposed for quarrying activity (Excavation). The proposed area is Cauvery River land. The mining activity is proposed to a maximum depth of 2m (1m abl + 1m bbl).

Due to mining operation, there is no remarkable impact on environment, except land degradation within project area. No release of toxic elements into the ground. No adverse impact is anticipated on land use of buffer zone associated due to the mining activity, as all the activities will be confined within the project area. The quarrying operations will impact the land usage and land aesthetics of project area. The land degradation is unavoidable during quarry activities like excavation, mineral handling etc.,

MITIGATION MEASURES

Due to the mining operation the land will get positive impact, the main aim of the mining operation is to restore the functional efficiency of the river

4.2 WATER ENVIRONMENT

The impact due to quarrying on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. The quarrying activity will not intersect ground water table as the maximum depth of the quarry is 2m (1m abl + 1m bbl) and the water table in the area is 21m bgl..

MITIGATION MEASURES

The quarrying operation is restricted well above the water table. The water table will not be intersected during mining in the riverbed. There is no proposal of any stream modification/diversion due to this mining activity hence there will be no any impact on flow of the river. Detail of water requirements in KLD as given below:.

4.3 AIR ENVIRONMENT

Quarrying Operations will be to carried out by opencast method without involving drilling and blasting, dust particles are generated only due to Excavation, Loading, handling of mineral and transportation. The air quality in the study area depends upon the nature and concentration of emissions and meteorological conditions. Prediction of impacts on air environment has been carried out taking into consideration proposed production of 4,80,000m³ of sand on air environment and net increase in emissions by Open pit source modeling in AERMOD Software.

The air borne particulate matter is the main air pollutant in this opencast mining. The mining operation will be carried out using Hydraulic Excavators for the excavation of Sand.

The major air pollutants due to mining activity includes:-

Particulate Matter (Dust) of various sizes.

Gases, such as, Sulphur Dioxide, Oxides of Nitrogen, Carbon Monoxide etc., from vehicular exhaust.

Dust is the single air pollutant observed in the open cast mines. Diesel operating vehicles produce NOX, SO₂ and CO emissions, usually at low levels. Dust can be of significant nuisance surrounding land users and potential health risk in some circumstances.

MITIGATION MEASURES

In the study area adequate control measures will be implemented at the time of quarrying operation. Mitigation Measures suggested for air pollution controls are based on the baseline ambient air quality of the area. From the point of view of maintenance of an acceptable ambient air quality in the region, it is desirable that air quality is monitored on a regular basis to check compliance of standards as prescribed by regulatory authorities. In case of non-compliance, appropriate mitigated measures need to be checked.

The following additional measures will also be adopted such as:

Water sprinkling on haul roads, service roads will help in reducing considerable dust pollution

Closed Cabins with AC for shovel and dumpers and dust masks to workers will be provided

Weekly maintenance of quarrying equipment's will be carried out

Transport of sand in trucks covered with tarpaulin.

Information on wind direction and meteorology will be considered while planning, so that pollutants, which cannot be fully suppressed by engineering technique, will be prevented from reaching the nearby agriculture area.

Comprehensive green belt in the river bund will be carried out to reduce to propagation of fugitive dust emissions in order to create clean and healthy environment.

The vehicles and machinery will be kept in well maintained condition so that emissions will minimize

PPE will be provided to all workers

Regular health check-up of workers and nearby villagers in the near vicinity of the project area will be carried out and also yearly occupational health assessment of employees will be carried out as per DGMS Guidelines.

Ambient Air Quality Monitoring will be conducted on half-yearly basis to assess the quality of ambient air.

4.4 NOISE ENVIRONMENT

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. In this mining operation drilling and blasting is not involved hence noise is only due to the movement of HEMM and tippers.

These activities will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the project area. Noise modelling has been carried out considering blasting and compressor operation (Drilling) and transportation activities.

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels.

MITIGATION MEASURES

Provision of earplugs to workers exposed to high noise generating activities. Workers and operators at work site will be provided with earmuffs

Noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipment

periodical medical checkup of all workers for any noise related health problems.

Proper training to personnel to create awareness about adverse noise level effects

Periodic noise monitoring at suitable locations in the mining area and nearby habitations to assess efficacy of adopted control measures

4.5 BIOLOGICAL ENVIRONMENT

ANTICIPATED IMPACT AND MITIGATION MEASURES

The impact on biodiversity is not anticipated as there are no Wild life sanctuaries, Eco sensitive zone within the radius of 10Km from the project site. The impact on biodiversity is difficult to quantify because of its diverse and dynamic characteristics.

There are no migratory corridors, Migratory avian-fauna, and rare endemic and endangered species. There are no wild animals in the area. No breeding and nesting site were identified in project site. No National park and Wildlife Sanctuary found within 10km radius. The low concentrations of NOx due to mine operation of the proposed quarry will have insignificant impact on ambient air quality and NOx concentration will remain within the NAAQ standards and will not have an impact on the biological environment.

Mining activities generally result in the deforestation, Land degradation, Water, Air and Noise pollution that directly or indirectly affect the faunal and floral status of the project area.

However, occurrence and magnitude of these impacts are entirely dependent upon the project location, mode of operation and technology involved.

Anticipated impacts and mitigation measures:

The proposed project of riverbed sand mining shall be carried out on the riverbed of the Kaveri River. There are no trees in the project area. The project shall also not lead to any change in land use and will be replenished every year after successive rains. The proposed mining activity, which although is an economically gainful activity, also constitutes river training work. There shall be negligible air emissions or effluents from the project site during the loading of the truck. This shall be a temporary effect and not anticipated to affect the surrounding Vegetation significantly.

Animals are sensitive to noise and avoid human territory. The project stretch of the river is not an identified drinking water point for the animals. However, any animal desirous of accessing the river can continue to do so upstream or downstream of the stretch during the mining activities, as there will not be any damming or diverting of water. Hence, no significant impact is anticipated from the proposed project.

To reduce the adverse effects on flora/fauna status of the area due to deposition of dust generated from mining operations, water sprinkling systems will be installed in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out

The river bund will be utilized for Greenbelt development with native species like Neem, coconut, Pungan etc.,

Development of dense poly-culture plantation using local flora species in the mining area at conceptual stage.

There's no breeding/ nesting sites of birds and animals in the nearby areas

To control the dust deposition in the nearby lands and vegetation, water will be sprinkled in the haul road, approach road and dust prone areas.

Systematic plantation will be carried out in the phased manner in every year. Three tier plantations will be carried out to arrest the dust.

4.6 SOCIO ECONOMIC ENVIRONMENT

The socio-economic impacts of quarrying operation are many. Impacts of a mine project may be positive or Negative. The adverse impacts attribute to physical displacement due to land acquisition, which is followed by loss of livelihood, mental agony, changes in social structure, and risk to food security etc.,

The villages and their inhabitants in the buffer zone will not be disturbed from their settlements due to the mining operations. There is no habitation within the project area and within the radius of 500m from the periphery of the project site. Therefore, neither villages nor any part of village or any hamlet will be disturbed during the short period of the mine.

Regular medical checkup / eye-camps will be organized for the villagers. This quarry project will provide job opportunities to 38 workers directly and 20 workers indirectly. Employed for mining work earning wages as per the minimum wages act applicable for unskilled, semi-skilled and highly skilled categories.



5 ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

There are no changes in the method of mining and technology. The methodology will be carried out as per the Mining plan approved by Department of Geology and Mining. The mineral deposits are site specific in nature; hence, question of seeking alternate site does not arise for this project.

6. ENVIRONMENT MONITORING PROGRAM

Usually an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by natural or human activities. Hence regular monitoring program of Environmental parameters is essential to take into account the changes in the Environment.

The Objective of Monitoring -

-  To check or assess the efficiency of the controlling measures;
-  To establish a data base for future impact assessment studies

6.2 POST ENVIRONMENTAL CLEARANCE MONITORING SCHEDULE

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM _{2.5} , PM ₁₀ , SO ₂ and NO _x .
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1 SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	-	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	-	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

7. ADDITIONAL STUDIES

7.1 DISASTER MANAGEMENT PLAN

The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following

Rescue the affected and provide medical treatment of casualties;

Safeguard other people;

Minimize damage to property and the environment;

Initially contain and ultimately bring the incident under control;

Secure the safe rehabilitation of affected area; and

Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

TABLE 7.1 CUMULATIVE IMPACT STUDY

Name and Location of the project	Project proponent address
Achamapuram Sand Quarry S.F.No.265/1(Part) Achamapuram Village Manmangalam Taluk, Karur District, Tamil Nadu state	The Executive Engineering, Water Resource Department, Mining and Monitoring Division, Thiruchirappalli – 620 020

TABLE 7.1 SALIENT FEATURES OF PROPOSAL

DESCRIPTION	DETAILS
Name of the project	Achamapuram Sand Quarry
Name of Mineral	Sand
S.F. No's and Village	S.F.No 265/1 (Part), Achamapuram Village
Extent	24.00.0 ha
Classification of Land	Government Land Water Resource Department, Mining and Monitoring Division, Thiruchirappalli
Taluk	Manmangalam
District	Karur
State	Tamil Nadu
Latitude Between	10°58'09.7255"N to 10°58'37.4311"N
Longitude Between	78°10'48.2644"E to 78°11'17.8825"E
Toposheet No	58- J/01
Topography of the area	The topography of the area is almost plain topography with shoals of Sands having gentle slope towards South East side. Highest Elevation between: 100.40m to 105.88m AMSL
Life of Mine	2 years
Geological Reserves	7,20,000m ³ of Sand
Mineable Reserves	4,80,000m ³ of Sand
Yearwise Production (2 Years)	1st Year 2,40,000m ³
	2nd Year 2,40,000m ³
Mining Method	Opencast Mechanized Method of Mining without Drilling and Blasting
Proposed depth of mining for this plan period	2m (1m abl + 1m bbl)
Ultimate Pit Dimension	1000m (Length) X 240m X 2m (Depth)
Employment Potential	38 Nos
Ground Water table	21-26 m BGL
Ground Water Table Intersection	Quarrying operation will be carried out well above the ground water table, hence ground water will not be affected by proposed mining.
Drainage Pattern	The drainage pattern of the area is dendritic.
Water Requirement & Source	Total water requirement for dust suppression, Greenbelt and drinking is 2.5 KLD. Water will be sourced from nearby villages by water tankers and drinking water will be sourced from approved water vendors.
500m Radius Letter from the	Existing Quarries - Nil

Assistant Director, Karur District	Expired/Abandoned Quarries - Nil Proposed Quarry - 1 No (24.00.0ha)
Project Cost	Rs 86,60,000 /-

8. PROJECT BENEFITS

Achamapuram Sand Quarry aims to produce 4,80,000m³ of Sand & Silt for a period of 2 years. This will enhance the socio-economic activities in the adjoining areas. The enhancement of production will result the following benefits

Improved road communication,

Strengthening of existing community facilities through the existing Community Development Program.

Greenbelt will be carried out in the project area to improve the vicinity and environment of mine and its surrounding area.

Awareness programme and community activities, like health camps, medical aids, family welfare programmes, immunization camp sports & cultural activities, plantation etc.,

Providing essential facilities for the local schools and primary health centers in the nearby villages

9. ENVIRONMENT MANAGEMENT PLAN

The Environment Monitoring Cell discussed formed by the mine management will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level.

The said team will be responsible for:

- ✚ Monitoring of the water/ waste water quality, air quality and solid waste generated
- ✚ Analysis of the water and air samples collected through external laboratory
- ✚ Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- ✚ Co-ordination of the environment related activities within the project as well as with outside agencies
- ✚ Collection of health statistics of the workers and population of the surrounding villages
- ✚ Green belt development
- ✚ Monitoring the progress of implementation of the environmental monitoring programme
- ✚ Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10. CONCLUSION

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for regular monitoring and immediate rectification at site. Due to the cluster quarrying activities, socio economic conditions in and around the project site will be improved substantially. Hence, the Prior Environmental Clearance shall be granted at the earliest