

EXECUTIVE SUMMARY

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT OF SAND QUARRY IN PALAR RIVER

**(As per EIA Notification, 2006 dated 14.09.2006 and Amendments,
Enforcement & Monitoring of Sand Mining Guidelines, 2020)**

Manual Method of Mining

Category: B1

Extent : 11.70 Ha
S. F. Nos. : 1 (P) & 213 (P)
Village : Kuthambakkam and Ananganallore
Taluk : Gudiyatham
District : Vellore

PROPONENT

THE EXECUTIVE ENGINEER,
Water Resources Department,
Mining and Monitoring Division,
Chennai, Tamil Nadu.

EIA CONSULTANT

AADHI BOOMI MINING & ENVIRO TECH (P) LTD

(QCI/NABET Accredited EIA Organization)

3/216, K.S.V Nagar, Narasothipatti, Alagapuram (PO),

Salem – 636004, Website: www.abmenvirotec.com

Email: abmenvirotech@gmail.com, suriyakumarsemban@gmail.com

Mob: 9842729655, 9443290855.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

Executive Summary

1. INTRODUCTION

The Executive Engineer, Sand Quarry over an extent of 11.70.0 hectare is located in S.F. No: (P) & 213 (P) in Kuthambakkam and Anangannallore village, Gudiyatham Taluk, Vellore District. The area is marked in the survey of India Toposheet No.57L/13. The area lies between Northern latitude of 12°53'25.36" N to 12°53'34.90" N and eastern longitude from 78°52'22.78"E to 78°52'52.13"E. The mining plan was approved in favor the Executive Engineer Rc.No.37/Mines/2021; dated 23.05.2022.

As per the Environmental Impact Assessment (EIA) Notification dated 14th September 2006, the project falls under 1(a) Mining of minerals, Category – B1 in view of lease area >5 and <100 Ha. In view of the above the proponent submitted the application to SEIAA/SEAC on 11.06.2022. The proposal has been placed in 293th STATE APPRAISAL COMMITTEE MEETING on 08.07.2022 and 538th SEIAA meeting, dated 02.08.2022 and granted Terms of Reference vide Lr.No.SEIAA-TN/F.No.9340/SEAC/TOR-1219/2022 dated 02.08.2022

1.1 SCOPE OF THE PROJECT

The draft EIA report of sand quarry of the Executive Engineer has been prepared based on the recommended Standard ToR and Specific ToR issued by SEIAA vide letter Lr.No.SEIAA-TN/F.No.9340/SEAC/TOR-1219/2022 dated 02.08.2022 for obtaining Environmental Clearance from SEAC/SEIAA.

1.2 PROJECT DESCRIPTION

Table 1.1 Project Details

Project Details	
Proponent	The Executive Engineer, Water Resources Department, Mining and Monitoring Division, Chennai
Total Mine Lease Area	11.70.0 Hectares (Government land – River body)
Survey No.	1 (P) & 213 (P)
Site Location	Kuthambakkam and Anangannallore Village, Gudiyatham Taluk, Vellore District, Tamil Nadu.
Geographical Co-ordinates	Latitude : N12°53'25.36" to N12°53'34.90" Longitude : E78°52'22.78" to E78°52'52.13"

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

Toposheet No.	57L/13			
Elevation	264.25m – 266.75m above MSL			
Accessibility				
Nearest Habitation	105m - N			
Nearest Villages	Ananganallore – 105m - N			
Nearest Settlement	Direction	Name of Village	Distance in km	Population
	N	Ananganallore	0.105	1739
	S	Koothampakkam	0.47	2556
	E	Agaramcheri	1.5	5885
	NW	Singalpadi	2.0	2311
Nearest Town	Gudiyatham – 4.7km - N			
Nearest Roadway	NH 48 – 440m - Bangalore to Chennai - S SH 130 – 3.7km - Gudiyatham to Vaniyambadi - NW MDR 1028 – 23km – Thirumalaikodi to Sathumadurai - SE Village road – 400m - W			
Nearest Railway station	Melalathur Railway Station - 2.8 km– N			
Nearest Airport	Chennai International Airport – 139km - E			
Environmental Sensitiveness				
Interstate Boundary	Tamil Nadu – Andhra Pradesh Interstate boundary is located 15 km away from lease area in North direction.			
Coastal Zone	Bay of Bengal is located 150 km away from lease area in E direction.			
Reserve Forest	<ol style="list-style-type: none">1. Pallalakuppam Extension Reserve Forest – 5.7km - W2. Pallikonda Reserve Forest – 6km – SE3. Sanankuppam Reserve Forest – 5.3km- SW4. Paravamalai Reserve Forest – 7.3 – S5. Kallapadi Reserve Forest – 7.7km – N6. Raddanaickanur & Charakkal Reserve Forest -19.0km – W7. Ambur Reserve Forest – 18km - SW8. Gundalapalli Reserve forest is - 11.5Km- North West9. Chenji R.F – 2 km – NE10. Bomminayakkanpalayam R.F – 19km – NE11. Nallimalai R.F – 10km – SE12. Virinjipuram Plantation R.F – 14km – E			

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District**

	13. Appukal R.F – 14km - SE There is no Reserve forest found within 1km radius. The proposed project site does not attract Forest Conservation Act, 1980.
Wildlife sanctuary	Nil within 10km radius. The Proposed project site does not the Wildlife (Protection) Act, 1972. Koundinaya wildlife sanctuary-21Km-North West
Water bodies	The project site itself located in River body (Palar River) <ol style="list-style-type: none"> 1. Nellorepet lake – 5km – NW 2. Ammanankuppam lake – 4.4km – NE 3. Agaramachi lake – 1.8km – E 4. Gollamangalam lake – 2.7km – SE 5. Tippasamudram lake – 4km – SE 6. Periya lake – 5km – SE 7. Agaram River – 3.3km – SE 8. Kavundinya river- 4.0 km – N 9. Seruvangi lake – 5.0 km – N 10. A lake near Settuvandai– 6.8km – NE 11. A lake near Veppur– 5.9km – NE 12. A lake near Netteri– 6.9km – NE 13. A lake near Pasumattur– 9.4km – NE 14. Chenakkam lake – 5.0km – NE 15. Odiyathur and Rajapuram lake – 6.1km – SE 16. A lake in Pallikonda village – 5.50km – E 17. Periya Stream from Pallikonda lake – 4.9km - E
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius
Quarries around 500m radius (AD Letter furnished)	No quarries found within 500m radius of the proposed lease area. AD Cluster Letter: Rc.No.37/2021(Mines) dated 27.05.2022
Seismic zone	Zone-II, Low damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002
Mining Details	
Method of Mining	Open cast Manual Method of Mining and Transportation by Tipper & Tractor combination
Geological resources	351618m ³ (Shoal - 618m ³ & 351000m ³ below TBL)
Mineable reserves	117618m ³ of sand (Shoal - 618m ³ & 117000m ³ below TBL)

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

Production (100%)	117618m ³ of sand (Shoal - 618m ³ & 117000m ³ below TBL)
Top soil	--
Ore: Waste ratio	1: 0
Depth of Mining	1m below Theoretical bed level (0.005m – Shoal height)
Water Table	6 m depth as observed in the nearby bore wells.
Road design	1: 10 inside the pit and ramp 1:16 for transport
Overall Pit Slope	45°
Period of Lease	1 Year (To be granted)
Project Cost	Rs. 45 Lakhs
EMP Cost	Rs. 6.0 Lakhs
CER Cost @ 2% of Project Cost	Rs. 0.9 Lakh

1.3 Description of the environment

1.3.1 Base line environmental study

Collection of base line data is an integral part of the preparation of environmental impact assessment reports. The baseline monitoring study has been carried out during March 1st 2022 – May 31st 2022 to assess the existing environmental scenario in the area. For the purpose of EIA studies, mine lease area was considered as the core zone and area outside the mine lease boundary up to 10km radius from the lease boundary was considered as buffer zone.

Table No 1.2 Baseline Data

Particulars	Details	Standards
Meteorology (March 1st 2022 – May 31st, 2022)		
Rainfall (Avg.)	1034.1mm	--
Temperature (Avg.)	13°C (Min) – 39.4°C (Max)	--
Wind speed	3.33 m/s	--
Wind Direction	Predominantly to North	
Ambient Air Quality (NAAQS)		
PM ₁₀	35 – 52µg/m ³	100 µg/m ³
PM _{2.5}	16 – 30µg/m ³	60 µg/m ³

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District**

SO ₂	4 – 14µg/m ³	80 µg/m ³
NO _x	6 – 18µg /m ³	80 µg/m ³
Noise Level (CPCB Standards)		
Day time (6:00 am - 10:00 pm)	Core zone – 41.4 – 43.5 dB (A) Buffer zone –41.0 – 46.1dB (A)	Industrial Area Day Time - 75 dB (A) Residential Area Day Time – 55 dB (A)
Night time (10:00 pm - 06:00 am)	Core zone –34.5 – 37.5 dB (A) Buffer zone –33.2 – 37.6 dB (A)	Industrial Area Night Time – 70 dB(A) Residential Area Night Time – 45 dB (A)
Water Quality IS 10500:2012 (Desirable limits)		
pH	6.48 – 7.20	6.5 to 8.5
TDS	762- 820 mg/l	500 mg/l
Electrical conductivity at 25°C	1140 -1324 micromhos/cm	
Total Hardness as CaCO ₃	182-260 mg/l	200 mg/l
Total suspended solids	2-4	IS:3025:P.16:1984:R.2012
Chlorides Cl	92-180mg/l	250 mg/l
Total iron Fe	0.05-0.08mg/l	0.3mg/l
Sulfates SO ₄	14-44mg/l	200 mg/l
Soil Quality		
pH	6.60-8.69	Neutral to slightly alkaline
Bulk density	1.06-1.38 g/cc	Favorable physical condition for plant growth.
Hydro Geology		
Depth of Mining	1m below Theoretical bed level (0.005m – Shoal height)	
Water Table	6m depth as observed in the nearby bore wells.	

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

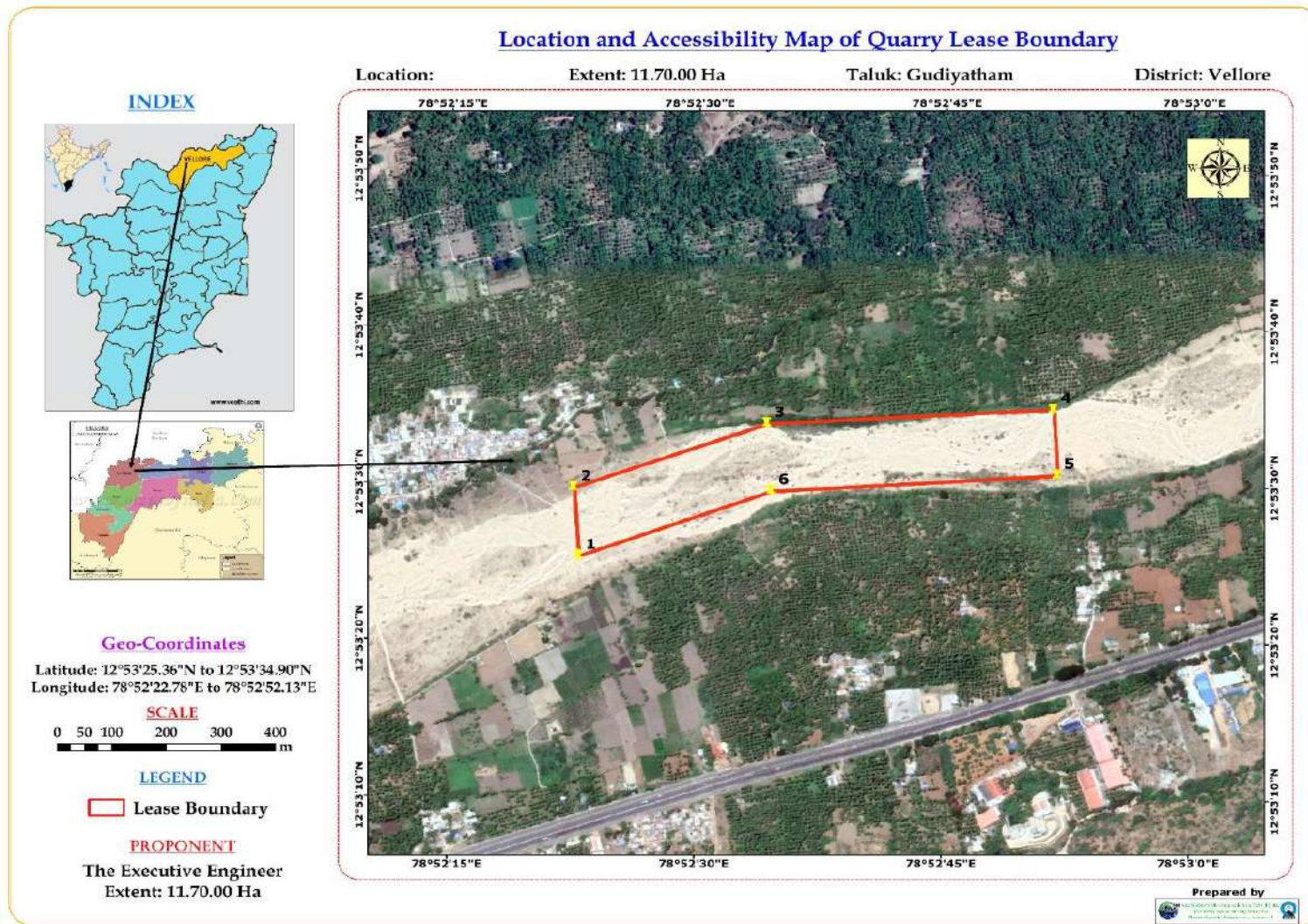


Fig No 1.2 Location Map for Proposed Sand Quarry

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District**

1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

1.4.1 Air Environment

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by adopting manual method of excavation and transportation by tipper and tractor combination.

AERMOD - Model was used for prediction of impact of PM₁₀ during conditions transportation of ore by trucks on Haul roads. Total predicted 24-h maximum GLC of PM₁₀ at project site for scenario 1 i.e transportation was 41.4µg/m³ after superposition of base-line value 40µg/m³ over the incremental GLC 1.4 µg/m³ due to transportation over the river bed. Meteorological data under worst case scenario providing 24-hr maximum average GLC was discussed above and Northerly were dominant. The overall impact on air quality due to proposed mining project is expected to be low.

1.4.2 Noise Environment

Noise pollution poses a major health risk to the mine workers. Transportation of sand by tipper is the only source of noise pollution in this proposed sand mining project. The noise of continuous movement of tippers in the approach road may disturb the people in nearest habitations, especially school children and elderly people.

- Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
- Proper and regular maintenance of vehicles, machinery and other equipments.
- The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments.
- Speed of trucks entering or leaving the mine and while crossing the village road will be limited to moderate speed to prevent undue noise from empty vehicles.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.
- The installation of convex mirrors in all the turning point of road will prevent the horn sound.

1.4.3 Water Environment

Mining operations can affect groundwater quality in several ways. The most obvious occurs in the mining below the water table, either in underground workings or open

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District**

pits. This provides a direct conduit to aquifers. Groundwater quality is also affected when waters (natural or process waters or wastewater) infiltrate through surface materials (including overlying waste or other material) into ground water. But this Sand quarry is devoid of any such impacts.

The impact due to mining on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during mining process. The water table in this region is about 6m bgl. The proposed depth of mining is 1m below theoretical bed level for one year. Thus, the mining activity will not intersect ground water table.

Total Dissolved Solids in water samples of all the villages and Total Hardness in water samples of Kuthambakkam and Agaramcheri villages are above the acceptable limits. Based on water quality index calculation, it is analyzed that the water quality in all three villages such as Ananganallore, Kuthambakkam and Agaramcheri were good. The reason is that the values of TDS and TH are not extremely high and also the values of all other parameters are below the acceptable limits. For excellent quality, the water should be treated by reverse osmosis to reduce dissolved solids and total hardness to the required rate. Boiling of water will remove the microorganisms effectively from all waters in the above said villages making the water aseptically fit for drinking purposes.

1.4.4 Soil Environment

There is no soil present in the quarry area as it is river bed.

1.4.5 Waste Dump

There are no wastages anticipated during the quarrying operation. The entire Sand and sand shoals will be transported to the needy customer site. Sanitary facility will be constructed as semi-permanent structure. So municipal solid waste will be collected in semi-permanent structure and disposed safely and periodically as per the PCB norms.

1.4.6 Biological Environment

There are no notified endangered species in the area, which may be affected due to the quarry activities; therefore the biological environment will not have significant impact due to quarrying activity. The impact on the biological environment due to amount of dust generation is minimized by well-developed green belt in and around the quarry

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District**

lease area.

1.4.7 Land Environment

Mining in the riverbed may change complete land use pattern including channel geometry, bed elevation. Land requirement for the project has been assessed considering functional needs. The excavated area shall be replenished during the next rainy season. The removing of sand will have only the positive impacts since it increases the water carrying capacity of the river. 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 site.

The land use analyses show that the area is of predominantly Agriculture followed by buffer zones of the study area. After excavating the sand from proposed quarry, the river carrying capacity gets increased. As a result the river flow direction never gets diverted and does not affect any crops and properties. Some fallow land also increases due to seasonal crop production, which shows a positive impact due to mining activity.

1.4.8 Socio Economic Environment

The mining activity will definitely increase the employment opportunity (directly as well as indirectly) in the project area. Some of these impacts would be beneficial. The expectation of the people of the area is concerned towards employment, education, and health facilities. The literacy rate may be increased with the economic benefits may arise from the mining activities.

Direct Employment - 63 persons

Indirect Employment - 40 persons

Indirect employment is that people will keep shops such as tea shops, hotels, spare parts store, mechanic shed, etc. around the quarry depending on the proposed projects. Population rate is increased day by day in India. It is necessary to create employment to all people for their livelihood and country's economic development.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

Table 1.3 Environmental Management Plan

S.No	Parameters	Mining Activity	Mitigation measures
1	Air Environment	Transportation	<ul style="list-style-type: none"> ○ Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste ○ Overloading will be prevented ○ Trucks/Dumpers covered by tarpaulin covers
		General measures	<ul style="list-style-type: none"> ○ Avenue trees along roads along river bank shall be planted as per the norms of MoEF to control fly of dust. ○ Labours engaged in such dust prone areas should be provided with safety devices like ear muff, mask and goggles as per the MMR, 1961 amendments and circulars of DGMS. ○ Regular health check-up of workers and nearby villagers in the impacted area should be carried out and also regular occupational health assessment of employees should be carried out as per the Factories Act. ○ Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.
2	Water Environment	Surface water	<ul style="list-style-type: none"> ○ There is no waste water produced due to sand quarry.
		Ground water	<ul style="list-style-type: none"> ○ The mining of sand is 1m depth and the water table is 6m bgl. So the mining activity will not intersect the ground water table
		Storm water	<ul style="list-style-type: none"> ○ Basically the mining area is river body. During rainy season, the storm water will flow through river body in the river flow direction. ○ During river flow, the mining activity will be stopped.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

		General measures	<ul style="list-style-type: none">○ Regular monitoring and analyzing the quality of water
3	Noise Environment	Transportation	<ul style="list-style-type: none">○ Proper and regular maintenance of transporting vehicles.○ Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles.○ Adequate silencers will be provided in all the diesel engines of vehicles.○ Minimum use of horns and speed limit of 10 km/hr in the village area.○ It will be ensured that all transportation vehicles carry a valid PUC Certificates.
		General measures	<ul style="list-style-type: none">○ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.○ Provision of Quiet areas, where employees can get relief from workplace noise.○ The development of green belts along the river bank to attenuate noise.○ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.
4	Socio Economic		<ul style="list-style-type: none">○ Good maintenance practices will be adopted for tippers which will help to avert potential noise problems.○ Green belt will be developed along the river bank as per Central Pollution Control Board (CPCB) guidelines.○ Appropriate air pollution control measure will be taken so as to minimize the environmental impact within the core zone.○ An emergency preparedness plan will be prepared in advance, to deal with firefighting, evacuation and local communication.○ For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

			<p>protecting devices has been provided which meet 'BIS' (Bureau of Indian Standards).</p> <ul style="list-style-type: none">○ As a part of CSR activities community welfare measures will be taken by Proponent through local Panchayat
5	Occupational Health		<ul style="list-style-type: none">○ First-aid facilities as per provisions under Rule (44) of Mines Rules 1955○ Initial and Periodical medical examination shall be conducted for the employees under Rule 29B & 45 (A).○ Insurance will be taken in the name of the labourers working in the mines○ Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears etc.

1.5 Analysis of Alternatives

We have analyzed all the option for alternatives of the proposed mine site. This project is sand specific project and existing land use of mine lease classified as River Body which will continue to be so even after the current mining project is over, hence no alternate site is suggested for this project.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District

1.6 Environmental Monitoring Program

Success of any environmental management program depends upon the efficiency of the organizational set up responsible for the implementation of the program. Regular monitoring of the various environmental parameters is also necessary to evaluate the effectiveness of the management program. Environmental Monitoring Program will be conducted for various environmental components as per conditions stipulated in the Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB.

Table No: 1.4 Post Project Environmental Monitoring Program

S. No.	Environment Attributes	Location	Monitoring		Remarks
			Duration	Frequency	
1	Meteorology and Air Quality	Continuous monitoring weather station in core zone/ nearest IMD station	24 hours	Monthly Once	Wind speed, direction, Temperature, Relative humidity and Rainfall.
2	Air Pollution Monitoring – PM _{2.5} , PM ₁₀ , SO ₂ and NO _x	5 locations (One station in the core zone and at least one in nearby residential, area, one in the upwind, two station on the downwind direction and one in cross wind direction).	8 hours	Six month once	Fine Dust Sampler and Respirable Dust Sampler
3	Water Pollution Monitoring	Mine effluents, Set of grab samples during pre and post monsoon for ground and surface water in the vicinity.	-	Six month once	Physico-chemical, microbiological characteristics
4	Hydrogeology	Water level in open wells in buffer zone around 1km at specific	-	Once in 6 months	Water level monitoring devices may be used.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District**

		wells			
5	Noise	Mine Boundary, high noise generating areas within the lease and at the nearest residential area	24 hours	Monthly Once	Sound level meter
6	Soil	Core Zone and Buffer zone (Grab samples)	–	Six month once	Physical and Chemical characteristics

1.7 Project Benefits

The proponent, The Executive Engineer, is very much conscious of their obligations to society at large. Under plantation program, it is suggested to develop green belt in village, govt. school, along village road. Apart from the green belts and aesthetic plantation for eliminating fugitive emission and noise control, all other massive plantation efforts will be executed with the assistance of experts and cooperation of the local community.

The mining activity will create rural employment. In addition there will be indirect employment to many more people in the form of contractual jobs like construction of infrastructural facilities, transportation of to destinations, sanitation, supply of goods and services to the mine and other community services, etc. The local population will have preference to get an employment. Part of the royalty is given to local bodies by the State Govt. for the welfare and development of the village. The proponent help in socio economic development of the village by providing education facilities to children's, procuring sports equipments, welfare amenities like drinking water to school, road facilities to villages and employment opportunities to nearby villagers. CSR budget is allocated as 2.5% of the profit.

1.8 Environmental Management Plan

The Environmental Management Plan (EMP) must be integrated into the process of quarry planning so that the ecological balance of the area is well maintained and adverse effects are minimized. EMP includes all preventive as well as mitigation

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: The Executive Engineer, Kuthambakkam and Ananganallore Sand Quarry,
Vellore District**

measures to minimize the impacts on the environment. The method of mining is manual excavation and transportation of sand by tractor/tipper combination. Such limited quarrying activity is not likely to cause any impact adversely on the environment as far as pollution of air, water, land and noise is concerned.

1.9 Conclusion

As discussed, it is safe to mention that the project is not likely to cause significant impacts on the ecology and environment of the area, as adequate preventive measures will be adopted to contain the pollutants within permissible limits. The total operations shall be carried out with ease & minimum risk to the workers. The proposed Environmental Management Plan will keep the area in a safe environment with negligible impact on the environment. Plantation will substantiate the impact due to the quarrying activity. Quarrying activity will help in improving the socio-economic benefits in areas like employment, communication and infrastructure development.