

PRE-FEASIBILITY REPORT

FOR NANJAI EDAYAR SAND QUARRY

Extent : 4.90.0Hectares
S.F. No. : 294 (P)
Village : Nanjai Edayar
Taluk : Mohanur
District : Namakkal
State : Tamil Nadu

PROJECT PROPONENT

Executive Engineer,
Public Works Department,
Water Resources Organization,
Mining and Monitoring Division,
Tiruchirappalli District.

CONSULTANT



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PRE-FEASIBILITY REPORT

FOR QUARRYING SAND

in S.No 294 in Cauvery River, Nanjai Edayar village, Mohanur Taluk, Namakkal District, Tamil Nadu

1. EXECUTIVE SUMMARY

This project is for quarrying Sand, Minor minerals over an area of 4.90.0 Hectares in SF. No. 294 (P), a part of Cauvery River in Nanjai Edayar Village, Mohanur Taluk, Namakkal District, Tamil Nadu. The quantity to be removed \ excavated shall be **121514 m³** as permitted by the Dept. of Geology and Mining, Namakkal for a lease period of Two years vide precise area letter No. Rc No. **834/2019/Mines dated 21.11.2019**, granted under Rule 12 of Tamil Nadu Minor Mineral Concession Rules, 1959 and amended up to date. Mining Plan is prepared under the provisions of Rule 41 of TNMMCR, 1959 and approved by Assistant Director of Dept of Geology and Mining, Namakkal vide letter No. Rc No. 834/Mines/2019 dated 27.01.2020. The Environment Clearance is required under Rule 42 of TNMMCR,1959 under category B2 for a fresh quarry lease for Sand from Cauvery river.

2. INTRODUCTION OF THE PROJECT

As per the Environmental Impact Assessment (EIA) Notification dated 14th September, 2006 and its subsequent amendments and supreme court order of February 27, 2012 the proposed quarry project fall under category B2 which required Environmental Clearance from the State Environmental Impact Assessment Authority (SEIAA), Chennai region.

The lease land\river basin was maintained by Executive Engineer, PWD/WRO Dept, MMD and they are removing such Sand, containing fine and coarse materials for clearing the obstacles of river flow. This project is more beneficial to the public for water supply around the flow direction of the river.

The Executive Engineer, PWD/WRO, MMD has applied to the District Collector, Namakkal to obtain permission for removal of sand and seeking Environmental clearance from SEIAA, Chennai for grant of fresh Quarry Lease.

2.1 Identification of project and project proponent. In case of Mining project, a copy of Mining lease/letter of intent should be given.

The Executive Engineer, PWD/WRO, Mining and monitoring Division is a Govt. project.

Owner name and address (address for correspondence):

The Executive Engineer,
PWD/ WRO, MMD,
Tiruchirappalli District.

A copy of Mining lease letter issued by the District Collector (R.C.No. 834/2019/Mines dated 21.11.209 is enclosed in Approved Mining plan's Annexure.

2.2 Brief description of nature of project:

The area is represented by Survey of India Topo sheet No. 58 I/4. The applied Lease area lies between latitude of 11°05'23.55"N to 11°05'32.31"N and longitude of 78°01'44.01"E to 78°01'51.61"E.

Pillar No	Latitude	Longitude
1.	11° 5'24.43"N	78° 1'44.01"E
2.	11° 5'32.31"N	78° 1'45.08"E
3.	11° 5'31.43"N	78° 1'51.61"E
4.	11° 5'23.55"N	78° 1'50.54"E

District & State	Taluk	Village	S.F.No	Area (Ha)
Namakkal, TamilNadu	Mohanur	Nanjai Edayar	294 (P)	4.90.0Ha

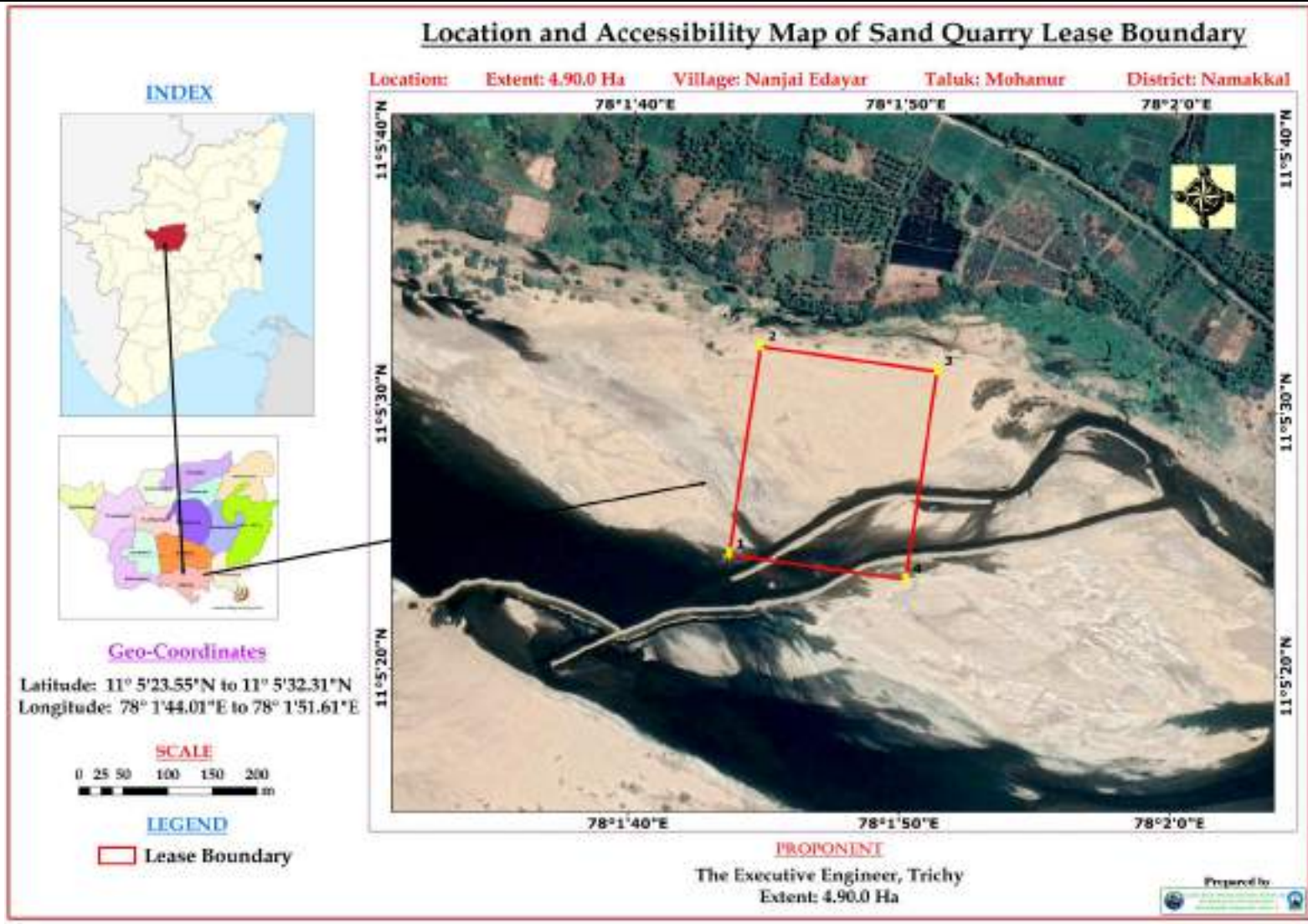


Fig.1 Location Map of the proposed sand quarry

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The name of mineral intends to quarry is sand containing fine and coarse materials. No toxic elements or hazardous materials are reported from this river bed. The applicant has received necessary clearance from all concerned authorities for removal of such Sand from the Cauvery River. The proposed area for quarry lease is river poramboke land, not a forest land.

Type of Mining: semi-mechanized Open cast, loading by hydraulic excavator and manual. Transport by bullock cart, tractors and tippers. Excavated sand from river site shall be transported to the stocking yard within 500m distance.

Period of Mining: Two years from the date of execution of quarry lease.

2.3 Need for the project and its importance to the country and or region:

- i) The Cauvery River should be desilted often during off season of rainy period so as to remove obstacles of flowing of water in the river, failing which the rain water will be flooded into down line stream and cause damage of paddy fields and other agricultural lands.
- ii) Water demand and supply can be met during summer season and avoid water scarcity in this area.
- iii) The sand is a non-sticky materials which is useful for construction and other civil purposes. Therefore this project is beneficial to the society as well as to the applicant to get some income out of this work.
- iv) No damage of land, no reclamation or back filling is required. Pollution out of this project is absolutely negligible.

2.4. Demand-Supply Gap

Demand of sand required for civil and other construction purposes is very high in this district.

2.5. Export Possibility

It is a low cost product and therefore the Lessee would like to sale out the sand in domestic market through tractor , tipper and bullock cart on royalty basis as per the order of state Govt.

2.6 Domestic Export / Markets

Lessee will like to sale out in domestic market as per requirement. No export is proposed.



2.7 Employment generation (direct and indirect) due to the project.

For the purpose of Mines safety under the provisions of MMR, 1961 under the Mines Act, 1952 the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision.

A mines clerk shall also be appointed to keep the registers and record of the mine and make necessary entries for the persons employed in the mines.

Supervisory & Skilled Persons			
S.No	Designation	Nos	
1	PWD Assistant Engineer	1	
2	Technical Assistant	1	
3	Poclain Operator	2	
4	Poclain Assistant	2	
Total		6	
Unskilled			
S.No	Designation	Nos	
5	Permit Slip issuer	3	
6	Traffic Regulator	Entrance	2
		Exist	2
		Quarrying Site	3
7	Bullock Cart persons	12	
8	Bucket Watcher	3	
9.	Office Helper	1	
10	Track Maintainer	6	
	Watchman(Two Shift)	4	
Total		36	
Grand Total		42	

3. PROJECT DESCRIPTION

3.1 Type of project interlinked and interdependent projects, if any.

This project is located in Nanjai Edayar village, Mohanur taluk, Namakkal District. It is mandatory to obtain environmental clearance for all mining project of minor minerals irrespective of mining area as per the order of the Honorable Supreme Court of India in I.A.No. 12-/13/2011 in S.L.P.No. 19628-19629 of 2009 etc., dated 27.02.2012, the Ministry of Environmental and Forest Office Memorandum dated 18.05.2012 clearance has to be obtained from the State Level Environmental Impact Assessment Authority, Tamil Nadu.

As per above order all projects less than 5 hectares falls in 'B2' Category of Schedule 1 (a).

The extent of this lease area is 4.90.0 hectares, and falls in 'B2' Category of Schedule 1 (a).

3.2 Location (Map showing general location, specific location, and project boundary & project site layout) with coordinates.

The area is represented by Survey of India Topo sheet No. 58 I/4. The applied lease area lies between latitude of 11°05'23.55"N to 11°05'32.31"N and longitude of 78°01'44.01"E to 78°01'51.61"E.

Pillar No	Latitude	Longitude
1.	11° 5'24.43"N	78° 1'44.01"E
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4.	11° 5'23.55"N	78° 1'50.54"E

The area is accessible from Namakkal to P.velur to reach at 25KM further travel to P. velur to Nanjai Edayar by 5Km, further 1Km to reach to the reach site. A Village road is available nearby the site for transport of materials. Details of infrastructures and communication are given in the table below,

Table No.3. Details of infrastructures and communication

S.No.	Description	Place	Distance (Kms)
1	Railway	Mohanur	14
3	Post office	Nanjai Edayar	1.10
4	Airport	Trichy	90
5	Police station	P.Velur	5.5
6	Fire service	Velayuthampalayam	4.5

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7	Primary Health centre	Nanjai Edayar	1.10
8	DSP Office	P.Velur	5.5
9	School	Nanjai Edayar	1.10
10	Villages		
i)	North	Nanjai Edayar	0.62
ii)	South	Punjai Edayar	3.24
iii)	East	Velur	2.46
iv)	West	Semmadapalayam	2.18

3.3 Details of alternate sites considered and the basis of selecting the proposed site.

This is a mining project, which is site specific due to availability of sand. Hence the site cannot be shifted. The opencast mining is proposed in the area for excavation of minerals and overburden.

3.4 Size or Magnitude of operation

Targeted production of Sand removal will be 121514m³ by open cast mining.

3.5 Project description with Process Details

Mining Process Details

- 1) Fixing boundaries of lease area covering an extent of 4.90.0Hectares using DGPS and Drone Technology as per the requirement of Sand Mining guidelines, 2020. Reduced levels (RL) were taken at 10mx 10m interval with cm accuracy. Contour lines were made at 0.25m interval.
- 2) Loading of sand by hydraulic excavator and manual into Bullock Carts, Tipper and tractor respectively.
- 3) Transport of sand from river site to the stocking yard and further to the Consumer Construction site based on the demand.
- 4) Mined out land shall be used for refilling of same type of sand by natural replenishing.

Proposed Method of Mining:

Being loose sand, it is proposed to load the materials by manual and hydraulic excavator and transport by Bullock Carts, Tipper and tractor by semi mechanized mining.

Removal of over burden

No overburden is proposed in the approved Mining plan.

Extent of Mining

a) Mining

Open cast, Mining would be carried out by opencast semi-mechanized method. Excavation of sand by using hydraulic excavator into the tipper and partly manual method using hand shovel and load into Bullock Cart, As the sand is loose granular material, it does not require any drilling.

b) Loading equipment

Loading of sand by manual as well as hydraulic excavator.

c) Transportation

Transportation by means of Bullock Carts, Tipper and tractor combination. The bullock transport sand from river site directly to the consumer point whereas tippers may not able to transport to its rated capacity and therefore sand will be transported upto the stock yard, located within 500m from the river bank.

Year	Production in m ³
Two years	121514



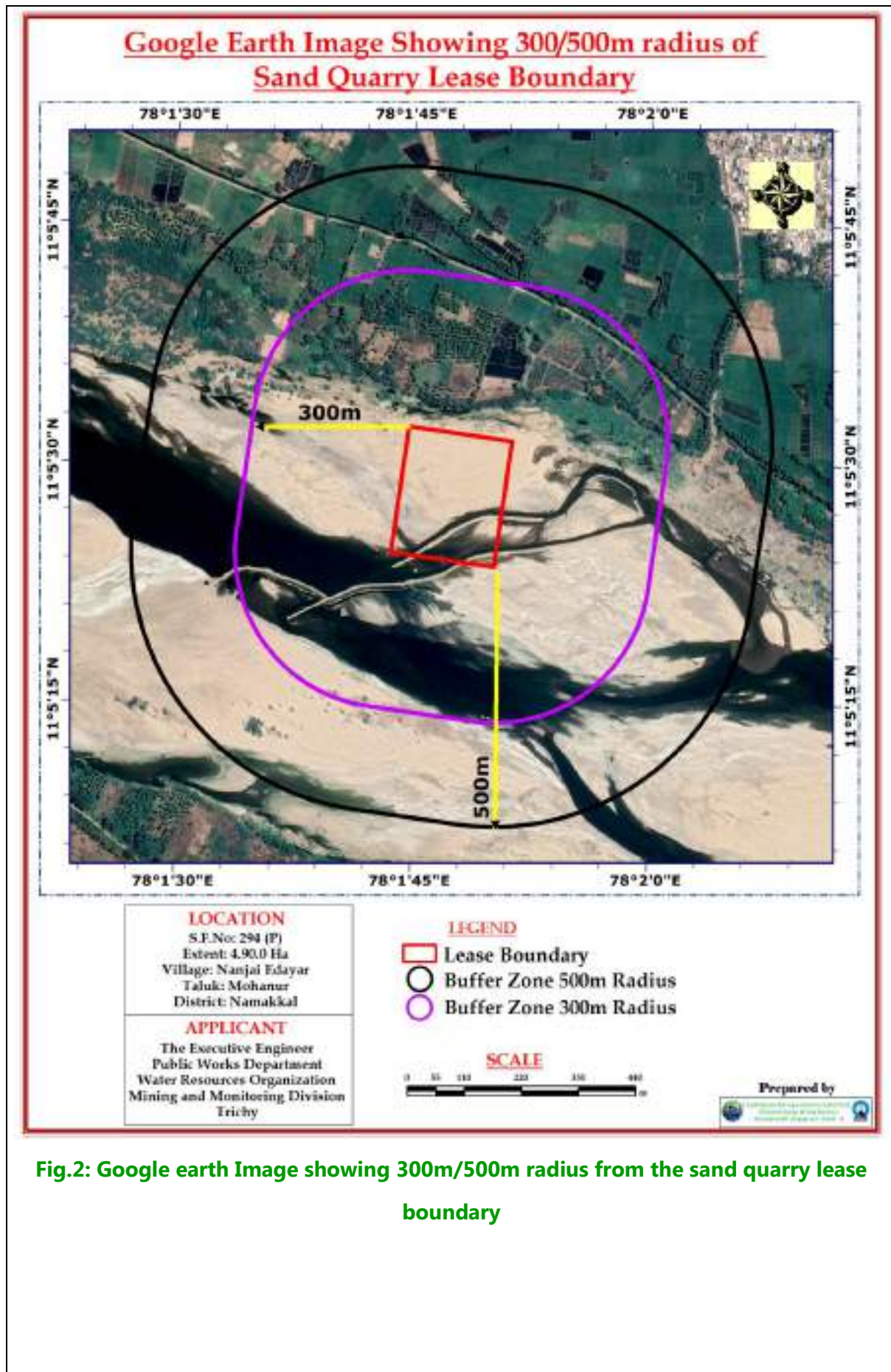


Fig.2: Google earth Image showing 300m/500m radius from the sand quarry lease boundary

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3.6 Raw Material required along with estimated quantity, likely source, Marketing area of final product/s, Mode of transport of raw Material and finished products.

This is a mining project for mining of sand, therefore no need of raw material except water for drinking and utilities. The Product is natural river sand; it will be transported to the Stock point directly. No stocking is permitted any where inside the lease area the area of lease.

3.7. Resource optimization/recycling and reuse envisaged in the project.

Removal of sand is made for the purpose of clearing the obstacles of the river for free flowing of water. The sand will be replenished being a natural resource and therefore recycling is not possible for this project.

3.8. Availability of water its source, energy/power requirement and source.

Whole some drinking water shall be provided as per the Mines Rules, 1955. Quantity for Drinking and utilities is 2.0KLD. Dust suppression and Green belt of water is 4.0KLD. Minimum quantity of **6.0KLD** has to be maintained as per the Rule. Drinking water is obtained by Mineral water industries by water canes. Dust suppression and green belt is obtained from the open wells of proponent site. Water will be drawn from the adjacent open well in The Cauvery river itself. No separate arrangements shall be made to bring water from external sources or by pumping. No electricity or fuel is required for this project.

3.9. Water balance chart:

Water balance chart on per day basis is given as under:

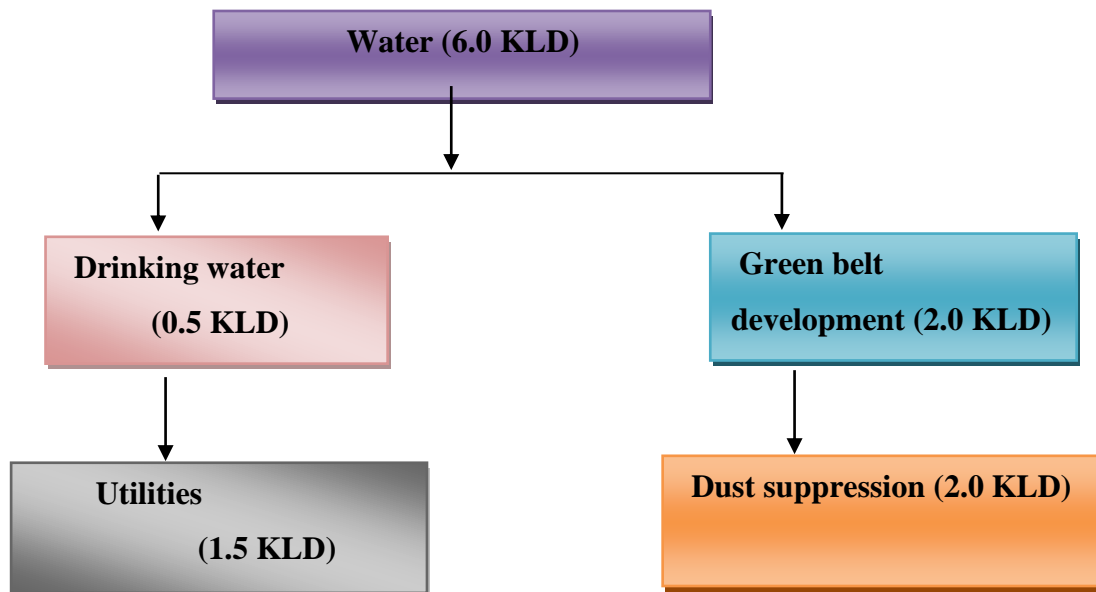


Fig. 3: Water Balance Chart

3.9 Quantity of waste to be generated (liquid and solid) and scheme for their

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Management/disposal.

There is no waste material to be removed from this river basin.

3.10 Schematic representations of the feasibility drawing which give information of EIA purpose.

As per the order of the Honorable Supreme Court of India in I.A.No. 12-/13/2011 in S.L.P.No. 19628-19629 of 2009 etc., dated:27.02.2012, the Ministry of Environmental and Forest Office Memorandum dated:18.05.2012 clearance has to be obtained for Minor Minerals from the State Level Environmental Impact Assessment Authority, Tamil Nadu. Form I and Pre-Feasibility report is required to get Environmental Clearance for the project from SEAC. EIA Report identifies all of the issues and technical requirements of a proposed operation, with particular attention to potential Environmental, Health and Safety, Social and Economic Impacts.

The purpose of EIA is to ensure the protection and conservation of the environment and natural resources including human health aspects against uncontrolled development. The long-term objective is to ensure a sustainable economic development that meets present needs without compromising future generations ability to meet their own needs. EIA is an important tool in the integrated environmental management approach.

The aim of Environmental Impact Assessment (EIA) is to enable the approving authority, the public, local and central government and the developer to properly consider the potential environmental consequences of a proposal, and to make recommendations to reduce the environmental consequences if necessary. It is important to provide sufficient information for the approving authority to make a decision on whether to approve a proposal and if so, under what conditions. The EIA provides the basis for sound ongoing environmental management.



4. SITE ANALYSIS

4.1 Location and Connectivity:

The area is accessible from Namakkal to P.velur to reach at 25km further travel to P. velur to Nanjai Edayar by 5Km, further 1Km to reach to the reach site. A Village road is available nearby the site for transport of materials.

4.2. Land for land use and land ownership.

The land covers under the mining lease area as under.

District & State	Tehsil	village	Area in Hect.	Type of land
Namakkal District, Tamilnadu	Mohanur	Nanjai Edayar	4.90.0	Cauvery river

4.3. Topography (along with Map):

The area applied for mining lease is a River Bed, with elevation vary from 113.138m (Minimum) to 113.783 m (Maximum) above MSL. It is represented in the Geological Survey of India 58 I/4. The applied Lease area lies between latitude of 11°05'23.55"N to 11°05'32.31"N and longitude of 78°01'44.01"E to 78°01'51.61"E. This is a river bed with huge amount of sand deposit. The area receives only scanty rainfall mostly during the northeast monsoon period of October to December. There is no reserve forest, wild life sanctuary, national monument etc nearer to the area around 10kms.

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forest, national park, wild life sanctuary, eco sensitive areas, water bodies(distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the gazette notification should be given.

The lands applied for removal of sand is a part of Cauvery River which carries rain and flood water to the sea during rainy season. It should be deepened or the silted area should be removed periodically for free flow of water without any obstacles.

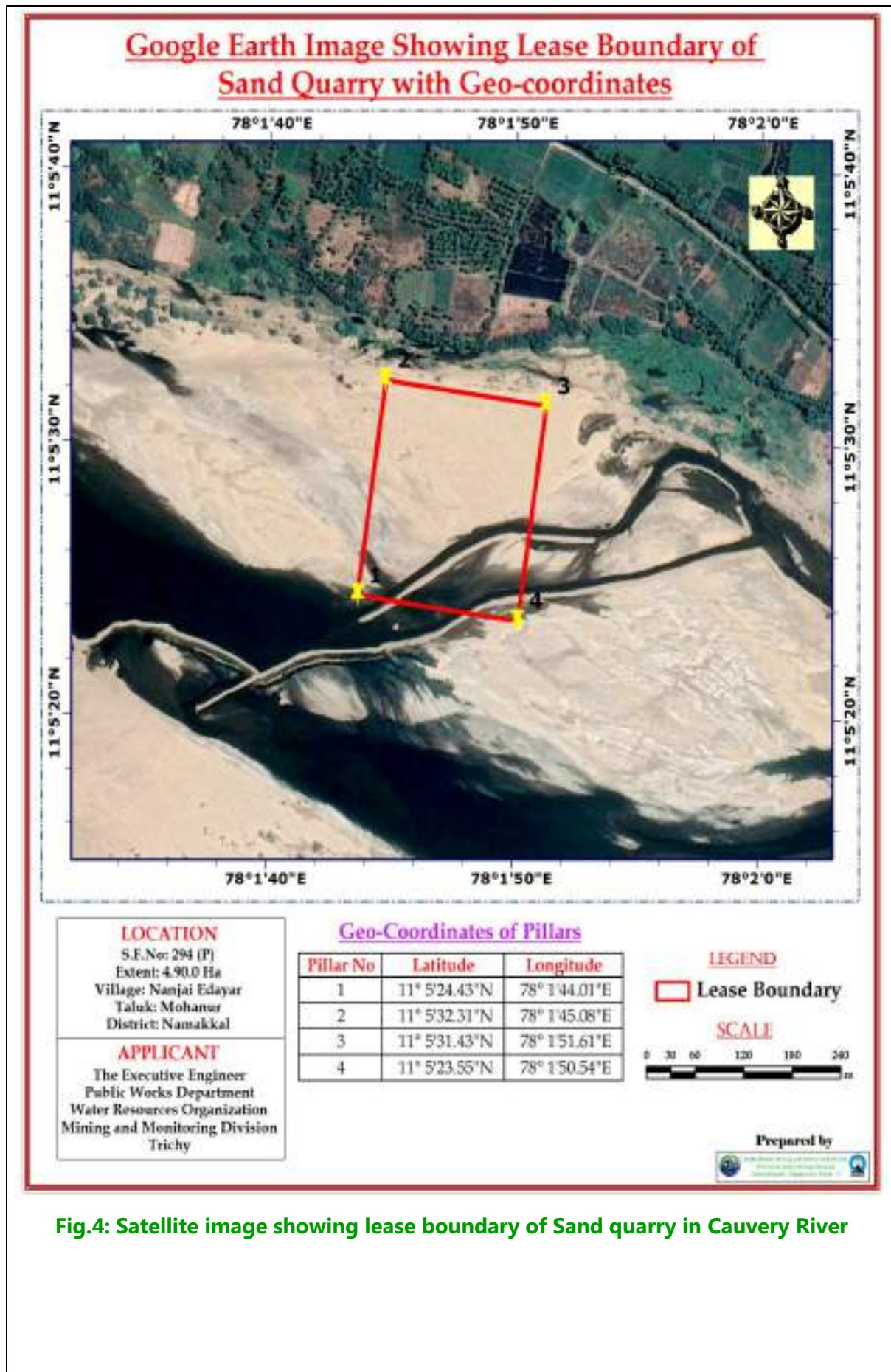


Fig.4: Satellite image showing lease boundary of Sand quarry in Cauvery River

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LAND USE PATTERN

S. No.	Description	Area of Land Use (In Hec.)	
		As at Present	At the end of Two years
1.	Mining	0.0	4.90.00
2.	Waste Dump	0.0	0.00.0
3.	Infrastructure	0.0	0.00.0
4.	Safety zone & Plantation	Nil	0.00.0
5.	Mine Roads	0.00	0.00
6.	Undisturbed area	4.90.00	0.00
Total		4.90.00	4.90.00

4.5. BASELINE ENVIRONMENT**4.5.1. Land environment**

In the proposed Mining activity there will not be much impact on the land environment due to the following reasons.

- There is no removal of vegetation such as plants, bushes in the reach area
- No effluent generation as any further processing of mineral is proposed. Hence no ground water contamination due to the proposed mining activity.

However, the quarrying activity will result in disturbance of the land use pattern of the quarry lease area. The land degradation is unavoidable during mining activities like excavation, overburden dumping, etc. Land requirement for the project has been assessed considering functional needs.

4.5.2. Sources of Air Pollution

S.No	Activities in Mines	Air Pollutants
1.	Drilling	Nil
2.	Blasting	Nil
3.	Loading & Unloading	SPM
4.	Haul Road	SPM
5.	Transportation	PM, SO ₂ , NO _x
6.	Waste / Top soil handling	Nil

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4.5.3 Air Pollution Control Measures

Some of the air pollution control measures are mentioned below. The APC system requirement should be assessed based on the mining activity and location aspects.

Potential sources of air pollution	Magnitude of air pollution	Control Measures
Drilling	High Dust Generation Risk of occupational hazard	No drilling
Blasting	Air emission	No blasting
Loading of material on dumper	Air emission	Loading can be done by excavator to tipper tractor combination and partially by manual by labours into bullock cart were source of air pollution is negligible and provide mask and ear muffles in addition to helmet for persons working nearby..
Transportation	High dust potential	<ul style="list-style-type: none"> • Water spraying over haul road using sprinklers. • Development of Green belt with the native species of trees having leaves and dense growth to control spreading of dust to villages and minimize noise level from vehicles operation.
Storage	High dust emission	No storage applicable for this project

4.5.4. Mine Drainage

The natural flow of water will not be affected any way and drainage will improve by proper gradient.

4.5.5. Noise Levels

Noise level has to be studied prior to mining and after opening the quarry for production.

Ambient noise level on threshold is 38.8dB.

4.5.6. Vibration Levels

Muddy sludge shall be removed prior to removal of Sand and keep along the bank of the tank for growing trees.

4.5.7. Measures for Ground Vibrations Due to Blasting: Not applicable

4.5.8. Solid waste Management:**Solid Waste Generated:** No solid waste removal**Disposal of waste****Overburden waste Management:** No overburden shall be removed or dumped elsewhere.**Top soil Management:** No top soil removal**Other wastes:** The removed bushes on the site clearings are conveyed and dumped along the bank of the river.**4.5.9 Power requirement & supply/source.** No power requirement.**4.5.10 Water quality**

- The quality of ground water is fairly good. There is no liquid waste discharge from quarrying activity, which is likely to pollute water.
- Drinking water will be utilized from the Mineral water Industries.

SL. NO	PARAMETERS	UNITS	SAMPLE 1 (SURFACE WATER) RESULT	SAMPLE 2 (GROUND WATER) RESULT	AS PER IS 10500:2012	
					REQUIREMENT (ACCEPTABLE LIMIT)	PERMISSIBLE LIMIT IN THE ABSENCE OF ALTERNATE SOURCE
1	pH value at 25°C	-	8.72	7.36	6.5 – 8.5	6.5 – 8.5
2	Turbidity	NTU	0.3	0.5	1	5
3	Electrical conductivity at 25°C	Micromhos/cm	428	1270	-	-
4	Total Suspended Solids	mg/l	BDL (DL=1.0)	6.0	-	-
5	Total Dissolved Solids	mg/l	240	874	500	2000
6	Total Hardness as CaCO ₃	mg/l	82.0	310	200	600
7	Chlorides as Cl	mg/l	48.0	159	250	1000
8	Sulfates as SO ₄	mg/l	12.0	90.0	200	400

9	Total Iron as Fe	mg/l	0.05	0.29	0.3	0.3
10	Silica (Reactive) as SiO ₂	mg/l	24.0	34.0	-	-

SI. No	PARAMETERS	UNITS	SAMPLE 1 (SURFACE WATER) RESULT	SAMPLE 2 (GROUND WATER) RESULT	Requirement as per IS 10500: 2012 Second revision (Acceptable Limit)
1	Total Coliforms	MPN / 100ml	90	140	Shall not be detectable in any 100 ml
2	E.coli	MPN / 100ml	17	30	Shall not be detectable in any 100 ml

4.5.11 Air Quality

Drilling and blasting operations are source of fugitive dust emission but its effect is more or less localized. The major part of the dust generated during such operations usually gets settle down and thus the effect of such operation will be localized phenomenon. The generation of dust is controlled and suppressed at source by sprinkling of water on haul roads, loading points at regular intervals.






Air Quality test report

SI. No	PARAMETERS	PROTOCOL	UNIT	RESULT	NAAQS*
1	Particulate Matter (PM _{2.5})	SOP-EA-001	µg / m ³	24	60
2	Respirable Particulate Matter (PM ₁₀)	IS 5182 Part 23-2017	µg / m ³	45	100
3	Sulphur Dioxide (SO ₂)	IS 5182 Part 2 - 2017	µg / m ³	7	80
4	Nitrogen Dioxide (NO ₂)	IS 5182 Part 6-2017	µg / m ³	6	80
5	Ozone (O ₃)	IS 5182 Part 9-2014	µg / m ³	21	180
6	Lead (Pb)	IS 5182 Part 22-2017	µg / m ³	BDL (DL=0.1)	1
7	Carbon Monoxide (CO) (1 Hour)	IS 5182 Part 10-2014	mg/m ³	BDL (DL=1.15)	4
8	Ammonia (NH ₃)	SOP-EA-009	µg / m ³	19	400
9	Arsenic (As)	SOP-EA-010	ng / m ³	BDL (DL=1.0)	6
10	Nickel (Ni)	SOP-EA-011	ng / m ³	BDL (DL=0.1)	20
11	Benzene (C ₆ H ₆)	IS 5182 Part 11-2017	µg / m ³	BDL (DL=0.1)	5
12	Benzo (a) Pyrene	IS 5182 Part 12-	ng / m ³	BDL (DL=0.1)	1





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4.5.12 Flora and Fauna				
a) Flora				
List of Flora of the lease area				
S. No.	Tamil /English Name	Botanical Name	Number of Trees	Photograph
1.	Veppamaram/ Margosa tree	Azadirachta Indica	Innumerable	
2.	Vivasaaya maram	Acasia bushes	Innumerable	
3.	moongil maram	Bambusa vulgaris	Innumerable	
4.	Panai/ Palmyra tree	Borassus fiabellifer	Innumerable	

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5.	Mamaram tree	Mangifera indica.	25	
6.	Thennai maram	Coconut Tree	Innumerable	
7.	Poovarasa maram	Thespesia Populnea	Innumerable	
8.	Soundal Tree	Leucaena leucocephala	Innumerable	
9.	Thekku Maram	Indonesia	Innumerable	

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10.	Pappali Tree	genus Carica	Innumerable	
11.	Puliya Maram	Tamarindus indica	Innumerable	
12.	Aalamaram	Ficus	Innumerable	
13.	Coconut sapling	Coconut sapling	Innumerable	

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b) Climbers:**Table No.11B List of Climbers of the lease area**




S.No.	Tamil/English Name	Botanical Name	Number of Trees	Photograph
1.	Oonangodi	Fragor Monstrum	Innumerable	

c) SHRUBS:**Table No.11C List of Shrubs of the lease area**

S.No.	Tamil Name	Botanical Name	Number of Trees	Photograph
1.	Bushes	-----	Innumerable	
2.	Parangi	Cucurbita digitata	Innumerable	
3.	Grass	Melinis repens	Innumerable	

d) HERBS:

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List of Herbs of the lease area				
S.No	Tamil Name	Botanical Name	Number of Plants	Photograph
1.	Unknown	---	---	
2.	Erukku Chedi	Calotropis Gigantea	Innumerable	
3.	Kakkattan, Kotikkakkattan, Sirikki,	Ipomoea nil	Innumerable	

2. Fauna:

The fauna species may be found around the project site is given below,

a) Mammals:

List of Mammals of the lease area

S.No.	Tamil & English Name	Zoological Name
1.	Keeri (<i>Common Mongoose</i>)	Herpestes edwardsii
2.	Anil (<i>Three Striped Squirrel</i>)	Funambulus palmarum
3.	Thavalai (Frog)	Cane toad

b) Avian Fauna:

List of Avian Fauna of the lease area

S.No.	Tamil & English Name	Zoological Name
1.	Kalugu (<i>Black kite</i>)	Milvis migrans
2.	Myna (<i>Black drogue</i>)	Dicrurus macrocercus
3.	Kakka (<i>House crow</i>)	Corvus splendens
4.	Chittukuruvi (<i>Indian Robin</i>)	Saxicoloides fulicatus



5.	<i>Parunthu</i> (Brahminy Kite)	<i>Haliastur indus</i>
----	--	------------------------

c) Butterfly/Insects:**List of Butterfly/Insects of the lease area**

S.No.	Tamil & English Name	Zoological Name
1.	Theil (<i>Scorpion</i>)	Scorpiones
2.	Vannthupoochi (<i>Millipedes</i>)	Diplopoda

4.13. OTHER PERMANENT STRUCTURES**4.13.1 Habitations / Village:**

Population of Nanjai Edayar village N- (3690), it is small village in Mohanur taluk and Namakkal district. Other Village hamlets like Punjai Edayar S-(4028), Velur W-(213091), Palapatti E-(2451).

4.13.2 Power Lines (HT / LT): There is no HT or LT lines is found nearby.

4.13.3 Water Bodies: The site is a part of river basin.

There is no other major river or water body, nallah and ponds are situated around 500m radius.

4.13.4 Archaeological / historical Monuments: There are no archaeological monuments around 500m radius.

4.13.5 Road (NH, SH others):

The area is accessible from Namakkal to P.velur to reach at 25KM further travel to P. velur to Nanjai Edayar by 5Km, further 1Km to reach to the reach site. A Village road is available nearby the site for transport of materials.

4.13.6 Places of worship: Nil

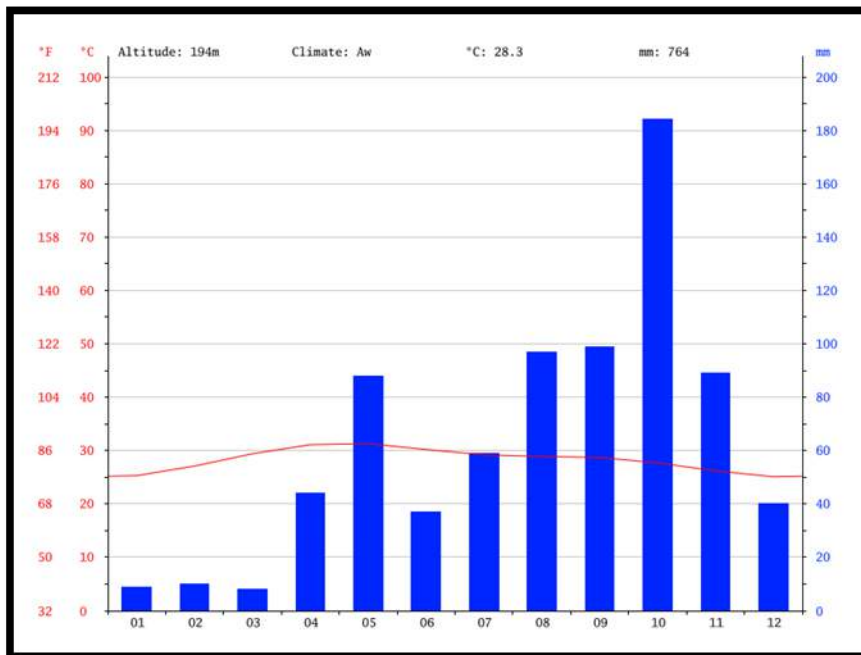
4.13.7 Reserved forest / Forest / Social forest / wild life sanctuary etc.: Nil

4.7 Climatic Conditions**a) Temperature****Mohanur Weather by Month /Weather Averages**

Mohanur's climate is classified as tropical. In winter, there is much less rainfall than in summer. The climate here is classified as Aw by the Koppen-Geiger system. The average temperature in Mohanur is is 28.3 °C. The average annual rainfall is 764 mm.**Mohanur**

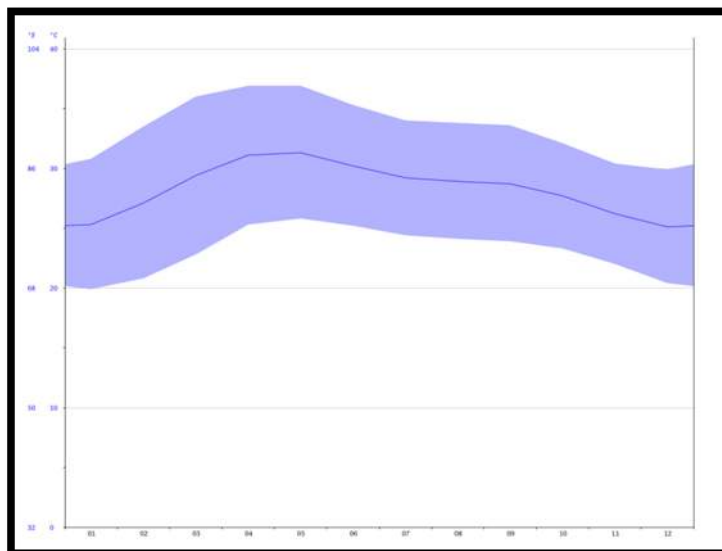
Climate Graph // Weather By Month

Precipitation is the lowest in March, with an average of 9 mm. Most precipitation falls in October, with an average of 191 mm.



Mohanur Average Temperature

With an average of 31.3 °C, May is the warmest month. In December, the average temperature is 25.1 °C. It is the lowest average temperature of the whole year.



Namakkal Weather By Month // Weather Averages

The precipitation varies 176 mm between the driest month and the wettest month. The average temperatures vary during the year by 6.2 °C.

Mohanur Weather By Month // Weather Averages

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Table No.12 Month wise Temperature of Mohanur Taluk

Months	Avg. Temperature (°C)	Min. Temperature (°C)	Max. Temperature (°C)	Avg. Temperature (°F)	Min. Temperature (°F)	Max. Temperature (°F)	Precipitation / Rainfall (mm)
January	25.3	19.9	30.8	77.5	67.8	87.4	9
February	27.1	20.8	33.5	80.8	69.4	92.3	10
March	29.4	22.8	36	84.9	73	96.8	8
April	31.1	25.3	36.9	88	77.5	98.4	44
May	31.3	25.8	36.9	88.3	78.4	98.4	88
June	30.2	25.2	35.3	86.4	77.4	95.5	37
July	29.2	24.4	34	84.6	75.9	93.2	59
August	28.9	24.1	33.8	84	75.4	92.8	97
September	28.7	23.9	33.6	83.7	75	92.5	99
October	27.7	23.3	32.1	81.9	73.9	89.8	184
November	26.2	22	30.4	79.2	71.6	86.7	89
December	25.1	20.4	29.9	77.2	68.7	85.8	40

Between the driest and wettest months, the difference in precipitation is 182 mm. The average temperatures vary during the year by 6.7 °C

c) Humidity

The monthly average percentage of relative humidity is 77%.

d) Wind speed

Wind velocity is an important meteorological parameter, which has considerable influence on evaporation and Evapotranspiration phenomenon. Wind has direct impact on climate and vegetation and is linked with circulation pattern of the monsoon. The average wind velocity in km/hour varies from 6 to 8.

5. PLANNING BRIEF

5.1 Planning concept (type of industries, facilities, transportation etc) town and country planning/development authority classification.

It is opencast mining project. The mine is proposed to work for a period of Two years only. The proposed working is Open cast semi-mechanized, loading by hydraulic excavator and manual. Transport by bullock cart, tractors and tippers combination and which will also continue in future. The mining will be carried out by removing and transporting the sand

found in the project area.

Mining will be done by open cast method to a depth of 1.0m after scrapping a thin layer of sludge materials containing bushes. Being a shallow mining with single bench no much planning required for slope stability issues. However the proponent shall maintain 45° slope as per safety practices.

5.2 Population Projection

In Mohanur taluk, Nanjai Edayar village had a total household 952 in 2001 which has an increased 1078 in according to census in this village. Village had a total person of 3690 in 2011 census previous census 3658 persons in 2001. There were about 1832 (49.6%) men according to 2011 census and 1791 (48%) men in 2001 census marking an increase of 41 men over the previous census. During 2001 there were about 1867 women which has decreased to 1858 (50%) in 2011 census.

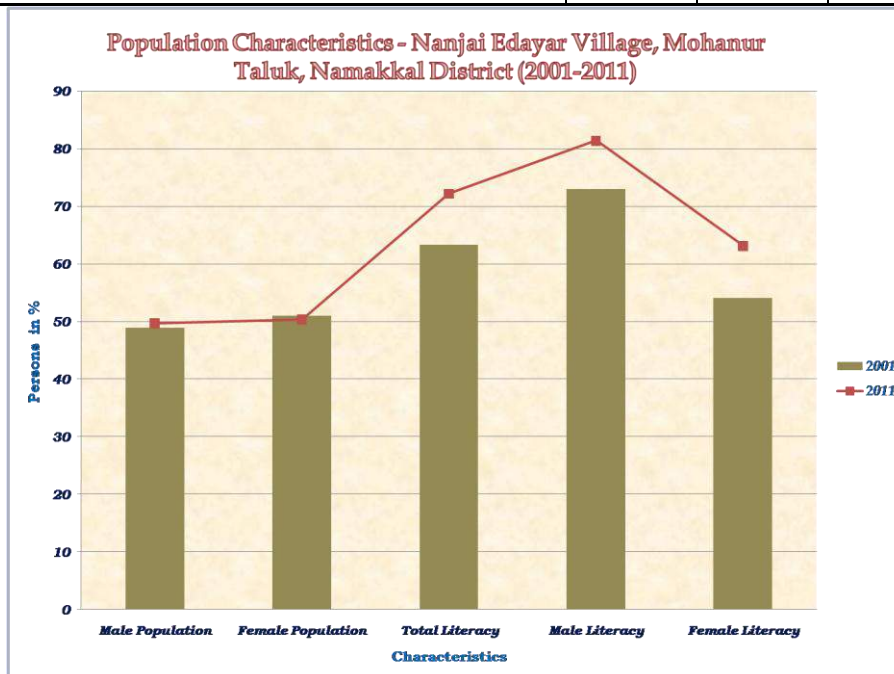
Nanjai Edayar village had a literate accounted for 2319 persons (63%) in 2001 and increased to 2665 persons (72%) in 2011. There were about 73percent males in 2001 and 81 percent in 2011 increased in male literacy rate. There were about 1010 (54%) females increased to 1173 (63%) classes as literates in 2011.(Tab No.1)

Sex composition is the most important demographic characteristic that affects the incidence of birth and death. The average sex ratio in Mohanur taluk, Nanjai Edayar village was 1042 during 2001 and decreased about 1014 in the year of 2011. The lowest sex ratio may be either due to the migrants for educational purpose and employment opportunities and due to infant birth of female is very low in this study area.



**Population Characteristics- Nanjai Edayar Village, Mohanur Taluk,
Namakkal District (2001-2011)**

S.No	Characteristics	2001	%	2011	%
1	Total Household	952		1078	
2	Total Population	3658		3690	
3	Male Population	1791	48.96	1832	49.65
4	Female Population	1867	51.04	1858	50.35
5	Total Literacy	2319	63.40	2665	72.22
6	Male Literacy	1309	73.09	1492	81.44
7	Female Literacy	1010	54.10	1173	63.13
8	Sex Ratio		1042		1014



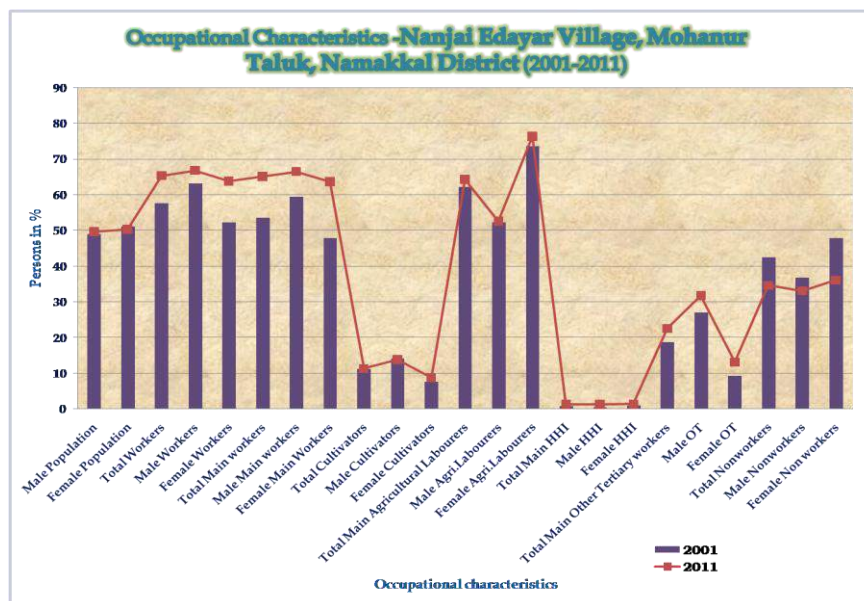
Occupational Characteristics- Nanjai Edayar Village

**Occupational Characteristics of Population - Nanjai Edayar Village,
Mohanur Taluk, Namakkal District (2001-2011)**

S.No	Characteristics	2001	%	2011	%
1	Total Population	3658		3690	
2	Male Population	1791	48.96	1832	49.65
3	Female Population	1867	51.04	1858	50.35
4	Total Workers	2107	57.60	2412	65.37
5	Male Workers	1132	63.20	1225	66.87
6	Female Workers	975	52.22	1187	63.89
7	Total Main workers	1956	53.47	2403	65.12

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8	Male Main workers	1063	59.35	1219	66.54
9	Female Main Workers	893	47.83	1184	63.72
10	Total Cultivators	236	11.20	274	11.36
11	Male Cultivators	161	14.22	170	13.88
12	Female Cultivators	75	7.69	104	8.76
13	Total Main Agricultural Labourers	1309	62.13	1551	64.30
14	Male Agri.Labourers	591	52.21	644	52.57
15	Female Agri.Labourers	718	73.64	907	76.41
16	Total Main HHI	16	0.76	33	1.37
17	Male HHI	6	0.53	16	1.31
18	Female HHI	10	1.03	17	1.43
19	Total Main Other Tertiary workers	395	18.75	545	22.60
20	Male OT	305	26.94	389	31.76
21	Female OT	90	9.23	156	13.14
22	Total Nonworkers	1551	42.40	1278	34.63
23	Male Nonworkers	659	36.80	607	33.13
24	Female Non workers	892	47.78	671	36.11



The term **workers** denote the population engaged in primary, secondary and tertiary activities classified in the census reports of Indian government. During the year 2001 Nanjai Edayar village had 2107 workers accounting for 57percent of the total population of the Village. During 2011 there were about 2412 (65%) according to the census. There were about 1132 men (63%) during 2001 which has an increase to 1225 persons (67%) according to census 2011. There were about 975 female according to 2001 which has an increase to 1187 female during 2011 marking of an increase to 212women over the previous census.

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In Nanjai Edayar village had a **total main workers** accounted of 1956 (53%) persons during 2001 census which has an increased to 2403 persons during 2011. There were about 893 (47%) women in 2001 and 1184 (63%) women according to the census 2011 marking an increase about 291 women over the previous census.

The study area has experienced a change in the occupational structure in the form of a decline in the proportion of cultivators, agricultural laborers and an increase in the proportion of secondary workers and tertiary workers.

5.3. Assessment of infrastructure demand (physical & social):

Physical Infrastructure

The road facility is already available which shall be used and maintained. The labour requirement is taken from the nearest villages like Nanjai Edayar. Other requisite infrastructure as transport of mine labours is available by way of jeep and two-wheeler. Medical facility is available for first aid at project site. Government Dispensary is available nearest to ML area in Nanjai Edayar and Mohanur in addition facilities in Namakkal. Rest room to meet the demand of shelter and Office room for project management will be made with portable container in the project area.

The will convey the excavated sand outside the quarry site to the end users.

The following measures may be taken for temporary soil erosion of bank:

Initiate stabilization measures as soon as practicable by dumping top soil over bank of the river for stability and afforestation purposes. General safety precaution shall be taken as per mining practices.

Access Roads

The area is accessible from Namakkal to P.velur to reach at 25KM further travel to P. velur to Nanjai Edayar by 5Km, further 1Km to reach to the reach site.

Usage of public road for transport shall be done as per approved practices and any damage it will be intimated to the Panchayat or concerned authorities for immediate remedies.

Social Infrastructure

The NH- road is situated at 3.50kms away from site and connecting Namakkal-Karur highways. A Village road is available nearby the site on the Northern side for transport of material.

(iv) Amenities/facilities:



As the workers are from nearby villages, the shelter room with toilet facilities & the first aid room will be built in a portable container since the project area itself a river bed and therefore all sanitary provisions shall be made outside The Cauvery river or in a portable container with disposal system. An office-cum-store shall be constructed. The water is required for drinking purpose as well as Drinking water is available by the water tankers from nearby area. Power is available at proximity. First aid box with all necessary materials will be kept all time in the office building for use as and when required.

6. PROPOSED INFRASTRUCTURE

6.1 Industrial area (processing area):

No processing unit is required; the sand material can be directly consumed. An office-cum-store will be constructed at mine site. A shelter room with toilet facilities & the first aid facilities will be built in a portable container.

6.2 Residential area (non processing area):

Not applicable, local personnel will be employed and there is no residential area proposed.

6.3 Greenbelt:

There would not be any adverse impact in the existing environment arising from the mining activities. To protect the environment, the Applicant Company would do adequate afforestation program with 150 trees per annum along the bank of the river.

Suggested plant species for Greenbelt development around the project:

S.No	Botanical Name	Tamil Name	Characteristics
1.	Azadirachta indica	Vepa or Neem	Semi ever-green, 5-8m height and spreading type
2.	Thespesia populnea	Poovarasam	Quick growing evergreen tree of 18m
3.	Samanea saman	Thoongu moonji	15-20m tall spreading tree
4.	Pongamia pinnata	Pongam	15-20m evergreen tree
5.	Albizia lebbak	Vagai	15-20m tall tree
6.	Prosopis juliflora	Neer Karuvai	A bushy thorny tree

6.4 Social infrastructure:

The area is accessible from Namakkal to P.velur to reach at 25KM further travel to P. velur to Nanjai Edayar by 5Km, further 1Km to reach to the reach site. The NH- road is situated at

3.50kms away from site and connecting Namakkal-Karur highways. A Village road is available nearby the site on the Northern side for transport of material. Positive community relationship proposed will be adopted by following methods:

- Care will be taken to ensure Mining Industrial Traffic not degrading public roads or jeopardize public safety
- Consulting with local people in a sincere manner
- Protecting drinking water and all water sources
- Minimize visual impacts to the landscape
- Minimize disruption of local footpaths and public areas
- Mine Supervisor and Workers will be aware and at all times meet the following requirements:
 - Usage of Personal Protective equipments
 - Necessary signage at mine access point
 - First Aid Kits
 - Gates, Fences, Signs (Or) Other barriers to ensure the mine site is secured against unauthorized and / or accidental entry
 - Ensure the mine site is not used for any other purpose other than mining

6.5 Connectivity:

The area is accessible from Namakkal to P.velur to reach at 25KM further travel to P. velur to Nanjai Edayar by 5Km, further 1Km to reach to the reach site. The NH- road is situated at 3.50kms away from site and connecting Namakkal-Karur highways.

6.6 Drinking water Management (source & supply of water):

The requirement of water will be of drinking water need for the labours, which will be around 0.5 KLD. Drinking water is obtained by Mineral water industries by water canes. Dust suppression and green belt is obtained from the open wells of proponent site.

6.7 Sewerage system:

There is no Sewerage System available in the Mining proposed area. No sewage will be generated from this project.

6.8 Industrial waste Management:

No wastes are anticipated

7.REHABILITATION AND RESETTLEMENT (R&R) PLAN

(i) **Policy to be adopted (central/state) in respect of the project affected persons**

including home ousters, land ousters, and landless labours.

a) PAP

There is no hutment in the lease area. No human being will be displaced from the project area so no person will be affected contrary local people will get job opportunities and better facilities. There is no rehabilitation & resettlement of people is required.

Mine Closure

Once the process of economical extraction of a mine is complete there is need for scientific mine closure which will not only restore ecology and regenerate bio mass but also take into account the socio-economic aspects of such closure. When mining activities carries out, mining communities get established and closure of the mine means not only loss of jobs but also disruption of community life. At the mine closure, it will be orderly and systematic and so planned as to help the workers and the dependent community to rehabilitate them without undue hardship. But in this case the excavation is made to deepen the water tank for storage and avoid flooding of storm water into villages and paddy fields. Therefore Mine closure plan should have proper leveling of the area before closing is advisable for this project.



8. PROJECT SCHEDULE AND COST ESTIMATION**(i) Likely date of start of construction and likely date of Completion**

The proposed mining operation will commence from the date of execution of quarry lease.

(ii) Estimated project cost along with analysis in terms of Economic viability of the project.

Being a short term project, the hired Machineries are used for excavation

PROJECT COST & EMP BUDGET**a) Project cost**

i) Land Cost	:	Nil
ii) Machinery to be used	:	Rs. 20,00,000
iii) Construction of bank reiver	:	Rs 2,00,000
iv) Laboures Shed	:	Rs 1,00,000
v) Sanitary facility	:	Rs 1,00,000
vi) Other items	:	Rs 1,00,000
Total		Rs 25.0 lakhs

EMP Cost

i) Environmental Monitoring	=	Rs. 2,00,000
ii) Sanitary arrangements	=	Rs 75,000
iii) Safety kits	=	Rs 75,000
iv) Internal road & Maintenance	=	Rs 1,50,000
v) Afforestation cost	=	Rs. 100,000
Total	=	Rs 6.0 lakhs

9. Analysis of Proposal

(i) Financial and social benefits with special Emphasis on the benefit to the local people including tribal population, if any in the area.

Social Benefits:

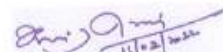
Mining in the project area will provide employment to nearby villagers. This employment will help in raising the standard of living on the people in the area. The mining activity in this belt will benefit the locals both directly and indirectly. The direct beneficiaries will be those who get employed in the mines as skilled and un-skilled workers. The indirect beneficiaries will be those who open small business to sell goods required by the residents whose "Per Capita income will be enhanced by the

Mining activity, and thereby their purchasing power. In the long run a lot of social goods are expected in the comparatively backward area when the inhabitants will be able to send their children to school, the change, though slow, is bound to be perceptible.

Financial Benefits:

It is clear from the objectives of the project that it will have significant positive impacts since it will:

- Provide filling material to the society.
- Give a boost to economic development in the region.
- Make a significant contribution to the construction and infrastructure sector of India.
- The Management will ensure good production and in turn there will be good revenue to the Government of Tamil Nadu and Government of India through taxes. The industry is an asset to the nation.


11/02/2020

This project is planned keeping in view the above mentioned advantages.

The quarrying operations will be carried out scientifically and systematically with an integrated mining plan and mine design may not disturb the environment and ecology of the area.



The Executive Engineer
Project Proponent
Public Works Department,
Water Resources Organization,
Mining and Monitoring Division,
Tiruchirappalli District



(Mr.S.SuriyakuMar)
M.Sc., M.Phil, F.C.C. (Min)
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