

PRE-FEASIBILITY REPORT

**FOR SAND REMOVAL FROM VAIPPAR RIVER IN
MARTHANDAMPATTI VILLAGE.**

AREA DETAILS

*Over An Extent of 4.00.0 Ha,
in SF. No. 431 (P),
In Marthandampatti Village,
Vilathikulam Taluk
Thoothukudi District,
Tamil Nadu.*

PROJECT PROPONENT

*THE EXECUTIVE ENGINEER,
Mining and Monitoring Division,
Public Works Department,
Water Resources Department,
Madurai, TamilNadu.*



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14/02/22

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PRE FEASIBILITY REPORT

FOR MARTHANDAMPATTI SAND QUARRY

**Over An Extent of 4.00.0 Ha, in SF. No. 431 (P), In Marthandampatti Village,
Vilathikulam Thoothukudi, Tamil Nadu**

1.EXECUTIVE SUMMARY

This project is for quarrying Sand, Minor minerals over an area of 4.00.0 Hectares in S.F.No.431(P), a part of Vaippar River in Marathandampatti village, Vilathikulam Taluk, Thoothukudi District, Tamil Nadu. The quantity to be quarried shall be 26,001m³ as permitted by the Dept. of Geology and Mining, Thoothukudi for a lease period of Two Years vide precise area letter Roc No.1/443/2018 Dated 01.08.2018, 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, Thoothukudi vide letter Roc No.1/443/2018 Dated 06.09.2018. The Environment Clearance is required under Rule 42 of TNMMCR, 1959 under category B2 for a fresh quarry lease for Sand from Vaippar 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, Thoothukudi 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,
Madurai District.

Handwritten signature and date: 14/02/22

A copy of Precise area communication letter issued by the District Collector is enclosed in Approved Mining plan's Annexure.

2.2 Brief description of nature of project:

The area is represented by Geological Survey of India Topo sheet No. 58K/04 and falls between Latitude of N09°04'49.64to N09°04'58.66"and Longitude of E78°11'38.94" to E78°11'48.03".

P.no	Latitude (N)	Longitude (E)
1	N09°04'54.85"	E78°11'38.94"
2	N09°04'58.66"	E78°11'44.21"
3	N09°04'53.39"	E78°11'48.03"
4	N09°04'49.64"	E78°11'42.70"

District & State	Taluk	Village	S.F.No	Area (Ha)
Thoothukudi,& TamilNadu	Vilathikulam	Marathandampatti	431(P)	4.00.0Ha

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 Vaippar 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 Vaippar 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 material 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.

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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 & 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 Marathandampatti village, Vilathikulam Taluk, Thoothukudi 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 4.00.0 hectares, and falls in 'B2' Category of Schedule 1 (a).

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

The area is represented by Geological Survey of India Topo sheet No. 58K/04 and falls between Latitude of N09°04'49.64to N09°04'58.66"and Longitude of E78°11'38.94" to E78°11'48.03".

P.no	Latitude (N)	Longitude (E)
1	N09°04'54.85"	E78°11'38.94"
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3	N09°04'53.39"	E78°11'48.03"
4	N09°04'49.64"	E78°11'42.70"

The area is accessible from Thoothukudi via Vilathikulam to reach Marathandampatti village. A Village road is available nearby the site. The PWD make temporary road which connects the village road for transportation of Materials. The PWD make temporary road which connects the village road for transportation of Materials,



Fig No.1. Image showing Location of Quarry.

A. Abinav
14/02/22

Table No.3.2. Details of infrastructures and communication

S.No.	Description	Place	Distance (km)	Direction
1	Railway	Kovilpatti	38	NW
3	Post office	Poosanoor	5.5	SW
4	Airport	Madurai	85	NW
5	Police station	Vilathikulam	6.5	NW
6	Fire service	Vilathikulam	6.5	NW
7	Primary Health centre	Poosanoor	5.5	SW
8	Sea Port	Thoothukudi	41	SE
9	School	Poosanoor	5.5	SW

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 Semi mechanized 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 26,001m³ by open cast semi mechanized mining.

3.5 Project description with Process Details

Mining Process Details

- 1) Loading of sand by hydraulic excavator and manual into Bullock Carts, Tipper and tractor respectively.
- 2) Transport of sand from river site to the stocking yard and further to the Consumer Construction site based on the demand.
- 3) 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 by semi mechanized mining loading the materials by manual and hydraulic excavator and transport by Bullock Carts, Tipper and tractor.

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.

.Table No.3.3 Production detail

Year	Over Burden/Shoal portion (m³)	ROM of sand (m³)	Saleable sand (m³)	Sub grade ore / mineral	Mineral Rejects	Ore to overburden ratio
1 st	Nil	13000.5	13000.5	Nil	Nil	Nil
2 nd	Nil	13000.5	13000.5	Nil	Nil	Nil
Total		26001	26001	Nil	Nil	Nil

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 1.0KLD. Dust suppression and Green belt of water is 3.0KLD. Total quantity is 4.0KLD. Drinking water is obtained by Mineral water industries by water canes. Dust suppression and green belt is obtained from the open wells or from the river site. 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:

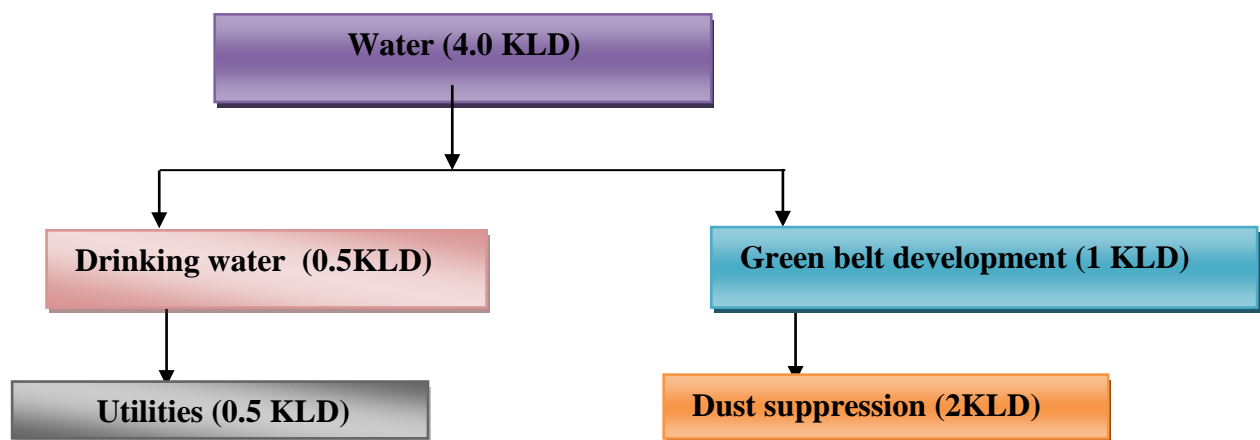


Fig. 3.4 Water Balance Chart

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

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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 generation 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 Thoothukudi via Vilathikulam to reach Marathandampatti village. A Village road is available nearby the site. The PWD make temporary road which connects the village road for transportation of Materials. The PWD make temporary road which connects the village road for transportation of Materials,

4.2. Land form, land use and land ownership.

Table No.4.1 Land ownership details

District & State	Taluk	Village	S.F.No	Area (Ha)
Thoothukudi,& TamilNadu	Vilathikulam	Marathandampatti	431(P)	4.00.0Ha

4.3. Topography (along with Map):

The lease applied area is part of Vaippar River exhibits slightly undulated topography covered with sand and shoals, sand which is formed by the continuous mechanical action of river erosion of weathered particles transported and deposited. The area applied for mining lease is a River bed, with elevation varies from 19.29m (Maximum) above MSL. The slope of the area is gentle towards South west.

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 Vaippar 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.

Table No.4.2 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	4.00.0
2.	Waste Dump	0.0	0.00.0
3.	Infrastructure	0.0	0.00.0
4.	Safety zone & Plantation	Nil	0.00.0

G. Arinjan
14/02/22

5.	Mine Roads	0.00	0.00
6.	Undisturbed area	4.00.00	0.00
Total		4.00.00	4.00.00

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.

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PLATE NO:IV

APPLICANT:
THE EXECUTIVE ENGINEER,
PUBLIC WORKS DEPARTMENT, WRO,
MINING AND MONITORING DIVISION,
MADRAS-2.

LOCATION OF QUARRY:
LEASE APPLIED AREA:
S.F.No : 431 (P)
EXTENT : 4000 Hq
VILLAGE : MATHANDAMPATTI
TALUK : VEATHIKULAM
DISTRICT: THOOTHUKUDU

LEGEND

Q. APPLIED AREA [Green outline]

APPROACH ROAD [Blue lines]

500M RADIUS [Purple outline]

1KM RADIUS [Orange outline]

SATELLITE IMAGINARY PLAN

2024-11-0000

PREPARED BY:
I, DC HENRY CERTIFY THAT THE PLAN
HAS BEEN CHECKED BY ME AND IS
CORRECT TO THE BEST OF MY KNOWLEDGE

[Signature]
A. R. S. SHANKAR, Jy.
REGISTERED QUALIFIED PERSON

Fig.4.1: Satellite image showing lease boundary of Sand quarry & 300,500in radius.

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4.5.2. Sources of Air Pollution

Table No.4.3 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

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.

Table No.4.4 Air Pollution Control Measures

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	Closed Air conditioned cabin for loading operator 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

Major noise generating sources may be considered for movement of vehicles and excavator during transportation of excavation of sand. With the starting of quarrying operations, it is imperative that

noise levels shall increase. In order to assess the impact baseline ambient noise level, noise monitoring has been carried out at different points using Sound level meter.

Table 2: Ambient Noise levels

S. No	Location	Latitude	Longitude	Noise levels dB (A)	Max dB (A)	Min dB (A)	TNPCB Standards
1	Core zone	9°4'54.02"N	78°11'46.11"E	36	40	32	Day Time Industrial – 75 dB (A) Residential – 55 dB (A)
2	L. boundary (West)	9°4'53.05"N	78°11'40.15"E	31	35	29	
3	L. boundary (South)	9°4'52.08"N	78°11'45.94"E	37	41	34	
4	L. boundary (North)	9°4'56.25"N	78°11'40.90"E	32	28	34	
5	L. boundary (East)	9°4'57.26"N	78°11'45.27"E	34	39	30	

The noise level found to be within the limits as per TNPCB Standards.

4.5.6. Vibration Levels

The vibration from HEMM is negligible.

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

Soil sample has been collected from the core zone for analysis of its physical and chemical characteristics.



Fig.5: Collection of sand sample

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(Latitude: 09°04'54.12"N & 78°11'46.28"E)

Table -6 Soil Texture Analysis

Physical Parameters	Results
pH value (10% Solution)	7.18
EC@ 25°C (Micromhos/cm) (10% solution)	54.8
Moisture	7.27%
Bulk Density	1.32 g/cc
Texture	Sandy = 90.38% ; Silt = 3.34% ; Clay = 6.28%, Sand
Chemical Parameters	Results
Alkalinity	0.026%
Calcium	0.231%
Chloride	0.0010%
Water Holding Capacity	40%
Organic Mater	0.088%
CaCO ₃	0.0276%

. Observations & Mitigation measures

- The pH of the soil found to be 7.18 indicating neutral in nature.
- Bulk Density of the soil found to be 1.32 g/cc.
- The Water Holding Capacity of the soil is found to be 40%.

The overall soil characteristics indicate favourable condition for plant growth.

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 and Surface water is tested in the laboratory results given below; 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.

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Fig.3: Collection of Water sample from Bore well
(Latitude: 09°05'26.33"N & 78°11'46.40"E)

Table 3: Water - Microbiological Examination

S.NO	Parameters (MPN / 100 ml)	Results Bore water	Requirement as per IS 10500: 2012 Second revision (Acceptable Limit)
1	Total Coliforms	110	Shall not be detectable in any 100 ml
2	E.Coli	21	Shall not be detectable in any 100 ml

Table 2.1: Physical and Chemical properties

S.No	Parameters	Unit	Results (Bore water)	As per IS 10500: 2012	
				Requirement (Acceptable limit)	Permissible limit in the absence of alternate source
1	pH value at 25°C	-	7.87	6.5 – 8.5	6.5 – 8.5
2	Turbidity	NTU	0.8	1	5
3	Electrical conductivity at 25°C	Micromhos/cm	2160	-	-
4	Total Suspended Solids	mg/l	1.0	-	-
5	Total Dissolved Solids	mg/l	1270	500	2000
6	Total Hardness as CaCO ₃	mg/l	56.0	200	600
7	Chlorides as Cl	mg/l	94.0	250	1000
8	Sulphates as SO ₄	mg/l	40.0	200	400
9	Total Iron as Fe	mg/l	0.18	0.3	0.3
10	Silica (Reactive) as SiO ₂	mg/l	14.0	-	-



Fig.4: Collection of Surface water.
(Latitude: 09°05'09.5"N & 78°11'32.4"E)

Table 4: Water - Microbiological Examination

S.NO	Parameters (MPN / 100 ml)	Results Bore water	Requirement as per IS 10500: 2012 Second revision (Acceptable Limit)
1	Total Coliforms	23	Shall not be detectable in any 100 ml
2	E.Coli	Absent	Shall not be detectable in any 100 ml

Table 5: Physical and Chemical properties

S.No	Parameters	Unit	Results (Bore water)	As per IS 10500: 2012	
				Requirement (Acceptable limit)	Permissible limit in the absence of alternate source
1	pH value at 25°C	-	7.02	6.5 – 8.5	6.5 – 8.5
2	Turbidity	NTU	5.90	1	5
3	Electrical conductivity at 25°C	Microm hos/cm	390	-	-
4	Total Suspended Solids	mg/l	16.0	-	-
5	Total Dissolved Solids	mg/l	230	500	2000
6	Total Hardness as CaCO ₃	mg/l	9.0	200	600
7	Chlorides as Cl	mg/l	64.0	250	1000
8	Sulphates as SO ₄	mg/l	3.0	200	400
9	Total Iron as Fe	mg/l	1.41	0.3	0.3

10	Silica (Reactive) as SiO ₂	mg/l	12.0	-	-
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4.5.11 Air Quality

Ambient Air monitoring has been carried out in the core zone. As there is no drilling and blasting. Transport of sand by Tipper, Tractor and bullock cart and possibility of fugitive emission like So₂, No₂ and Respirable dust in this sand quarry will be negligible. Base line data collected for Air Quality is given as under,

Table 1: Ambient Air Monitoring

S.No	Parameters ($\mu\text{g}/\text{m}^3$)	Measured Value	NAAQS
1	Particulate Matter (PM _{2.5})	29	60
2	Respirable Particulate Matter (PM ₁₀)	46	100
3	Sulphur Dioxide (SO ₂)	7.5	80
4	Nitrogen Dioxide (NO ₂)	14.3	80
5	Ozone (O ₃)	9	180
6	Lead (Pb)	BDL (DL = 0.13)	1
7	Carbon Monoxide (CO) 1 hour	BDL (DL = 0.27)	4
8	Ammonia (NH ₃)	6.4	400
9	Arsenic (As)	BDL (DL = 0.84)	6
10	Nickel (Ni)	BDL (DL = 1.78)	20
11	Benzene (C ₆ H ₆)	BDL (DL = 1.05)	5
12	Benzo (a) Pyrene	BDL (DL = 0.34)	1
BDL = Below Detectable Limit, DL = Detection Limit NAAQS = National Ambient Air Quality Standards			

The above results comply with NAAQS. The generation of dust is controlled and suppressed at source by sprinkling of water on haul roads, loading points at regular intervals as shown below.

Mitigation Measures

- Dust control along haul roads passing through villages by periodical wetting with water tanker.

4.5.12 Flora and Fauna

6.1 FLORA

6.1.1 Survey Methodology

The present study on the floral assessment for the existing project activity is based on extensive field survey of the area. The plant species were identified with the help of plant taxonomy manual, literatures and Botanical Survey of India website (efloraindia.nic.in). In addition besides the collection of plant species, information was also collected with vernacular names of plant species made by local inhabitants.

FLORA IN CORE ZONE

Since the study area is a river, Mostly, Acacia Nilotiaca, Common grasses and Erukku plants are noticed in the core zone. Details of flora with the scientific name were mentioned in Table.

FLORA IN BUFFER ZONE

karuvelam, Nerinjil plant, Mango tree, Neem, Tamarind, Koyyakka, Thulasi, Thumbai, Muringai, Avaram and Neem plant are found more on regional scale. Details of flora with the scientific name were mentioned in the Table.

Table No. 1. Flora in Core and Buffer area

S.No	Local Name	Botanical Name	Number	Core/Buffer
1.	Mullu Maram	Acacia Nilotiaca	In numerable	Core
2.	Erukku	Calotropis	Many	Core
3.	karuvelam	Vachellia nilotica	38	Buffer
4.	Nerinjil plant	Tribulus terrestris	In numerable	Buffer
5.	Panai tree	Borassus flabellifer	243	Buffer
6.	Mango tree	Mangifera indica	57	Buffer
7.	Neem	Azadirachta indica	Many	Buffer
8.	Tamarind	Tamarindus indica	Many	Buffer
9.	Koyyakka	Psidium guajava	Many	Buffer
10.	Thulasi	Ocimum tenuiflorum	Many	Buffer
11.	Thumbai	Luecas aspera	Many	Buffer
12.	Muringai	Muringa oleifera	Many	Buffer
13.	avaram	Senna Auriculata	Many	Buffer
14.	Neem	Azadirachta indica	Many	Buffer

6.2. FAUNA

The faunal survey has been carried out as per the methodology cited and listed out Mammals, birds, Reptiles, Amphibians, and Butterflies. All the listed species were compared with Red Data Book and Indian Wildlife Protection Act, 1972.

6.2.1. Fauna methodology

The study of fauna takes a substantial amount of time to understand the specific faunal characteristics of the area. The assessment of fauna has been done on the bases of primary data collected from the lease sites. The presence was also confirmed from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area. In addition officials, local peoples were another source of information for studying the fauna of the area. Field activities such as physical/active search, covering rocks, burrows, hollow inspection and location of nesting sites and habitat assessment etc. Taxonomical identification was done by the field guide book and wildlife envis database ([wiienviis.nic.in/Database/Schedule Species Database](http://wiienviis.nic.in/Database/Schedule%20Species%20Database)) and Zoological Survey of India (ZSI).

FAUNA IN BUFFER ZONE & CORE ZONE

The proposed area is a part of river and there is no critically endangered, vulnerable and endemic species were observed. Details of fauna with the Zoological name were mentioned below table

b) Flora found on regional scale

S.No.	Local Name	Zoological Name
1.	Indian cormorant	Phalacrocorax fascicollis
2.	Red-wattled lapwing	Vanellus indicus
3.	Little cormorant	Microcarbo niger
4.	House sparrow	Passer domesticus
5.	Common cuckoo	Cuculus canorus
6.	House crow	Corvus splendens
7.	Dog	Canis lupus
8.	Rat	Rattus
9.	Peacock	Pavo cristatus
10.	Rabbit	Oryctolagus cuniculus
11.	Palm squirrel	Funambulus palmarum
12.	Butterfly	Rhopalocera
13.	Snake	Serpentes
14.	Garden lizard	Calotes versicolor
15.	Common myna	Acridotheres tristis
16.	Koel	Eudynamys scolopaceus
17.	Red-wattled lapwing	Vanellus indicus
18.	Fan-Throated Lizard	Sitana ponticeriana
19.	Black drongo	Dicrurus macrocercus
20.	Cattle erget	Bubulcus ibis
21.	White throated king fisher	Halcyon smyrnensis



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Fig.7 Photograph shows Flora observed in the Area.



Fig 8: Photographs showing Fauna observed in the area.

4.6. OTHER PERMANENT STRUCTURES

4.6.1 Habitations / Village:

Table No.4.9. Habitation details

Direction	Name of Village	Distance from Mines in Km (Approx)	Population
SE	Virusampatti	3.5	650
NW	Mandhikulam	0.70	100
NE	Olaipatti	1.3	450
SW	Marthandampatti	3.5	300

4.6.2 Power Lines (HT / LT): There is no HT or LT lines is found nearby the site

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

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

4.6.5 Road (NH, SH others):

The area is accessible from Thoothukudi via Vilathikulam to reach Marthandampatti village. A

S. Arinjanin
14/02/22

Village road is available nearby the site for transportation of Materials. The N.H45B situated 22.5Km on NW side and S.H.75 situated 2.2Km on Western side.

4.6.6 Places of worship: Nil

4.6.7 Reserved forest / Forest / Social forest / wild life sanctuary etc:

No reserve forest and No wild life sanctuary situated within 10km radius.

4.7 Climatic Conditions

Rainfall and Climate

The district receives the rain under the influence of both southwest and northeast monsoons. The northeast monsoon chiefly contributes to the rainfall in the district. Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal. The southwest monsoon rainfall is highly erratic and summer rains are negligible. Rainfall data from seven stations over the period 1901- 2001 were utilised and a perusal of the data shows that the normal annual rainfall over the district varies from about 570 mm to 740 mm. It is the minimum around Arasadi (577.4 mm) and Thoothukkudi (582.8 mm) in the central eastern part of the district. It gradually increases towards south, west and north and attains a maximum around Kayattar (722.5 mm) and Kovilpatti (734.8 mm) in the northwestern part.. The district enjoys a hot tropical climate. The high relative humidity prevail throughout the year between 60 and 75%. The annual mean minimum and maximum temperature are 23°C and 29°C respectively.

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 by open cast, semi mechanized mining using Excavator and manual mining method 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 semi mechanized method to a depth below 1.0m or above theoretical bed level 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.

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. 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 Vilathikulam in addition to the facilities in Thoothukudi. Rest room to meet the demand of shelter and Office room for project management will be made with portable container in the project area.

They 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 Thoothukudi via Vilathikulam to reach Marathandampatti village. A Village road is available nearby the site. The PWD make temporary road which connects the village road for transportation of Materials. The PWD make temporary road which connects the village road for transportation of Materials,

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 area is accessible from Thoothukudi via Vilathikulam to reach Marathandampatti village. A Village road is available nearby the site. The PWD make temporary road which connects the village road for transportation of Materials. The PWD make temporary road which connects the village road for transportation of Materials,

(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 of Vaippar River or in a portable container with disposal system. An office-cum-store shall be constructed. The water is required for drinking purpose 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 a forestation program with 100 trees per annum along the bank of the river.

Suggested plant species for Greenbelt development around the project:

Table No.4.12. Suggested plant species

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.	Albizzia lebbak	Vagai	15-20m tall tree
6.	Prosopis juliflora	Neer Karuvai	A bushy thorny tree

6.4 Social infrastructure:

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 Thoothukudi via Vilathikulam to reach Marathandampatti village. A Village road is available nearby the site. The PWD make temporary road which connects the village road for transportation of Materials. The PWD make temporary road which connects the village road for transportation of Materials,

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 4 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.

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 river 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 50,000
iii) Safety kits	=	Rs 50,000
iv) Internal road & Maintenance	=	Rs 200,000
v) Afforestation cost	=	Rs. 100,000
Total	=	Rs 6.0 lakhs

9. ANALYSIS OF PROPOSAL AND FINAL RECOMMENDATIONS

(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:

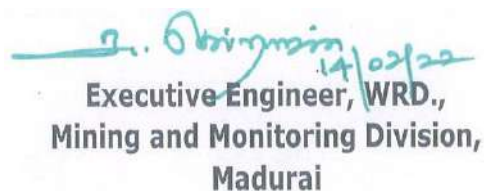
- Provide filling material to the society.
- Give a boost to economic development in the region.
- Make a significant contribution to the construction and infrastructure sector of India.
- The Management will ensure good production and in turn there will be good revenue to the Government of Tamil Nadu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

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.

Signature of Project Proponent

Along with signature



Executive Engineer, WRD,
Mining and Monitoring Division,
Madurai

The Executive Engineer
Project Proponent
THE EXECUTIVE ENGINEER,
Mining and Monitoring Division,
Public Works Department,
Water Resources Department,
Madurai, TamilNadu.

Date: 21.03..2022

Place : Salem

Signature of EIA- Coordinator

For Aadhi Boomi Mining &
Enviro Tech (P) Ltd



Director

S.Suriyakumar
M.Sc., M.Phil, F.C.C. (Min)
PGDBA, DIPC
EIA Co-ordinator (Mining)

