

PRE-FEASIBILITY REPORT

FOR PULLAMADAI-II SAND QUARRY

Extent : 4.88.0Hectares
S.F. No : 523 (P)
Village : Pullamadai-II
Taluk : R.S.Mangalam
District : Ramanathapuram
State : Tamil Nadu

PROJECT PROPONENT

The Executive Engineer,
Public Work Department,
Water Resources Organization,
Mining and Monitoring Division,
Madurai.



EIA CONSULTANT

AADHI BOOMI MINING AND ENVIRO TECH (P) LTD.

NABET Accredited EIA Consultant – “A” Category.

Certificate No: NABET/EIA/1821/RA 0103

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14/02/22
Executive Engineer, WRD,

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PRE-FEASIBILITY REPORT

FOR PULLAMADAI-II SAND QUARRY

**in S.No 523(P) in Kottakarai River, Pullamadai-II Village, R.S.Mangalam Taluk,
Ramanathapuram District, Tamil Nadu.**

1.EXECUTIVE SUMMARY

This project is for quarrying Sand, Minor minerals over an area of 4.88.0 Hectares in S.F. No. 523(P), a part of Kottakarai river in Pullamadai-II Village, R.S.Mangalam Taluk, Ramanathapuram District, Tamil Nadu. The quantity to be Quarried shall be 58,098 m³ as permitted by the Dept. of Geology and Mining, Ramanathapuram for a lease period of Three years vide precise area letter No. Rc No. **1419/G&M.1/2018 dated 21.06.2019**, 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, Ramanathapuram vide Rc No. 1419/G&M.1/2018 Dated. 08.08.2019. The Geological Resources and Mineable reserves are estimated as per the requirement of Sand Mining Guidelines, 2020 with grid levels taken 50m x 50m interval and plans and sections has been prepared with 0.5m contour interval. The Environment Clearance is required under Rule 42 of TNMMCR, 1959 under category B2 for a fresh quarry lease for Sand from Kottakarai 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, Madurai has applied to the District Collector, Ramanathapuram 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.

A copy of Mining lease letter issued by the District Collector (R.C.No. 1419/G&M.1/2018 dated 21.06.2019 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/14 and falls between Latitude of N9°40'06.80" N9°40'20.66" and Longitude of E78°52'31.20" to E78°52'38.81"

P. No	Latitude	Longitude (E)	P. No	Latitude (N)	Longitude (E)
1	N9°40'07.91"	E78°52'34.23"	5	N9°40'19.16"	E78°52'35.30"
2	N9°40'12.79"	E78°52'34.28"	6	N9°40'12.42"	E78°52'38.42"
3	N9°40'19.45"	E78°52'31.20"	7	N9°40'09.19"	E78°52'38.81"
4	N9°40'20.66"	E78°52'33.89"	8	N9°40'06.80"	E78°52'37.87"

District & State	Taluk	Village	S.F.No	Area (Ha)
Ramanathapuram, TamilNadu	R.S.Mangalam	Pullamadai-II	523(P)	4.88.0Ha


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Executive Engineer, WRD, MADURAI
 M. S. M. DIVISION,
 MADURAI-2.

<p>PLATE NO-VI</p> <p>APPLICANT: THE EXECUTIVE ENGINEER, WRD, WRD, MORING AND MONITORING DIVISION, MADURAI DISTRICT.</p>	<p>INDEX</p> <p>QUARRY (TASI) APPLIED AREA</p> <p>TEMPORARY BENCH MARK</p> <p>APPROACH ROAD</p> <p>CONTOUR</p> <p>SILT</p> <p>LEVELS</p> <p>BUND</p> <p>SAFETY DISTANCE</p>	<p>THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT</p>
<p>LOCATION: SLP. NO : 523(P), EXTENT : 4.88.0 Ha, VILLAGE : PULLAMADAI-II, TALUK : R.S.MANGALAM, DISTRICT : RAMANATHAPURAM</p>	<p>QUARRY LEASE, SUBFACE & TOPOGRAPHICAL GEOLOGICAL PLAN SCALE : 2000</p>	<p><i>[Signature]</i></p> <p>K. RAJASEKAR M.Sc. RECORDED QUALIFIED PERS. ROP/CD/264/2015/A</p> <p><i>[Circular Stamp]</i></p>

Fig.1.1 Location plan of the proposed sand quarry

[Signature]
 14/02/22
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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 Kottakarai 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: Three 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 Kottakarai 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.

2.5. Export Possibility

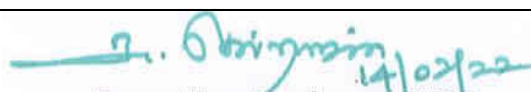
It is a low cost product and therefore the Lessee would like to sale out the sand in domestic market through bullock cart on royalty basis as per the order of state Govt.

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.

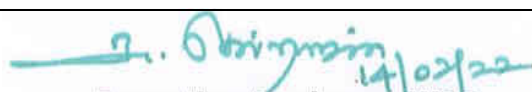
For the purpose of Mines safety under the provisions of MMR, 1961 under the Mines Act, 1952 the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the


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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	


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3. PROJECT DESCRIPTION

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

This project is located in Pullamadai-II village, R.S.Mangalam taluk, Ramanathapuram 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 4.88.0 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 Geological Survey of India Topo sheet No. 58K/14 and falls between Latitude of N9°40'06.80" N9°40'20.66" and Longitude of E78°52'31.20" to E78°52'38.81"

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Table No.3.2. Details of infrastructures and communication

S.No.	Description	Place	Distance (km)	Direction
1	Railway	Ramanathpuram Railway Station	35	S
3	Post office	Sanaveli	1.9	NW
4	Airport	Madurai	88	W
5	Police station	R.S.Mangalam	5	SW
6	Fire service	R.S.Mangalam	5	SW
7	Primary Health centre	R.S.Mangalam	5	SW
8	School	Pullamadai-II	1.6	SE
10	Nearest Town	R.S.Mangalam	5	SW
11	Villages			
	i)	Mettukarkalathur	1.8	NE
	ii)	Sanaveli	1.6	NW
	iii)	Kulamanikkam	2.0	SE
	iv)	Saveriyar pattinam	1.9	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 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 58098m³ by open cast mining.

3.5 Project description with Process Details

Mining Process Details

- 1) Fixing boundaries of lease area covering an extent of 4.88.0Hectares using DGPS and Drone Technology as per the requirement of Sand Mining guidelines, 2020. Reduced levels (RL) were taken at 50mx 50m interval with cm accuracy. Contour lines were made at 0.50m 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 remove the materials by Bullock Carts and loading directly into the Consumer Construction Site shall be connected by proper approach roads. The Layout of infrastructure such as workings and its sections are shown in the approved Mining Plan.

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 and manual.

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
1st	8134	19366	19366	0	0	1:0.42
2nd	8133	19366	19366	0	0	1:0.42
3rd	8133	19366	19366	0	0	1:0.42
Grand Total		24,400	58098	-	-	1.042

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 3.0KLD. Minimum quantity of **5.0KLD** 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 Kottakarai 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:

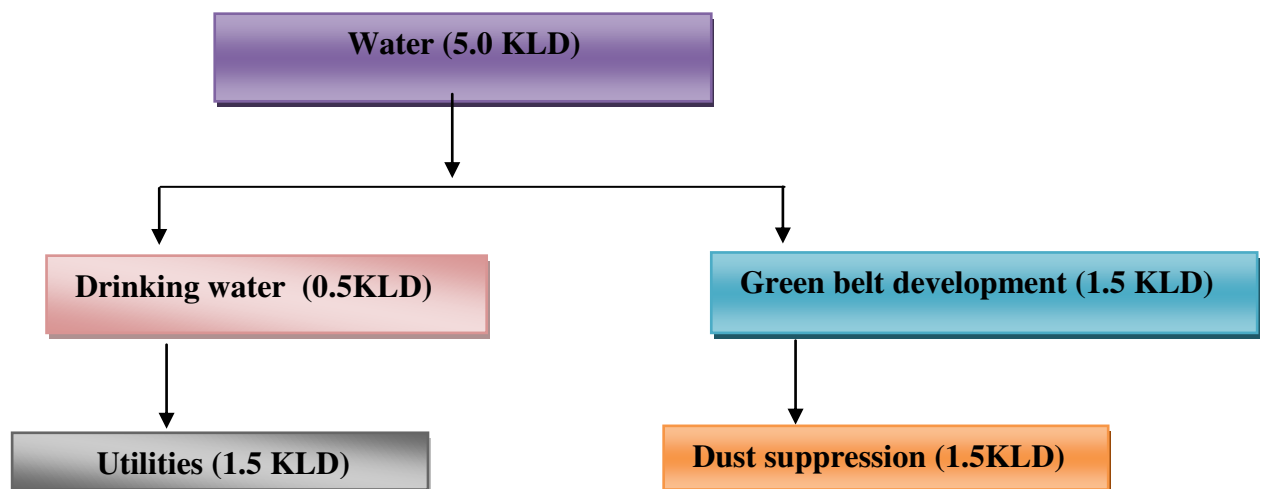


Fig. 3.1 Water Balance Chart

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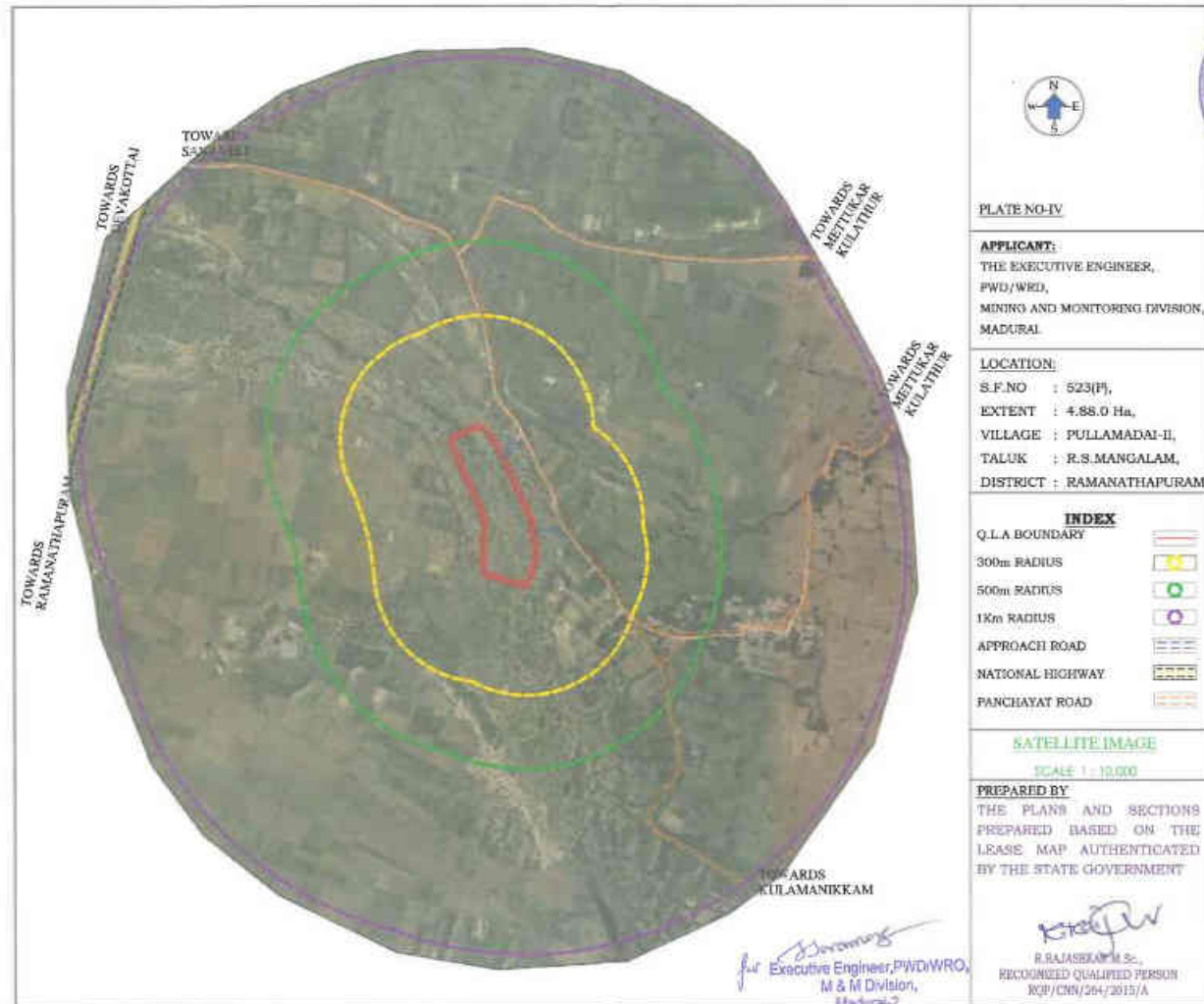


Fig.3.2: Google earth Image showing 300m,500m & 1km radius from the sand quarry lease boundary

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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 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 Nearest National Highway is NH-210 located about 1km On Western side of the area which connecting Devakottai-Ramanathapuram.

The state highway is SH-34A located about 3.7km on Southwestern side of the area.

4.2. Land form, land use and land ownership.

Table No.4.1 Land ownership details

District & State	Tehsil	village	Area in Hect.	Type of land
Ramanathapuram District, Tamilnadu	R.S.Mangalam	Pullamadai-II	4.88.0	Kottakarai river

4.3. Topography (along with Map):

The lease applied area is kottakarai river exhibits almost plain topography covered with sand which is formed by the continuous mechanical action of river erosion of weathered particles transported and deposited. The altitude of the area is 9.478m (Maximum) AMSL. The slope of the area is gentle towards Eastern side.

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 RF, 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 Kottakarai 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 Three years
1.	Mining	0.0	4.88.00
2.	Undisturbed area	4.88.00	0.00
Total		4.88.00	4.88.00

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

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

Noise level has to be studied prior to mining and after opening the quarry for production. Ambient noise level on threshold is 41.8dB.

4.5.6. Vibration Levels

It is a manual mining. Hence, no vibration is anticipated.

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

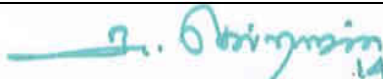
Disposal of waste

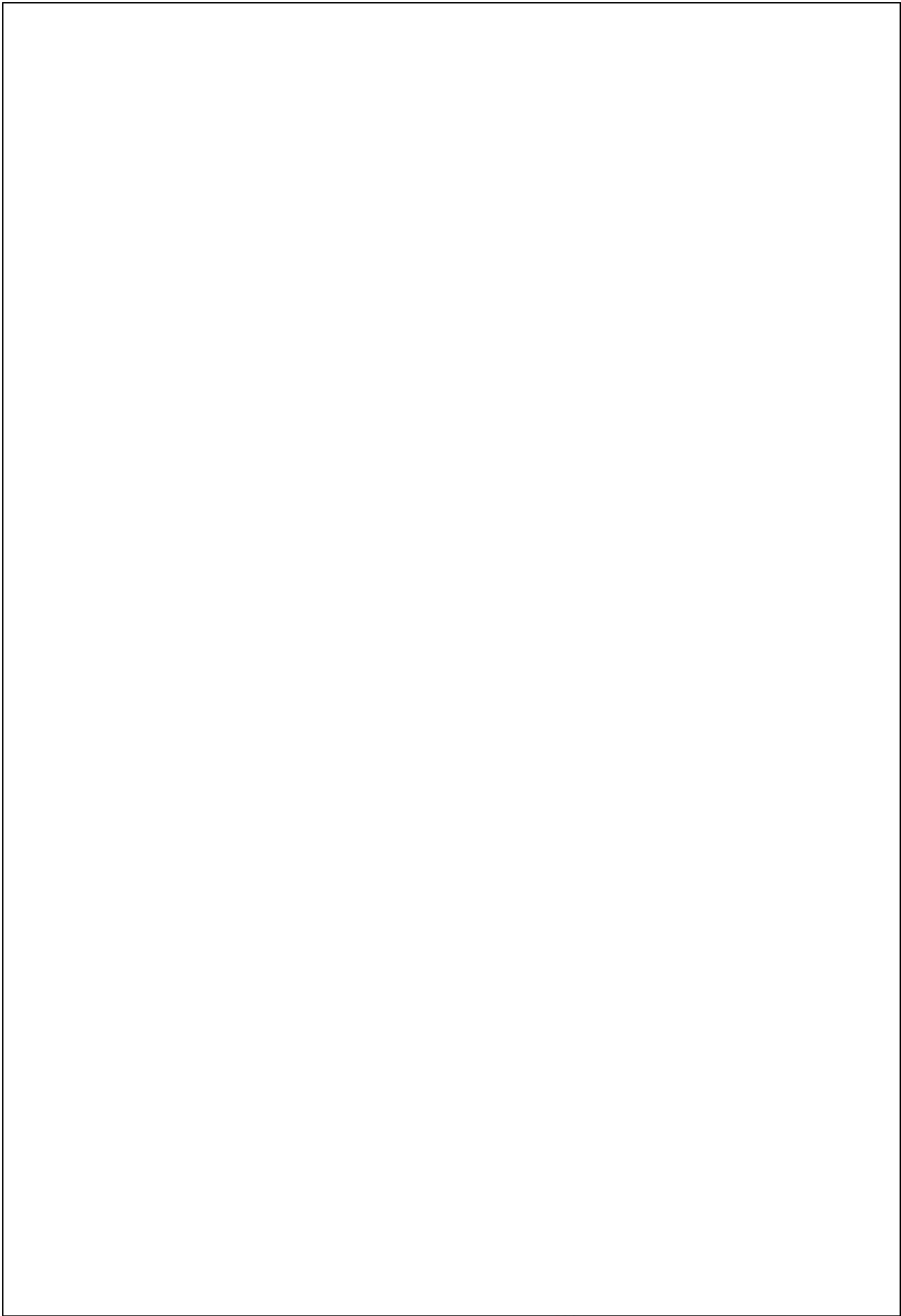
Overburden waste Management: No overburden shall be removed or dumped elsewhere.

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.


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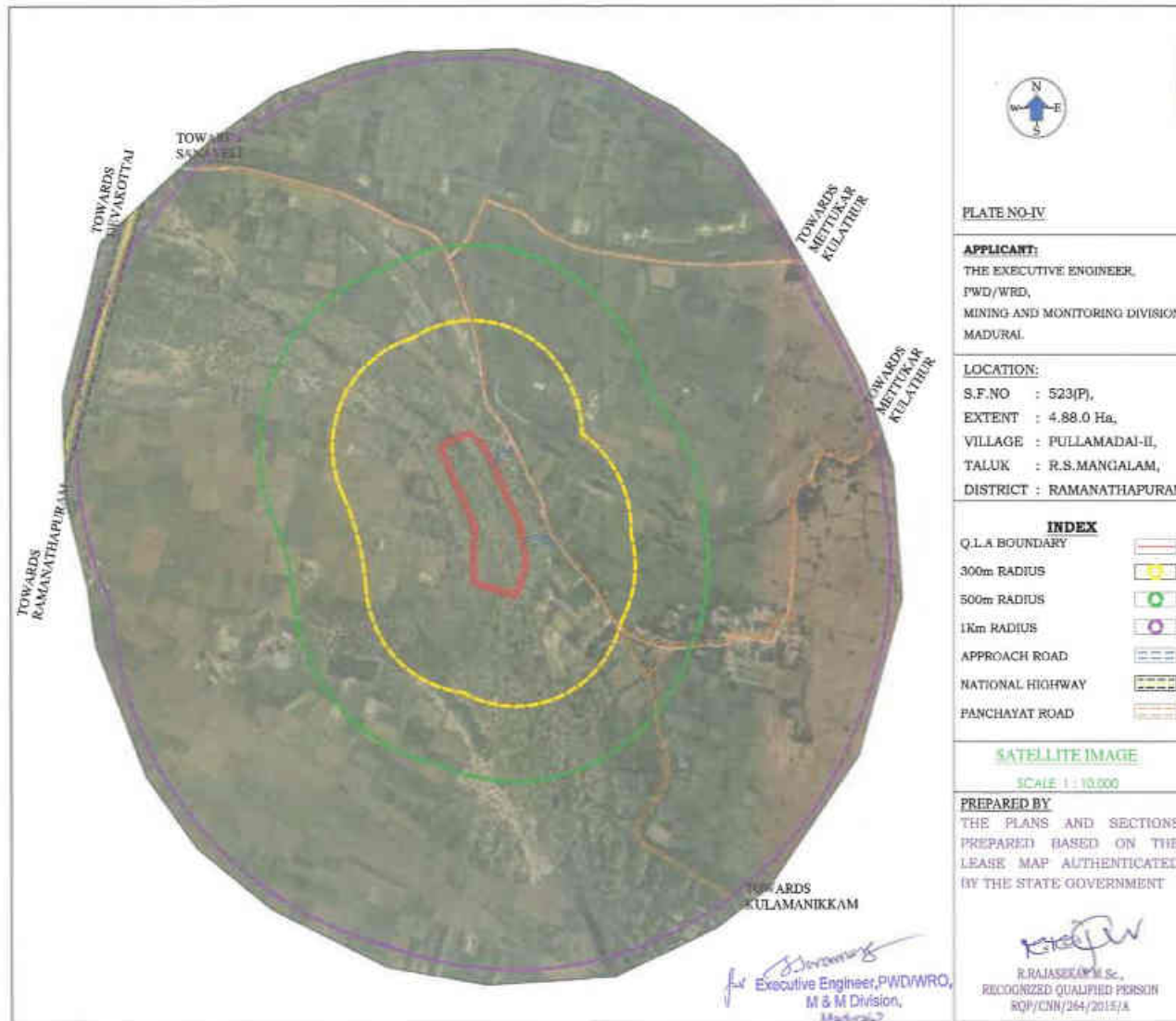


Fig.4.1: Satellite image showing lease boundary of Sand quarry in Kottakarai River

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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.

Table No.4.5 Water quality test report

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	-	7.73	6.5 – 8.5	6.5 – 8.5
2	Turbidity	NTU	BDL (DL=0.1)	1	5
3	Electrical conductivity at 25°C	Micromathos/cm	1326	-	-
4	Total Suspended Solids	mg/l	BDL (DL=0.1)	-	-
5	Total Dissolved Solids	mg/l	802	500	2000
6	Total Hardness as CaCO ₃	mg/l	206	200	600
7	Chlorides as Cl	mg/l	127	250	1000
8	Sulphates as SO ₄	mg/l	47	200	400
9	Total Iron as Fe	mg/l	0.08	0.3	0.3
10	Silica (Reactive) as SiO ₂	mg/l	37	-	-

S. No	Parameters	Protocol	Unit	Result	Range
1.	<i>Escherichia coli</i>	IS 5887 (Part 1): 1976	Per 100ml	Absent	Qualitative
2.	Total Coliforms	IS 5401 (Part 2): 2012	Per 100ml	Absent	Qualitative


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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.






Table No.4.6 Air Quality test report

SI. No	PARAMETERS	PROTOCOL	UNIT	RESULT	NAAQS*
1	Particulate Matter (PM _{2.5})	SOP-EA-001	µg / m ³	35	60
2	Respirable Particulate Matter (PM ₁₀)	IS 5182 Part 23-2017	µg / m ³	46	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	16	80
5	Ozone (O ₃)	IS 5182 Part 9-2014	µg / m ³	23	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=1.17)	4
8	Ammonia (NH ₃)	SOP-EA-009	µg / m ³	28	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 12-2014	ng / m ³	BDL (DL=0.1)	1

4.5.12 Flora and Fauna

a) Flora



Table No.4.7. A. List of Flora of the lease area

S. No.	Tamil /English Name	Botanical Name	Number of Trees	Photograph
1.	Vivasaaya Maram	Acasia bushes	Innumerable	
2.	Panai/ Palmyra tree	Borassus fiabellifer	Innumerable	
3.	Eechamaram/ Melaleuca Alternifolia	Sylvestries.	30	
4.	Karuvelamaram	Prosopis juliflora	Innumerable	
5	Avaram poo	Cassia Auricuiata	Innumerable	

c) HERBS:

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Table No.4.7.C. List of Herbs of the lease area

S.No.	Tamil Name	Botanical Name	Number of Plants	Photograph
1.	Erukku Chedi	Calotropis Gigantea	Innumerable	
2.	koraipull	(coco-grass, Cyperus rotundus)	innumerable	

2. Fauna:

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

a) Mammals:

Table No.4.8.A. 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:

Table No.4.8.B. 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.	Parunthu(Brahminy Kite)	Haliastur indus

c) Butterfly/Insects:

Table No.4.8.C 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


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4.6. OTHER PERMANENT STRUCTURES

4.6.1 Habitations / Village:

Table No.4.9. Habitation details

Name of Village	Distance from Mines in Km (Approx)	Direction	Population
Mettukarkalathur	1.8	NE	150
Sanaveli	1.6	NW	250
Kulamanikkam	2.0	SE	150
Saveriyar pattinam	1.9	SW	200

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):

1. Nearest NH is NH210, connecting Ramanathapuram- Devakottai, located about 1km on W side.

2. Nearest SH is SH 34A, connecting Ilayabgudi – RS Mangalam, located about 14km on south side.

4.6.6 Places of worship: Nil

4.6.7 Reserved forest / Forest / Social forest / wild life sanctuary etc: None in 10km radius

4.7 Climatic Conditions

a) Temperature

Climatic Conditions

Ramanathapuram Weather

Ramanathapuram Weather Forecast. Providing a local 3 hourly Ramanathapuram weather forecast of rain, sun, wind, humidity and temperature.

The Long-range 10 day forecast also includes detail for Ramanathapuram weather today. Live weather reports from Ramanathapuram weather stations and weather warnings that include risk of thunder, high UV index and forecast gales. See the links below the 10-day

Ramanathapuram weather forecast table for other cities and towns nearby along with weather conditions for local outdoor activities.

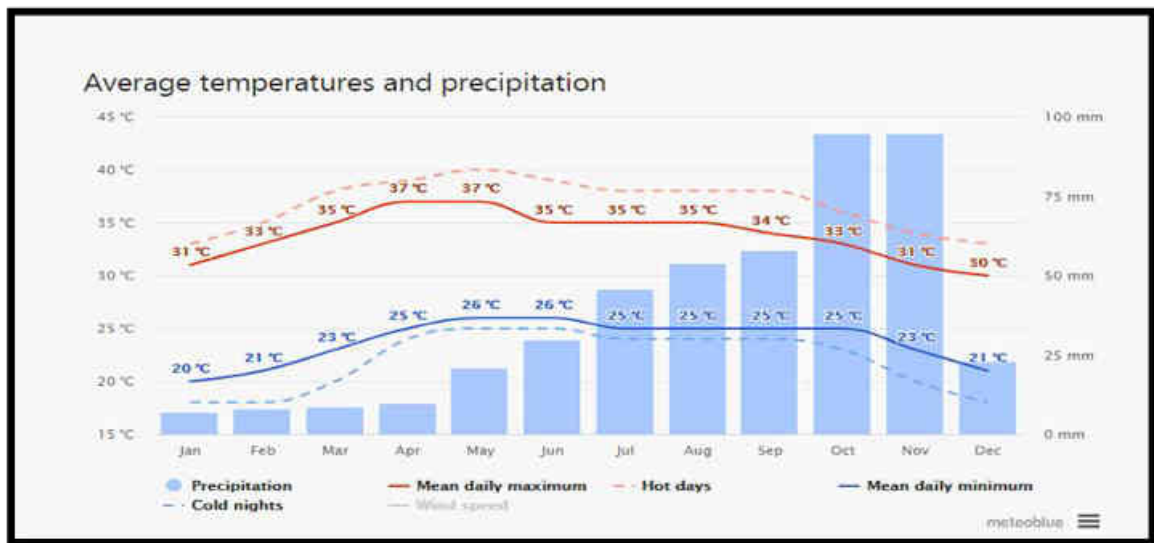


Fig no.4.2 average Temperature and precipitation

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Ramanathapuram. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years. For vacation planning, you can expect the mean temperatures, and be prepared for hotter and colder days. Wind speeds are not displayed per default, but can be enabled at the bottom of the graph.

The precipitation chart is useful to plan for seasonal effects such as monsoon climate in India. Monthly precipitations above 150mm are mostly wet, below 30mm mostly dry.

The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast.

The maximum temperature diagram for Ramanathapuram displays how many days per month reach certain temperatures. Dubai, one of the hottest cities on earth, has almost none days below 40°C in July.

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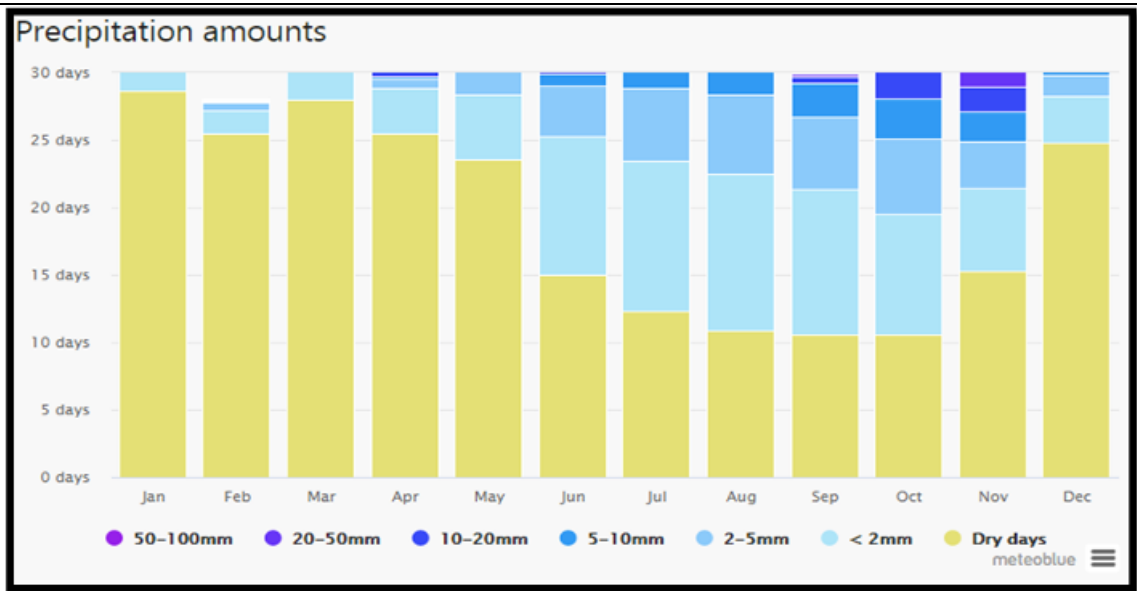


Fig no.4.3 precipitation amount

The precipitation diagram for Ramanathapuram shows on how many days per month, certain precipitation amounts are reached. In tropical and monsoon climates, the amounts may be underestimated.

The diagram for Ramanathapuram shows the days per month, during which the wind reaches a certain speed. An interesting example is the Tibetan Plateau, where the monsoon creates steady strong winds from December to April, and calm winds from June to October.

The wind rose for Ramanathapuram shows how many hours per year the wind blows from the indicated direction. Example SW: Wind is blowing from South-West (SW) to North-East (NE).

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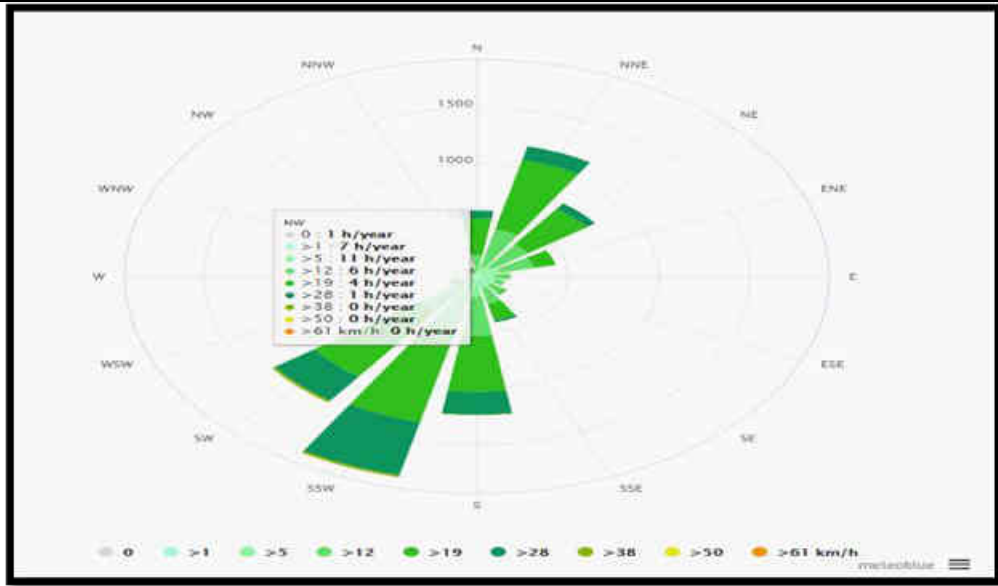


Fig No.4.4. Wind rose pattern

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 Three years only. The proposed working is by opencast semi mechanized 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 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

Name of Village	Distance from Mines in Km (Approx)	Direction	Population
Mettukarkalathur	1.8	NE	150
Sanaveli	1.6	NW	250
Kulamanikkam	2.0	SE	150
Saveriyar pattinam	1.9	SW	200

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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 Pullamadai-II . 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 RS mangalam in addition facilities in Ramanathapuram. 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

. A Village road is available nearby the site. 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

Nearest NH is NH210, connecting Ramanathapuram- Devakottai, located about 1km on W side. Nearest SH is SH 34A, connecting Ilayabgudi – RS Mangalam, located about 14km on south side.

(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 Kottakarai 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 a forestation program with 150 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.	Albizia 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:

1. Nearest NH is NH210, connecting Ramanathapuram- Devakottai, located about 1km on W side.

2. Nearest SH is SH 34A, connecting Ilayabgudi – RS Mangalam, located about 14km on south side.

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 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 owners, land owners, 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**

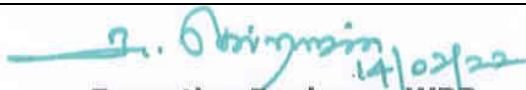
The proposed mining operation will commence from the date of execution of quarry lease.

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

PROJECT COST & EMP BUDGET

a) Project cost

i) Land Cost	:	Nil
ii) Machinery to be used	:	Rs 20,00,000
iii) Rest shelter	:	Rs 1,00,000
iv) Sanitary facility	:	Rs 1,00,000
v) Sanitary Maintenance	:	Rs 54,000


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vi) Formation of pathways	:	Rs 10,00,000
vii) Other items	:	Rs 1,24,000
Total		Rs 33.78 lakhs

EMP Cost

i. Environmental Monitoring	=	Rs 2,50,000
ii. Sanitary arrangements	=	Rs 50,000
iii. Safety kits,	=	Rs 100,000
iv. v. Afforestation etc.	=	Rs 1,00,000
Total		= Rs 5.0 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.

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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

Signature of EIA- Coordinator

Along with signature


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Mining and Monitoring Division,
Madurai

For Aadhi Boomi Mining &
Enviro Tech (P) Ltd.


Director

The Executive Engineer

(S.Suriyakumar)

Project Proponent

M.Sc., M.Phil, F.C.C. (Min)

Public Works Department,

PGDBA, DIPC

Water Resources Organization,

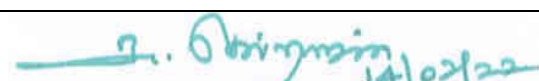
EIA Co-ordinator (Mining)

Mining and Monitoring Division,

Madurai- 625 002

Date: 14.02.2022

Place : Salem


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