

ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENT MANGEMENT PLAN (EIA/EMP)

FOR SAND QUARRY FROM KOTTAKKARAI RIVER.

Over An Extent of 4.88.0 Ha, in SF. No. 523(P), In Pullamadai-II
Village, R.S.Mangalam, Ramanathapuram, Tamil Nadu.

PROJECT PROPONENT

The Executive Engineer
Public works Department,
Water resource Department,
Mining and Monitoring Division,
Madurai.
Pin- 625 020.

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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BASE LINE INFORMATION

Introduction.

Base line studies have been conducted in the proposed sand quarry from Government land (Kottakkarai River) S.F.No.523(P), over an extent of 4.88.0 Ha in Kottakkarai river Pullamadai-II village, R.S.Mangalam and Ramanathapuram Disatrick, Tamil Nadu as per the instruction of the Executive Engineer, PWD, Water Resource Organisation, Madurai circle for sand quarrying for a period of 3 Years. The excavated sand is used for Domestic purpose and other infrastructure development in and around the District.

The District collector, Ramanathapuram has given precise area communication letter vide letter Roc No.1419/G & M1 /2018 Dated 21.06.2019 to get approved mining plan and Environmental clearance certificate from the State Environment Impact Assessment Authority (SEIAA) for grant of quarrying the sand lease in S.F.No: 523(P) over an extent of 4.88.0Hectare, Pullamadai-II Village of R.S.Mangalam Taluk, Ramanathapuram District, Tamil Nadu. The mining plan is approved by Assistant Director, Geology and Mining, Ramanathapuram vide letter No. Roc.No.1419/G&M1/2018 dated 08.08.2019.

Base line data in respect of Ambient Air Quality, Water, Soil and Noise. Also Ecology and Biodiversity, Hydrological information has been collected and presented here.

Salient features of the project is given as under,

TABLE NO: 1 SALIENT FEATURE

FEATURE	DETAILS
Name of the Proponent and address	The Executive Engineer Public works Department, Water resource Department, Mining and Monitoring Division, Madurai. Pin- 625 020. Ph; +91 9655910010.
Existing/New Quarry	New
Survey number	523(P)
Geographical features	Latitude: 9°40'06.80"Nto 9°40'20.66"N Longitude: 78°52'31.20"Eto 78°52'38.81E 8-9m from MSL Toposheet No. 58 K/14.
Site Location	Pullamadai-II Village, R.S.Mangalam Taluk, Ramanathapuram District and Tamil Nadu.
Type of Project	Sand.
Mining lease area	4.88.0 Hectare

EIA/EMP Plan

For Pullamadai-II, Sand Quarry, Ramanathapuram District

Geological Resources	2,53,298m ³			
Mineable Reserves	58,098 m ³			
Production	58,098 m ³ m ³ for 3 Years			
Depth of Mining	1 m below present level			
Water Table	4-5m bgl			
Method of Mining	Open cast Manual mining			
Blasting Pattern	As the Sand is quarried by conventional method of manual mining. Sand shall be transported by Bullock cart. It is eco friendly quarrying proposed without any drilling and blasting.			
Types of Explosives				
Measures proposed to minimize ground vibrations due to blasting				
Storage of Explosive				
Category	B ₂			
Mining plan approval	Assistant Director, Geology and Mining, Ramanathapuram vide Roc.No.1419/G&M1/2018 dated 08.08.2019.			
Period of Lease	3 Years			
Does it attract any general conditions specified in the EIA notification, 2006?	Not applicable			
Man Power	26 persons			
Water requirement	Total water requirement – 2.0 KLD Drinking and Utilities 0.5 KLD, Dust suppression & Utilities -1 .5 KLD. Source: Mineral water supply and water tank			
EMP Cost	Rs. 4 Lakhs			
Project Cost	Rs. 13.78 Lakhs			
Nearest habitation	Sanaveli – 1.6km (250)			
PMHC	R.S.Mangalam – 5Km			
Nearest Town	R.S.Mangalam – 5Km			
Nearest Railway station	Ramanathapuram – 40km			
Nearest Airport	Madurai Airport – 140km			
Water bodies	The project site itself a river. The nearest water body is 80m away.			
Interstate Boundary	There is no interstate boundary within 100 Km Radius.			
Coastal Zone	Bay of Bengal – 10.2km – East			
Reserve Forest	There is no Reserve forest found within 10Km Radius.			
Land use pattern				
	S. No	Description	Present Area (Hec)	Area to be added for Required during 3 Years
	1	Excavated area	0.00	4.88.0
2	Reclaimed	0.00	0.00	

	area(Agriculture purpose)		
3	Safety Zone & Plantation	0.00	0.00
4	Virgin Area	4.88.0	0.00
Total		4.88.0 Ha	4.88.0 Ha

**ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENT MANGEMENT
PLAN (EIA/EMP)**

There would not be any adverse impact in the existing environment arising from this mining activity. To protect the environment, the proponent would do adequate afforestation program and spend CER @ 2% of the project cost and CSR at a rate of 2.5% of the profit through local Panchayat for the welfare of Pullamadai-II Village.



Fig.1 General View of the proposed site

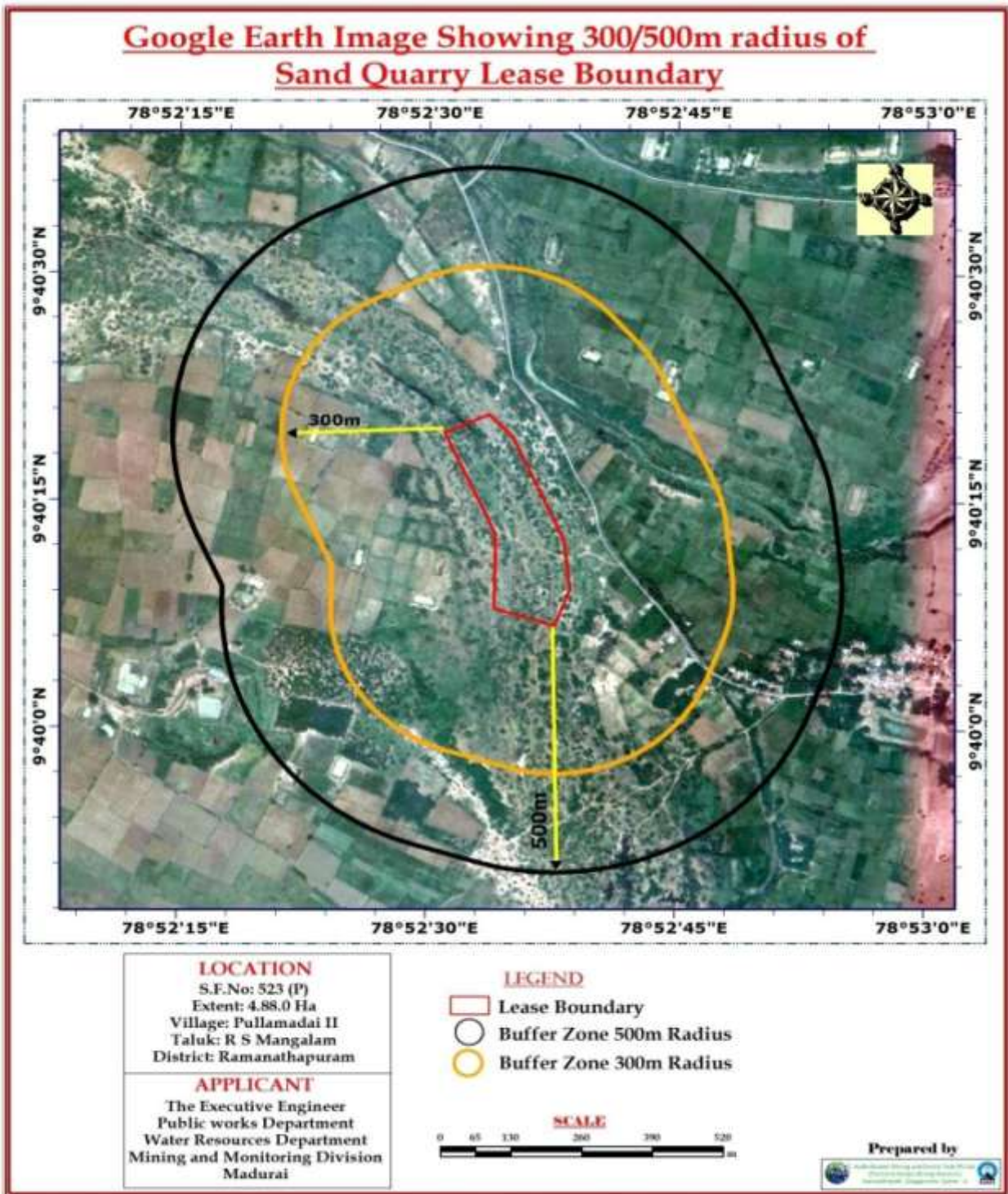


Fig.2 Surface features around 300/500m radius over Google Earth image

BASE LINE DATA :

1. Ambient Air Quality

Ambient Air monitoring has been carried out in the core zone. As there is no drilling and blasting. Transport of sand by 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 (µg/m³)	Measured Value	NAAQS
1	Particulate Matter (PM _{2.5})	20.7	60
2	Respirable Particulate Matter (PM ₁₀)	42.4	100
3	Sulphur Dioxide (SO ₂)	6.2	80
4	Nitrogen Dioxide (NO ₂)	10.4	80
5	Ozone (O ₃)	27.3	180
6	Lead (Pb)	BDL (DL = 0.1)	1
7	Carbon Monoxide (CO) 1 hour	BDL (DL = 1.15)	4
8	Ammonia (NH ₃)	22.6	400
9	Arsenic (As)	BDL (DL = 1.0)	6
10	Nickel (Ni)	BDL (DL = 0.1)	20
11	Benzene (C ₆ H ₆)	BDL (DL = 0.1)	5
12	Benzo (a) Pyrene	BDL (DL = 0.1)	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.

2. Noise and vibration

Major noise generating sources may be considered for movement of cart during transportation 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°40'11.18"N	78°52'37.13" E	35	36	34	Day Time Industrial – 75 dB (A) Residential – 55 dB (A)
2	L. boundary (West)	9°40'14.81"N	78°52'33.41" E	31.5	32	31	
3	L. boundary (South)	9°40'7.40"N	78°52'35.35" E	33	34	32	
4	L. boundary (North)	9°40'20.11"N	78°52'32.58" E	35	36	34	
5	L. boundary (East)	9°40'12.31"N	78°52'38.49" E	33	34	32	

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

Ground vibrations:

Ground vibration due to quarrying activities in the area is less because of it is a manual sand quarry with very low depth some vibration will be there due to movement of vehicles.

Noise Control Measures: Noise is within the limit of CPCB norms

The nearest village from the quarry lease area is Sanaveli 1.6km. The study area currently does not involve any quarrying activity.

3.0 Water quality

The water quality has been checked both surface and Ground water, the quarrying not intercept with the ground water level. The major source of drinking water is Tanker water supplied by the local authority. The bore wells and open wells in the surrounding radius has been studied and observed that water table is at 4-5m Bgl.



**Fig.3 :Collection of Water sample from Bore well
(Latitude: 09°41'1.60"N & 78°52'8.40"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	Absent	Shall not be detectable in any 100 ml
2	E.Coli	Absent	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	-	7.73	6.5 – 8.5	6.5 – 8.5
2	Turbidity	NTU	BDL (DL=0.1)	1	5
3	Electrical conductivity at 25°C	Micromhos/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	-	-



Fig.4: Collection of Surface water.
(Latitude: 09°40'7.89"N & 78°52'36.65"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	Absent	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	-	7.34	6.5 – 8.5	6.5 – 8.5
2	Turbidity	NTU	22.8	1	5
3	Electrical conductivity at 25°C	Micromhos/cm	380	-	-
4	Total Suspended Solids	mg/l	42.0	-	-
5	Total Dissolved Solids	mg/l	230	500	2000
6	Total Hardness as CaCO ₃	mg/l	116	200	600
7	Chlorides as Cl	mg/l	45.0	250	1000
8	Sulphates as SO ₄	mg/l	24.0	200	400
9	Total Iron as Fe	mg/l	4.82	0.3	0.3
10	Silica (Reactive) as SiO ₂	mg/l	19.0	-	-

i. Mitigation measures

3. The quality of ground water is fairly good. There is no liquid waste discharge from quarrying activity, which is likely to pollute water.
4. Drinking water will be utilized from the Mineral water Industries.
5. Total water requirement will be 2 KLD.

Soil Environment

Soil sample has been collected in the quarry lease area for analysis its physical and chemical characteristics.



Fig.5: Collection of sand sample

(Latitude: 09°40'11.87"N & 78°52'37.86"E)

Table -6 Soil Texture Analysis

Physical Parameters	Results
pH value (10% Solution)	7.21
EC@ 25°C (Micromhos/cm) (10% solution)	55.2
Moisture	7.30 %
Bulk Density	1.36 g/cc
Texture	Sand = 90.10% : Silt = 3.52%: Clay = 6.38%
	Sand
Chemical Parameters	Results
Alkalinity	0.029%

Calcium	0.236%
Magnesium	0.198%
Sodium	0.0015%
Potassium	0.0010%
Iron	1.52%
Copper	0.0006%
Chlorides	0.009%
Organic Matter	0.092%
Water Holding Capacity	42.0%

. Observations & Mitigation measures

- The pH of the soil found to be 7.21.
- Bulk Density of the soil found to be 1.36 g/cc.
- The Water Holding Capacity of the soil is found to be 42.0%.

The overall soil characteristics indicate favourable condition for plant growth.

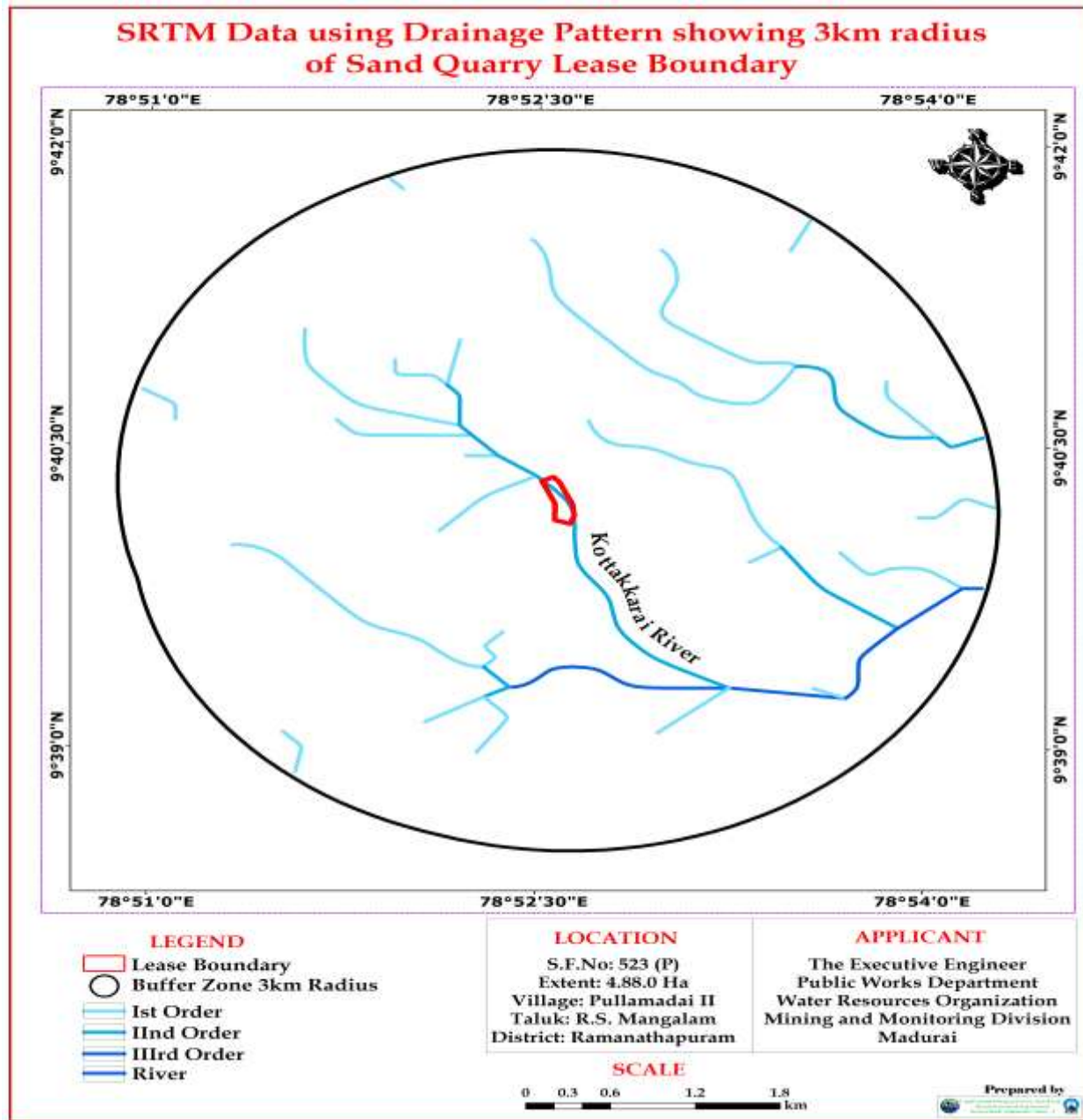
5.0 Hydrological Investigation

All open and tube wells around the proposed sand quarry area is studies in respect of water table and recuperation. Two bore wells and two open wells were identified for measurements,



Fig.6 Hydrological study around the Proposed Area.

Water table is found at 4-5m depth in each open well. But the aquifer touch in the tube well is reported at 6m. It may temporary (Perched) water table. No much continuity of water table with river bed as indicated by high salinity of water in the open well.



Drainage Pattern for 300m Radius.

6 FLORA AND FAUNA

STUDY AREA ECOLOGY

The mining lease area is a river itself, so the flora and fauna are very low in core area where as in buffer zone vegetation is high. The following methods were applied during the baseline study of flora, fauna and diversity assessment.

National Park/Sanctuary

There are no National park and Wild life sanctuary located near to mining lease area and 10km radius of mining lease area.

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 Bushes, Common grasses and Small sized palm trees are noticed in the core zone. Details of flora with the scientific name were mentioned in Table.

FLORA IN BUFFER ZONE

Panai tree, Neem, acacia bushes, Njaval, Vavarasi, Nelli, Koyya, karuvelam, avaram, Adhala, Muringai, Poovarasu, manjurai, Thumbai, Nerinji 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 Bushes)	Prosopis Juliflora	In numerable	Core
2.	Panai tree	Borassus flabellifer	40	Core
3	Karuvelam	Vachellia nilotica	520	Buffer
4	Njaval	Syzygium cumini	Many	Buffer
5	Nerinjil plant	Tribulus terrestris	Many	Buffer
6	Adhala		Many	Buffer
7	Muringai	Muringa oleifera	Many	Buffer
8	Poovarasu	Thespesia populnea	Many	Buffer

9	Thumbai	Luecas aspera	Many	Buffer
10	avaram	Senna Auriculata	Many	Buffer
11	Neem	Azadirachta indica	Many	Buffer
12	Tamarind	Tamarindus indica	Many	Buffer
13	Nelli	Ribes uva-crispa	Many	Buffer
14	Koyyakka	Psidium guajava	Many	Buffer
15	Thulasi	Ocimum tenuiflorum	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 ([wiienvis.nic.in/Database/Schedule Species Database](http://wiienvis.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) Fauna found on regional scale

S.No.	Local Name	Zoological Name
1.	Rabbit	Oryctolagus cuniculus
2.	Rat	Rattus
3	Peacock	Pavo cristatus
4	Snake	Serpentes
5	Butterfly	Rhopalocera
6	Garden lizard	Calotes versicolor
7	Fan-Throated Lizard	Sitana ponticeriana

8	Common house gecko	Hemidactylus frenatus
9	Fan-Throated Lizard	Sitana ponticeriana
10	Dog	Canis lupus
11	Palm squirrel	Funambulus palmarum
12	Red-wattled lapwing	Vanellus indicus
13	White throated king fisher	Halcyon smyrnensis
14	Indian cormorant	Phalacrocorax fascicollis
15	Little cormorant	Microcarbo niger
16	Common myna	Acridotheres tristis
17	Black drongo	Dicrurus macrocercus
18	Koel	Eudynamys scolopaceus
19	House sparrow	Passer domesticus
20	Cattle egret	Bubulcus ibis
21	Japanese quail	Coturnix japonica
22	House crow	Corvus splendens
23	Common cuckoo	Cuculus canorus



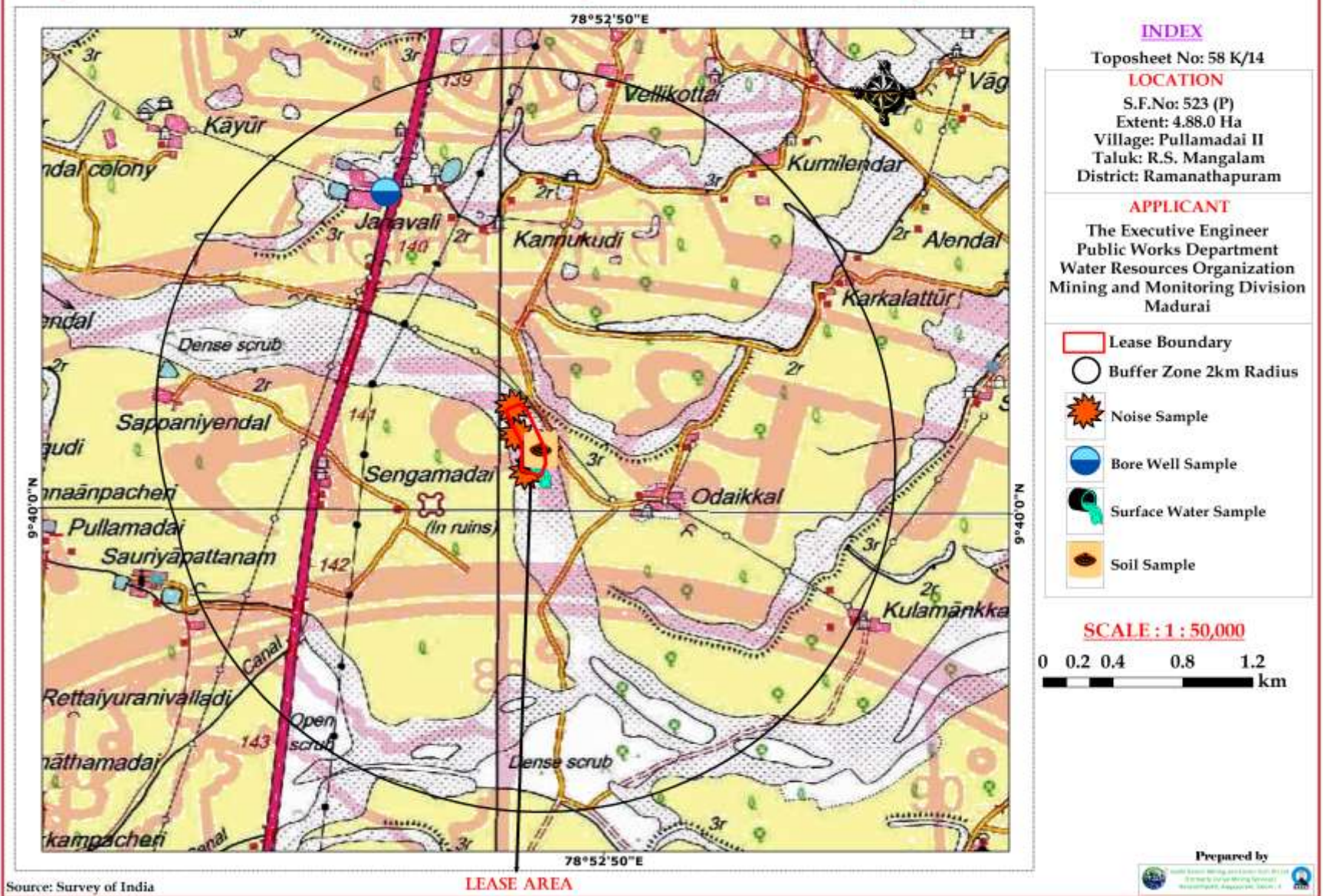


Fig.7 Photograph shows Flora observed in the Area.



Fig 8: Photographs showing Fauna observed in the area.

Toposheet showing 2km radius of Sand Quarry Environmental Monitoring Station



Toposheet Showing Location of EMP Monitoring.

7. SOLID WASTE MANAGEMENT

The sand doesn't have any wastes in the form of rejects and the proposed depth is 1 m only, the silt found over the sand will be stored on the banks of the river for making Bund.

8. GREEN BELT

The Applicant has developed trees like Teak, Neem, Casuarinas and Eucalyptus etc with proper nursery garden and plantation along bank of river to protect the bank from soil erosion and increase slope stability. The applicant has agreed to plant 400 trees along the bank of river.

7. COST OF EMP IMPLEMENTATION

a) EMP Cost

i) Air Quality Sampling	=	Rs 50,000
ii) Water quality Sampling	=	Rs 25,000
iii) Noise Level Monitoring	=	Rs 25,000
iv) Ground vibration test	=	Rs 25,000
v) Water sprinkling	=	Rs 1,25,000
vi) Afforestation	=	Rs 1,00,000
vii) Environment Monitoring	=	Rs 50,000
Total	=	<u>Rs 4 lakhs</u>

The quarrying activity shall be undertaken in accordance with the environmental conditions as Prescribed in the EC.

7. OBSTACLES.

There are no obstacles with this project, since this is an opencast manual mine the pollution towards environment is very negligible and the proponent will take the necessary action to protect the environment. The sand removal from this river will help the flow of river and storage capacity has been increased and the mined out pit will be refilled naturally.

8. PROJECT BENEFITS

The quarrying activities in this area will benefit to the local people both directly and indirectly. The direct beneficiaries will be those who get employed in the quarry as skilled and un-skilled workers. 26 persons will be employed in this quarry. The extent of impact will however be confined to lease area only. This operation doesn't need relocation of any habitats.

The proponent is proposed to spend CSR @ 2.5% of profit as per the Companies Act, 2013 and CSR Rules, 2014 and 2% of the Project Cost about Rs 27560 as a part of CER through local Panchayat for maintenance of road, street light, school sanitation etc.

(Executive Engineer)

Project Proponent

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

S. Suriyakumar
Director

(Mr.S.SURIYAKUMAR)

Signature of EIA coordinator (Mining)
M.Sc., M.Phil, F.C.C. (Min) PGDBA, PGDIPC.



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TEST REPORT

Sample Ref No : EES/AS/005/11

Sample Rep No : 207/11

NAME OF INDUSTRY

ADDRESS

Date of Sampling : 02.11.19

Reporting Date : 09.11.19

: The Executive Engineer,
: Public Works Department, Water Resources Organization,
: Mining and Monitoring Division, Villupuram District,
: Tamilnadu.

Sampling Location

: Extent : 4.88.0 Ha. S.F. No : 523 (P) Village : Pullamada
: Taluk : R.S. Mangalam, District : Ramana-haduram

Sample Description

Sample Mark

Sample Drawn By /Date

Received On

Analysis Commenced On

Analysis Completed on

Sampling Method

Ambient Temperature

Relative Humidity

: State : Tamil Nadu

: Ambient Air Monitoring

: Core Zone-Lease Area

: EES/02.11.19

: 02.11.19

: 02.11.19

: 09.11.19

: IS 5182 (Part V) and (Part XIV)

: 30° C

: 80%

Sl. No	PARAMETERS	PROTOCOL	UNIT	RESULT	NAAQS*
1	Particulate Matter (PM _{2.5})	SOP-EA-001	µg / m ³	20.7	60
2	Respirable Particulate Matter (PM ₁₀)	IS 5182 Part 23-2017	µg / m ³	42.4	100
3	Sulphur Dioxide (SO ₂)	IS 5182 Part 2 -2017	µg / m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS 5182 Part 6-2017	µg / m ³	10.4	80
5	Ozone (O ₃)	IS 5182 Part 9-2014	µg / m ³	27.3	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=1.0)	4
8	Ammonia (NH ₃)	SOP-EA-009	µg / m ³	22.8	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

BDL – Below Detectable Limit ; DL – Detection Limit

Remarks: The above results meets the *National Ambient Air Quality Standards –CPCB

End of Report



Authorized Signatory

NOTE:

1. Test results shown in this test report relate only to the items tested.
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E-mail : ekdantab@gmail.com / info@ekdantab.co.in

Web : www.ekdantab.co.in

TEST REPORT

Sample Ref No : EESAW001/11	Report No. : 205/11
Issued To: The Executive Engineer, Public Works Department, Water Resources Organization, Mining and Monitoring Division, Villupuram District, Tamilnadu.	Report Date : 09.11.19 Page: 1 of 1
Sample Description : Water	Received On : 04.11.19
Sample Drawn By/ Date : Courier/ 04.11.19	Commenced On : 04.11.19
Customer's Reference : Letter Dated on 04.11.19	Completed On : 09.11.19
Sample Mark : Core Zone - Surface Water	
Site Address : Extent : 4.88.0 Ha S.F.No : 522 (P) Village : Pullamadai Taluk : R.S. Mangalam District : Ramanathapuram State : Tamil Nadu	

Sl. No	PARAMETERS	UNITS	RESULTS	As Per IS 10500:2012		PROTOCOL: APHA 23 rd Edition 2017
				Requirement (Acceptable limit)	Permissible limit in the absence of alternate source	
1	pH value at 25°C	-	7.34	6.5 - 8.5	8.5 - 8.5	4500 II' B
2	Turbidity	NTU	22.8	1	5	2130 B
3	Electrical conductivity at 25°C	Micromhos/cm	380	-	-	2510 B
4	Total Suspended Solids	mg/l	42.0	-	-	IS 3025: P.17:1964 R.2012
5	Total Dissolved Solids	mg/l	230	500	2000	IS 3025: P.16:1964 R.2012
6	Total Hardness as CaCO ₃	mg/l	116	200	600	2340 C
7	Chlorides as Cl	mg/l	45.0	250	1000	4500 Cl B
8	Sulfates as SO ₄	mg/l	24.0	200	400	4500 SO ₄ E
9	Total Iron as Fe	mg/l	4.82	0.3	0.3	3500 Fe B
10	Silica (Reactive) as SiO ₂	mg/l	19.0	-	-	4500 SiO ₂ C

-----End of Report-----



Authorized Signatory

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Web : www.ekdantlab.co.in

TEST REPORT		
Sample Ref No : EES/MM/008/11	Report No. : 204/11	
Issued To: The Executive Engineer, Public Works Department, Water Resources Organization, Mining and Monitoring Division, Villupuram District, Tamilnadu.	Report Date : 09.11.19 Page: 1 of 1	
Sample Description : Soil	Received On : 04.11.19	
Sample Drawn By/ Date : Courier/ 04.11.19	Commenced On : 04.11.19	
Customer's Reference : Letter Dated on 04.11.19	Completed On : 09.11.19	
Sample Mark : Core Zone-I case Area		
Site Address : Extent : 4.85.0 Ha		
S.F.No : 523 (P)		
Village : Pullamada		
Taluk : R.S.Mangalam		
District : Ramanathepuram		
State : Tamil Nadu		
PHYSICAL PARAMETERS		
S. No	PARAMETERS	RESULTS
1	pH value (10% Solution)	7.21
2	EC@ 25°C (Micromhos/cm) (10% solution)	55.7
3	Moisture	7.33 %
4	Bulk Density	1.56 g/cc
5	Texture	Sand = 90.10% : Silt = 3.52% : Clay = 6.38% Sand

-----End of page 1-----



B. Pragna Lakshmi
Authorized Signatory

- NOTE: 1. Test results shown in this test report are only for the items tested.
2. This test report shall not be reproduced anywhere except in full and in same form at without the approval of the laboratory.
3. Unless informed by the customer the test items will not be retained for more than 10 days from the date of issue of test report (exceptional for Microbiology and wastewater for which retaining time 7 days.)