

PRE-FEASIBILITY REPORT

**FOR SANNASINALLUR SAND QUARRY AS PER SAND MINING GUIDELINES,
2020**

LOCATION

**EXTENT : 1.20.0HECTARES
S.F. NO : 302 (P)
VILLAGE : SANNASINALLUR
TALUK : SENDURAI
DISTRICT : ARIYALUR
STATE : TAMIL NADU**

PROJECT PROPONENT

**THE EXECUTIVE ENGINEER,
PUBLIC WORK DEPARTMENT,
WATER RESOURCES ORGANIZATION,
MINING AND MONITORING DIVISION,
TIRUCHIRAPPALLI DISTRICT.**

EIA CONSULTANT



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11/02/2020

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PRE-FEASIBILITY REPORT

FOR SANNASINALLUR SAND QUARRY AS PER SAND MINING GUIDELINES, 2020

**S.No 302(P) in Vellaru River, Sannasinallur village, Sendurai Taluk,
Ariyalur District, Tamil Nadu.**

1. EXECUTIVE SUMMARY

This project is for quarrying Sand, Minor minerals over an area of 1.20.0 Hectares in SF. No. 302(P), a part of Vellaru River in Sannasinallur Village, Sendurai Taluk, Ariyalur District, Tamil Nadu. The quantity to be quarry shall be 12000m³ as permitted by the Dept. of Geology and Mining, Ariyalur for a lease period of one year vide precise area letter Rc No. **Rc.No.236/G&M/2018 dated 27.02.2020** 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 Deputy Director of Dept of Geology and Mining, Ariyalur vide letter RC No. 236/G&M/2018, dated 02.06.2020. The Geological Resources and Mineable reserves are estimated as per the requirement of Sand Mining Guidelines, 2020 with grid levels taken 10m x 10m interval and plans and sections has been prepared with 0.25m contour interval. The Environment Clearance is required under Rule 42 of TNMMCR, 1959 under category B2 for a fresh quarry lease for Sand from Vellaru 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, Ariyalur to obtain permission for removal of sand and seeking Environmental clearance from SEIAA, Chennai for grant of fresh Quarry Lease.


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

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

Owner name and address (address for correspondence):

The Executive Engineer
PWD/ WRO, MMD
Tiruchirappalli District.

A copy of Mining lease letter issued by the District Collector **Rc.No.236/G&M/2018 dated 27.02.2020** is enclosed in Approved Mining plan's Annexure.

2.2 Brief description & nature of project:

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 Vellaru 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: one year 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 Vellaru 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.


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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 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 Sannasinallur village, Sendurai taluk, Ariyalur 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 1.20.0 hectares, and falls in 'B2' Category of Schedule 1 (a).

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

The area is represented by Survey of India Topo sheet No. 58 M/3. The applied Lease area lies between Latitude of 11°22'35.03740"N to 11°22'39.35336"N and Longitude of 79°10'05.02120"E to E 79°10'11.18934"E as per DGPS survey.

Point ID	Easting mE	Northing mN	Elevation (m)	Feature Code	Latitude(Local)	Longitude(Local)
1	300032.951	1258305.703	54.338	Pillar	N11°22'37.28563"	E79°10'05.02120"
2	300166.405	1258361.336	53.214	Pillar	N11°22'39.35336"	E79°10'07.23087"
3	300285.687	1258242.997	53.712	Pillar	N11°22'35.52699"	E79°10'11.18934"
4	300195.472	1258228.521	53.429	Pillar	N11°22'35.03740"	E79°10'08.21712"

District & State	Taluk	Village	S.F.No	Area (Ha)
Ariyalur, TamilNadu	Sendurai	Sannasinallur	302(P)	1.20.0Ha

The area is accessible from Ariyalur to reach Sendurai by 20Km via Ariyallur-Sendurai Road then 18Km to reach Sannasinallur village. Further 3Km to reach the site. A Village road is available nearby the site. The PWD make temporary road which connects the village road for transportation of Materials. Details of infrastructures and communication are given in the table below,

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S.No.	Description	Place	Distance (kms)
1	Railway	Eachangadu Railway Station	5.5
3	Post office	Sannasinallur	1.65
4	Airport	Tiruchirapalli	84
5	Police station	Aviangudi	1.5
6	Fire service	Titagudi	7.94
7	Primary Health centre	Keezheperambalur	5
8	DSP Office	Thittagudi	6.94
9	School	Sannasinallur	1.75
10	Villages		
i)	North	Aviangudi	1.1
ii)	South East	Sannasinallur	1.3
iii)	East	Thalavai North	6.4
iv)	West	M.R.Nallur	2.3

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 12000 m³ by open cast Semi mechanized mining.

3.5 Project description with Process Details

Mining Process Details



Fig:1. DGPS survey for Ground control Points (GCP) and Drone for Aerial

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surveying

- 1) Fixing boundaries of lease area covering an extent of 1.20.0Hectares using DGPS and Drone Technology as per the requirement of Sand Mining guidelines, 2020. Reduced levels (RL) were taken at 10mx 10m interval with cm accuracy. Contour lines were made at 0.25m interval.
- 2) Loading of sand by hydraulic excavator and manual into Bullock Carts, Tipper and tractor respectively.
- 3) Transport of sand from river site to the stocking yard and further to the Consumer Construction site based on the demand.
- 4) Mined out land shall be used for refilling of same type of sand by natural replenishing.

Proposed Method of Mining:

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

Removal of over burden

No overburden is proposed in the approved Mining plan.

Extent of Mining

a) Mining

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

b) Loading equipment

Loading of sand by manual as well as hydraulic excavator.

c) Transportation

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

Year	Production in m³
one year	12000 m ³

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

This is a mining project for mining of sand, therefore no need of raw material except water for drinking and utilities. The Product is natural river sand; it will be transported to the quarrying area to consumer site. 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 1.5KLD. Dust suppression and Green belt of water is 2.0KLD. Minimum quantity of 3.5KLD 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 Vellaru 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.

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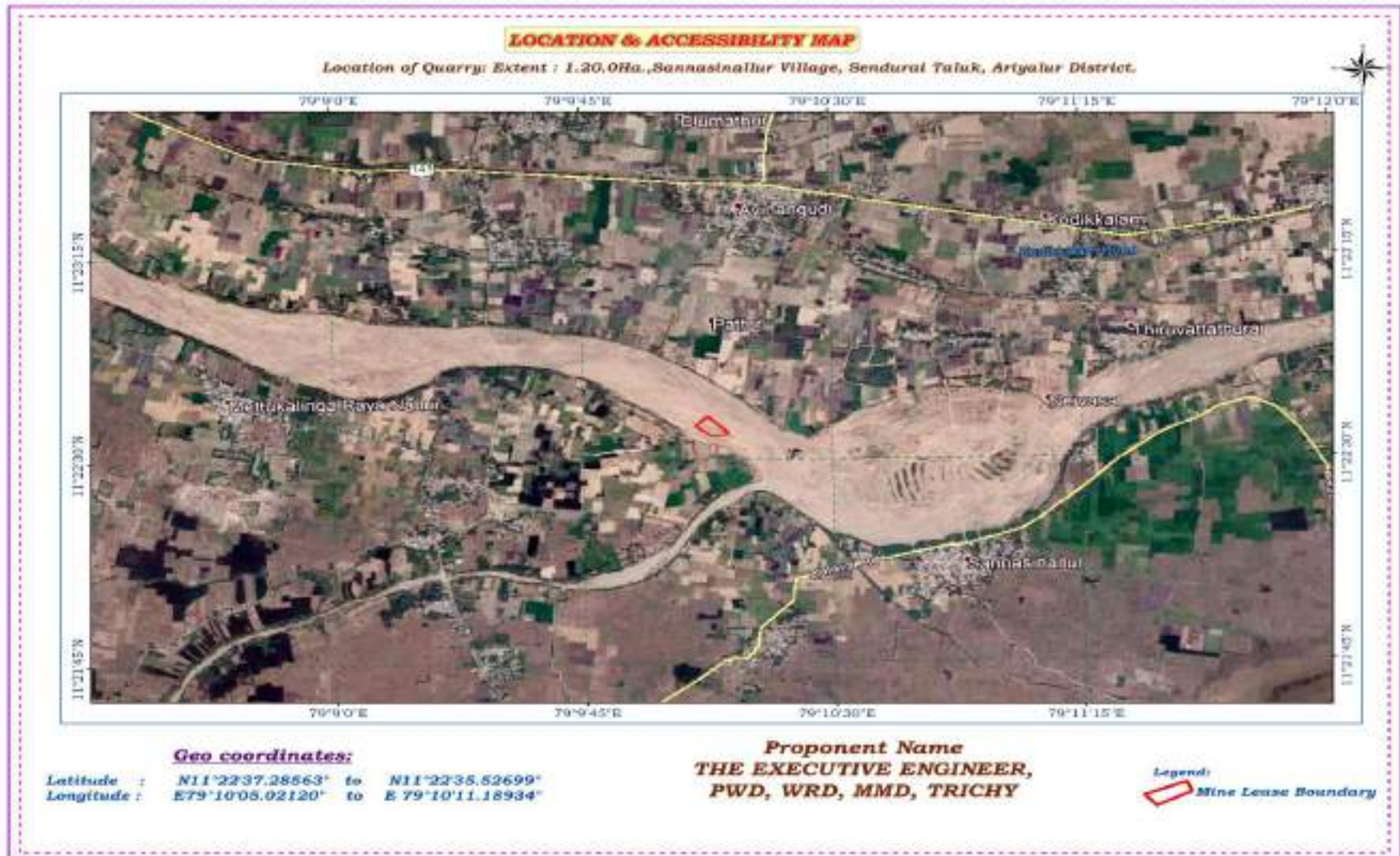


Fig.2: Location of the proposed sannasinallur Sand Quarry

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3.9. Water balance chart:

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

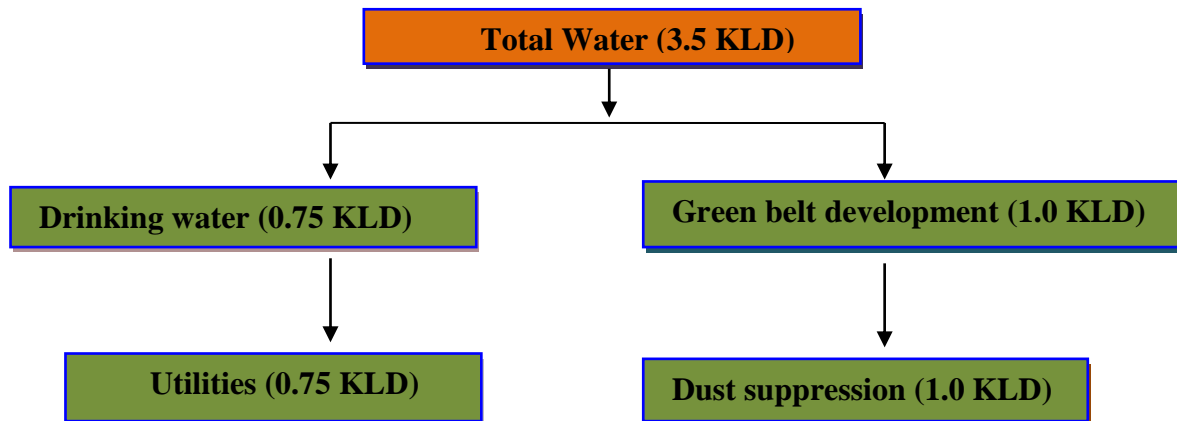


Fig. 3: Water Balance Chart

3.9 Quantity of waste to be generated (liquid and solid) and scheme for their Management/disposal.

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

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

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

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

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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 Ariyalur to reach Sendurai by 20Km via Ariyallur-Sendurai Road then 18Km to reach Sannasinallur village. Further 3Km to reach the site. A Village road is available nearby the site. The PWD make temporary road which connects the village road for transportation of Materials.

4.2. Land form, land use and land ownership.

The land covers under the mining lease area as under.

District & State	Taluk	village	Area in Hect.	Type of land
Ariyalur District & Tamilnadu	Sendurai	Sannasinallur	1.20.0	Vellaru river

4.3. Topography (along with Map):

The area applied for mining lease is a River Bed, with elevation varying from 53.214m (minimum) 54.338 m (Maximum) to above MSL. It is represented in the Survey of India Topo sheet No.58 M/3 and Latitude of 11°22'35.03740"N to 11°22'39.35336"N and Longitude of 79°10'05.02120"E to E 79°10'11.18934"E using DGPS survey. This is a river bed with huge amount of sand deposit. The area receives only scanty rainfall mostly during the northeast monsoon period of October to December. There is no reserve forest, wild life sanctuary, national monument etc nearer to the area around 15kms.

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery

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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 Vellaru 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.

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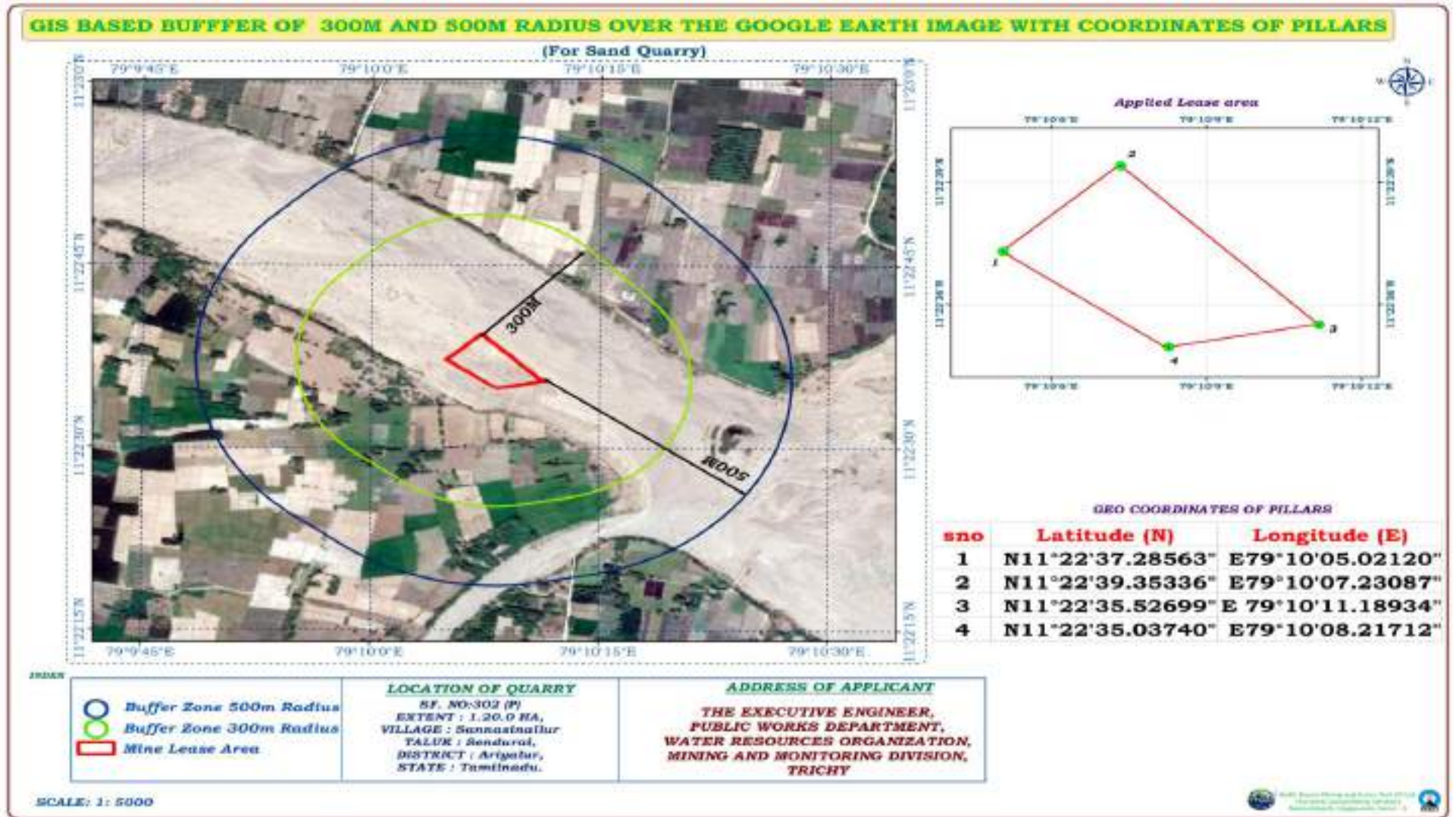


Fig.4: Satellite image showing lease boundary & 500,300m Radius.

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LAND USE PATTERN

S. No.	Description	Area of Land Use (In Hec.)	
		As at Present	At the end of one year
1.	Mining	0.0	1.20.00
2.	Waste Dump	0.0	0.00.0
3.	Infrastructure	0.0	0.00.0
4.	Safety zone & Plantation	Nil	0.00.0
5.	Mine Roads	0.00	0.00
6.	Undisturbed area	1.20.00	0.00
Total		1.20.00	1.20.00

4.5. BASELINE ENVIRONMENT

4.5.1. Land environment

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

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

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

4.5.2. Sources of Air Pollution

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

4.5.3 Air Pollution Control Measures

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

Potential sources of air pollution	Magnitude of air pollution	Control Measures
Drilling	High Dust	No drilling

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	Generation Risk of occupational hazard	
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 38.8dB.

4.5.6. Vibration Levels

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

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

4.5.8. Solid waste Management:

Solid Waste Generated: No solid waste removal

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

Top soil Management: No top soil removal

Other wastes: The removed bushes on the site clearings are conveyed and dumped along the bank of the river.

4.5.9 Power requirement & supply/source. No power requirement.

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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.

SL. NO	Parameters	Units	Sample -1 (Surface Water) Result	Sample 2 (Ground Water) Result	As Per Is 10500:2012	
					Requirement (acceptable limit)	Permissible limit in the absence of alternate source
1	pH value at 25°C	-	8.25	8.40	6.5 – 8.5	6.5 – 8.5
2	Turbidity	NTU	-	-	1	5
3	Electrical conductivity at 25°C	Micromhos/cm	477	1876	-	-
4	Total Suspended Solids	mg/l	0.02	0.002	-	-
5	Total Dissolved Solids	mg/l	382	1534	500	2000
6	Total Hardness as CaCO ₃	mg/l	95.92	555.9	200	600
7	Chlorides as Cl	mg/l	71.44	500.146	250	1000
8	Sulfates as SO ₄	mg/l	-	-	200	400
9	Total Iron as Fe	mg/l	-	-	0.3	0.3
10	Silica (Reactive) as SiO ₂	mg/l	-	-	-	-

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

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					100 ml
2	E.coli	MPN / 100ml	Absent	Absent	Shall not be detectable in any 100 ml

4.5.11 Air Quality

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

Air Quality test report







S. No	Parameters ($\mu\text{g}/\text{M}^3$)	Measured Value	NAAQS
1	Particulate Matter (PM _{2.5})	24	60
2	Respirable Particulate Matter (PM ₁₀)	40	100
3	Sulphur Dioxide (SO ₂)	7	80
4	Nitrogen Dioxide (NO ₂)	11	80
5	Ozone (O ₃)	24	180
6	Lead (Pb)	BDL (DL=0.1)	1
7	Carbon Monoxide (CO) 1 hour	BDL (DL=1.10)	4
8	Ammonia (NH ₃)	24	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			

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4.5.12 Flora and Fauna

a) Flora





List of Flora of the lease area

S. No.	Tamil /English Name	Botanical Name	Number of Trees	Photograph
1.	Panai/ Palmyra tree	Borassus fiabellifer	Innumerable	
2.	Mamaram tree	Mangifera indica.	25	
3.	Thennai maram	Coconut Tree	Innumerable	
4.	Vazhai	Musa acuminata	Innumerable	
5.	Thekku Maram	Indonesia	Innumerable	
6.	Pappali Tree	genus Carica	Innumerable	

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7.	Vivasaaya Maram	Acasia bushes	Innumerable	
S. No.	Tamil /English Name	Botanical Name	Number of Trees	Photograph
1.	Veppamaram/ Margosa tree	Azadirachta Indica	Innumerable	
2.	Soundal	Leucaena leucocephala	Innumerable	
3.	Thennai maram	Coconut Tree	Innumerable	
4.	Puliyamaram/ Tamrind	Tamaridus indicus	15	
5.	Pungai Maram (Avenue tree)	Ponga Miagiabro	Innumerable	

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6.	Murungai	Moringa oleifera	Innumerable	
7	Mamaram/ Mango Tree	Mangifera indica	Innumerable	
8.	Poovarasa maram	Thespesia Populnea	Innumerable	
9.	Mullu Maram (Acacia Bushes)	Acacia Nilotiaca	Innumerable	

b) Climbers





List of Climbers of the lease area

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

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c) SHRUBS:

Table No.11C List of Shrubs of the lease area

S.No.	Tamil Name	Botanical Name	Number of Trees	Photograph
1.	Unknown	-----	Innumerable	
2.	korai pul	Cyperus rotundus	Innumerable	
3.	Unknown	-----	Innumerable	
4.	Parangi	Cucurbita digitata	Innumerable	

d) HERBS:

List of Herbs of the lease area

S.No.	Tamil Name	Botanical Name	Number of Plants	Photograph
1.	Erukku Chedi	Calotropis Gigantea	45	

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2. Fauna:

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

a) *Mammals:*

List of Mammals of the lease area

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

b) *Avian Fauna:*

List of Avian Fauna of the lease area

S.No.	Tamil & English Name	Zoological Name
1.	Kalugu (<i>Black kite</i>)	<i>Milvis migrans</i>
2.	Myna (<i>Black drogue</i>)	<i>Dicrurus macrocercus</i>
3.	Kakka (<i>House crow</i>)	<i>Corvus splendens</i>
4.	Chittukuruvi (<i>Indian Robin</i>)	<i>Saxicoloides fulicatus</i>
5.	Parunthu(<i>Brahminy Kite</i>)	<i>Haliastur indus</i>
6.	Kokku	<i>Gruidae</i>
7.	Neerkakkai	<i>cormorant</i>



Photos on Kokku and Kakka (*House crow*)

c) *Butterfly/Insects:*

Table No. List of Butterfly/Insects of the lease area

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

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4.13. OTHER PERMANENT STRUCTURES

4.13.1 Habitations / Village:

Population of Sannasinallur village 4074, it is small village in Sendurai Taluk and Ariyalur District. Other Village hamlets were given in the following table,

Human settlement

Name of Village	Direction	Distance from Mines in Km (Approx)	Population
North	Aviangudi	1.1 km	2858
SouthEast	Sannasinallur	1.3km	4074
East	Thalavai North(Silappanur)	6.4km	2691
West	M.R.Nallur	2.3km	1951

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

4.13.3 Water Bodies: The site is a part of river basin. There is no other major river or water body, nallah and ponds are situated around 500m radius.

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

4.13.5 Road (NH, SH others):

The NH-532 road is situated at 18kms away from site a connecting Salem-Vridhachalam and S.H-141 situated 1.6Km on Northern side. A Village road is available nearby the site on the Southern side for transportation of materials.

4.13.6 Places of worship: Nil

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

4.7 Climatic Conditions

The district receives the rainfall under the influence of both southwest and northeast monsoon. There is a gradual decrease in precipitation from northeast to southwest over the district. The normal rainfall for the period (1901-70) ranges from 843.5 to 1123.3 mm. It is lowest in the Vembavur area and highest in the Jayankondan areas. Ariyalur district enjoys a typical semi arid climate

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with hot summers and moderately cool winters. The hottest season is from March to May. During the period the maximum temperature often exceeds 40°C. The winter season is spread over two months viz. January and February and the nights are cool and pleasant. The district generally has a high humidity. The district experiences strong winds during the southwest monsoon season. The wind speed during June to August is more than 25 km/hr. Thereafter there is a gradual decrease in speed reaching the lowest value 7.7 km/hr.

a) Temperature

Ariyalur Average Temperature

The climate of Ariyalur district is sub-tropical. The average maximum and minimum temperatures for district have been 40°C and 22°C respectively. The annual maximum and minimum temperature normal (1970-2000) of Ariyalur district are 33.7°C and 24.2°C respectively.

Sendurai Climate Graph // Weather By Month

The variation in the precipitation between the driest and wettest months is 311 mm | 12 inch. The average temperatures vary during the year by 8.7 °C | 47.7 °F

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	24.4	25.7	27.7	30.4	33.1	32.5	31	30.4	29.9	28.1	26.8	24.7
Min. Temperature (°C)	19.5	20.2	22.4	25.7	27.9	27.3	26.3	25.7	25.2	24.1	22.3	20.6
Max. Temperature (°C)	29.4	31.2	33	36.2	38.4	37.8	36.7	36.1	34.4	32.2	29.4	26.9
Avg. Temperature (°F)	75.9	78.3	81.9	86.7	91.6	90.5	87.8	86.7	85.8	82.6	78.4	76.5
Min. Temperature (°F)	67.1	68.4	72.3	78.3	82.3	81.1	79.3	78.3	77.4	75.4	72.1	69.1
Max. Temperature (°F)	84.9	88.2	91.4	95.4	101.1	100.0	98.2	95.2	93.9	90.0	84.9	80.2
Precipitation / Rainfall (mm)	19	4	2	13	51	62	96	132	112	229	312	117

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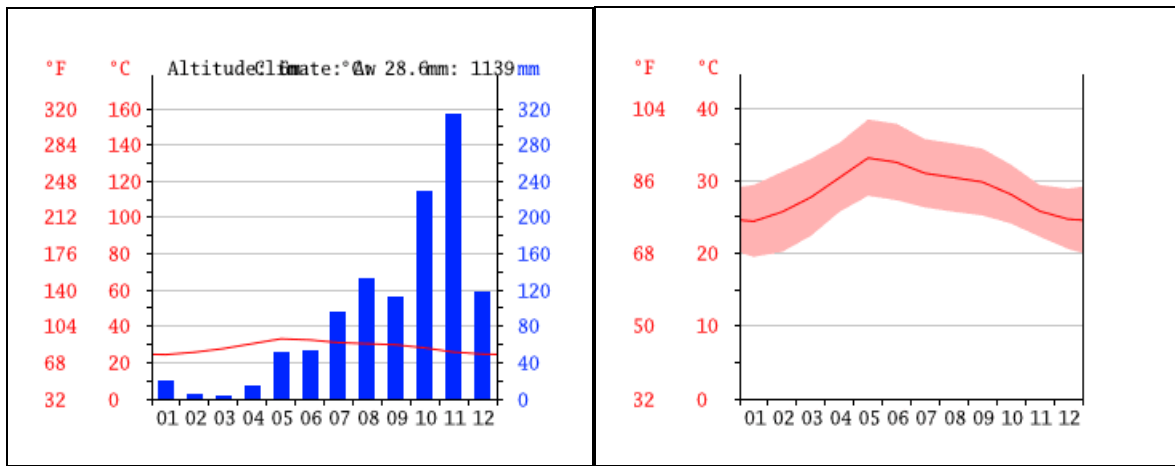


Fig.5: Ariyalur Climate Graph and Averages// Weather by Month

c) Humidity

The winter season 4 is spread over two months viz. January and February and the nights are cool and pleasant. The district generally has a high humidity.

d) Wind speed

The district experiences strong winds during the southwest monsoon season. The wind speed during June to August is more than 25 km/hr. Thereafter there is a gradual decrease in speed reaching the lowest value 7.7 km/hr.

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 one year only. The proposed working is by opencast semi mechanized mining 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

Sannasinallur is a Village in Sendurai Taluk, Ariyalur district and Tamil Nadu State. Sannasinallur Village Total population is 4074 and number of houses are

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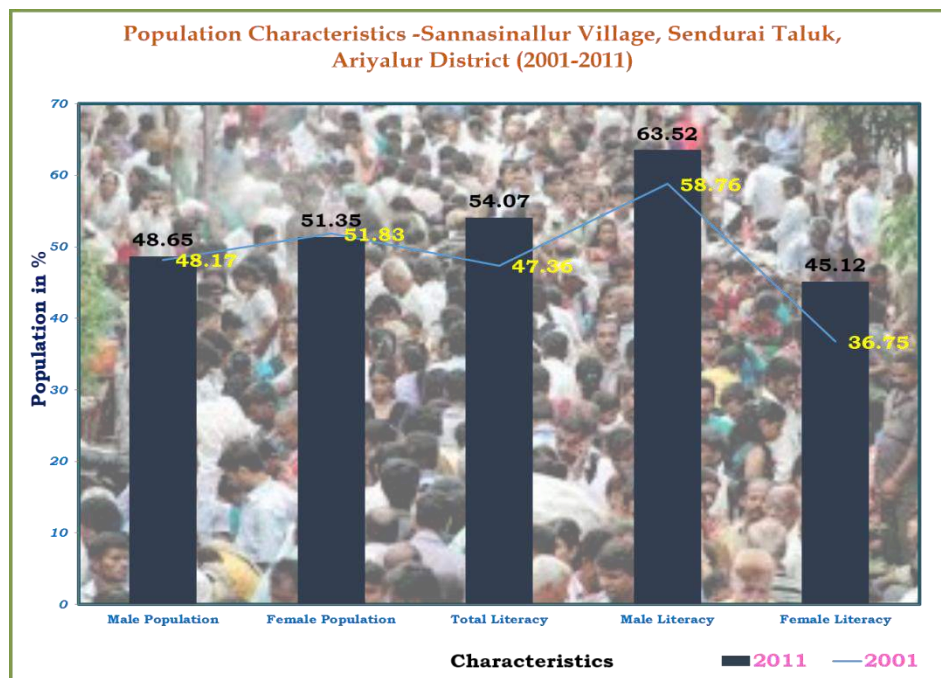
1152. Female Population is 51.4%. Village literacy rate is 54.1% and the Female Literacy rate is 45.12%.

Sex composition is the most important demographic characteristics that affect the incidence of birth and death. Sex ratio is used to describe the number of females per 1000 of males. The average sex ratio in Sendurai taluk, Sannasinallur village was 1076 during 2001 and decreased to 1055 in the year of 2011.

Table 13 : Population Characteristics-Sannasinallur Village, Sendurai Taluk, Ariyalur District (2001-2011)

Sno	Characteristics	2001	%	2011	%
1	Total Household	926		1152	
2	Total Population	3554		4074	
3	Male Population	1712	48.17	1982	48.65
4	Female Population	1842	51.83	2092	51.35
5	Total Literacy	1683	47.36	2203	54.07
6	Male Literacy	1006	58.76	1259	63.52
7	Female Literacy	677	36.75	944	45.12
8	Sex Ratio		1076		1055

As Per census 2001, 2011, Ariyalur District



Occupational Characteristics- Sannasinallur Village

The term workers denote the population engaged in primary, secondary and tertiary activities classified in the census reports of Indian government. During

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the year 2001 Sannasinallur village had 2031 workers accounting for 57 percent of the total population of the Village. During 2011 there were about 2262 (55 %) according to the census. There were about 1016 men (59 %) during 2001 which is an increase to 1130 persons (57 %) according to census 2011. There were about 1015 (55%) female according to 2001 which is an increased to 1132 (54%) female during 2011 marking a decrease of 117 women over the previous census.

Main Workers are those workers who had worked for the major part of the reference period i.e. 6 months or more. In Sannasinallur village had a total main workers accounted of 1584 (44 %) persons during 2001 census which is decrease to 1493 (36 %) persons during 2011.

The distribution of agricultural laborers in the study area for the two census periods has revealed that the study area has experienced a decline in the proportion of workers classed as agricultural laborers between 2001 and 2011. Sendurai taluk in Sannasinallur village had agricultural labourers 576 (25% of the total workers) agricultural labourers during census 2011.

This group includes the employment of workers in manufacturing activities. Agro based industries, located in the study area engages a sizeable amount of workers. The distribution of secondary workers in the study area is calculated as percent to the total workers. The proportion of secondary workers to total workers has experienced decreasing trend in the Sannasinallur village area between 2001 and 2011. Secondary workers during 2001 and 2011 it could be stated that this may be due to the opening of a number of manufacturing units in the study area.

Workers in the tertiary part of the economy provide services rather than goods. Sales, repair services, banking, and insurance are all part of the tertiary industry. In Sannasinallur village had tertiary workers accounted for about 6 percent of the workers during 2001 census it is decreased to 5.7 % according to census 2011. There were about male tertiary workers of 103 (10%) of the male workers which is decrease to 97 (8 % of the male workers) according to census 2011.

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Non-workers as defined in Census of India are persons who did not at all work during the reference period. In Sannasinallur village had non workers population accounted of 1812 (44% of the total population) according to census 2011. Which is decreased from previous census 2001 had population 1523 (42 %). Because of more number of people are educated most of people living the village had agricultural labours and cultivating area more, and then newly mining & cement industries also lot of money earn our daily life.

Table 14 : Occupational Characteristics of Population -Sannasinallur Village,Sendurai Taluk, Ariyalur District (2001-2011)

Sno	Characteristics	2001	%	2011	%
1	Total Population	3554		4074	
2	Male Population	1712	48.17	1982	48.65
3	Female Population	1842	51.83	2092	51.35
4	Total Workers	2031	57.15	2262	55.52
5	Male Workers	1016	59.35	1130	57.01
6	Female Workers	1015	55.10	1132	54.11
7	Total Main workers	1584	44.57	1493	36.65
8	Male Main workers	987	57.65	849	42.84
9	Female Main Workers	597	32.41	644	30.78
10	Total Cultivators	566	27.87	775	34.26
10	Male Cultivators	415	40.85	462	40.88
11	Female Cultivators	151	14.88	313	27.65
12	Total Main Agricultural Labourers	883	43.48	576	25.46
13	Male Agri.Labourers	465	45.77	282	24.96
14	Female Agri.Labourers	418	41.18	294	25.97
15	Total Main HHI	4	0.20	12	0.53
16	Male HHI	4	0.39	8	0.71
17	Female HHI	0	0.00	4	0.35
18	Total Main Other Tertiary workers	131	6.45	130	5.75
19	Male OT	103	10.14	97	8.58
20	Female OT	28	2.76	33	2.92
21	Total Nonworkers	1523	42.85	1812	44.48
22	Male Nonworkers	696	40.65	852	42.99
23	Female Non workers	827	44.90	960	45.89

As Per census 2001, 2011, Ariyalur District

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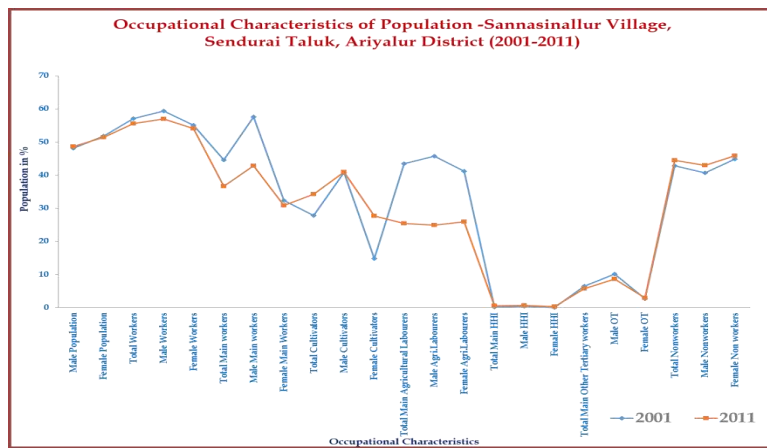


Fig. 6 : Occupational Characteristics of Villages around study area

Benefits:

The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc.

Awareness and opinion of the people about the project for the assessment of awareness about the project activities and opinion about it, following salient observations were recorded:

- during survey it was observed that only nearby villagers are aware and other villagers are not aware about the proposed project
- People in the region expect job opportunities and improvement in educational, transportation and sanitation facility from project authority.

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

Physical Infrastructure

The road facility is already available which shall be used and maintained. The labour requirement is taken from the nearest villages like Sannasinallur. 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 Sannasinallur and sendurai in addition facilities in Ariyalur. Rest room to meet the demand of shelter and Office room for project management will be made with portable container in the project area.

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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: There is no top soil/overburden and no dump. General safety precaution shall be taken as per mining practices.

Access Roads

The area is located 1km away from sannasinallur village road southern side. Access roads will be restored to pre-quarry conditions or better condition.

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

Social Infrastructure

The NH-532 road is situated at 18kms away from site a connecting Salem-Vridhachalam and S.H-141 situated 1.6Km on Northern side. A Village road is available nearby the site on the Southern side 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 The Vellaru 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

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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:

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:

The area is located 1.3Km away from sannasinallur village south side. The NH-532 road is situated at 18kms away from site a connecting Salem-Vridhachalam and S.H-141 situated 1.6Km on Northern side. A Village road is available on 1.0km from site to village road on Southern side for transportation of materials. Village road is available nearby the site on the southern direction for transport of materials. 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

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6.5 Connectivity:

The NH-532 road is situated at 18kms away from site a connecting Salem-Vridhachalam and S.H-141 situated 1.6Km on Northern side. A Village road is available nearby the site on the Southern side for transportation of materials.

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

Whole some drinking water shall be provided as per the Mines Rules, 1955. Quantity for Drinking and utilities is 1.5KLD. Dust suppression and Green belt of water is 2 KLD. Total 3.5 KLD water required per Day. The drinking water is obtained from Mineral water suppliers in the nearby areas.

6.7 Sewerage system:

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

6.8 Industrial waste Management:

No wastes are anticipated.

7. REHABILITATION AND RESETTLEMENT (R&R) PLAN

(i) Policy to be adopted (central/state) in respect of the project affected persons including home ousters, land ousters, and landless labours.

a) PAP

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

Mine Closure

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



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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

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 1,00,000
v)	Afforestation cost	=	Rs. 100,000
	Total	=	Rs 5.0 lakhs

9. Analysis of Proposal

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

Social Benefits:

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


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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.

Project Proponent

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

S. Suriyakumar
11/02/2022

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

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

S. Suriyakumar
11/02/2022