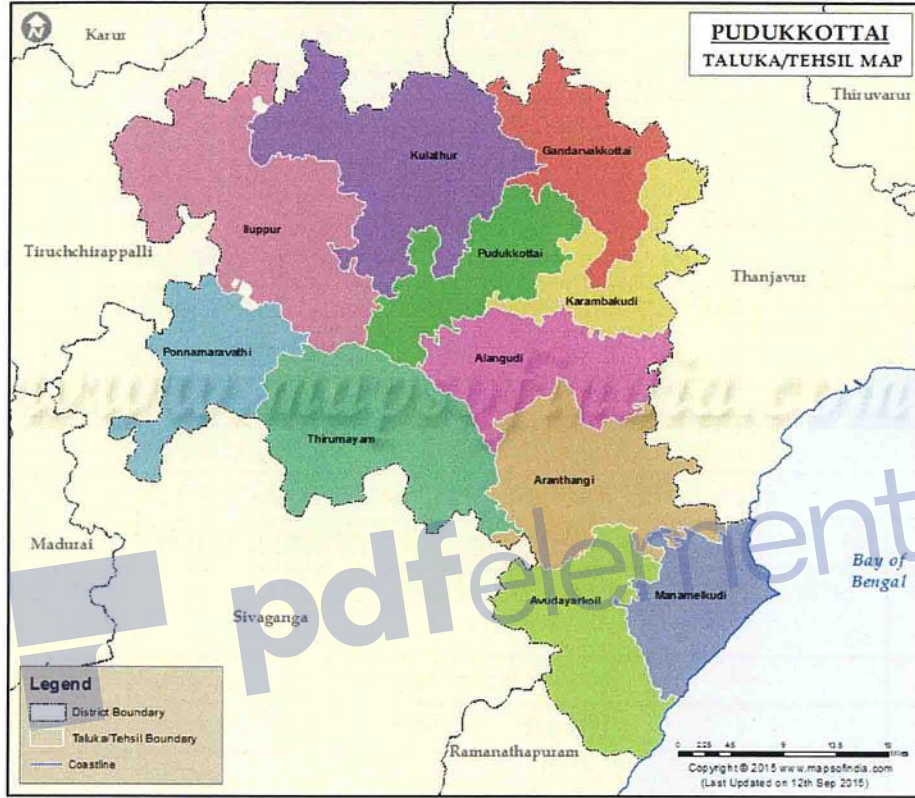


PUDUKKOTTAI
DISTRICT SURVEY REPORT
FOR GRAVEL/RED EARTH/EARTH/PEBBLE



(Prepared as per Gazette Notification S.O.3611 (E) Dated 25.07.2018 of Ministry of Environment, Forest and Climate Change, Government of India)

தமிழ்நாடு அரசு
புவியியல் மற்றும் சுரங்கத்துறை



GOVERNMENT OF TAMIL NADU
DEPARTMENT OF GEOLOGY AND MINING

MAY 2019

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PUDUKKOTTAI DISTRICT SURVEY REPORT
FOR GRAVEL/RED EARTH/EARTH/PEBBLE

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1.0 Introduction

As per the notification no.SO.141 (E) dated 15.01.2016 and S.O.190 (E) dated 20.01.2016 of Ministry of Environment, Forest and Climate change, Government of India, the District Level Environment Impact Assessment Authority (DEIAA) and District Environment Appraisal Committee (DEAC) have been constituted in Pudukkottai District for grant of Environment Clearance for category "B2" projects for quarrying of Minor Minerals.

The main purpose of preparation of District Survey Report is to identify the mineral resources and developing the mining activities along with other relevant data of the District. Accordingly, the District Mineral Survey Report is prepared on the basis of field works carried out in Pudukkottai District by the officials from the Geological survey of India and Department of Geology and Mining, (Pudukkottai) Government of Tamil Nadu. The District Survey Report was prepared based on the guidelines given in the notification no. SO.3611(E) dated 25.07.2018 of Ministry of Environment, Forest and Climate change, Government of India.

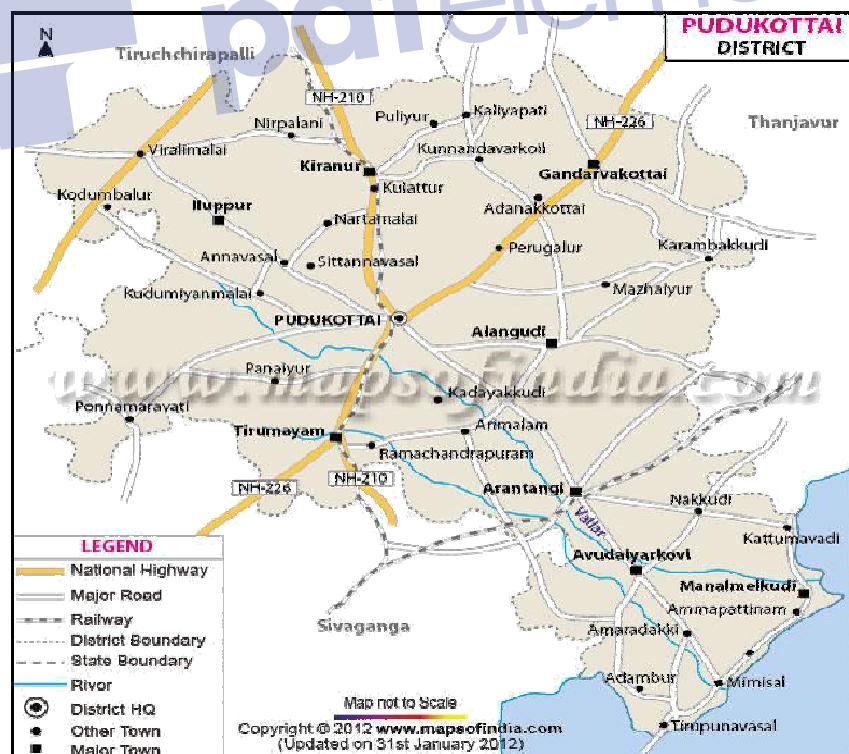


Fig: 1. Pudukkottai district map with accessibility and major rivers.

1.1 Origin

Pudukkottai District was organized as a separate district, on 14th January 1974, comprising the former Pudukkottai Division of Tiruchirappalli district with some additions from Thanjavur district.

1.2 Location

Pudukkottai District is located in the central part of Tamil Nadu State and it lies between 9° 50' to 10° 40' North latitudes and 78° 25' to 79° 15' East longitudes. It forms a part of the Survey of India (SOI) topographic sheets of 58 J/9, 10, 11, 14, 15, 16, 58 N/2, 3, 4 and 58 O/1&2 of 1:50,000 scale. The District is wide spread with an aerial extent of about 4,663 sq.km. Pudukkottai District is bounded on the northeast and east by Thanjavur district, On the southeast by the Palk Strait, on the Southwest by the Ramanathapuram and Sivaganga districts and Northwest by Tiruchirappalli.

Pudukkottai district as one of the princely states of Tamilnadu holds rich cultural heritage with Fortresses, Palaces, Temples, Cave Paintings and many other historical monuments. The district was one of the homes of pre-historic man. Many of the villages are of ancient foundation and also referenced often in Tamil Sangam Literature. Pudukkottai district is well endowed with natural resources of land and sea bounded by the marine hedge of Bay of Bengal in the east conjoined by the southern districts viz, Trichy, Sivaganga, Ramanathapuram and Thanjavur.

The Palaces, Fortress, Canals and Tanks built during the reign of ancient Tamil Kings are the place of interest. Besides, Temple in Avudayarkovil, Kudumiyamalai, Chitthannaval are very much prominent. Muslim's sacred place viz Kattubhava pallival, christian monument at Avur and jains temples at Annaval proclaims the religious harmony of the district . Peacock sanctuary at Viralimalai, cave temples, temples built on the mountains are major tourism destination.

PUDUKKOTTAI DISTRICT, TAMIL NADU LOCATION

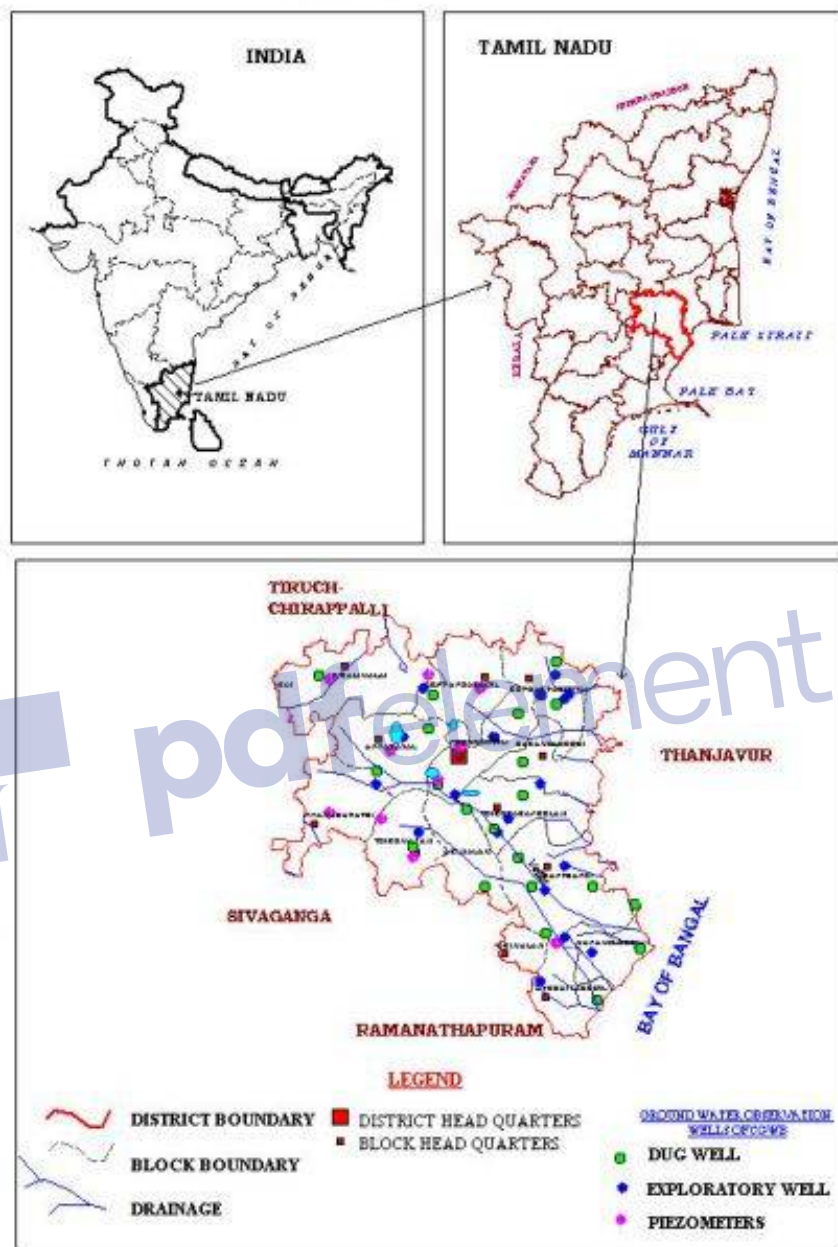


Fig: 2. Location map of Pudukkottai district.

2.0. Overview of Mining Activity in the District:

The geological formation of Pudukkottai District comprises of the hard rocks formed in the Archean age to the sedimentary deposits of the Quaternary period. Rocks and minerals of economic importance found to occur in Pudukkottai District are Multicolour Granite, Rough stone, Red Earth, Gravel, Savudu, Pebbles with traces of occurrence of Quartz and Feldspar.

At present the following mining / quarry leases are in existence in Pudukkottai District.

Sl.No.	Mineral	Classification of land		Total
		Patta	Government land	
1.	Granite	92	3	95
2.	Rough Stone	81	44	125
3.	Gravel	24	-	24
4.	Sand	-	5	5
5.	Earth	-	1	1
	Total	197	53	250

3.0. General profile of the District

3.1. Administrative Structure:

Pudukkottai District is divided into three Revenue Divisions, comprising with twelve taluks, thirteen blocks and 763 villages besides two municipalities, eight town panchayats and 497 village panchayats as tabulated below.

Table of Revenue Division and Taluks

Sl.No.	Revenue Division	Taluk	No. of villages
1	Pudukkottai Division	Pudukkottai	40
		Alangudi	73
		Gandarvakottai	37
		Thirumayam	81
		Karambakudi	50
2.	Illuppur Division	Illuppur	58
		Kulathur	65
		Ponnamaravathi	49
		Viralimalai	37
3.	Aranthangi Division	Aranthangi	105
		Avudaiyarkoil	96
		Manamelkudi	72
	Total		763

3.2 Administrative Blocks

Si. No.	Name of the block	No. of village Panchayats
1.	Pudukkottai	27
2.	Annavasal	43
3.	Viralimalai	45
4.	Kunnandarkoil	37
5.	Thirumayam	33
6.	Ponnamaravathi	42
7.	Arimalam	32
8.	Gandarvakottai	36
9.	Karambakudi	39
10.	Thiruvarankulam	48
11.	Aranthangi	52
12.	Avudaiyarkoil	35
13.	Manamelkudi	28
	Total	497

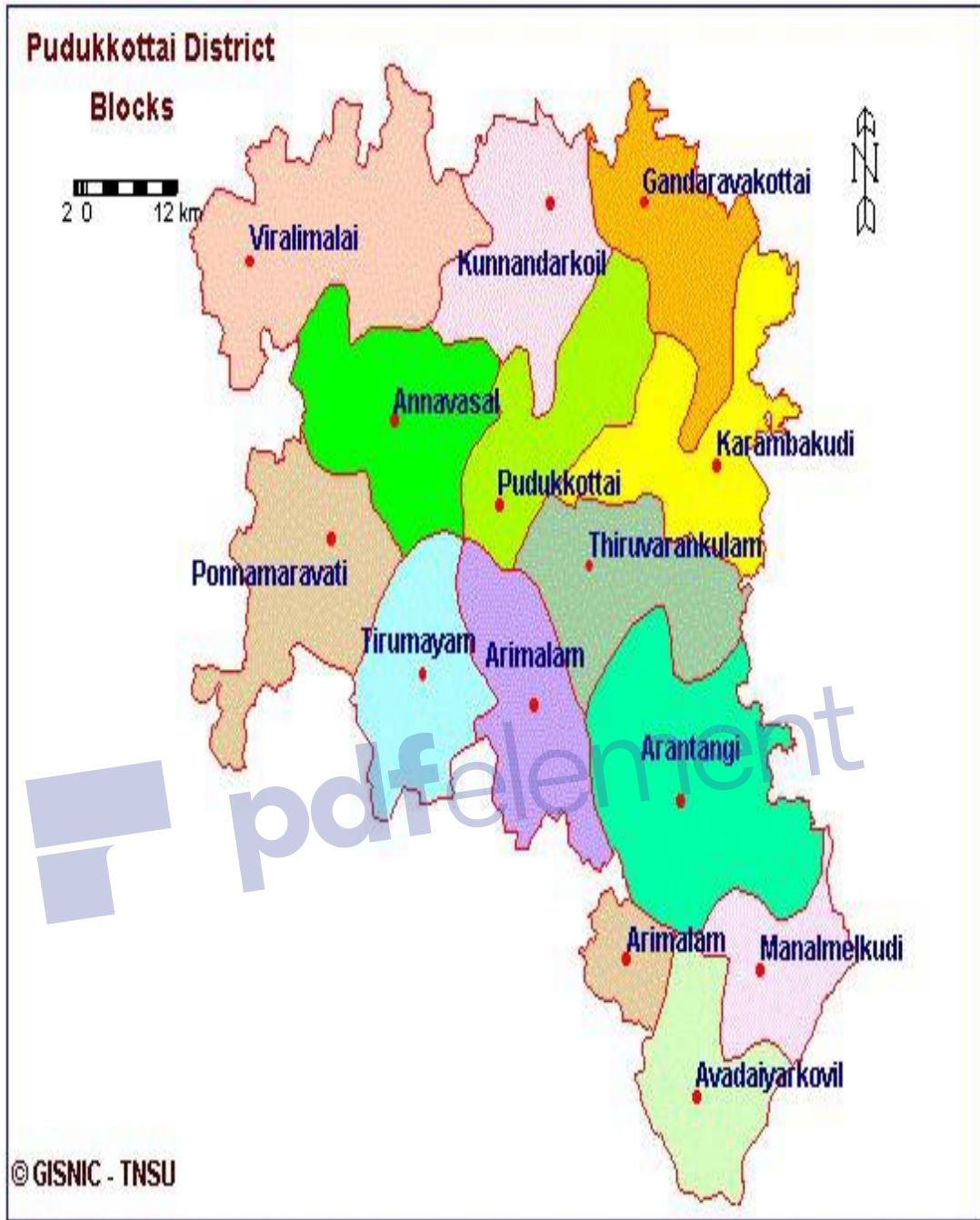


Fig: 3. Administrative Units of Pudukkottai district.

3.3 Population and Literacy

The details of population by rural- urban, male-female and literacy rates in Pudukkottai district as per Census 2011 are presented as follows.

Population Profile and Literacy of Pudukkottai District as per 2011

Census

Sl.No	Details	Ref. Year	Unit	Figure
1.	Area		Sq.Kms	4663
2.	Population	Census 2011	Nos.	1618345
	❖ By Sex			
	1. Male		„	803188
	2. Female		„	815157
	❖ By Area			
	1. Rural		„	1301991
	2. Urban		„	316354
	❖ Growth Rate of Population			
	Density		Sq.Kms	347
	Literates		Nos.	1110545
	Sex Ratio		For 1000 males	1015
	Child (0-6 years) Sex Ratio		For 1000 male children	960

3.4 Physiography

Fundamental characteristic of the terrain of Pudukkottai District is the general flatness; inter spread with small rocky hills which are numerous in the south western parts of the district. Within this general flat terrain, depressions and slopes have created seasonal rivers and jungle streams, and have made it possible to construct tanks across slopes and irrigate lands under these tanks for many centuries. There are rivers like Vellar, Agniar that drain the district. The climate of the district is hot and dry during most parts of the year. In coastal areas of the district the intensity of the heat is mitigated to some extent by sea breeze.

3.5 Topography:

Pudukkottai District is well endowed with natural resources of land and sea, bounded by the marine hedge of Bay of Bengal in the east conjoined by the southern districts viz, Trichy, Sivaganga, Ramanathapuram and Thanjavur. It admeasures an area of 4663.29 sq.kms with a coastal length of 42 kms. The District is composed by of 3 Revenue Divisions, 12 Taluks, 45 Firkas and 763 Revenue Villages. At the developmental front, it has 13 Blocks, 497 Village Panchayats, 2 Municipalities and 8 Town Panchayats.

3.6 Soil type:

Black soil, Red loamy, Sandy coastal Alluvium, Red sandy soil are found to be popular in this district.

4.0 Geology of Pudukkottai District:

The geological formation of Pudukkottai District comprises of the hard rocks formed in the Archean age to the sedimentary deposits of the Quaternary period. Geologically the entire study area can be divided into hard rock and sedimentary rock regions. The hard rocks are found on the western side and sedimentary formation towards the eastern direction of the study area. About 45 per cent of the study area is under hard massive formation of Archean age and the rest 55 per cent comprises of the sedimentary formation ranging from Pre-Cambrian to Quaternary period.

The various types of hard rocks found here are Charnockites, Hornblende Gneiss, Biotite Gneiss, Granite and Quartzite's. Various types of Gneiss rocks are found in the western part of Pudukkottai District. Charnockites and granites rocks are mostly found in the central part including the blocks of Kunnandavarkoil, Thirumayam and the southern parts of Pudukkottai Block. The various types of Gneiss rocks are found in the western part of the study area, consisting the blocks of Viralimalai, Annavasal and Ponamaravathy. Quartzite deposits are found in small quantity in some parts of Annavasal and Thirumayam Blocks. In the Blocks of Kulathur, Thirumayam and parts of Pudukkottai crystalline rocks are found.

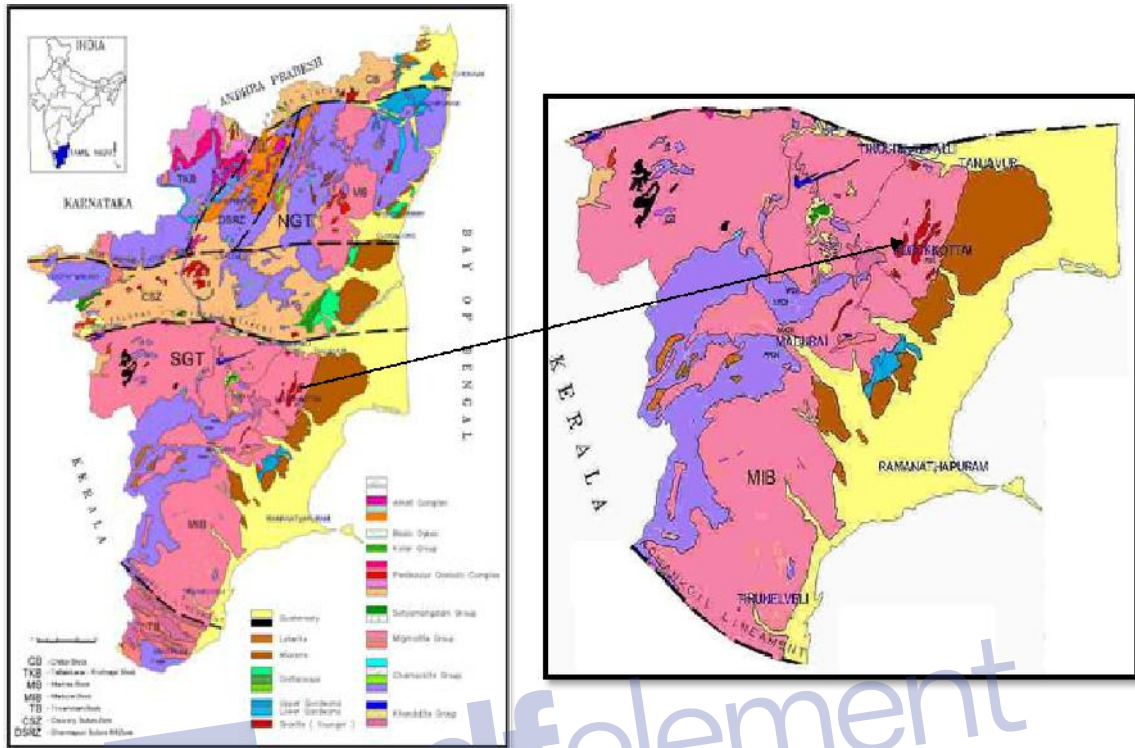


Fig: 4. Geological map of Pudukkottai district.

The sedimentary deposits found in this region consist of shaly sandstone, sand, clay and gravels. The sedimentary deposits formed during the Tertiary period consist of laterite, arenaceous and argillaceous sandstone clay. These deposits are found in the Blocks of Arantangi, Gandarvakottai, Alangudi and Thiruvankulam. Cretaceous deposits consisting of clay, limestone, sand stone and clayey sand stone are found in some parts of Gandarvakottai, Thirumayam and Pudukkottai. Unconsolidated coastal alluvial deposits consisting of sand gravel and silt are found along the river bed. Silt and clay deposits of Quaternary period are found in the blocks of Avudaiyarkoil and Manalmelkudi. Sand deposits with beach ridges and dunes are identified near the coastal boundary of Pudukkottai District.

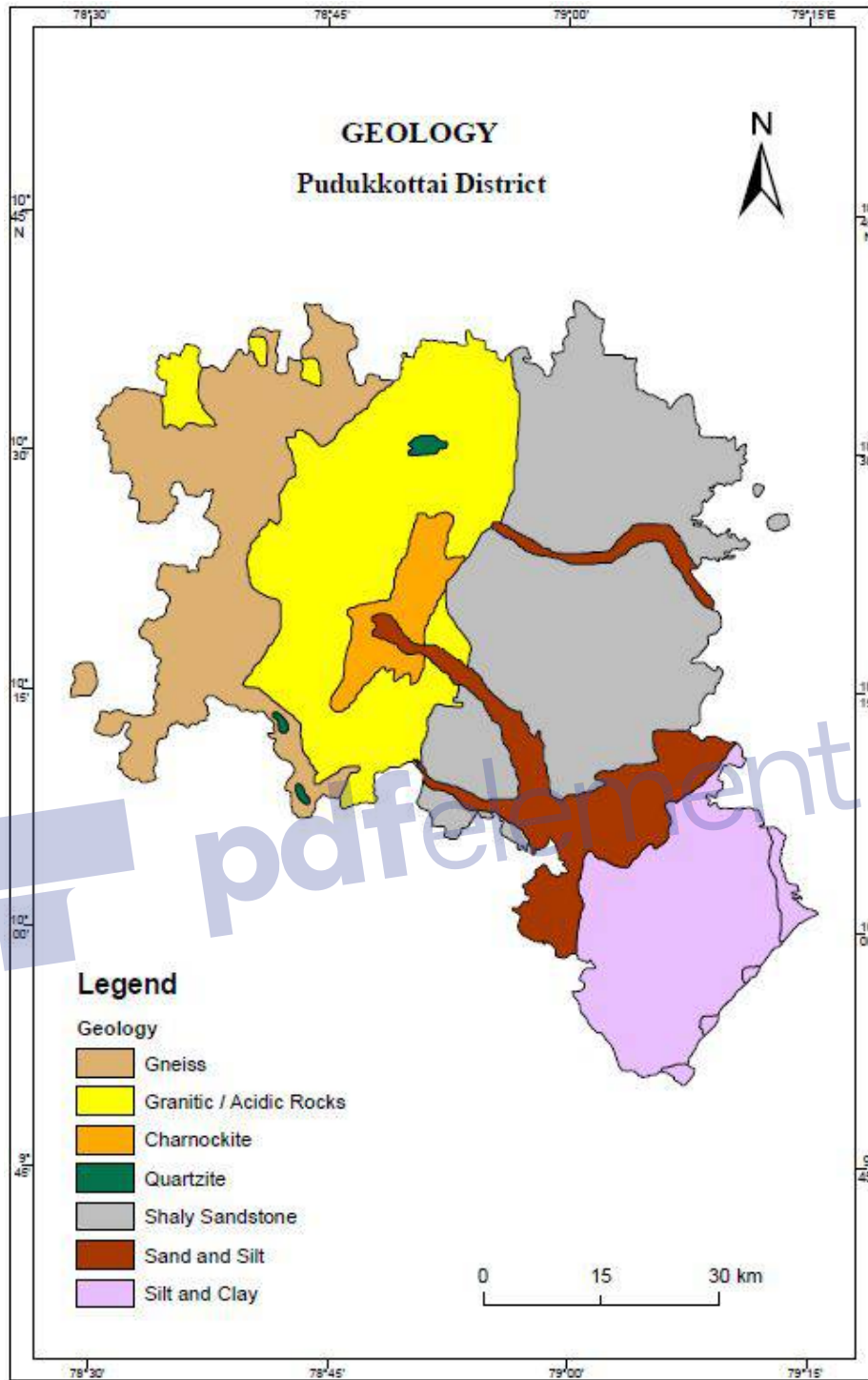


Fig: 5. Lithology map of Pudukkottai district

Stratigraphic succession of different rock types in Pudukkottai District

ERA	PERIOD	AGE	LITHOLOGY
CAINOZOIC	Quaternary	(Recent) Holocene to Late - Pleistocene -----	Fluvial Fluvio-Marine Aeolian and Marine Sediments
		Early to Middle - Pleistocene -----	Laterite
	Tertiary	Mio-Pliocene - Cuddalore Formation	Sandstone
PROTEROZOIC	Acid Intrusives	Pudukkottai Granite	Pegmatite / Quartz Veins Pink Granite, Granite - Gneiss
		Migmatite Complex	Grey Migmatite / Hornblende - Biotite Gneiss, Grey Granolite, Garnet Granolite
ARCHAEOZOIC	Charnockite Group		Pyroxene-Granulite Charnockite
		Khondalite Group	Calc-Gneiss / Calc-Granulite, Crystalline-Limestone Quartzite

4.1 Geomorphology

The district is characterized by an undulating topography with residual hills in the northern, western and southern parts of the district; where as in the eastern part of the district is a flat terrain consisting of alluvial plains. The elevation of the terrain of the western part of the area is about 125 m above MSL, whereas towards coast it is about 1m above MSL.

The geomorphic evolution of the area is mainly controlled by denudational, structural and fluvial processes. The evolution of various landforms has been governed mainly by the varying resistance of geological formations to these processes. Various landforms are occurring in the area, such as erosional plains, residual hills, pediments, buried pediments and deltaic plain. The shallow pediments possess poor to moderate yields with thin soil cover. The buried pediments and deltaic plain possess good ground water potential.

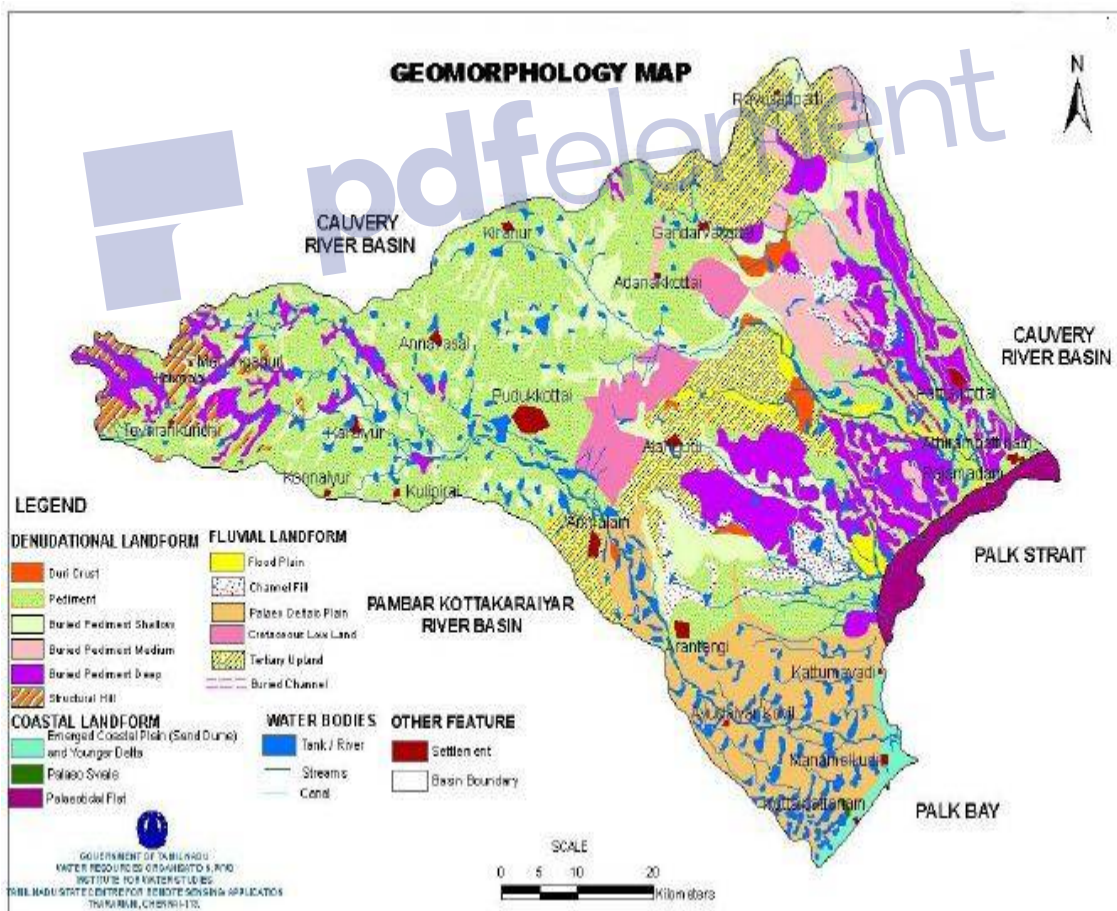


Fig: 6. Geomorphology map of Pudukkottai district

5.0 Drainage of irrigation pattern

Pudukkottai is a part of Cauvery Basin and parts of Vellar, Agniyar, Ambuliyar, Koraiyar, Gundar and Pambar sub basins. Vellar is the major river, which flows in an East- south easterly direction and confluences with the bay of Bengal near Manamelkudi. Agniyar, Ambuliyar, Koraiyar, Gundar and Pambar are the other important rivers draining the District. All most all the rivers are ephemeral in nature.

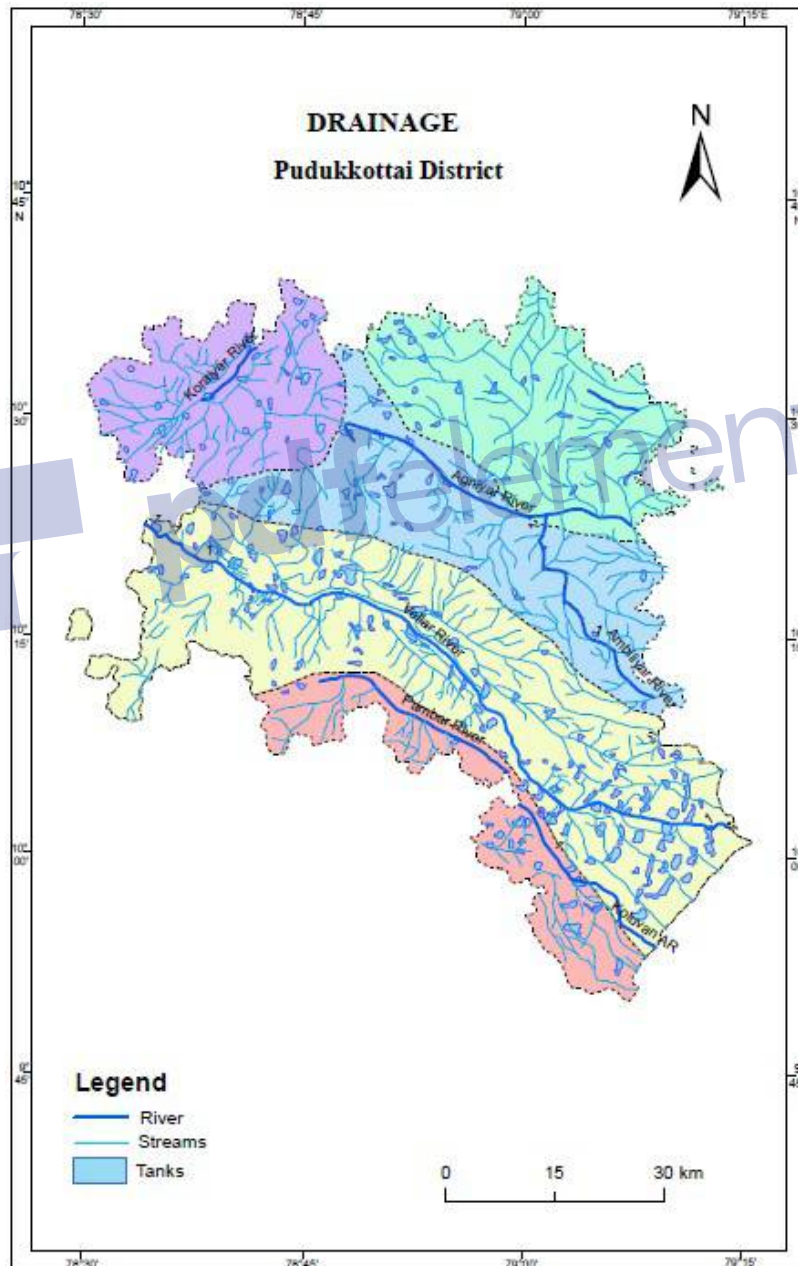


Fig: 7. Drainage Pattern of Pudukkottai district

5.1 Irrigation Practices

Irrigation Type	Extent. in Hect
Government Canals	9661
Tanks	62645
Tube Wells	12832
Other Wells	6777

6.0. Land utilisation pattern in the district:

Soil is one of the natural resources which have the most direct impact on agricultural development. Types of soil, rainfall and irrigation projects have influenced the development of land use in the district.

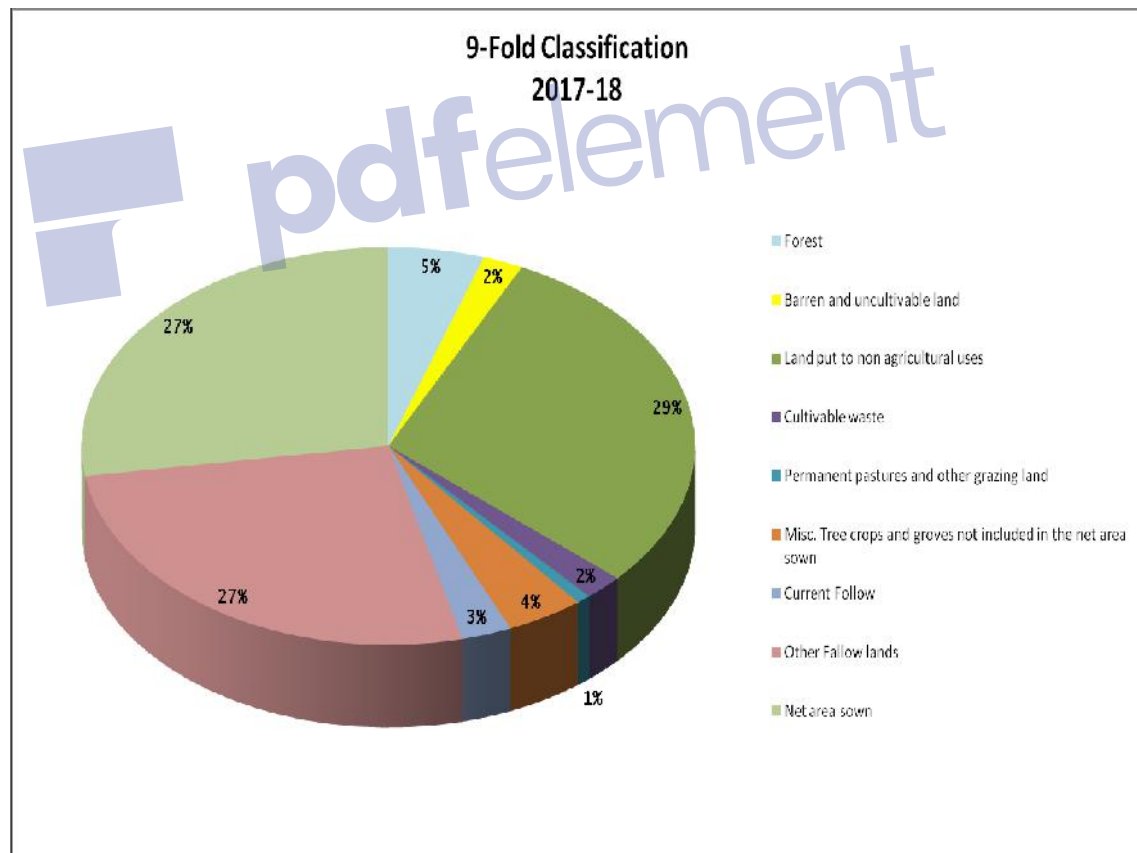


Fig: 8. Nine Fold Classification diagram

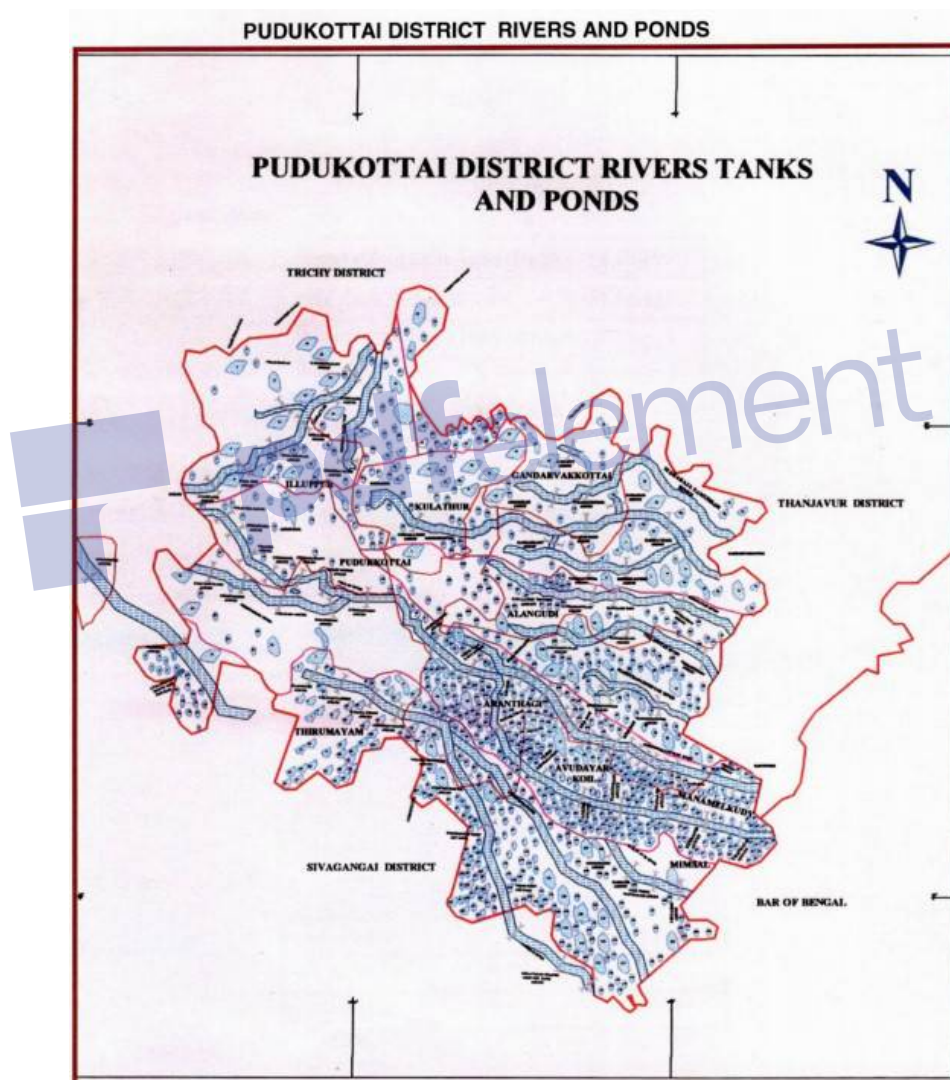
LAND UTILISATION IN PUDUKKOTTAI DISTRICT 200708 TO 2017-18

SI No	Classification	Area (in Hect.)											% to Geographic Area	
		2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18		
	Total Geographical Area	466329	466329	466329	466329	466329	466329	466329	466329	466329	466329	466329	466329	100.00
1	Forest	23535	23535	23535	23535	23535	23535	23535	23535	23535	23535	23535	23535	5.05
2	Barren and uncultivable land	9863	9863	9863	9863	9863	9863	9863	9863	9863	9863	9863	9863	2.12
3	Land put to non agricultural uses	129807	129819	129836	129844	129856	129893	137105	137113	137135	137155	137184	137184	29.42
4	Cultivable waste	10230	10003	10003	9982	9982	9858	9787	9776	9766	9669	9669	9669	2.07
5	Permanent pastures and other grazing land	5124	5124	5124	5124	5124	5124	3471	3471	3471	3471	3471	3471	0.74
6	Misc. Tree crops and groves not included in the net area sown	28380	28172	28103	27762	26895	24844	22496	19449	19495	20294	19095	19095	4.09
7	Current Fallow	16277	15528	17073	11189	10870	24475	26305	21196	11445	12537	12246	12246	2.63
8	Other Fallow lands	91353	90893	92121	99663	98596	101279	106951	126505	132775	132866	123398	123398	26.46
9	Net area sown	151760	153392	150671	149367	153608	137458	126816	115421	118844	116938	127868	127868	27.42
	Area sown more than once	894	856	994	927	5524	3548	5397	3255	4878	2671	4487	4487	
	Gross area sown	152654	154248	151665	150294	159132	141006	132213	118676	123722	119610	132355		

Source : "G" Return 2017-18

7.0 Surface water and ground water scenario of the District

Pudukkottai is the part of Cauvery Basin and parts of Vellar, Agniyar, Ambuliyar, Koraiyar, Gundar and Pambar sub basins. Vellar is the major river, which flows in an East- south easterly direction and confluences with the bay of Bengal near Manamelkudi. Agniyar, Ambuliyar, Koraiyar, Gundar and Pambar are the other important rivers draining the District. The total length of stream in the District is 241 km and covers basin area of about 47000 hec. Almost all the rivers are ephemeral in nature. There are about 7130 tanks in the District.



The ground water resources have been computed jointly by Central Ground Water Board and State Ground & Surface Water Resources and Data Centre (PWD, WRO, and Government of Tamil Nadu) as on 31st March 2004. The salient features of the computations are furnished below.

Name of Groundwater Assessment Unit (Block)	Net Ground water Availability	Existing Gross Draft for Irrigation	Existing Gross Draft for Domestic and industrial watersupply	Existing Gross Draft for all uses	Allocation for Domestic and Industrial Requirement supply upto next 25 years (2029)	Net ground water Availability for future Irrigation Development	Stage of Ground water Development	Category of the Block
1	2	3	4	5	6	7	8	9
Annavasal	6702.93	1450.23	260.01	1710.24	270.21	4982.49	26	Safe
Aranthangi	5969.89	1312.03	113.87	1425.90	118.34	4539.52	24	Safe
Arimalam	6969.76	362.35	138.45	500.80	143.88	6463.53	7	Safe
Avudairkoil	11757.79	0.00	168.58	168.58	175.19	11582.60	1	Safe
Gandharvakottai	7225.92	1815.84	158.55	1974.39	164.77	5245.31	27	Safe
Karambakudi	7319.02	3257.89	207.33	3465.22	215.47	3845.67	47	Safe
Kunnandarkoil	5865.52	1241.16	173.40	1414.56	180.21	4444.15	24	Safe
Manamelkudi	3901.37	0.00	85.21	85.21	88.55	3812.82	2	Safe
Ponnamaravathi	4071.06	305.08	200.11	505.19	207.96	3558.02	12	Safe
Pudukkottai	5176.33	1833.08	174.08	2007.16	180.91	3162.34	39	Safe
Thirumayam	5070.70	291.49	148.98	350.47	154.83	4714.38	7	Safe
Thiruvarankulam	9031.41	6265.45	312.21	6577.66	324.47	2441.50	73	Safe
Viralimalai	7556.38	486.95	237.10	724.05	246.40	6823.03	10	Safe
District Total	861808	18531.55	2377.88	20909.43	2471.19	65615.34	24	

8.0 Climate of the District

Temperature is an important parameter in determining the climatic condition of any region. The climatic condition determines the agricultural pattern, life style of people and the socio economic conditions of any region. Pudukkottai District falls under the tropical region so the temperature here is normally high.

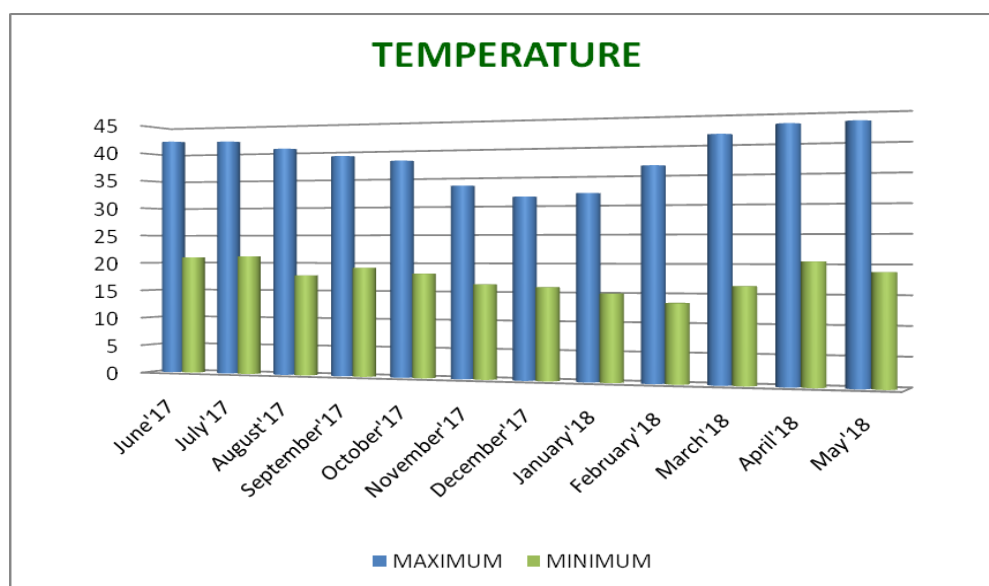
TEMPERATURE 2017-18

Name of the Station: Pudukkottai

(Celsius)

Year and Month		Maximum		Minimum		Humidity in %	
		Highest	Mean	Lowest	Mean	8.30 Hours	17.30 Hours
2017	June	42.2	39.1	21.0	25.5	63.8	52.7
	July	42.0	39.1	21.2	25.9	63.8	54.7
	August	40.5	36.5	17.8	24.1	75.6	64.0
	September	39.0	36.2	19.2	23.6	78.1	65.1
	October	38.0	34.3	18.2	22.7	81.7	73.7
	November	33.5	29.9	16.4	20.6	84.5	79.2
	December	31.5	29.7	16.0	19.5	86.0	81.7
2018	January	32.0	30.6	15.0	18.6	80.9	76.5
	February	36.5	34.2	13.5	20.3	81.4	76.9
	March	41.5	37.8	16.4	22.1	79.3	60.7
	April	43.0	40.1	20.5	23.7	75.6	50.2
	May-2018	43.2	38.8	18.8	23.1	74.9	53.8

Source: Asst .Engineer,P.W.D.,Hydrology Section, Pudukkottai



8.1 Rainfall

The normal rainfall for the district has been 827.18 mm (Per Year). However, during the two decades the district has experienced rainfall only below normal. Most of the rains occur during north east monsoon. The heaviest rainfall in the district used to be received in the month October was 153.99 mm (Average). The average humidity is 74.2%.

MONTH-WISE AND SEASON-WISE RAINFALL DURING - 2017-18

Month	Actual Rainfall (in MM)	Normal Rainfall (in MM)	% Variation
June - 2017	54.8	44.6	22.87
July - 2017	41.7	79.3	-47.41
August - 2017	217.3	109	99.36
September - 2017	93.5	117.7	-20.56
SOUTH-WEST MOONSOON	407.3	350.6	16.17
October - 2017	89.3	158	-43.48
November - 2017	88.6	147.1	-39.77
December - 2017	29.6	101.1	-70.72
NORTH-EAST MONSOON	207.5	406.2	-48.92
January - 2018	6.5	23.2	-71.98
February - 2018	0.8	9.9	-91.92
WINTER SEASON	7.3	33.1	-77.95
March - 2018	7	13.5	127.85
April - 2018	13.5	34.2	-98.60
May - 2018	73.7	49.8	-57.33
HOT SEASON	94.2	97.5	-46.16
WHOLE YEAR	716.3	887.4	-40.64

Source: Dept. of Economics and Statistics, Chennai-6.

		MONTHWISE RAINFALL-2001-02 TO 2017-18 (In MM)																
Month / Year		200 1- 02	200 2- 03	200 3- 04	200 4- 05	200 5- 06	200 6- 07	200 7- 08	200 8- 09	200 9- 10	201 0- 11	201 1- 12	201 2- 13	201 3- 14	201 4- 15	201 5- 16	201 6- 17	201 7- 18
JUNE	Actual	32.6	84.5	18.5	34.4	19.9	63.8	31.9	44.5	30.5	49.7	47.5	14.4	33.8	18.3	46.2	32.79	54.8
	Normal	47.4	49.2	45	45	45	45	45	45	45	45	44.6	44.6	44.6	44.6	44.6	44.6	44.6
JULY	Actual	70.2	36.4	60.9	75.9	70	10	45	64.4	21.2	50.6	79.4	36.1	21.8	18.5	53.9	57.05	41.7
	Normal	66.9	86.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	76.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3
AUG	Actual	76.6	51.4	195.9	23	64.2	94.1	199.1	145.8	33.2	105.4	142	107.6	133.3	140.4	56.5	77.25	217.3
	Normal	118.6	119.4	108.4	108.4	108.4	108.4	108.4	108.4	108.4	108.4	109.0	109	109	109	109.0	109	109.0
SEP	Actual	122.7	51.2	54.5	256.2	193.8	57.4	32.8	37.3	119.7	161.6	118.1	139.5	97.6	74.3	70.9	76.08	93.5
	Normal	119.6	124.3	121	121	121	121	121	121	121	121	117.7	117.7	117.7	117.7	117.7	117.7	117.7
OCT	Actual	149.3	317.1	197.9	252.4	177.9	203.9	174.9	155.3	33	107.6	197.7	221.8	102.9	176	163.3	98.34	89.3
	Normal	164.1	163.4	170.5	170.5	170.5	170.5	170.5	170.5	170.5	170.5	158	158	158	158	158	158	158
NOV	Actual	185.4	87.1	176.5	189.4	474.7	211.1	40.4	329.8	295.6	246	268.2	55.2	51.6	119.6	368.1	23.32	88.6
	Normal	148.2	135.2	144.3	144.3	144.3	144.3	144.3	144.3	144.3	144.3	147.1	147.1	147.1	147.1	147.1	147.1	147.1
DEC	Actual	38.9	31.1	10	18.2	156.7	26.1	240.6	59.9	150.1	140.9	30.5	9.4	48.3	103.6	142.2	49	29.6
	Normal	87.4	102.5	103.2	103.2	103.2	103.2	103.2	103.2	103.2	103.2	101.1	101.1	101.1	101.1	101.1	101.1	101.1
JAN	Actual	0.4	0	0	0.4	4	0.2	7.7	13.7	1.5	13.7	2.9	15.4	3.5	2.9	0	59.5	6.5
	Normal	37	20.5	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2
FEB	Actual	137.5	0.7	0	39.7	0	1.9	55.2	0	0	4.3	0	19.2	4.6	3.2	0	0.96	0.8
	Normal	13.2	12.7	14.3	14.3	14.3	14.3	14.3	14.3	14.3	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
MAR	Actual	0	6	2.3	5.4	45.3	2.1	161.6	3.5	0	6.2	0	71.3	0	6.1	0	30.76	7.0
	Normal	15.7	15.7	17.6	17.6	17.6	17.6	17.6	17.6	17.6	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
APRIL	Actual	0	36.5	4	60.6	42.5	15.2	12.2	38.9	11.1	69.2	27.6	3.1	0.3	107.2	0	0.48	13.5
	Normal	45	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	34.2	34.2	34.2	34.2	34.2	34.2	34.2	34.2
MAY	Actual	62.5	66.3	251.1	46.6	37.4	28.5	6.1	38.5	117.8	46.3	33.1	15.5	135.4	125	77.7	21.25	73.7
	Normal	54.8	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8
TOTAL	Actual	876.1	768.3	971.6	1002.2	1286.4	714.3	1007.5	931.6	813.7	1001.5	947	708.5	633.1	895.1	978.8	526.78	716.3
	Normal	917.9	926.2	921.5	921.5	921.5	921.5	921.5	921.5	921.5	921.5	899.3	887.4	887.4	887.4	887.4	887.4	887.4

9.0 Details of Existing Quarry Leases in the District:

Physical weathering and leaching of flat topped hillocks have given rise to red earth. The red earth formation is found to occur in Gandarvakkottai, Thirumayam, Kulathur and Alangudi taluks. There are 24 gravel quarry leases are in existence as tabulated below. Pebbles is found to occur in Gandarvakottai and Pudkkottai Taluks.

A. Gravel / Red Earth Leases

SI No	Name of the Mineral	Name of the Lessee	Address & Contact No. of Lessee	Mining lease Grant Order No. & date	Area of Mining lease (in hectares)	Period of Mining Lease (Initial)		Period of Mining Lease (1st / 2nd ... renewal)		Date of commencement of Mining Operation	Status (Working/Non-Working/Tem, Working for dispatch etc.,)	Captive / Non-Captive	Obtained Environmental Clearance (Yes/No) , If Yes Letter No with date of grant of Ec	Location of the Mining lease (Latitude & Longitude)	Method of Mining (Opencast/Under ground)
						From	To	From	To						
1	Gravel	Thiru.A.Michael, S/o.Arockiyasamy,	Venkadukulam (po), Alangudi Taluk, Pudukkottai District	Rc.No.2598/14 (G&M) dt.04.06.16	1.88.0	17.06.2016	16.06.2019	--	--	08.08.2016	Operation	Non-Captive	yes	10° 18'31.27"N 78°55'15.29"E	Opencast
2	Gravel	Thiru.R.Manoharan S/o.Rajangam,	No.436,Inathukkanpatti (v) Thanjavur District	Rc.No.1935/2015 (G&M) dt.04.06.16	4.37.0	20.06.2016	19.06.2019	--	--	26.07.2016	Operation	Non-Captive	yes	10°39'57.41"N to 10°40'5.77"N 78°56'36.72"E to 78°56'40.44"E	Opencast
3	Gravel	Thiru.K.Chelladurai S/o.Karunanidhi,	Old.No.1-40, New No.200, Manjappettai village, Gandharvakottai Taluk, Pudukkottai District	Rc.No.639/2016 (G&M) dt.28.11.16	4.93.5	02.12.2016	01.12.2019	--	--	12.12.2016	operation	Non-Captive	yes	10° 40'58.70"N 79°00'28.34"E	Opencast
4	Gravel	Tmt.R.Bhuvaneswari, W/o.Singh T.Rajendran,	19, South Mettu Street, Vallam, Thanjavur District	Rc.No.983/2014 (G&M) dt.28.11.16	3.76.5	02.12.2016	01.12.2019	--	--	12.12.2016	operation	Non-Captive	yes	10°39'50.84"N to 10°19.49."N 78°25.53.27"E to 78°46'04.09"E	Opencast

5	Gravel	Thiru.A.Sebastin, S/o.A.Aasirvadham	5/36, Mathakovil Street, Arputhapuram, Kurungulam Melpathi (post), Thanjavur Taluk, Thanjavur District	Rc.No. 1368/2016 (G&M) dated 28.12.2016	0.90.5	30.12.2016	29.12.2019	--	--		Non - operation	Non- Captive	yes	10° 12'53.897"N 78°48'14.595"E	Opencast
6	Gravel	Thiru.G.Selvagana pathi S/o.Ganapathi,	Aranmanaipatti, Namathanpatti (post) Thirmayam Taluk, Pudukkottai District	Rc.No. 1177/2017 (G&M) dated 20.01.2017	2.99.5	23.03.2017	22.03.2020.	--	--		Non - operation	Non- Captive	yes	10° 12'10.12"N 78°43'25.48"E	Opencast
7	Gravel	Thiru.Manivannan S/o.Ganesan,	No.53/28, Izam colony, Mam Nagar, Janaki nivas, Pudukkottai	Rc.No. 2404/2016 (G&M) dated 20.07.2017	3.64.5	24.07.2017	23.07.2020	--	--	03.08.2017	operation	Non- Captive	yes	10°10'22.94"N to 10°10'29.49"N 78°42'39.49"E to 78°42'50.18"E	Opencast
8	Gravel	Thiru.S.Stanislaus, S/o.A.Sebastian,	No.7, Dhanabakiyathammal Nagar, R.S.College post, Thanjavur-5	Rc.No. 1089/2017 (G&M) dated 20.07.2017	2.09.5	24.07.2017	23.07.2020	--	--		Non - operation	Non- Captive	yes	10°35'19.47"N to 10°35'26.59"N 78°56'27.54"E to 78°56'36.30"E	Opencast
9	Gravel	Tvl.URC Construction (p) Ltd.,	119, Power House Road, Erode	Rc.No. 1637/2016 (G&M) dated 14.06.2017	2.84.0	27.06.2017	26.06.2020	--	--		Non - operation	Non- Captive	yes	10°35'44.33"N to 10°35'38.55"N 78°56'37.37"E to 78°56'27.87"E	Opencast
10	Gravel	Thiru.G.Murugesan , S/o.Ganesan,	No.3/632, Arayappatti village, Alangudi Taluk, Pudukkottai District	Rc.No. 2601/2016 (G&M) dated 14.06.2017	1.52.0	30.06.2017	29.06.2020	--	--	11.12.2017	operation	Non- Captive	yes	10°38'26.01"N to 10°38'30.78"N 78°58'58.22"E to 78°59'03.48"E	Opencast
11	Gravel	Thiru.S.Vijayakuma r, S/o.P.Saminathan,	No.1-28B, Punalkulam, Thethuvasalpatti post, Gandharvakottai Taluk, Pudukkottai District	Rc.No. 120/2017 (G&M) dated 14.06.2017	1.62.0	23.06.2017	22.06.2020	--	--		Non - operation	Non- Captive	yes	10°36'38.01"N to 10°36'34.17"N 78°56'47.27"E to 78°56'33.02"E	Opencast
12	Gravel	Thiru.Murugesan S/o.Rengasamy,	Colony, Vadakkutheru, Viralippatti village, Komapuram (post), Pudukkottai District	Rc.No.1157/2017 (G&M) dt 09.10.2017	4.72.5	12.10.2017	11.10.2020	--	--	23.10.2017	operation	Non- Captive	yes	10°40'17.02"N to 10°40'25.36"N 79°00'25.05"E to 79°00'33.43"E	Opencast
13	Gravel	Thiru.P.Shanmuga m S/o.Palanimanicka m,	Punalkulam, Gandharvakottai Taluk, Pudukkottai District	Rc.No.2470/2017 (G&M dated 09.10.2017	2.39.0	12.10.2017	11.10.2020	--	--	20.10.2017	operation	Non- Captive	yes	10°39'39.75"N to 10°39'49.44"N 79°02'08.24"E to 79°02'14.81"E	Opencast
14	Gravel	Thiru.P.Kamaladas an, S/o.C.Pitchaikann u,	No.978, Periyar Nagar, Pudukkottai	Rc.No.1192/ 2017 (G&M) dated 09.10.2017	2.80.5	26.10.2017	25.10.2020	--	--	20.11.2017	Non - operation	Non- Captive	yes	10°39'55.09"N to 10°40'02.20"N 78°42'19.74"E to 78°42'25.49"E	Opencast
15	Gravel	Thiru.V.Manickavas agam, S/o.Velusamy,	T.Retiyapatti, Kadavur Taluk, Karur District	Rc.No. 2509/2016 (G&M) dated 18.01.2018	1.22.5	18.01.2018	till 25.10.2019.	--	--	23.01.2018	Non - operation	Non- Captive	yes	10°39'45.57"N to 10°39'51.43"N 78°42'09.88"E to 78°42'12.97"E	Opencast
16	Gravel	Thiru.U.Murugesan , S/o.Uthirapathi,	Muthupattinam, S.Kulavaipatti post, Pudukkottai District	Rc.No.2405/2016 (G&M) dated 28.08.2017	5.25.0	28.09.2017	27.09.2020	--	--	04.10.2017	operation	Non- Captive	yes	10°36'29.61"N to 10°36'39.61"N 78°39'33.33"E to 78°49'44.26"E	Opencast
17	Gravel	Thiru.C.Chitrambal am S/o.Chockalingam,	No.3393, Kurinji Nagar, Thirukkattalai post, Pudukkottai	Rc.No. 1937/2017 (G&M) dated 26.04.2018	4.25.0	26.04.2018	25.04.2021	--	--	01.06.2018	operation	Non- Captive	yes	10°38'30.82"N to 10°38'39.32"N 78°55'47.02"E to 78°55'55.54"E	Opencast

18	Gravel	Thiru.Muruganathan S/o.Dharmaraj,	Kollupatturai Street, Vallam, Thanjavur District	Rc.No. 1427/2017 (G&M) dated 07.06.2018	2.07.5	11.06.2018	10.06.2021	--	--	10.09.2017	operation	Non-Captive	yes	10o40'00.38"N to 10o40'06.64"N 78°56'02.93"E to 78°56'12.05"E	Opencast
19	Gravel	Thiru.P.Senguttuvan S/o.Periyannan,	Manjapettai, Thethuvasalpatti (post), Gandharvakottai Taluk	Rc.No.1428/2017 (G&M) dated 07.06.2018	2.32.0	08.06.2018	07.06.2021.	--	--	10.09.2018	operation	Non-Captive	yes	10°39'58.83"N to 10°40'04.97"N 78°55'53.34"E to 78°56'00.71"E	Opencast
20	Gravel	Thiru.M.Kalanidhi, S/o.Mayilraj, 19C,	19C, Ariyanipatti, Thethuvasalpatti post, Gandharvakottai Taluk, Pudukkottai District	Rc.No.2920/2015 (G&M) dated 23.07.2018	2.13.5	23.07.2018	22.07.2021	--	--	01.10.2018	operation	Non-Captive	yes	10°38'40.02"N to 10°38'47.35"N 79°01'29.72"E to 79°01'36.76"E	Opencast
21	Gravel	Thiru.Jayaraman, S/o.Vaithilingam,	Door No.88, Mallikai Street, Rahuman Nagar, Neelagri, Thanjavur Taluk, Thanjavur District	Rc.No.1289/2017 (G&M) dated 07.06.2018	1.49.0	23.07.2018 .	22.07.2021.	--	--	26.07.2018	operation	Non-Captive	yes	10o35'43.27"N to 10°35'36.07"N 78°56'37.69"E to 78°56'42.65"E	Opencast
22	Gravel	Thiru.K.Paulraj S/o.Karunanithi,	No.202, South Street, Manjappettai, Gandharvakottai Taluk, Pudukkottai District	Rc.No.2916/2017 (G&M) dated 07.09.2018	4.09.5	07.09.2018	06.09.2021	--	--	01.11.2018	operation	Non-Captive	yes	10°40'28.68"N to 10°40'20.49"N 79°00'59.10"E to 79°00'50.91"E	Opencast
23		Thiru.A.Rajendran S/o.Athimoolam,	No.2/235, Therkkupatti, Keelaiyur, Kulavaipatti, Alangudi Taluk, Pudukkottai District.	Rc.No.2553/2017 (G&M) dated 27.12.2018	2.26.5	27.12.2018	26.12.2021	--	--	21.01.2019	operation	Non-Captive	yes	10°38'35.56"N to 10°38'42.83"N 78°48'01.02"E to 78°48'08.93"E	Opencast
24	Gravel	Tmt.U.Usharani D/o.Urumaiya,	No.2/309, Udaiyar Street, Killukottai, Kulathur Taluk, Pudukkottai District	Rc.No.2798/2017 (G&M) dated 21.12.2018	2.08.0	21.12.2018	20.12.2021	--	--	23.01.2019	operation	Non-Captive	yes	10°39'46"N to 10°39'58"N 79°02'46"E to 79°02'48"E	Opencast

B. Earth Leases

SI No	Name of the Mineral	Name of the Lessee	Address & Contact No. of Lessee	Mining lease Grant Order No. & date	Area of Mining lease (in hectares)	Period of Mining Lease (Initial)		Period of Mining Lease (1st / 2nd ... renewal)		Date of commencement of Mining Operation	Status (Working/ Non-Working/ Tem, Working for dispatch etc.,)	Captive / Non-Captive	Obtained Environmental Clearance (Yes/No), If Yes Letter No with date of grant of Ec	Location of the Mining lease (Latitude & Longitude)	Method of Mining (Opencast/Under ground)
						From	To	From	To						
1	Earth	Thiru.R.Sun deravadivel,	N.50, Vaattathikottai, Tanjore District	Rc.No.2813/16 (G&M) dt.09.03.19	1.42.90	17.06.2016	16.06.2019	--	--	08.08.2016	Operation	Non-Captive	yes	10° 18'31.27"N 78°55'15.29"E	Opencast

C. Pebble Leases

SI No	Name of the Mineral	Name of the Lessee	Address & Contact No. of Lessee	Mining lease Grant Order No. & date	Area of Mining lease (in hectares)	Period of Mining Lease (Initial)		Period of Mining Lease (1st / 2nd ... renewal)		Date of commencement of Mining Operation	Status (Working/ Non-Working/T em, Working for dispatch etc.,)	Capti ve/ Non-Capti ve	Obtain ed Enviro nment al Cleara nce (Yes/ No), If Yes Letter No with date of grant of Ec	Location of the Mining lease (Latitude & Longitude)	Method of Mining (Openca st/Unde r ground)
						From	To	From	To						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NIL															

10.0 Details of Royalty or Revenue received last three years

The details of Revenue /Royalty received from Gravel /Red Earth for the last three years are tabulated as follows: (in rupees)

Year	April	May	June	July	August	Sept	October	Nov	Dec	Jan	Feb	Mar	Total
2016- 17	1588275	237195	1144215	113130	43875	395750	133750	220250	1197000	485925	785595	3590375	9935335
2017-18	279250	251500	138250	702250	427750	329750	597000	303375	486250	616685	479985	558345	5170390
2018-19	1290515	432030	990180	1657590	748785	755135	493865	555745	473310	648045	790925	975930	9812055

11.0 Details of production of Minor Mineral in last three years

A. Gravel

Sl. No	Year	Gravel/Red Earth (CBM)	Total production (Gravel/Red Earth) (CBM)
1	2016-17	300969	300969
2	2017-18	190766	190766
3	2018-19	297335	297335
	Total	789070	789070

12.0 Mineral Map of the District

A number of economically important minerals and rock types are found in the Pudukkottai District. Mineral resources are identified in hard rocks as well as in sedimentary deposits found here. The important minerals found in the area are Feldspar, Quartz, Multi-coloured Granite, Biotite Garnet, Biotite Gneisses and River sand. Multi coloured granite deposits exhibits yellow, pink, green or white colour background with less wave patterns. These granites have great national and international markets.

These granites are mainly used for decorative and flooring purposes in commercial and residential buildings, institutions, and shopping complexes. The multi coloured granite is found at the regions of Kulathur, Narthamalai and Vilathupatti.

Economically important good quality charnockite rocks are quarried from the central part of the study area. Feldspar occurs in Sembattur village and Narthamalai which has high commercial value. Limestone deposits are found in small quantity at Adanakottai. Kaolinitic clay is found near the coast in the Block of Manalmelkudi. Kaolinitic clay is mainly used for ceramic, stoneware and refractory units.

River sands exploited from the river beds of Vellar, Agniyar, and Koraiyar, used for building and construction purposes. In general the blocks of Ponamarvathy, Thirumayam, Viralimalai, Annavasal, Kunnadvarkoil, Pudukkottai

and Thiruvarankulam located in the western and central part of the study area are enriched with mineral deposits. Whereas the blocks located in the southeastern parts of Pudukkottai District namely, Alangudi, Arantangi, Avudayarkoil and Manalmelkudi have limited deposits of minerals.

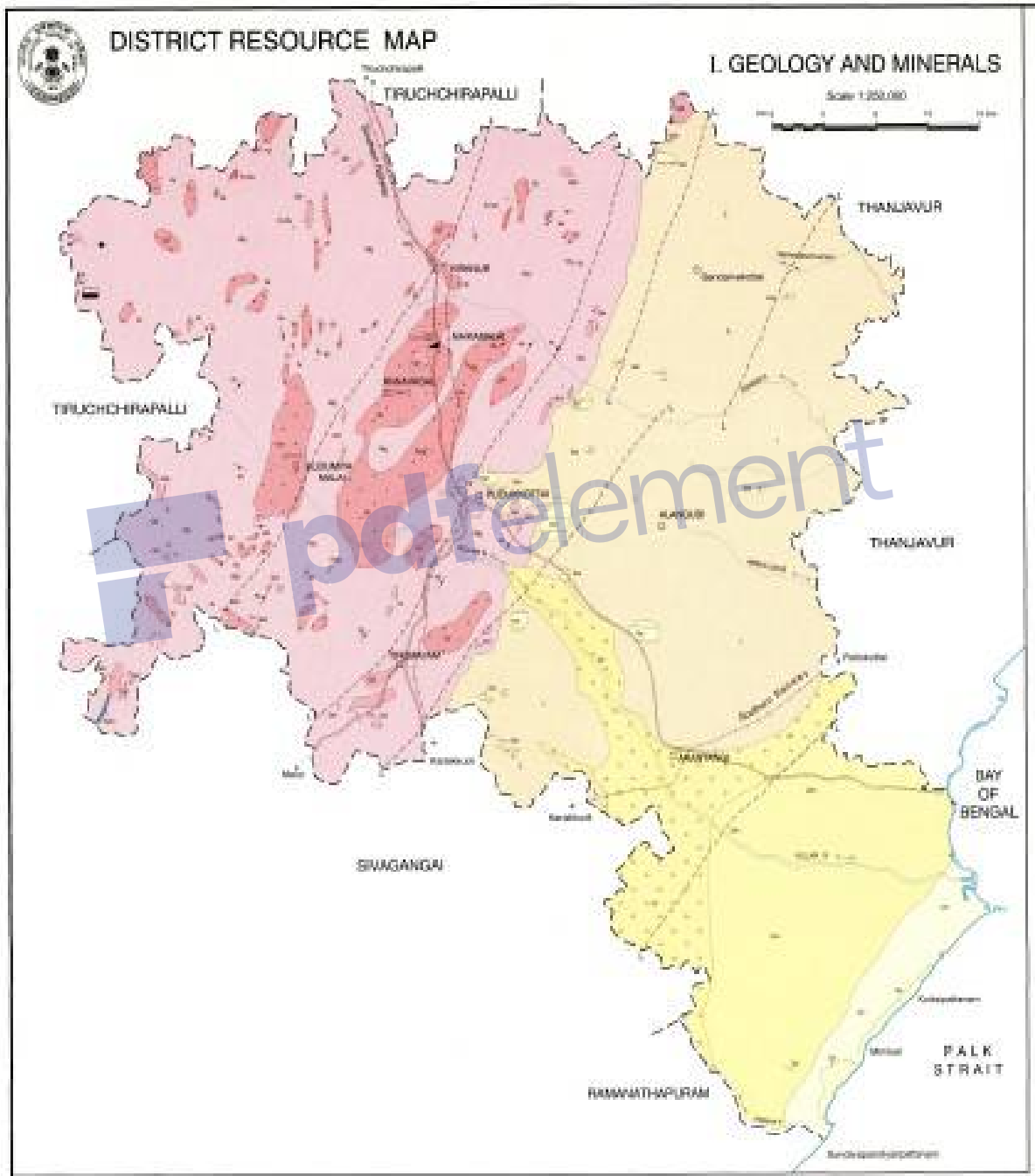


Fig: 9. Mineral Map of the Pudukkottai District

13.0 List of Letter of Intent (LOI) holders for Gravel/Red Earth in district along with its validity as per the following format

Sl. No.	Name of the Mineral	Name of the lessee	Address & contact no. of letter of Intent holder	Letter of Intent Grant order No. & date	Area of mining lease to be allotted (Ha)	Validity of LOI	Use (Captive/ Non-captive)	Location of the Mining lease (Latitude & Longitude)
1.	Gravel	P.L.Palaniyappan, S/o.Palaniyappan	Vengalur, Konappattu Post, Thirumayam Taluk, Pudukkottai District	Rc.No.337/2017 (G&M) dt.22.12.2017	0.87.0	--	Non-captive	10°11'31.44"N to 10°11'34.02"N 78°44'55.18"E to 76°44'59.42"E
2.	Gravel	G.Manivannan, S/o.Ganesan,	Old No.64, New No.4837, N.G.O.Colony, Pudukkottai District	Rc.No. 2653/2016 (G&M) dated. 01.10.2018	2.43.5	--	Non-captive	10°38'49.86"N to 10°38'56.71"N 79°01'23.91"E to 79°01'30.10"E
3.	Gravel	A.M.Xavier, S/o.Anthonymuthu	No.10, plot No.78, MGR Street, Soodamanipuram, Karaikudi, Sivagangai District	Rc.No. 150/2018 (G&M) dated. 31.10.2018	2.00.0	--	Non-captive	10°16'48.66"N to 10°16'54.80"N 78°43'41.08"E to 78°43'46.95"E

14.0 Mineral resource available in the District.

Geological resources as arrived in the mining plans in respect of the existing Gravel quarries are as follows:

Name of the Mineral	Geological resources as arrived in the mining plan for the existing Gravel quarry leases (in cubic metre)
Gravel	1614752

15.0 Quality / Grade of Mineral available in the District Gravel

Gravel is a loose aggregation of rock fragments and it is classified by particle size range and includes size classes from granule to boulder sized fragments. Gravel is categorized into granular gravel (2 to 4mm or 0.079 to 0.157 inch) and pebble gravel(4 to 64 mm or 0.2 to 2.5 inch) ISO 14688 grades gravel as fine, medium and coarse with ranges 2mm to 6.3 mm to 20mm to 63mm.

Red Earth/Pebbles

Red Earth deposits found in the district are fine to medium grained in nature. Pebble having size of 0.5 to 7 cm are commonly in Pudkkottai and Gandarakottai Taluks.

16.0 Use of Mineral

Gravel/Earth

Gravel/ Earth are used for filling and leveling of low lying areas, formation of roads and railway tracks.

Red Earth/Pebble

Red earth is mostly used in the nursery gardens to grow the plants. High fertile nature of the red earth deposits makes it suitable to be used in the nursery garden and domestic purposes.

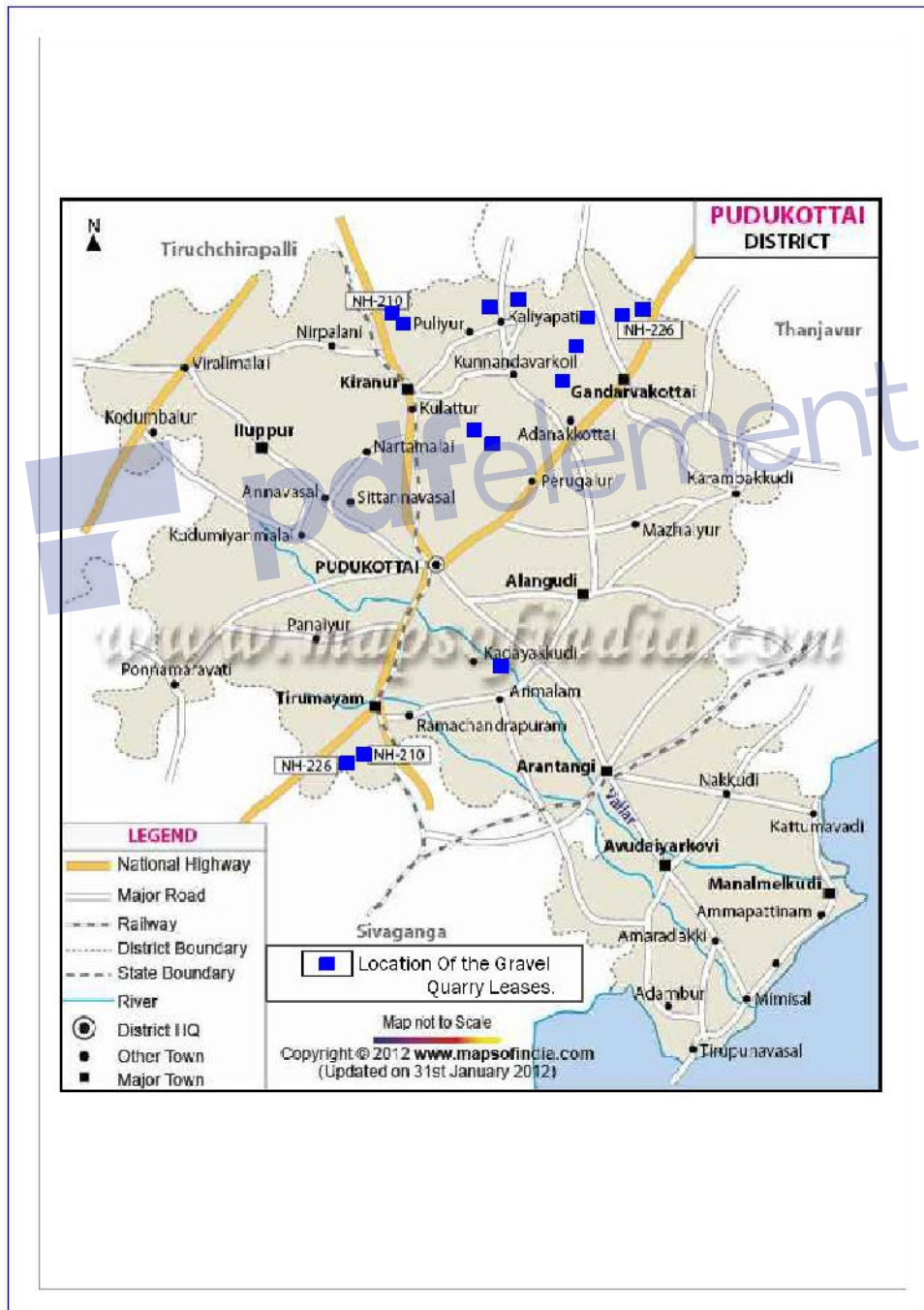
Main use of the pebbles is to filter the water in the bore wells and also for decorative purposes to some extent.

17.0 Demand and supply of mineral in the last three years.

There is an increase in the production of Gravel / Red Earth due to the high demand for the on-going construction works in and around the District.

Sl. No	Year	Gravel / Red Earth (CBM)	
		Demand	Supply
1	2016-17	300969	300969
2	2017-18	190766	190766
3	2018-19	297335	297335
	Total	300969	300969

18.0 Mining leases (Gravel/Pebble/Red Earth/Earth) marked on the map of the District



19.0 Details of the area where there is a cluster of mining leases viz., number of mining leases, location (Latitude and Longitude):

Nil

20.0 Details of Eco-sensitive area:

The hill, small town and Murugan Temple at Viralimalai, south of Tiruchirappalli have been nominated the Viralimalai Peacock Sanctuary. Several species of peacocks can be seen here in the wild state.

21.0 Impact on the Environment (Air, Water, Noise, Soil Flora & Fauna, Land use, Agriculture, Forest etc.,) due to Mining Activity

Mining and allied operations may affect the existing environmental setup in the area unless proper mitigation measures are not taken. Hence it is essential to assess the impacts of mining on various environmental parameters so that abatement measures could be planned in advance for systematic, sustainable and eco-friendly mining in the area.

(i) Air Environment

The mining and allied operations may cause deterioration of air quality due to pollution if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be the dust generation in the mine due to:

- Excavation of Minor Minerals like Gravel
- Movement of HEMM such as excavators, tippers etc.,
- Loading and unloading operation
- Overburden & minor minerals transportation

Beside the above mentioned fugitive dust emissions, atmospheric fugitive dust emissions, atmospheric pollution can occur as a result of emission of SO₂, Nox, CO etc., from diesel driven mining equipment, compressors, generators etc., Larger suspended particles are generally filtered in the nose and throat and do not cause problems.

Particulate matter smaller than 10 microns, referred to as PM10, can settle in the bronchi and lungs and cause health problems like Bronchitis, Emphysema, Bronchi Asthma, Irritation of mucus membranes of eyes etc. Particles smaller than

2.5micrometers (PM 2.5), tend to penetrate into the lungs and very small particles (<100 nanometers) may pass through the lungs to affect other programs.

(ii) Water Environment

The major sources of water pollution normally associated due to mining and allied operations are:

- Generation of Industrial effluent water from workshop, service building.
- Disturbance to drainage course or water bodies in the project area, if any.
- Washouts from waste dumps/embankment, if any.
- Domestic effluent
- Mine discharge water pumped out from opencast mines, if any and effect on ground water table.

Direct impact on human beings due to poor water quality consequent to mining operation can lead to various water borne diseases like diarrhoea, jaundice, dysentery, typhoid etc. Besides, the polluted water may not be useful for animal or human consumption, vegetation and may affect aquatic life, if effluents are not properly treated to remove the harmful pollutants.

(iii) Noise & Vibration

The impact prediction and control measure for noise environment due to mining and allied activities are described below:

Noise is one of the inevitable causes of pollution in mining operations largely due to the extensive mechanization adopted. Since the Gravel in the District is in friable form drilling and blasting is not required for the excavation. The major source of noise will be from the equipment's such as Excavators, loading & unloading & movement of vehicles etc., will produce noise of considerable magnitude in mining operations.

(iv) Impact on Land Environment:

Due to mining and its allied activities there will be some changes to the pre-mining land status due to the following activities:

- Excavation of minor minerals and waste/ Overburden
- Temporary side casting / Backfilling of waste / overburden.
- Construction of Infrastructure facilities such as office, road, site services etc.,

(v) Impact on Biological Environment

The major possible impact on biological environment due to mining is given below:

- Clearance of vegetation due to mining and allied activities
- Retardation of tree growth, tip burning etc., due to deposition of dust and the particulate matter generated from the mining operation.
- The project releases effluents into water bodies that also supplies water to irrigation
- Diversion of Agricultural and forest lands for mining

22.0 Remedial Measures to Mitigate the Impact of Mining on the Environment

The following remedial measures to be taken during mining

(i) Remedial Measures to mitigate Air Pollution

- Water sprinkling on mineral transport road from the mines to the main road
- Black topping of the main transportation roads to the possible extent
- Avoiding crowding of trucks by properly spacing them to avoid the concentration of dust emission at any time
- Covering the trucks by tarpaulin sheets during ore transportation
- Proper maintenance of HEMM to minimize gaseous emission
- Imparting sufficient training to operators on safety and environmental parameters
- Proper maintenance of haul road and other roads
- Development of green belt/ plantation around mine, along the roads, backfilled area, in various undisturbed areas within the mine lease areas etc.

(ii) Remedial Measures to mitigate Water Pollution

- Industrial effluent treatment systems wherever necessary to be introduced and maintained properly.
- Safety barriers to be provided for all water bodies and no mining activities should be carried out in the safety barrier area

- Mitigative measures like construction of garland drains formation of earth bunds to be followed in the waste dumping areas to avoid wash off.
- Domestic effluents to be treated in scientific manner.
- Required statutory clearances to be obtained and all precautionary measures to be adopted wherever punping of ground water is involved.

(iii) Remedial Measures to reduce Noise & Vibration

- Planting rows of native trees around mine, along the roads, other noise generating centres to act as acoustic barriers.
- Sound proof operator's cabin for equipment like Excavators, tippers etc.
- Proper and regular maintenance of equipment may lead to less noise generation.
- Air silencers of suitable type that can modulate the noise of the engines of machinery to be utilized and will be maintained effectively.
- Providing in-built mechanism for reducing sound emissions.
- Providing earmuffs to workers exposed to higher noise level and to those persons operating or working close to any machine.
- Conducting regular health check-up of workers including Audiometric test for the workers engaged in noise prone area.

(iv) Remedial Measures to reduce Impact on Land Environment

Scientific reclamation measures to be adopted to reduce the impact of land environment due to mining.

(v) Remedial Measures to reduce Impact on Biological Environment

- The mineral bearing areas in the District is mostly of dry areas, afforestation to be carried out in the mining areas.
- Necessary mitigative measures like dust suppression, proper maintenance of equipments, black topping of roads etc., to be carried out to prevent dust generation & any further impact on the vegetation
- Effluents generated in the mining areas to be treated properly.

23.0. Reclamation of Mined out Area (Best practice already implemented in the district, requirement as per rules and regulations, proposed reclamation plan)

The reclamation of mined out lands by simultaneous backfilling and development of plantation in the backfilled areas will be the best practice of reclamation.

24.0. Risk Assessment & Disaster Management Plan

Risk Assessment and Disaster Management plan in connection with mining and allied operations should be spelt out in detail to cover possible dangers /risks/explosions/accidents etc., likely to arise from the project operations including onsite and off-site emergency plans to meet the disastrous situations if any.

The management is able to deal with the situation efficiently to reduce confusion keeping in view of the likely sources of danger in the mine.

(i) Outline of Disaster management plan :-

The purpose of disaster management plan is to restore the normalcy for early resumption of mining operation due to an unexpected, sudden occurrence resulting to abnormality in the course of mining activity leading to a serious danger to workers or any machinery or the environment.

(ii) System of communication:-

An internal communication system should be provided. Telephone nos. and addresses of adjoining mines, rescue station, police station, Fire service station, local hospital, electricity supply agency and standing consultative committee members should be properly updated and displayed.

(iii) Consultative committee:-

A standing consultative committee will be formed under the head of Mines. The members consists of Mines manager /safety officer / medical officer / public relation officer/Foreman/ and environmental engineer.

(iv) Facilities & Accommodation:-

Accommodation and facilities for medical centre, rescue room and for various working groups shall be provided. Regular checking of these facilities shall be undertaken.

(v) First Aid & medical facilities:-

The mine management should be having first aid / medical centre for use in emergency situation. All casualties should be registered and should be given first aid. The centre should have facilities for first aid & minor treatment, resuscitation, ambulance and transport. Proper telephone / wireless should be provided for quick communication with hospitals where the complicated cases are to be referred. Regular checking of these facilities shall be undertaken by the doctor and the in charge of the first aid room.

(vi) Stores and equipment:-

A detailed list of equipment available, its type & capacity and items reserved for emergency should be maintained.

(vii) Transport services:-

A well defined transport control system should be provided to deal with the situation.

(viii) Functions of public relations group:-

Liaison with representatives of the mine workers is required to ameliorate the situation of panic, tension, sentiments, grievances and misgivings created by any disaster. Management is required to ameliorate the injured, survivors and family members of affected persons by providing material, finance, moral support and establishing contact with relatives of victims. The consultative committee formed, especially the nominated public relation officer shall look into these aspects.

(ix) Security:-

Manning of security posts is very essential during the disaster management.

(x) Catering & Refreshment:-

Arrangement will be made for the victims, rescue teams and others.

25.0. Details of Occupational health issue in the District

The details of number of patients treated for silicosis and Tuberculosis for the last five years in the district is given below:

Si.No	Year	Number of patients treated for silicosis	Number of patients treated for Tuberculosis
1	2017	Nil	Nil
2	2016		
3	2015		
4	2014		
5	2013		

26.0. Plantation and Green belt development in respect of leases already granted in the district

It is necessary to develop Green belt in and around the polluted site with suitable species to reduce the air pollution effectively. Implementation of afforestation program is of paramount importance. In addition to augmenting existing vegetation, it also checks soil erosion, make the ecosystem more complex and functionally more stable and make the climate more conducive. Mining simultaneous backfilling method will be followed in most of the mining areas. During the operations, the plantation will be proposed and will be carried out on the safety barrier areas and also on the mined out and backfilling areas.

27.0 Any other information: Nil


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