DISTRICT SURVEY REPORT

FOR EARTH

THENI DISTRICT

TAMIL NADU STATE

தமிழ்நாடு அரசு
புவியியல் மற்றும் சுரங்கத்துறை

GOVERNMENT OF TAMIL NADU
DEPARTMENT OF GEOLOGY AND MINING

DEPARTMENT OF GEOLOGY

AND MINING

THENI DISTRICT

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DISTRICT SURVEY REPORT
OF
THENI DISTRICT

1.0 INTRODUCTION:

With reference to the gazette notification dated 15th January 2016, Ministry of Environment, Forest and Climate Change, the District Environment Impact Assessment Authority (DEIAA) and District -Environment Appraisal Committee (DEAC) are to be constituted for prior environmental clearance of quarry for minor and major minerals.

District Survey Report should be prepared with the assistance of irrigation department, Drainage department, Forest department, and Mining department and Revenue department in the district. The main purpose of preparation of District Survey Report is to identify the mineral resources and mining activities along with other relevant data of district. The SEIAA/DEIAA and SEAC/DEAC will scrutinize and recommend the prior environmental clearance for minor and major minerals on the basis of District Survey Report. The District Survey Report is prepared with the Assistance of Geological Survey of India, State Unit: Tamil Nadu and Puducherry, Chennai. The District Survey Report (DSR) report prepared based on the guidelines by MOEF S.O. 3611(E). dt 25.July 2018.

Theni District is one of the District of Tamil Nadu state in South India. It is, lying at the foot of the Western Ghats, is bounded by Dindigul District to the north, Madurai District in the East, Idukki district of Kerala State in the West and south and Virudhunagar District to the southwest. Theni District was formed by bifurcation from erstwhile Madurai District as per G.O. Ms. No. 679 Revenue Department, Dtd. July 7, 1996. Theni Municipal town was only a firka headquarters till 31.12.96. Consequent to the formation of the new district, Theni Municipal Town was upgraded as the Taluk and District headquarters on January 1, 1997.

The District lies between 09⁰30'00"N to 10⁰30'00"North Latitudes and 77⁰00'00"E to 78⁰ 30'00"East Longitudes and has an aerial extent of 3242.3 sq.km. (Fig No.1).

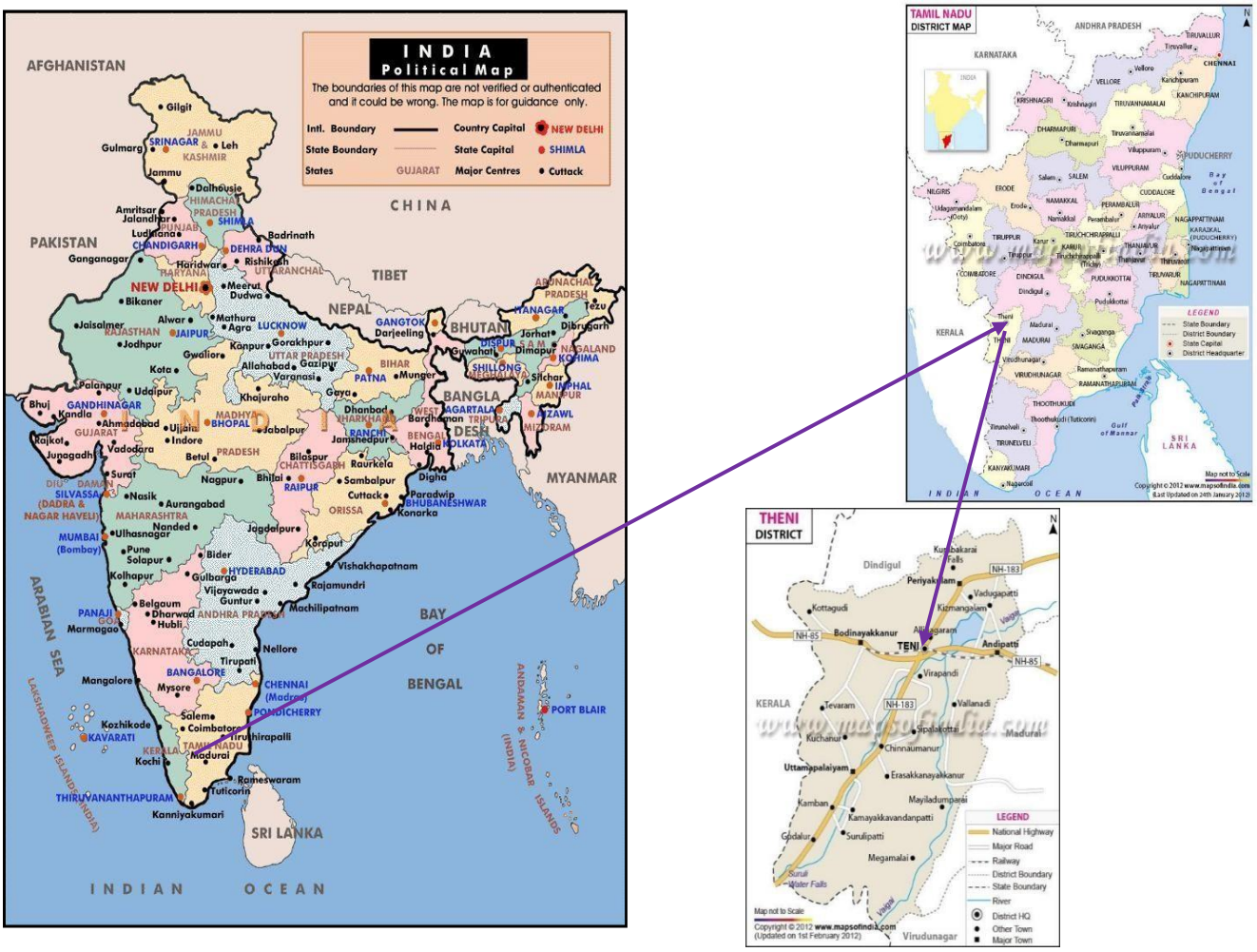


Fig No.1Location plan

2.0 OVERVIEW OF MINING ACTIVITY IN THE DISTRICT;

The minerals of economic importance found in Theni district of Tamil Nadu are granite and Limestone. Granite is mined in Myladumparai and limestone Mines are found in Thimmarasanaickanur and Myladumparai. Mining activities based on these minerals are very less. However, numerous rough stone quarries are operational for production of construction material and earth fill (gravel). In addition to above, manufacturing sand also called M. Sand is also mined.

The office of the Assistant Director, Department of Geology and Mining functions under the control of the District Collector, Theni. The Assistant Director, Geology and Mining assists the District Collector in the Mineral Administration works.Theni District has limited occurrence of minerals. The available Major mineral is Limestone and Minor Minerals are Granite and Charnockites. Charnockites are quarried for rough stones.

Granite:

Granite is found in Myladumparai village in Andipatti Taluk. The massive granite body trends in N60E-S60W with a dip of 80° to South. Granites (raw silk variety) are found in Myladumparai. Granites are quarried for dimensional stones.

Rough Stone

Charnockite and granitic gneisses are extensively quarried as rough stone which is used as aggregates for construction of building, laying of roads and for preparation of value added products like hollow blocks, pillar stones, M-sand etc. Charnockite occurs as massive bodies, medium to coarse grained in all the five taluks- Periyakulam, Theni, Andipatti, Bodinayakkanur and Uthamapalayam. At places in Thimmarasanayakkanur Bit-I, charnockite occurs with intercalations of calc granulite and hornblende biotite gneiss. Near E.Kamatchipuram, charnockite is found in association with calcgranulite+sillimanite while at places around Kullapuram, it is found associated with calc gneisses. Near Odaipatty, Charnockiteis found at a depth of nearly 15m below quartzo-feldspathic gneiss. Near Kombai, coarse grained granites and granitic gneisses are quarried for Roughstones.

Gravel/Savudu /Earth

Graval /Earth occurs in Bodinayakkanur, Uthamapalayam and Andipatty areas. They are mainly used asfilling material for building constructions and road works.

3.0 GENERAL PROFILE OF THE DISTRICT:

TheniDistrict holds Nature's beauty with the spicy green ornaments, historical temples and famous water falls. The Theni town in the District Headquarters known as the "Second Manchester of South India" indicates the various cotton trade. It is situated at 295 ft. above the mean sea level. Theni district ranks 2nd in ASIA in banana trading. It is known for the large scale trading of garlic, cotton, cardamom, grapes and chilli.

The Vaigai River, Kottagudi River, Suruliyar River, Varaganathi River, Manjalar River and Varattaru River flow through the district. The important reservoirs in the district are Vaigai Dam, Manjalaru Dam, Sothuparai Dam, Sanmughanathi Dam, Manalaru Dam and Melmanalaru Dam. Three hydropower station projects namely, Periyar, Surliar and Vaigai Micro Hydropower Station generate electricity in the district.

Agriculture, Industry and Trade play an important role for its economic developmental activities. Principal crops like paddy, sugarcane, cotton, coconut, groundnut and various kinds of fruits and vegetables viz. cholam, cumbu, redgram, greengram, blackgram, horsegram, turmeric, mango, banana, tapioca and gingelly are being cultivated in this district. Sericulture is another occupation of the people of the district.

Cotton Spinning Mills and sugar Mills are the major industries in this district. Handloom weaving and power looms are found in Andipatti Taluk. Plenty of wind mills were erected in this region with the help of Ministry of Non-Conventional Energy and Tamil Nadu Energy Development Agency. In Uthamapalayam Taluk, "Highwavis Estate" plays an important role in the production of tea.

DIVISION	TALUKS	Revenue Firkas	VILLAGES
Periyakulam	Theni	2	12
	Periyakulam	2	*22*
	Andipatti	4	25
Uthamapalayam	Uthamapalayam	6	39
	Bodinayakanur	3	15
Total		17	113

Table No. 1 General Profile

1.	Area	:	3242.3 Sq.km.		
2.	Population (as per Provisional 2011 Census)	:	24,79,052		
			Male	Female	Total
			625683	620216	1245899
			Rural	Urban	Total
			575418	670481	1245899
3.	No. of Revenue Divisions	:	2- Periyakulam, Uthamapalayam		
4.	No. of Taluks	:	5		
5.	No. of Revenue Villages	:	113		
6.	No. of Blocks	:	8		
7.	No. of Village Panchayats	:	130		
8.	No. of Town Panchayats	:	22		
9.	No. of Municipalities	:	6		
10.	No. of Panchayat Unions	:	8		
11.	No. of Parliamentary constituencies	:	1		
12.	No. of Assembly constituencies	:	4		
13.	Irrigation	:	1. Total Gross Area Irrigated		73221 Hec.
			2. Net area irrigated		59950 Hec.
14.	Road	:	1. State Highways		764.445 km
			2. Sugarcane Road		5.30km
			3. Other District Roads		389.90 km
			4. Major District roads		226.05 km
			5. National Highways		74.00 km
15.	Railways Route Length		1) Broad Gauge		7838
			2) Metre Gauge		12748
16.	Forest	:	1) Reserved Forest		35481hec
			2) Unclassified Forest		31094 hec
			3) Reserved Lands		-
17	Electricity	:	1) Hydro		578 m.units
			2) Wind Mill Generation		12.5 m.units
			3) Thermal		-
18.	Industries	:	1) Large Scale Industries		15
			2) Medium Scale Industries		4
			3) Small Scale Industries		209
			4) Cottage Industries		552

Fig No. 2 District Map

4. GEOLOGY OF THE DISTRICT

The Western Ghats comprises Charnockite Group of rocks while the plains are underlain by hornblende – biotite gneiss, silimanite- garnet-biotite gneiss. Alluvium quaternary sediments are spread almost in central part of the district. Around 70% of the total area is covered with charnockite followed by migmatite and khondalite.

The high grade metamorphic rocks are well exposed in the Theni district on the moderate to steeply sloping hills. These rocks are characterized into three Groups (Krishnan, 1949; Anon, 2005), viz.

i. Khondalite Group comprising of quartzite, pyroxene granulite, calc gneiss / spinel gneiss, crystalline limestone, minor garnet-cordierite gneiss and garnetiferousquartzo-feldspathic gneiss (leptynite).

ii. Charnockite Group consisting of acid charnockite and pyroxene granulite.

iii. Migmatite Complex represented by hornblende-biotite gneiss, grey granitic gneiss and pink migmatite.

KHONDALITE GROUP

Khondalite Group consists of meta-sedimentary rocks of arenaceous, calcareous and argillaceous composition metamorphosed under granulite facies and represented by quartzite, calc gneiss / diopside marble, garnet 30 sillimanite gneiss with minor bands of garnetiferousquartzo-feldspathic gneiss (leptynite), garnet cordierite gneiss. These rocks occur as either individual bands or as a set of sequence as „enclaves" or as tectonic slices within the predominantly charnockite-migmatite country.

Quartzite is the important member of Khondalite Group occupying the crest of linear ridges. The thickness varies from less than a metre to 150m. The quartzite is white or dirty white in colour and composed essentially of interlocking grains of quartz and feldspar, which is often kaolinised.

Mafic granulite is dark grey medium grained, evenly granular rock of thickness from 3 to 20m, which is inter banded with quartzite. It consists of mainly diopside, hypersthene, feldspar and quartz.

Calcareous gneiss is grayish white, medium grained, granular or gneissose rock with typical ribbed weathering. It consists mainly of green diopside, white calcite and quartz with pinhead size garnets, green apatite and magnetite as accessory minerals. The thickness of calc gneiss varies from a meter to 30 m. With the decrease of silicate minerals and increase of carbonates, the calc gneiss grades into crystalline limestone at a few places.

Garnet-silimanite gneiss represents metamorphosed pelitic sediments. This rock shows a thickness varying from 1 to 50m. Development of garnet is very profuse and at times, garnet rich layers of 1 to 2cm thick are found alternating with quartz feldspar rich layers. Silimaniteoccurs in varying amounts. Biotite is a common associate mineral. Development of cordierite is noticed in the garnet-silimanite gneiss in a few places.

Minor bands of a few centimetres to a couple of metres wide whitish looking quartzo- feldspathic gneiss (leptynite) with unevenly distributed pink garnets occurs as 31 inter-bands within garnet-sillimanaite gneiss. This rock represents the metamorphosed psammitic sediments within the predominant metapelitic rock. 2.1.2. Charnockite Group.

CHARNOCKITE GROUP

The Charnockite Group consists of acid to intermediate charnockite and the associated thin interbands and lenses of pyroxene granulite. The pyroxene granulite is dark grey granular to gneissic, medium grained and occurs mostly as unmappable bands within charnockite and hornblende biotite gneiss.

The charnockite is grey, greasy, medium to coarse grained massive rock and occupies a major part of Theni district. It occurs over the hills as well as the plains underlying the metasediments. The rock is chiefly made up of quartz, K-feldspar, plagioclase and hypersthene with apatite and magnetite as accessories. Pink garnets upto 1 to 2mm diameter are developed in places (Krishnan, 1949; Anon, 2005). 2.1.3.

MIGMATITE COMPLEX

The charnockitic rocks have been extensivelymigmatised due to later quartz feldspathic influx resulting in banded hornblende-biotite gneiss which with change in intensity of migmatisation grade into granitic gneiss and grey hornblende granite.

The hornblende biotite gneiss is medium to coarse, pale grey coloured rock and show banded structure with alternating quart-feldspar rich layers and hornblende biotite rich layers with individual layers ranging from 1mm to 1cm width imparting a well developed gneissosity to the rock. (Krishnan, 1949; Anon, 2005).

Granitic gneiss is grey, medium grained, well foliated rock with colour and compositional banding. It occurs mostly as band upto 15m wide, co-folded along with the metasediments. The rock is chiefly made up of quartz and orthoclase, which is mostly perthitic with plagioclase and biotite as the main accessories. The hornblende granite is a medium grained massive, grey coloured rock and is made up of quartz, K- 32 feldspar, and plagioclase with hornblende and biotite as accessories. Minute sulphide minerals mainly pyrite and pyrrhotite and rare chalcopyrite are seen embedded within hornblende and biotite in hand specimen.

A small band of carbonatite with magnetite is exposed at the foot hills around Cumbam Mettu. Younger intrusives that are noticed in the Theni district are thin veins of pegmatite seen cutting all the rocks. Pegmatite is coarse grained, mostly pink coloured with orthoclase and quartz as the main minerals. Biotite and magnetite occur in small. quantity. Quaternary sediments up to 10 to 30m thick occur in the Cumbum valley occupying the NNE-SSW troughs formed due to block faulting (graben). The Quaternary sediments of Theni district comprises gravity slided deposits and boulders and cobbles overlain by sheet wash and slope wash materials like medium sized boulders, pebbles and coarse sands. Colluvial deposits of assorted pebbles and sand are deposited at the bread in slope, which are overlain by a graded sequence of alluvial deposits of medium sands, find sand and slit. It is overlain by basal boulder bed, siliceous limestone, calcareous and ferruginous sandstone with calcrete and kankar layers and coarse sandstone interbedded with partly lithified sandstone and thin layers of Kankarand sand-silt-clay admixtures.

STRUCTURE

Three phases of folding are recognized with the earliest (F1) being tight to near isoclinal fold of reclined to recumbent type. The F2 fold is of close type with steep axial plane trending NE-SW with low southerly plunge. Third phase (F3) occur as open type along NW-SE to WNW- ESE axial trace. The main trend of the rock is NE-SW to E-W with moderate to steep dips towards SE and South. The area has undergone metamorphism of upper amphibolite to granulite facies with subsequent retrogression.

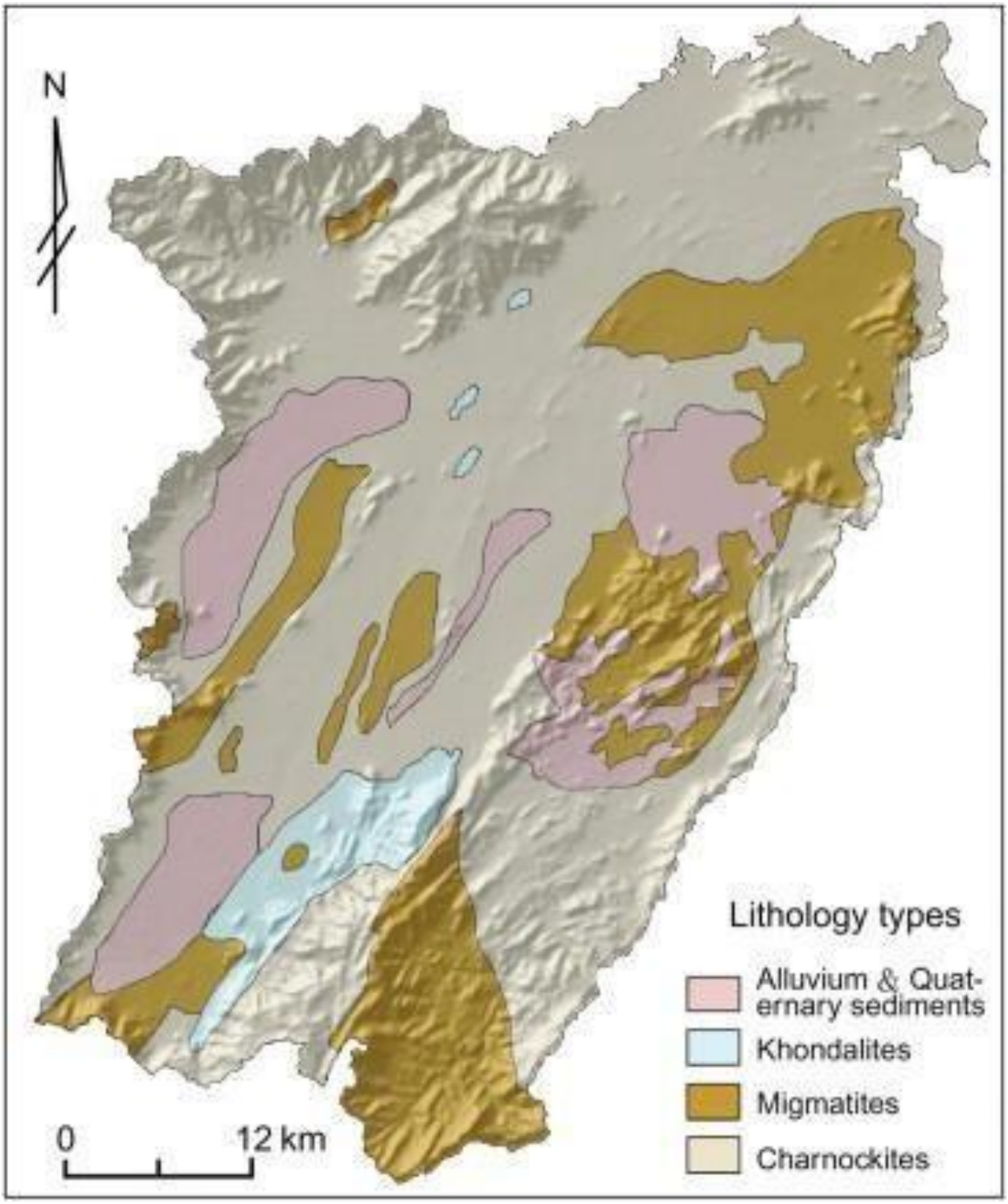


Fig No. 3 Lithology of the Map

(Source: Magesh et al., 2012)

5. DRAINAGE OF IRRIGATION PATTERN:

Vaigairiver has its origin in the eastern slope of Western Ghats in Gandamanayakanur. Theni district is drained by a network of rivers namely VaigaiRiver, SuruliAr, Periyarriver and KottagudiRiver. The tributaries of Vaigai river i.e. KoothantchiAr, Kottagudi River, Theniaru, Manjalar, Varahanadhi and some local streams are drained in this district. The regional drainage pattern is dentritic and major direction of the flow of river is easterly (east, southeast and northeast) from the Western Ghat hills.

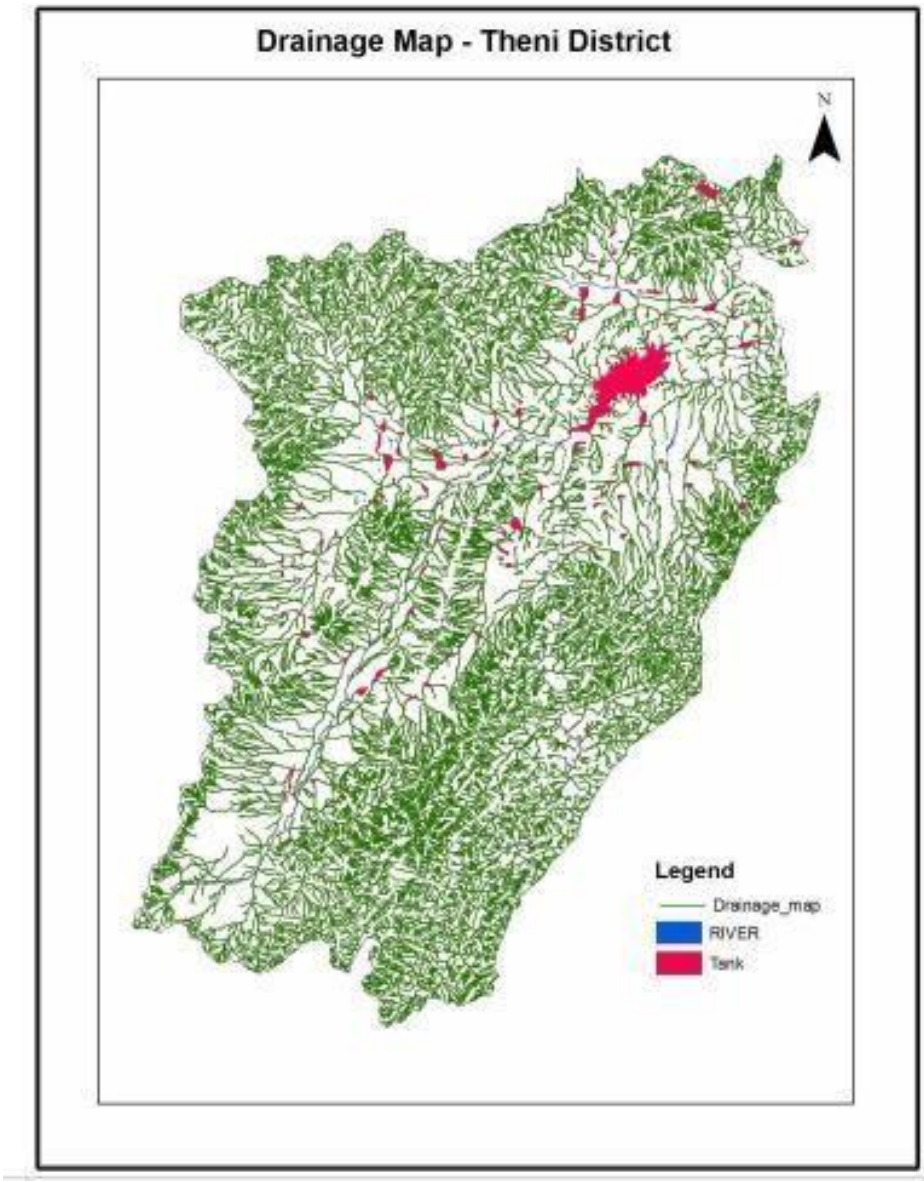


Fig No.4 Drainage Map (source Sukumar and Sankar, 2011

6. LAND UTILISATION PATTERN IN THENI DISTRICT

The land use pattern in the district is influenced by types of soil, goundwater, rainfall and irrigation projects. The major landuse type in the study area are barren land, crop land, dense forest and plantations, dry crop land, hill, shrub land, medium dense forest, reserved forest, and settlements. Around 40% of the total area is under cultivation, remaining forest and barren land are 34% and 26% respectively.

Soil is one of the natural resources that impacts the agricultural development of an area. Theni district is characterised by red, black and brown soils. The major part of the area is characterised by red gravelly soil (in deeply buried pediments and moderately buried pediments) with red loamy soil and. The red soils are medium to heavy textured soils with moderate to higher permeability. Red loamy soil is a product of weathered granite of Archaean and quartzite of Proterozoic age. The black soils are limited to less than 1% of the area. They are fine textured with low permeability. The brown soils are limited to less than 1% of the area and they characterised by low permeability. The alluvial soil (in the flood plains) at some places.

Groundwater is available up to 750m from the surface of the earth below which it decreases in amount, the reason being that the rocks are well compacted by pressure due to overburden. The water table may be met within a few hundred meters in humid regions while it is at the surface in swamps and lakes. The water table parallels the topography of the region. The depth to water table is closely related to the topography, subsurface lithology, precipitation, and also to the irrigation channels and surface water bodies. Excellent groundwater potential zone is concentrated in the north-eastern and north-western region of the district due to the distribution of alluvial plains and agricultural land with high infiltration ability (Magesh et al, 2012). The minimum depth of water table is in the range of 2 to 20 m in Theni district.

LAND USE PATTERN **Table No.2 - Landuse Classification**

Sl. No	Land Classification	Area (in Ha)
1	Forest	134812.92.0
2	Barren and Uncultivable uses	12224.50.5
3	Land put to Non Agricultural uses	24614.75.5
4	Cultivable Waste	2864.36.5
5	Permanent Pastures and Other Grazing Land	314.70.0
6	Land Under Miscellaneous Tree crops and Groves not included in net area sown	1249.66.0
7	Current Fallows	9880.83.5
8	Other fallows	25713.18.5
9	Net area sown	112555.26.0
10	Geographical Area according to Village records	324230.20.5
11	Total Cropped Area	127396.22.0
12	Area sown more than once	13270.66.5

Source: G Return- Fasli 1424,Deputy Director of Statistics, Theni)

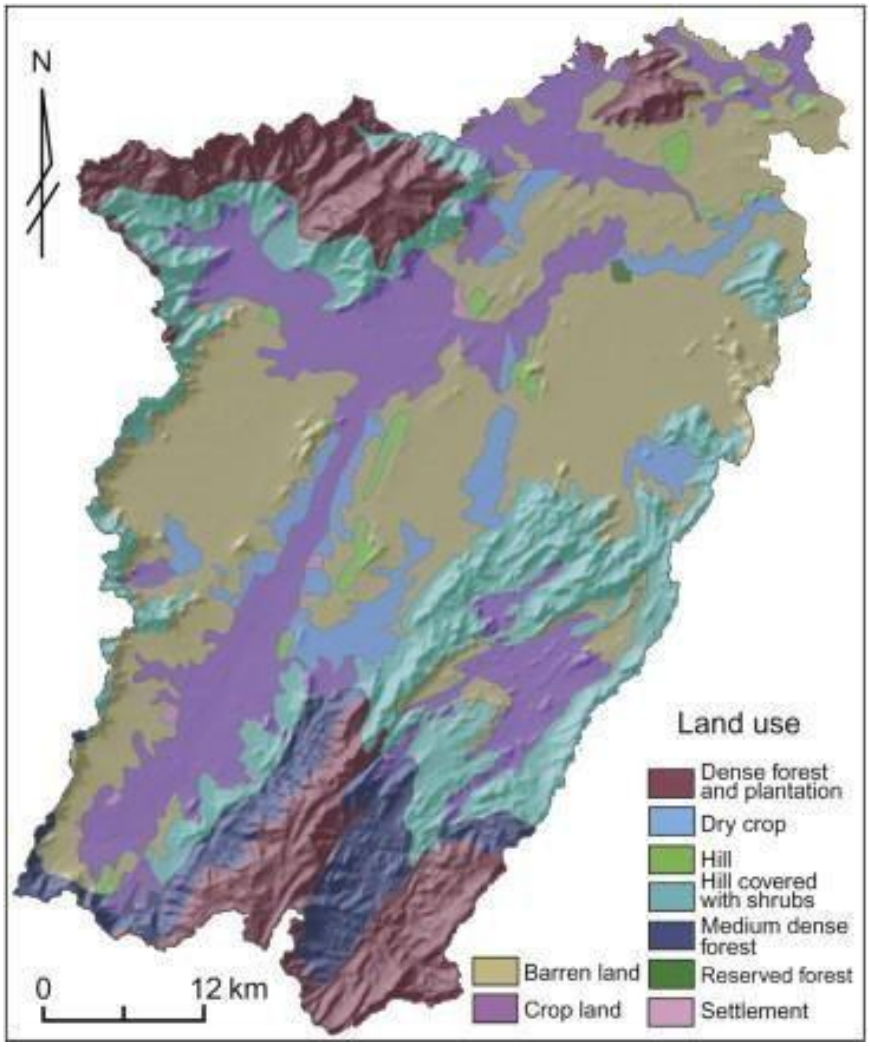


Fig.5 -Landuse map of Theni District
(Source: Magesh et al., 2012)

6.1 - FOREST:

Forests types in the district include Tropical West Coast semi-evergreen forests, Tropical moist mixed deciduous forests, Tropical secondary moist mixed deciduous forests, Tropical dry mixed deciduous forests, Tropical Carnatic Umbrella thorn forests and dry deciduous scrub. According to forest department of Tamil Nadu, the forest area in Theni district is about 27.6% to their total geographical area of the district. Theni forest division is one among the three divisions in Madurai region. The total forest area in Theni forest division is 895.79 sq.kms. The forest types in Theni district are - Southern Tropical West Coast semi-evergreen forests, Southern Tropical moist mixed deciduous forests, Southern Tropical secondary moist mixed deciduous forests, Southern Tropical dry mixed deciduous forests, Southern Tropical Carnatic Umbrella thorn forests, Southern dry deciduous scrub.(Source: District Census Handbook).

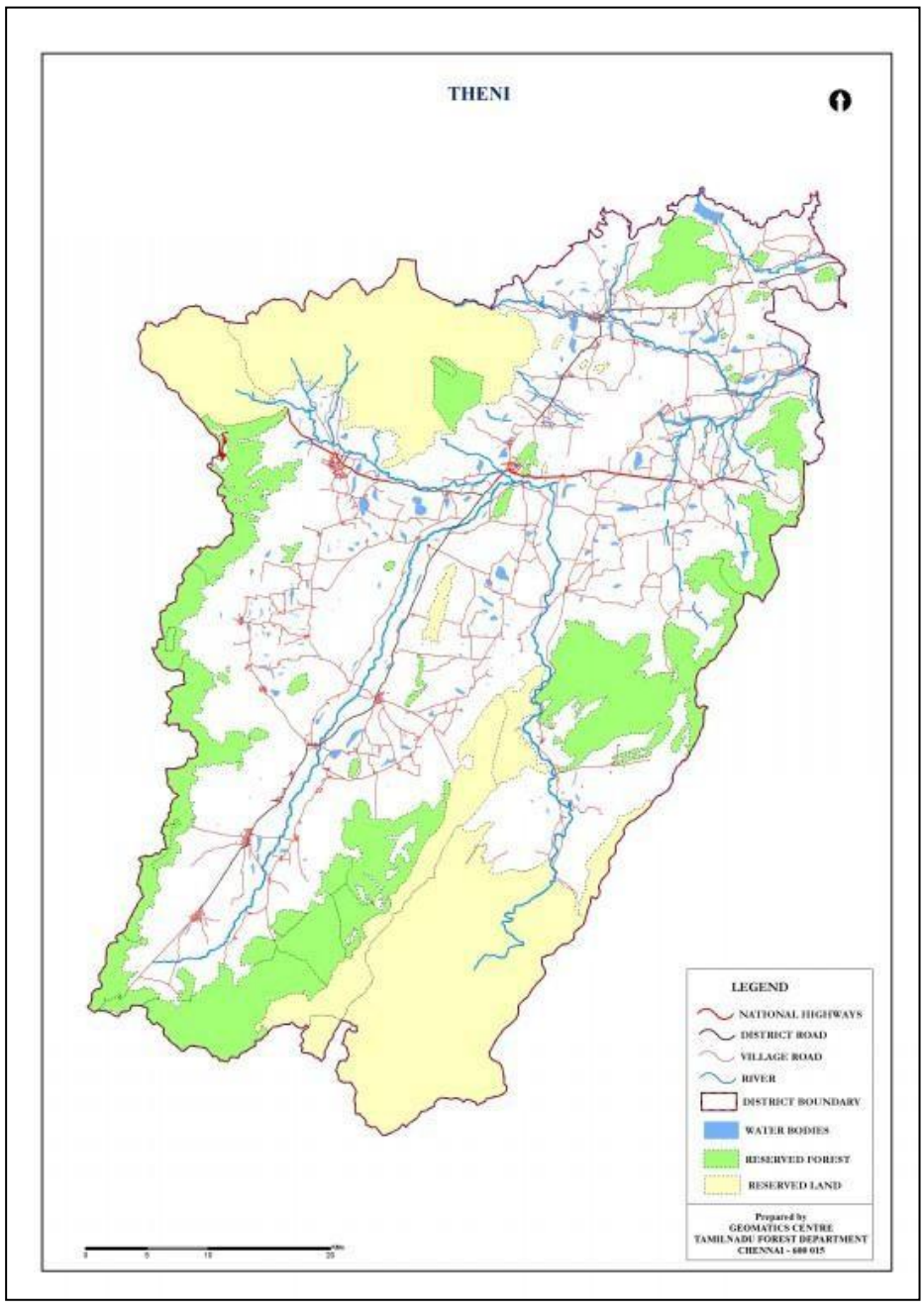


Fig No. 6 Forest Map

AGRICULTURE

The district is characterised by Red, Black and Brown soils. The major part of the area is characterised by red soil, which can be either transported or lateritic (insitu). These are medium to heavy textured soils with moderate to higher permeability. The black soils are limited to less than 1% of the area. They are fine textured with low permeability. The brown soils are limited to less than 1% of the area and they characterised by low permeability.

HORTICULTURAL

Horticulture sector has emerged as one of the important and vibrant part of Indian agriculture in recent years. Its role in the Country's nutritional security, poverty alleviation and employment generation programme is becoming increasing important. It offers not only a wide range of options to the farmers for crop diversification for making agriculture more profitable through efficient land use, but also provides ample scope for sustaining large number of agro-industries which generate huge employment opportunities. Horticulture crops identified as a means of diversification, optimum utilization of natural resources and creating skilled employment for rural masses especially women folk.

Major horticulture crops cultivated in this district are fruits crops like mango, banana, grapes, guava and aonla, tropical vegetables like bhendi, tomato, brinjal, onion, temperate vegetables like cauliflower, beetroot and knol-khol, spices and condiments like pepper and cardamom and plantation crops like coffee and tea

7. SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT

BASIN AND SUB-BASIN

The district is part of vaigai sub basin.

DRAINAGE

Vaigairiver has its origin in the eastern slope of Western Ghat atGandamanayakanur. Suruliar, Theniar, Varahanadhi and Manjalar are itsmain tributaries.The regional drainage pattern is dentritic and major direction of the flow ofriver is easterly (east, southeast and northeast) from this Western Ghat hills.

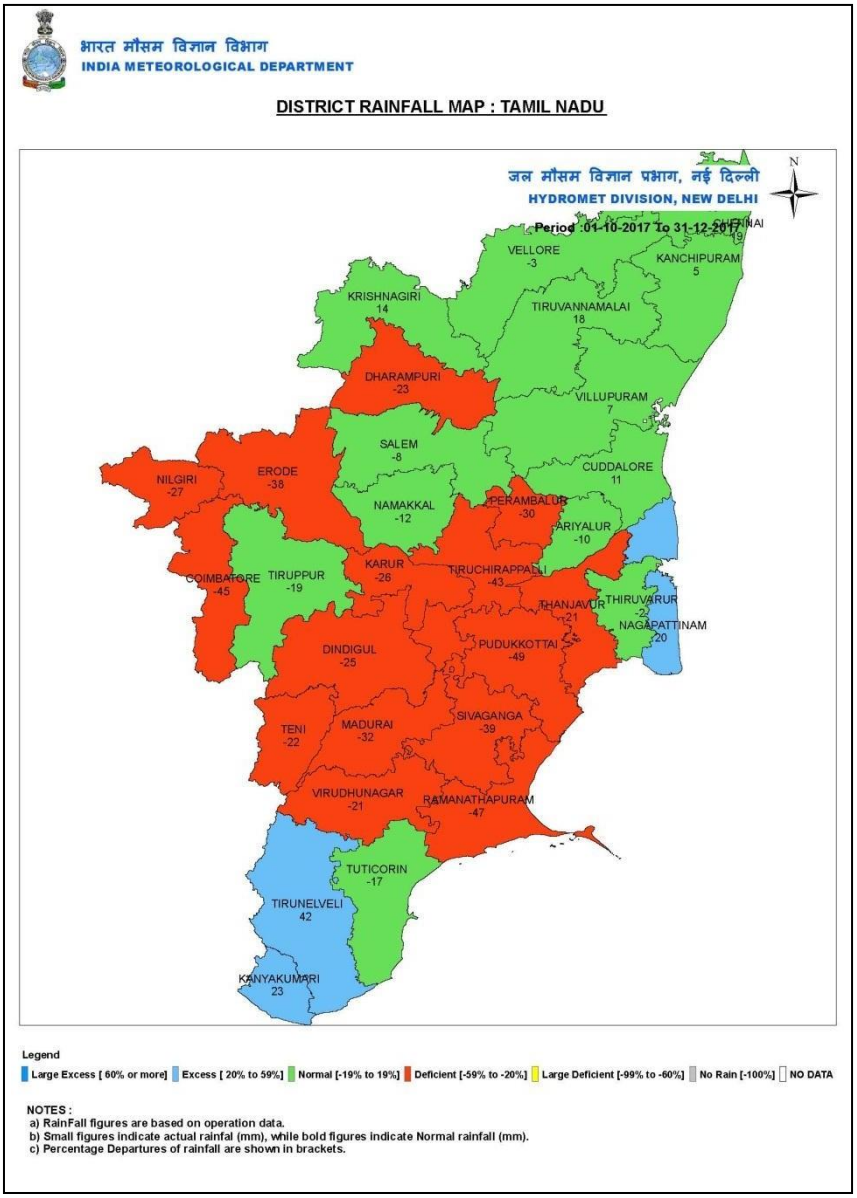
OCUURENCE OF GROUND WATER

Ground water occurs under water table or phreatic conditions in weathered, jointed and fractured formations. The pore space developed in the weathered mantle(disintegrated material) acts as shallow granular aquifers and forms the potential water bearing and yielding zones. Water table is very shallow in canal and tank irrigated regions whereas it is somewhat deeper in other regions. Ground water occurs under water table or phreatic conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissicformations. As a result, these are not termed as potential water bearing zones excepting in a region where the intensity of weathering coupled with development of joints andfractures is greater. Sometimes the occurrence of kankar material over charnockitehampers the permeability and well yielding capacity. Ground water occurs under water table or semi confined conditions. The valleyfill sediments are highly porous and permeable and the sandy material facilitates verticalinfiltration. Valleyfill sediments play a vital road in the development of Ground Water in Theni District.

Ground water occurs under water table or semi confined conditions. The valleyfill sediments are highly porous and permeable and the sandy material facilitates verticalinfiltration. Valleyfill sediments play a vital road in the development of Ground Water in Theni District.

8.0 RAINFALL OF THE DISTRICT AND CLIMATE CONDITION:

In the plains, the temperatures ranges from a minimum of 19.9 °C to a maximum of39.5 °C. In the hills the temperatures can range from as low as 4-5 °C to 25 °C. The mean daily minimum temperature varies from 20.9°C (January) to 26.3°C (May) and mean daily maximum temperature varies from 29.7°C (December) to 37.5°C (May). The district is known for its salubrious climate. Theni District comes under the Western Agro climatic Zone. In general, the humidity is high and during the month of November, it is highest. The relative humidity ranges from 37 to 75 percent.



http://hydro.imd.gov.in/hydrometweb/(S(smwwf455h1k0ul45nq3dyg45))/landing.aspx#

Fig No.7 District Rainfall Map

In the plains, the temperatures ranges from a minimum of 19.9 °C to a maximum of39.5 °C. In the hills the temperatures can range from as low as 4-5 °C to 25 °C. The mean daily minimum temperature varies from 20.9°C (January) to 26.3°C (May) and mean daily maximum temperature varies from 29.7°C (December) to 37.5°C (May). The district is known for its salubrious climate. Theni District comes under the Western Agro climatic Zone. In general, the humidity is high and during the month of November, it is highest. The relative humidity ranges from 37 to 75 percent.

The District Rainfall in millimeters (R/F) are shown below. % Dep. are the departures of rainfall from the long period averages of rainfall for the district.

YEAR	JAN		FEB		MAR		APR		MAY		JUN	
	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP
2012	25.8	61	4.0	-79	4.2	-88	78.0	6	40.9	-31	35.3	60
2013	0.2	-99	44.4	129	63.5	79	43.0	-41	69.8	17	94.9	331
2014	2.0	-88	8.5	-56	39.0	10	26.6	-64	161.3	171	29.0	32
2016	1.6	-90	1.4	-93	11.8	-67	11.3	-85	67.4	13	44.8	104

YEAR	JUL		AUG		SEPT		OCT		NOV		DEC	
	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP
2012	34.2	5	66.1	98	23.9	-66	199.3	19	80.6	-42	19.8	-61
2013	90.1	176	121.9	266	64.6	-8	149.8	-11	79.2	-43	28.9	-44
2014	73.2	125	137.5	313	63.0	-11	272.9	63	79.8	-43	46.0	-10
2016	65.2	100	15.8	53	6.1	-91	103.8	-38	21.6	-84	14.9	-71

Source: IMD

Table No.3 Rainfall data

9. DETAILS OF THE MINING LEASE IN THE DISTRICT:

EARTH

Aeolian deposits of Earth, Brick Earth, occur in Andipatty, Uthamapalayam and Bodinayakkanur area. Earth deposits is formed due to geological action of wind resulting the formation of dunes in Bodinayakkanur.

A) ANDIPATTI, BODINAYAKKANUR AND UTHAMAPALAYAM AREA

The area is an Aeolian deposit, the accumulation of sand due to the action of wind activity. These wind may erode, transport and deposit material and are effective agents in the region with sparse vegetation and a large supply of unconsolidated sediments although water is a much more powerful eroding force than wind, Aeolian processes are important in arid environment.

Earth quarry leases granted in the villages of Ramakrishnapuram, Thekkampatty, Mottanuthu in Andipatty Taluk, Cumbum, Kombai (West), Seepalakottai, Uthamapalayam, Odaipatty and Pottipuram in Uthamapalayam Taluk, Rasingapuram and Silamalai in Bodinayakkanur Taluk.

A total number 21 quarry leases granted in Theni District for quarrying Earth. The Earth used for filling purposes in building constructions and Road work and also used in Country Kiln for Brick Manufacturing. The list of the Earth quarry lease is given below.

9. DETAILS OF THE MINING LEASE IN THE DISTRICT AS PER FOLLOWING FORMAT

Mineral : Earth

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of Lessee	Mining lease Grant Order No. & date	Area of Mining lease (ha)	Period of Mining lease (Initial)		Period of Mining lease (1st/2nd… renewal)		Date of commencement of Mining Operation	Status (Working / Non-Working / Temp. 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/Underground)
						From	To	Form	To						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Earth & Turf	S.Kumbeswaran	S/o.A.Selvam, Rajathani, Andipatty	District Collector Proceedings Roc.No. 76/Mines/2016, dated 28.11.2016	2.16.5	28.11.2016	27.11.2019	-	-	02.12.2016	Non-Working (Approved Quantity exhausted)	Non Captive	Yes - SEIAA-TN/F. No.5668/ 1(a)/EC. No.3734/ 2016, dt.26.09.2016.	09°54'58.28 N to 09°55'03.20 N 77°37'15.75 E to 77°37'24.26 E	Open cost
2	Earth	R.Ramar	S/o.Ramasamy, T.Kallupatti Village, PeraiyurTaluk, Madurai District	District Collector Proceedings Roc.No. 161/Mines/2014, dated 28.08.2017	4.36.0	28.08.2017	27.08.2020	-	-	30.08.2017	Non-Working	Non Captive	Yes - SEIAA/TN/F. No.6340/ DEIAA/ THN/F. No.0008/ 2017, dt.10.07.2017.	09°56'18 N to 09°56'24 N 77°32'43 E to 77°32'54 E	Open cost

3	Earth	R.S.Arun	S/o.S.R.Subramaniam, No.1, Gandhiji Road, Erode.	District Collector Proceedings Roc.No. 358/Mines/2017, dated 16.08.2018	2.34.0	27.08.2018	26.07.2019	-	-	12.09.2018	Working	Non Captive	Yes - SEIAA/TN/F. No.11541/DEIAA/THN/F. No.00046/2018, dt.16.02.2018	09°54'55 N to 09°54'59 N 77°33'24 E to 77°33'34 E	Open cost
4	Earth & Turf	R.Murugan	S/o.K.Rasupillai, No.1/287, MuniappanKoil Street, Silamalai Village, Bodinayakkanur	District Collector Proceedings Roc.No. 135/Mines/2013, dated 22.05.2017	1.03.0	22.05.2017	21.05.2020	-	-	24.05.2017	Non-Working	Non Captive	Yes - SEIAA-TN-/F.No.4086/1(a)/EC No.3907/2016, dt.24.11.2016		Open cost
5	Earth	R.Mokkasamy	S/o.R.Ramasamy, No.32/A, ThelunguChettiyar Street, Vazhaiyathupatti, Boothipuram, BodinayakkanurTaluk, Theni District	District Collector Proceedings Roc.No. 416/Mines/2017, dated 01.03.2019	3.58.0	01.03.2019	28.02.2021	-	-	08.03.2019	Working	Non Captive	Yes - SEIAA/TN/F. No.18150/2017/DEIAA/THN/F. No.00040/2018, dt.17.10.2018	10°00'01"N to10°00'08"N 77°24'59"E to 77°25'08"E	Open cost
6	Earth	C.Rajendiran	S/o.K.Cellapillai, No.28E, 2-3, 3rd South Street, Bharathiyar Nagar, Cumbam, UthamapalayamTaluk, Theni District	District Collector Proceedings Roc.No. 18/2015/Mines, dated 24.05.2016	2.72.0	24.05.2016	23.05.2019	-	-	10.06.2016	Working	Non Captive	Yes - SEIAA-TN/F. No.3640/1(a)/EC. No.3117/2015, dt.11.03.2016.	09°43'21 N to 09°43'28 N 77°14'36 E to 77°14'48 E	Open cost

7	Earth	P. Elangovan	S/o.Pathinettampadiyan, No.16, W-5, Vellaiyathevan Street, Hanumanthanpatty, UthamapalayamTaluk, Theni District	District Collector Proceedings Roc.No. 220/2015/Mines, dated 18.11.2016	1.01.0	18.11.2016	17.11.2019	-	-	23.11.2016	Working	Non Captive	Yes - SEIAA-TN/F. No.5213/1(a)/EC. No.3534/2016, dt.10.08.2016.	09°47'27.73 N to 09°47'33.39 N 77°17'39.92 E to 77°17'44.28 E	Open cost
8	Earth	E.Srinath	S/o.Eswaran, No.4/63, North Street, Gokilapuram Village, Uthamapoalayam Taluk, Theni District	District Collector Proceedings Roc.No. 12/Mines/2016, dated 31.07.2017	0.74.0	31.07.2017	30.07.2020	-	-	03.08.2017	Working	Non Captive	Yes - SEIAA-TN/F. No.5026/1(a)/EC. No.3877/2016, dt.05.06.2016.	09°50'45 N to 09°50'47 N 77°27'38 E to 77°27'42 E	Open cost
9	Earth	S.Alagarsamy	S/o.R.Subbaiah, Gandhi Gramam, AtturTaluk, Dindigul District	District Collector Proceedings Roc.No. 80/Mines/2016, dated 31.07.2017	1.99.7	31.07.2017	30.07.2020	-	-	02.08.2017	Working	Non Captive	Yes - SEIAA-TN/F. No.5847/1(a)/EC. No.3873/2016, dt.14.11.2016.	10°01'04 N to 10°01'09 N 77°32'49 E to 77°32'55 E	Open cost
10	Earth	S.Rajasekar	S/o.K.P.Sannasi, No.33C/11, SamyKulam 2nd Street, Chinnamanur, Uthamapalayam	District Collector Proceedings Roc.No. 231/Mines/2015, dated 28.08.2017	1.52.5	28.08.2017	27.08.2020	-	-	29.11.2017	Non-Working (Approved Quantity exhausted)	Non Captive	Yes - SEIAA-TN/F. No.4779/1(a)/EC. No.3183/2015, dt.04.04.2016.	09°56'08 N to 09°56'12 N 77°19'15 E to 77°19'21 E	Open cost

11	Earth	S.Muthuchamy	S/o.Selvaraju, D.No.1/30, Velayuthamapalayam, VedasandurTaluk, Dindigul District	District Collector Proceedings Roc.No. 186/Mines/2012, dated 01.09.2017	1.89.0	01.09.2017	31.08.2020	-	-	25.09.2017	Working	Non Captive	Yes - SEIAA-TN/F. No.3932/1(a)/EC. No.3020/2015, dt.19.02.2016	09°48'01 N to 09°48'10 N 77°25'33 E to 77°25'38 E	Open cost
12	Earth	M.Vikraman	S/o.M.Muthuvijayan, No237/2 Ward, Near Over Tank, Rasingapuram, BodinayakkanurTaluk, Theni District	District Collector Proceedings Roc.No. 135/Mines/2014, dated 05.10.2017	0.66.5	05.10.2017	04.10.2019	-	-	10.10.2017	Non-Working	Non Captive	Yes - SEIAA-TN/F. No.4569/1(a)/EC. No.3067/2015, dt.02.03.2016.	09°56'50 N to 09°56'54 N 77°19'00 E to 77°19'04 E	Open cost
13	Earth	R.Ramesh	S/o.P.Ramakrishnan, No.294/5C, Ranger Office Road, Cumbum, UthamapalayamTaluk, Theni District	District Collector Proceedings Roc.No. 163/Mines/2017, dated 30.11.2017	1.09.6	30.11.2017	29.11.2020	-	-	13.12.2017	Working	Non Captive	Yes - SEIAA/TN/F. No.7286/2017/DEIAA/THN/F. No.00019/2017, dt.16.10.2017.	09°44'18"N to 09°44'21"N 77°14'13"E to 77°14'19"E	Open cost
14	Earth & Turf	S.Mathiyalagan	S/o.P.K.Sivaji, ChinnaOvulapuram (Post), UthamapalayamTaluk, Theni District	District Collector Proceedings Roc.No. 91/Mines/2011, dated 09.01.2018	1.68.25	22.01.2018	21.01.2021	-	-	31.01.2018	Non-Working	Non Captive	Yes - SEIAA-TN/F. No.4584/1(a)/EC. No.3146/2015, dt.11.03.2016.	09°56'17 N to 09°56'22 N 77°19'03 E to 77°19'14 E	Open cost

15	Earth & Turf	P.Vinnarasu	S/o.Pannerselvam, No.23A, KallarPalliTheru, Pannaipuram Village, UthamapalayamTaluk, Theni District	District Collector Proceedings Roc.No. 110/Mines/2016, dated 29.01.2018	1.38.5	29.01.2018	28.01.2021	-	-	31.01.2018	Non-Working	Non Captive	Yes - SEIAA/TN/F.No.8636/2017/DEIAA/THN/F.No.00026/2017, dt.05.12.2017	09°55'36"N to 09°55'43"N 77°17'52"E to 77°17'56"E	Open cost
16	Earth	K.C.Bose	S/o.K.Chinnathevar, Door No.25/2, Ulagathevar Street, Cumbum, UthamapalayamTaluk, Theni District	District Collector Proceedings Roc.No. 5/Mines/2013, dated 19.07.2018	1.09.0	19.07.2018	18.07.2019	-	-	01.08.2018	Working	Non Captive	Yes - SEIAA/TN/F. No.6979/2017/DEIAA/THN/F. No.00010/2017, dt.05.12.2017.	09°45'22.81 N to 09°45'26.86 N 77°14'51.98 E to 77°14'56.53 E	Open cost
17	Earth	S. Karthiyasamy	S/o.K.Sinnan, Ward-17, Sokkanathapuram, Chinnamanur, Uthamapalayam.	District Collector Proceedings Roc.No. 66/Mines/2015, dated :16.08.2018	2.22.5	16.08.2018	15.08.2020	-	-	03.09.2018	Working	Non Captive	Yes - SEIAA-TN/F. No.4003/1(a)/EC. No.3147/2015, dt.11.03.2016.	09°48'01 N to 09°48'10 N 77°25'33 E to 77°25'38 E	Open cost
18	Earth	R. Ramaraj	S/o.Ramasamy, No.38/4, Mandabam Street, Venkatachalapuram, Thandicherry Via, Theni	District Collector Proceedings Roc.No. 129/Mines/2016, dated :16.08.2018	1.06.0	16.08.2018	15.08.2020	-	-	22.11.2017	Working	Non Captive	Yes - SEIAA-TN/F. No.5801/1(a)/EC. No.3867/2016, dt.14.11.2016.	09°48'25.81 N to 09°48'29.95 N 77°25'42.43 E to 77°25'48.23 E	Open cost

19	Wind Earth	H.MohamedAbubakkarSiddeeq	S/o.A.HidayaThulla, No.6-9-6, PalliVasal Street, Muthuthevanpatti, Veerapandi Post, TheniTaluk, Theni District	District Collector Proceedings Roc.No. 198/Mines/2017, dated :16.08.2018	0.48.5	16.08.2018	15.08.2019	-	-	31.01.2019	Working	Non Captive	Yes - SEIAA/TN/F. No.8663/2017/DEIAA/THN/F. No.00030/2018, dt.16.02.2018.	09°55'20.30 N 77°18'29.00 E	Open cost
20	Wind Earth	H.MohamedAbubakkarSiddeeq	S/o.A.HidayaThulla, No.6-9-6, PalliVasal Street, Muthuthevanpatti, Veerapandi Post, TheniTaluk, Theni District	District Collector Proceedings Roc.No. 197/Mines/2017, dated :16.08.2018	1.12.0	16.08.2018	15.08.2020	-	-	25.09.2018	Working	Non Captive	Yes - SEIAA/TN/F. No.8673/2017/DEIAA/THN/F. No.00029/2018, dt.16.02.2018.	09°55'36.85 N 77°19'08.45 E	Open cost
21	Wind Earth	C.Sudhanthiran	S/o.Chinnaiah, No.3/483, Veeradipatti, Vamban Post, AlangudiTaluk, Pudukottai District	District Collector Proceedings Roc.No. 244/Mines/2018, dated :07.03.2019	2.29.0	07.03.2019	06.03.2021	-	-	15.03.2019	Working	Non Captive	Yes - SEIAA/TN/F. No.18206/DEIAA/THN/F. No.00030/2018, dt.17.10.2018	09°55'39"N to 09°55'46"N 77°17'27"E to 77°17'37"E	Open cost

10. Details of Royalty / Revenue received in the last three years (2015-16 to 2017-18)

Table No.5

The commodity-wise revenue collection for the last three years is given below

Sl. No	Year	Earth
1	2015-2016	Rs. 39,09,310
2	2016-2017	Rs. 35,31,825
3	2017-2018	Rs.1,46,25,502

11. Details of Production of Minor Mineral in last three Years:

Table No.6

Details of Production of Earth Mineral in last three Years

MINERAL PRODUCTION FOR THE YEAR 2015 - 2018		
Sl. No.	Year	Minor Minerals (Cbm)
		Earth
(1)	(2)	(3)
1	2015-16	111645
2	2016-17	**67209**
3	2017-18	**397851**

12. MINERAL MAP OF THE DISTRICT

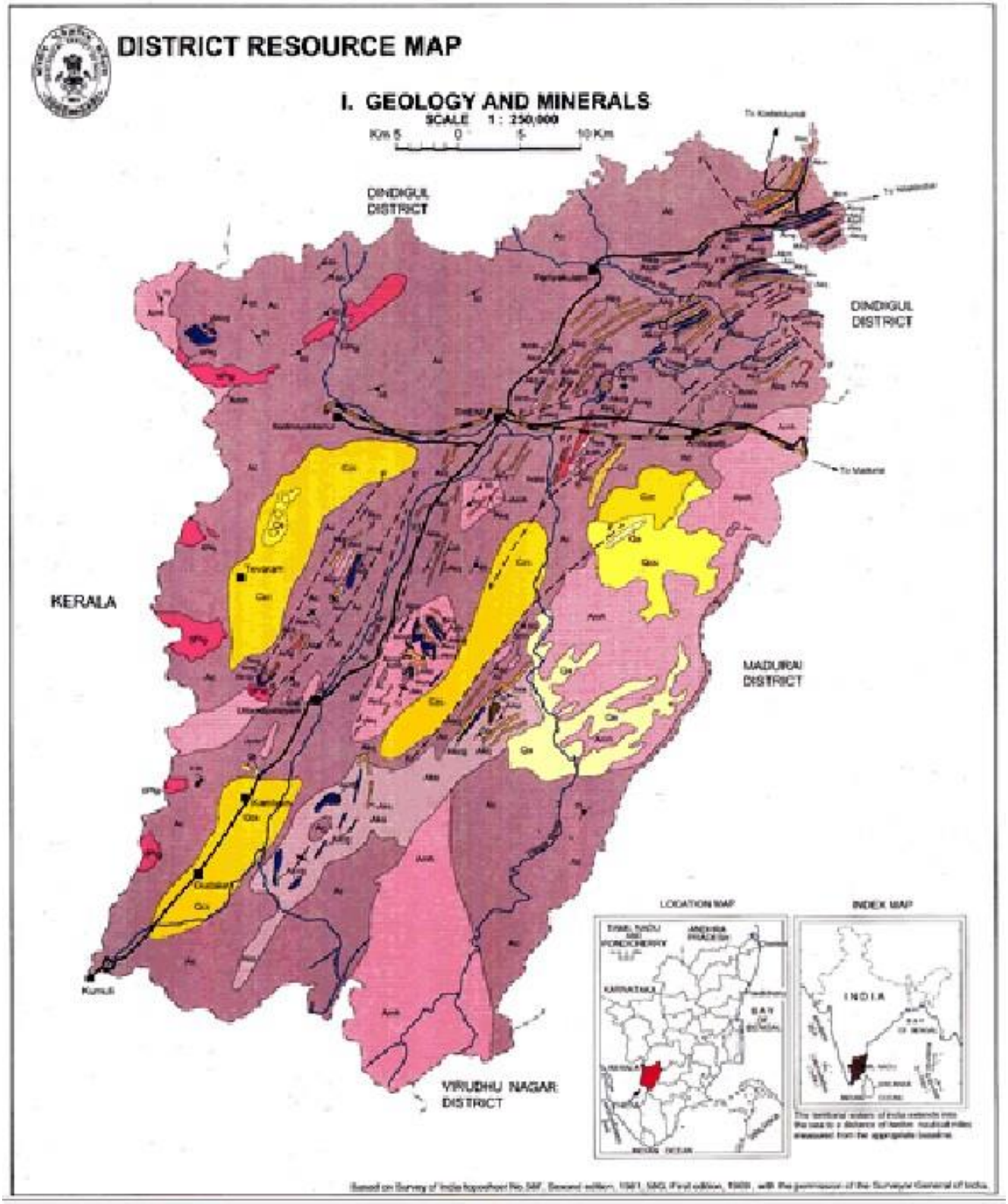


Fig No. 8 Mineral Map of the District

13.0 - LIST OF LETTER OF INTENT (LOI) HOLDER IN THE DISTRICT ALONG WITH ITS VALIDITY

Mineral : Earth / Wind Earth

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.	Earth	G.Murugan	CumbamUthamapalayam.	Roc.No.285/Mines/2018, date:28.12.2018.	0.84.0	-	Non-Captive	09° 42 ' 51 " N to 09° 42 ' 54 " N 77° 15 ' 02 " E to 77° 15 ' 06 " E
2.	Wind Earth	N. Rajesh	Devakottai, Sivakangai.	Roc.No.63/Mines/2018, date:26.11.2018	0.66.77	-	Non-Captive	09° 57 ' 18 " N to 09° 57 ' 23 " N 77° 19 ' 25 " E to 77° 19 ' 30 " E
3.	Earth	S.Sivaram	Bommayagoundanpatti, Theni.	Roc.No.118/Mines/2018, date:19.12.2018	0.82.0	-	Non-Captive	10° 03 ' 16 " N to 10° 03 ' 19 " N 77° 27 ' 46 " E to 77° 27 ' 50 " E
4.	Earth	M.Jhanakiram	Andipatty	Roc.No.128/Mines/2018, date:09.11.2018	2.80.0	-	Non-Captive	09° 59 ' 53 " N to 10° 00 ' 02 " N 77° 39 ' 14 " E to 77° 39 ' 20 " E
5.	Wind Earth	G.Sasi	Cumbum, Uthamapalayam.	Roc.No.24/Mines/2018, date:28.09.2018.	2.49.5	-	Non-Captive	09° 57 ' 31 " N to 09° 57 ' 39 " N 77° 17 ' 52 " E to 77° 17 ' 59 " E
6.	Earth	M.AbubackarSithick	Thenkarai, Periyakulam.	Roc.No.347/Mines/2018, date:01.03.2019.	1.93.5	-	Non-Captive	10° 08 ' 59 " N to 10° 09 ' 05 " N 77° 31 ' 33 " E to 77° 31 ' 38 " E

7.	Wind Earth	P.Gunasekarapandiyan	Uthamapalayam.	Roc.No.351/Mines/2018, date:01.03.2019	4.03.5	-	Non-Captive	09^{O} 56 ’ 59 ” N to 09^{O} 57 ’ 08 ” N 77^{O} 19 ’ 14 ” E to 77^{O} 19 ’ 24 ” E
8.	Earth	R.Singaperumal	Vellaiammalpuram, Uthamapalayam.	Roc.No.119/Mines/2016, date:16.08.2016	2.79.5	-	Non-Captive	09^{O} 46 ’ 55.51 ” N to 09^{O} 46 ’ 50.59 ” N 77^{O} 25 ’ 58.30 ” E to 77^{O} 25 ’ 10.54 ” E
9.	Earth	V.Manikandasamy	Rasingapuram, Bodinayakkanur	Roc.No.317/Mines/2018, date:07.03.2019	2.56.0	-	Non-Captive	09^{O} 57 ’ 31.73 ” N to 09^{O} 57 ’ 37.00 ” N 77^{O} 18 ’ 54.90 ” E to 77^{O} 19 ’ 04.26 ” E
10	Earth	P.Ganesan	Unjampatty, Theni.	Roc.No.324/Mines/2018, date:01.03.2019	1.32.0	-	Non-Captive	09^{O} 55 ’ 54 ” N to 09^{O} 55 ’ 58 ” N 77^{O} 20 ’ 52 ” E to 77^{O} 20 ’ 58 ” E
11.	Earth	V.Murugesan	Thevaram, Uthamapalayam	Roc.No.202/Mines/2018, date:28.12.2018	2.36.0	-	Non-Captive	09^{O} 53 ’ 29 ” N to 09^{O} 53 ’ 35 ” N 77^{O} 27 ’ 18 ” E to 77^{O} 27 ’ 23 ” E

14.0 TOTAL MINERAL RESERVE AVAILABLE IN THENI DISTRICT.

Mineral: Earth / Wind Earth

S. No	Name of the Lessee / LOI Holder	Village	Taluk	Earth (in cbm)
1	G.Murugan	Cumbam	Uthamapalayam	12600
2	N. Rajesh	Rasingapuram	Bodinayakkanur	45900
3	S.Sivaram	Unjampatty	Theni	8200
4	M.Jhanakiram	Thimmarasanaickanur Bit-II	Andipatty	28000
5	G.Sasi	Rasingapuram	Bodinayakkanur	62375
6	M.AbubackarSithick	Vadakarai Bit-I	Periyakulam	19350
7	P.Gunasekarapandiyan	Rasingapuram	Bodinayakkanur	161400
8	R.Singaperumal	Odaipatty	Uthamapalayam	111800
9	V.Manikandasamy	Rasingapuram	Bodinayakannur	25600
10	P.Ganesan	Rasingapuram	Bodinayakkanur	66000
11	V.Murugesan	Poomalaikundu	Theni	23600

Table No7 total mineral reserve available in the district.

15.0 - QUALITY / GRADE OF MINERAL AVAILABLE IN THE DISTRICT

The Western Ghats comprises Charnockite Group of rocks while the plains are underlain by hornblende – biotite gneiss, silimanite- garnet-biotite gneiss. Alluvium quaternary sedimentsare spread almost in central part of the district. Around 70% of the total area is covered with charnockite followed by migmatite and khondalite.

The high grade metamorphic rocks are well exposed in the Theni district on the moderate to steeply sloping hills. These rocks are characterized into three Groups (Krishnan, 1949; Anon, 2005), viz.i)Khondalite Group comprising of quartzite, pyroxene granulite, calc gneiss / spinel gneiss, crystalline limestone, minor garnet-cordierite gneiss and garnetiferousquartzo-feldspathic gneiss (leptynite).ii.Charnockite Group consisting of acid charnockite and pyroxene granulite.iii.Migmatite Complex represented by hornblende-biotite gneiss, grey granitic gneiss and pink migmatite.

16.0 - USE OF MINERAL

The Earth / Wind Earth are used for filling purposes in building constructions and road works and also used in country kiln for bricks manufacturing.

17.0 - DEMAND AND SUPPLY OF THE MINERAL IN THE LAST THREE YEARS

	2015-2016	2016-2017	2017-2018
Demand (Lakh Ts)	1.58	0.95	5.64
Supply (Lakh Ts)	1.58	0.95	5.64

18.0 - MINING LEASES MARKED ON THE MAP OF THE DISTRICT

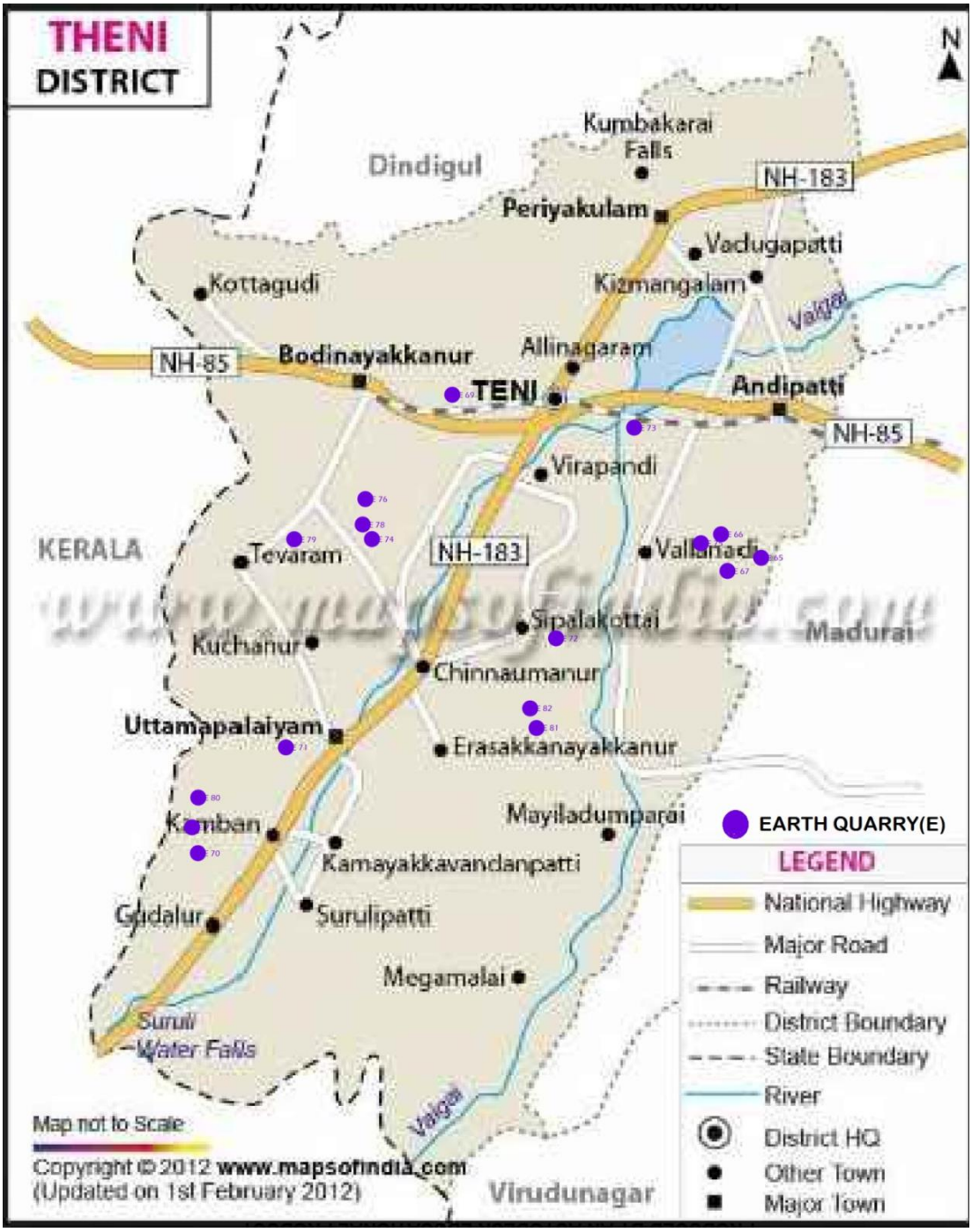


FIG .SHOWS MINING LEASES MARKED ON THE MAP OF THE DISTRICT-
EARTH QUARRY

19.0 DETAILS OF THE AREA WHERE THERE IS A CLUSTER OF MINING LEASES VIZ., NUMBER OF MINING LEASES, LOCATION (LATITUDE & LONGITUDE)

Sl. No	No.of quarrying leases	Name of Village &Taluk	Location	
			Latitude	Longitude
1.	Not applicable			

Table No.8.0 Details of The Area Where There is no Cluster of Mining Leases

20.0 - DETAILS OF ECO-SENSITIVE AREA

Megamalai Wildlife Sanctuary is carved out of Madurai and Theni Division forest areas in the Southern Western Ghats. Geographically it is located between the Longitudes 770 45' N and Latitudes 090 31' to 090 58' E. The territorial jurisdiction of the sanctuary falls in two taluks, Uthamapalayam and Periyakulam in TheniDistrict and two Taluks, Thirumangalam and Usilampattyin Madurai District.The areas included in the Sanctuary have a long management history. Megamalai Wildlife Sanctuary was declared in 2009 vide G.O.(D)No.63, Environment and Forest (FR-V) Department dated 26.06.2009. Total extent of the notified sanctuary is 269.10 Km2 (26910.815 Ha).Sanctuary is a home for indigenous tribal group - Paliyars. With biological richness, the sanctuary offers excellent scope for scientific research on biological, anthropological, historical and cultural aspects as this area remains as one of the least studied protected areas in the country.

Megamalai Wildlife Sanctuary provides important ecological services for Theni and Madurai region as it forms the catchment of Vaigai River, the life line of the region. Sanctuary also supports some irrigation cum hydroelectric Project like Periyar and Suruliar Hydro Electric Projects. The agricultural and economic prosperity of the region thus depends heavily on the sanctuary.

Megamalai Wildlife Sanctuary is thus very rich biologically with floral, faunal and anthropological uniqueness in the Western Ghats with Himalayan faunal associates like NilgiriTahr. Sanctuary qualifies as Elephant Reserve, Tiger Reserve, Anthropological reserve, Primate Sanctuary and Wild gene sanctuary. It plays vital role in the water security of the region as water sanctuary and enhances quality of life as very great oxygen sanctuary. Conservation of Megamalai is therefore very crucial for the physical, mental and spiritual well-being of humanity as a whole.

GOOGLE MAP OF ECO-SENSITIVE ZONE OF MEGAMALAI WILDLIFE SANCTUARY

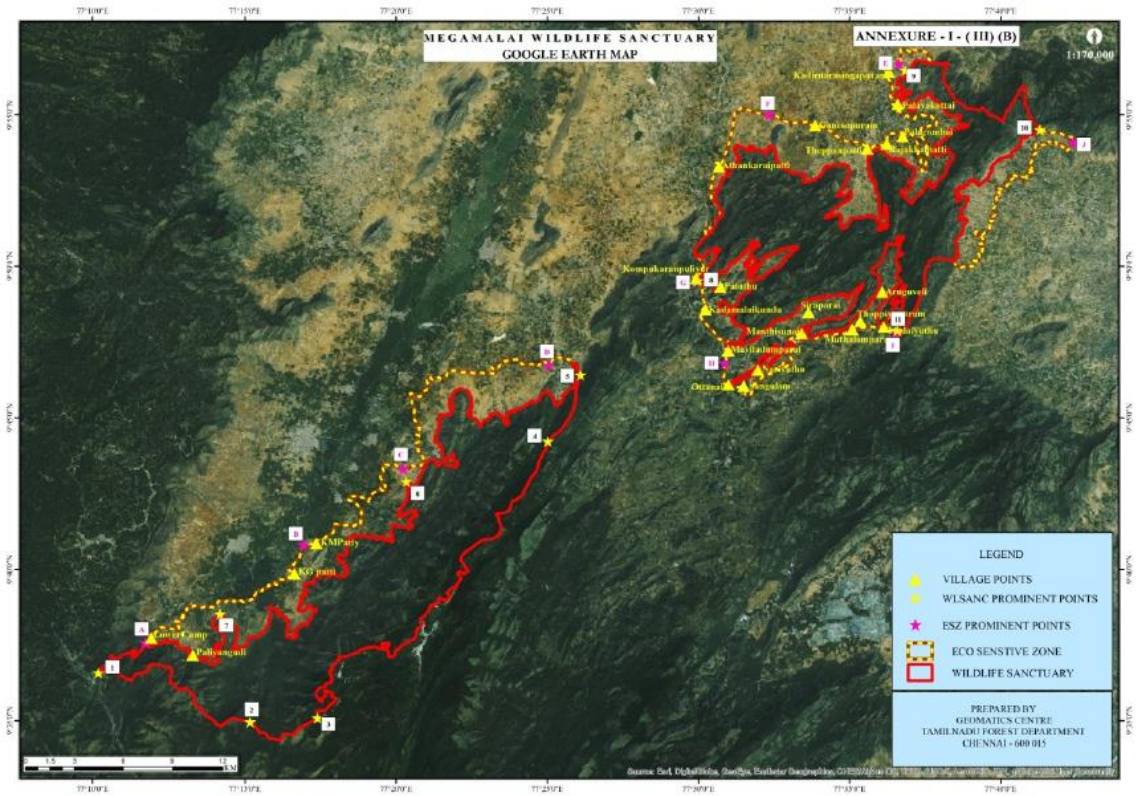


Fig No.10 .Google Map of Eco Sensitive Zone

20.0 The details of quarries lies within the Eco-Sensitive Zone from the boundary of the Megamalai Wildlife Sanctuary is furnished in the prescribed proforma.

Sl. No.	Village	S. No / Name of the Quarry	Actual Distance from the boundary of the wildlife Sanctuaries / Birds Sanctuaries area / National Park	Name of the wildlife Sanctuaries / Birds Sanctuaries / National Park	Recommending distance for fixing Eco – Sensitive Zones from the boundary
Earth/Wind Earth					
1	Nil	Nil	Nil	Megamalai Wildlife Sanctuaries / Kodaikanal Wildlife Sanctuaries	10.0 km.

21.0 - IMPACT ON THE ENVIRONMENTDUE TO MINING ACTIVITY:-

Environmental impact on granite quarrying can be broadly classified in to two categories:

1. Environmental degradation
2. Environmental pollution

ENVIRONMENTAL DEGRADATION: Degradation of topography, fauna and flora invariably takes place on granite quarrying. While developing infrastructure, vegetation cover is destroyed, topography degraded and fauna and flora affected. If it is rubber plantation in Kerala, it is mango grooves in Tamil Nadu that is destroyed. Natural lakes, nalla beds have become the convenient loci to dump the over burden. Filling up of the natural drainage channels creates problem in the water way system. Degradation the topography leads to destruction of vegetative cover, dry air circulation, non precipitation, choking of natural drainage and finally to extreme drought. This is what happening at present in excessively quarried areas for which the reason attributed is failure of monsoon.

ENVIRONMENTAL POLLUTION: Air, water and noise pollution, ground vibration from blasting and generation of solid waste are some of the impacts of granite quarrying on environment which have extreme destructive consequences. Silicosis is the prevalent disease that affects major of the quarry workers and the adjoining villages. In addition to the natural water sources getting contaminated with particulates, deepening of quarry depth intercepts ground water table. Natural topographic gradient is upset with concomitant change in drainage pattern. Deepened out quarries have become overnight perched aquifers draining away water from all the surrounding highlands. Noise pollution, over and above those from quarrying equipment gets accentuated from increased use of jet burners(flames cutters). Ground vibration on account of blasting are at times worst, simulating seismic waves, and causing damages to the buildings nearby. Solid waste is non-biodegradable and slow mechanical disintegration of which leads to environment of silica, sodium, potassium and calcium in soils. Soils become unproductive. Inadequate space for dumping solid wastes near quarries leads to dumping of them on either side of the road. Granite dumps on road sides impart not only aesthetic displeasure but also ugly sights and potential danger for traffic hazards.

22. REMEDIAL MEASURE TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT.

The Top Soil, rock Fragments etc., as Mineral Rejects are generated approach road formation or dumping yard site etc.,

Air Environment

- Plantation along approach roads and all along the safety barrier of the mining lease.
- Water tankers with spraying arrangement will be used for regular water sprinkling on the haul roads to ensure effective dust suppression.
- Haul roads will be maintained regularly.
- Speed limits will be prescribed for transport vehicles
- Water will be sprayed daily on the roads by using water tankers.
- Periodic maintenance of the trucks used for transport shall be done to reduce smoke emissions.
- Over loading of trucks is avoided

Noise Environment

- Development of green belt all along the boundary of the mining lease area which will act as effective noise barrier.
- Loading, hauling and lifting equipment and earth moving machineries etc., are bound to produce certain level of noise which will be bring down to acceptable norms
- Proper gradient of haul roads to reduce cumulative noise levels.

Water Environment

- There will be no major effect on the surface water environment.
- Surface water channels will be made to divert all surface drainage for green belt development & dust suppression purposes.

- Mine water will be used for dust suppression & green belt development.

Land Environment

- Landscape will be changed due to open cast mine. There will be no land subsidence as area is made up of hard rock. Aesthetic environment will be effected.
- Soil cover and the weathered material accounts for the Over Burden
- Agriculture is seen mainly in the plains far away from the lease area. A few bushes will be cleared to facilitate mining and other related activities and there are no big trees.
- Top soil will be removed & stored on the inner boundary of the mining lease area. To improve its quality, soil stabilizers shall be mixed and leguminous plantation will be done over these stacks.
- Top soil shall be used in afforestation work, as early as possible.
- A retaining wall and garland drain will be constructed all around to prevent the wash off

23. RECLAMATION OF MINED OUT AREA (BEST PRACTICE ALREADY IMPLEMENTED IN THE DISTRICT, REQUIREMENT AS PER RULES AND REGULATIONS, PROPOSED RECLAMATION PLAN)

During the end of the life of the mine, when the mine reaches its ultimate pit limit, the pit will be partially backfilled and partially act as a good storage for water.The spring water and seepage water will prove to be a viable source for water supply to agriculture lands nearby.In the mining area,depth has been envisaged as workable depth for safe & economic mining during the lease period. Hence, after mine reaches ultimate pit limit and fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle.

24. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

Any mines have dangers or risk like fires, inundation, failure of machinery, which need to be investigated,addressed and mitigated. Disaster management is formulated with an aim of taking precautionary steps to avert disaster and also to take such action after the disaster which limits the damage to the minimum.Mining operations may be carried to the utmost safety but there is always some element of danger or risk in it. No major disaster is envisaged. Only minor accidents may take place. No perennial source of surface water is present in the ML area. Blasting in ore body will be proposed. The mining operations will be carried out under supervision of statutory personnel's as per provisions of MCR 1960, MCDR 1988, Mines Rules 1955,Mines Act 1952 & strictly following safety aspects as per MMR 1961 monitored by Directorate General ofMines safety.The following natural/industrial hazards may occur during normal operation.

- Accident due to explosives;
- Accident due to heavy mining equipment;
- In order to take care of above hazard/disaster, the following control measures will be adopted;
- All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations;
- Entry of unauthorized persons will be prohibited;
- Fire fighting and first aid provisions in the mines office complex and mining area
- Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made
- available to the employees and regular check for their use;

- Training and refresher courses for all the employees working in hazardous premises; Under Mines
- vocational training rules all employees of mines shall have to undergo the training at a
- regular interval;
- Working of mine, as per approved mine plan and regularly updating the mine plans;
- Cleaning of mine faces will be regularly done;
- Handling of explosives, charging and blasting will be carried out by competent persons only;
- Provisions of magazine at a safe place with fencing and necessary security arrangement;
- Regular maintenance and testing of all mining equipment as per manufacturer's guidelines;
- Suppression of dust on the haulage roads;
- Adequate safety equipment will be provided at explosive magazine; and
- Increasing the awareness of safety and disaster through competitions, posters and other similar drivers.
- For any type of above disaster, a rescue team will be formed by training the mining staff with specialized training.

25. DETAILS OF OCCUPATIONAL HEALTH ISSUE IN THE DISTRICT (LAST FIVE –YEAR DATA OF NUMBER OF PATIENTS OF SILICOSIS & TUBERCULOSIS IS ALSO NEEDS TO BE SUBMITTED)

Table No. 9.0 The details of number of patients treated for silicosis and Tuberculosis for the last five years in the district is given below:

Sl.No.	Year	Number of patients treated for silicosis	Number of patients treated for Tuberculosis
1	2014	-Nil-	**1453**
2	2015	-Nil-	**1557**
3	2016	-Nil-	**1624**
4	2017	-Nil-	**1745**
5	2018	-Nil-	**1831**

26. 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 conductive.

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.

FIELD PHOTOGRAPHS OF QUARRIES
EARTH/WIND EARTH QUARRIES IN PATTA LANDS

Earth Quarries in Rajathani, Andipattitaluk at location N 09°54'16"N: E 77°34'47"'

Wind Earth Quarries in Poomalaikundu, Thenitaluk at location N 09°53'29": E 77°27'18"

Wind Earth Quarries in Pottipuram Village, Uthamapalayamtaluk at location N 09°56'16": E 77°16'50""

Earth Quarries in Timmarasanaickanur Bit-II Village, AndipattiTalukat location N 09°59'53"N: 77°39'14"E

27. Any other information

Theni District has restricted occurrence of minor minerals. The available minor minerals are granites and limestone while charnockites are quarried for Roughstones along with a few occurrences of gravel, earth and tuff.

Theni District is predominantly occupied by charnockites. Charnockite are quarried for production of rough stones, pillar stones and M-sand. M-sand or manufacturing sand is the need of the hour to reduce the consumption /exploitation of river sand. Charnockites are crushed in the crushing units for the manufacture of aggregates and produces M-sand which gives direct and indirect employment to the nearby people. The granites found in Theni District is coarse grained, massive, pink, pale white to bluish grey in colour.

The details related to the occurrence of mineral resources and other data of the district are subject to updation from time to time. Before granting of any quarrying lease, parameters related to geosciences and sustainable developments are to be considered. The introduction of e-permit system and implementation of Mineral Dealers Rule and the despatch slips / transit permits with tampered proof security features and tracking of mined out minerals would fetch more revenue to the State Exchequer as well as sustainabledevelopment.

28/05/19

ASSISTANT GEOLOGIST /
ASSISTANT DIRECTOR (i.c),
Geology and Mining,
Theni.

30/5/19

DISTRICT COLLECTOR,
Theni District.