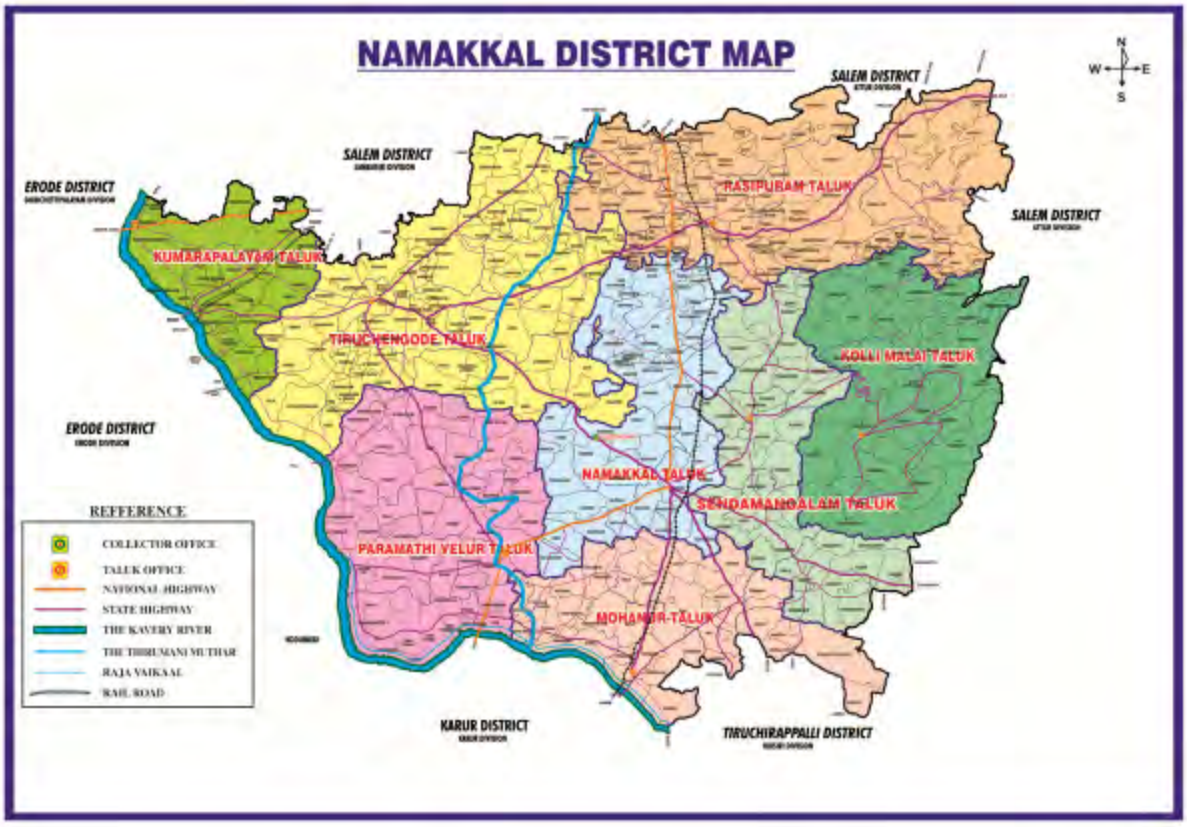
# DISTRICT SURVEY REPORT FOR GRANITE
# NAMAKKAL DISTRICT




**(Prepared as per Gazette Notification S.O.3611 (E) Dated 25.07.2018 of Ministry of Environment, Forest and Climate Change MoEF & CC)**

**MAY 2019**

# 1. Introduction

In pursuance to the Gazette Notification, Ministry of Environment, Forest and Climate Change (MoEF & CC), the **Government of India Notification No. S.O.3611 (E) dated 25.07.2018** laid procedure for preparation of District Survey Report of minor minerals other than sand mining or river bed mining. 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.

This District Survey report guide systematic and scientific utilization of natural resources, so that present and future generation may be benefitted at large. The purpose of District Survey Report (DSR) is "Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited".

The District Survey report (DSR) contain mainly data published and endorsed by various Departments and websites about Geology of the area, Mineral Wealth details, Details of Lease and Mining activity in the District along with Revenue of Minerals. This report also contains details of Forest, Rivers, Soil, Agriculture, Road, Transportation and Climate etc.,

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. The DEAC will scrutinize and screen scope of the category "B2" projects and the DEIAA will grant Environmental Clearance based on the recommendations of the DEAC for the Minor Minerals on the basis of District Survey Report. This District Survey Report is prepared with the assistance of Geological Survey of India, State Unit, Tamil Nadu and Pudhucherry, Chennai.

## 2. Overview of Mining Activity in the District

Mining activities carried out in the District is Opencast Semi Mechanized/ Mechanized and Manual method.

The Economic important mineral found in Namakkal District are mainly Limestone, Magnesite, Bauxite and Quartz-Feldspar. Limestone quarries are mainly located in Kumarapalayam and Paramathi-Velur Taluk while few leases for Bauxite are seen in and around Kolli Hill. Besides, the district is endowed with sizeable reserves of rough stone mainly in Senthamanglam, Tiruchengode, Namakkal and Rasipuram taluks. High quality granite (both leuco and multicoloured granite) is available in Paramathivelur taluk. Occurrence of good quality of Quartz and feldspar mining is situated Tiruchengode Taluk. Occurrence of PGE (Platinum Group of Elements) is reported in Sittampundi area, Paramathivelur taluk.

The office of the Assistant Director, Department of Geology and Mining is functioning under the control of District Collector, Namakkal. The Assistant Director, Geology and Mining is assisting the District Collector in the Mineral Administration works.

## 3. General Profile of the District.

Namakkal district is came into existence from bifurcation of Salem district on 01.01.1997 is bounded by Salem District in North and East, Tiruchirapalli District in South & East, Erode District in West and Karur District in South. It is located between latitudes N 11° 00' to 11° 36' and longitudes E 77° 28' to 78° 30' with total geographical area of 3363.35 sq kms.

The district economy is mainly agrarian as well as industry in nature. Nearly 50-60% of the workforce is dependent on agriculture and allied activities. The district is famous for its poultry farm, weaving, spinning mills and lorry body building. The hottest period of the year is generally for the month of March to June, the highest temperature going up to 40°C in May. The climate become cool in December and continues so up to February, touching a minimum of 25°C. On an average the district receives an average annual rainfall of 58 to 70 cm. the northern portion of Namakkal is mountainous and southern areas are plains. With the aid of perennial water supply from Cauvery River, paddy, pulses, sugarcane, Plantain, coconut, turmeric and ground

nut are cultivated in the fertile belt near river. The area farther away from Cauvery River is suitable for rain fed crop like jawar millets onion and castor. For administrative purpose, the district has been divide into two divisions viz Namakkal and Tiruchengode, Eight taluks viz. Namakkal, Rasipuram, Tiruchengode, Paramathivelur, Kollihills, Sendamanglam, Komarapalaiyam and Mohanur with Namakkal as District head quarters . As per 2011 Census, Namakkal District had a total population of 1726601 with a sex-ratio of 986 females for every 1,000 males.

Other statistics of the district is given below:

| | | | | | |
|---|---|---|---|---|---|
| 1. | Area | : | 3363 Sq.km. | | |
| 2. | Population ( as per Provisional 2011 Census) | : | 1726601 | | |
| | | | Male | Female | Total |
| | | | 869280 | 857321 | 1726601 |
| | | | Rural | Urban | Total |
| | | | 1030476 | 696125 | 1726601 |
| 3. | No. of Revenue Divisions | : | 2 | | |
| 4. | No. of Taluks | : | 7 | | |
| 5. | No. of Revenue firkas | : | 30 | | |
| 7. | No. of Panchayat Union | : | 15 | | |
| 8. | No. of Town Panchayats | : | 19 | | |
| 9. | No. of Municipalities | : | 5 | | |
| 10 | Revenue village | : | 454 | | |
| 11 | Village Panchayat | : | 322 | | |
| 12 | Railway (Broad Gauge) | : | 71 km | | |
| 13. | Road | : | 1. State Highways | | 380.10 km |
| | | | | | |
| | | | 2. Sugarcane Road | | 96.4km |
| | | | 3. Other District Roads | | 1073.67 km |
| | | | 4. Major District roads | | 270.13 km |
| | | | 5. National Highways | | 27.00 km |

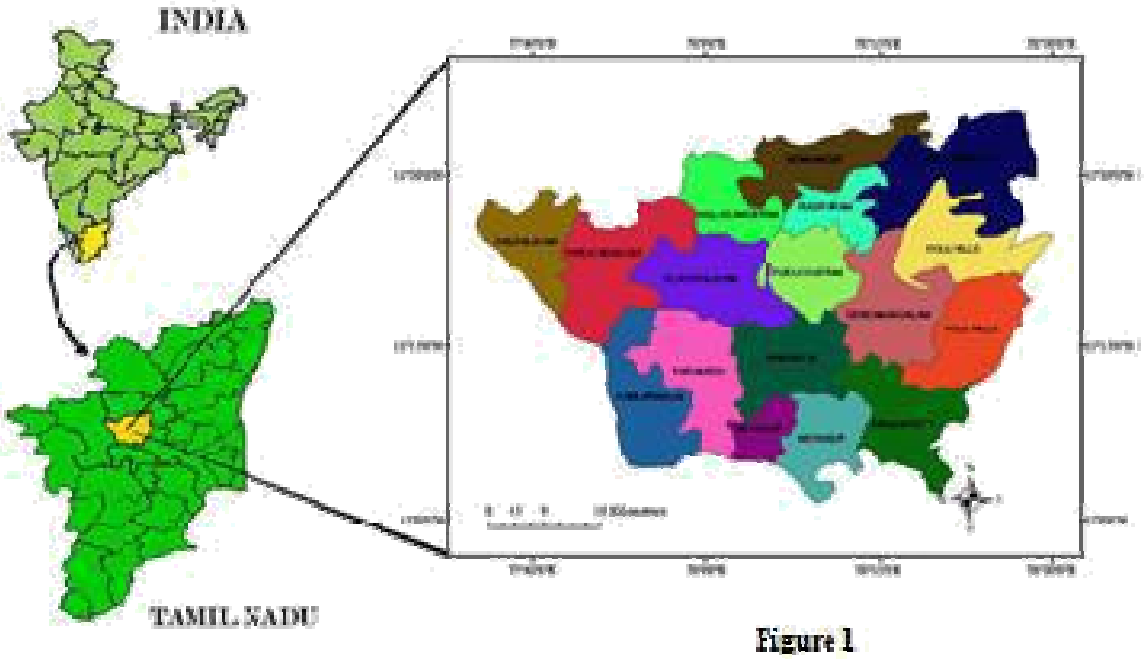



Figure 1

Namakkal District holds Nature's beauty, historical temples, famous rock fort and hill station i.e. Kolli Hill . The Namakkal town in the District Headquarters and known as the "Egg City" as it contains a number of poultry farms. It finds a place in the map of India for its lorry building industry hence called as “Transport City”.

Agriculture, micro to mesoscale industry and Trade play vital role for its economic growth. Principal crops like tapioca, paddy, sugarcane, cotton, coconut, groundnut and various kinds of fruits and vegetables viz. horsegram, turmeric, mango, banana, and gingili are being cultivated in this district. Sago and Starch production in Rasipuram Taluk are exported to other countries.

Cotton Spinning Mills and Paper Mills are the major industries in Tiruchengode Taluk. Handloom weaving and power looms are found in Rasipuram and Tiruchengode taluk. Few sugar mills are located in Mohonur block.

The district is well known as an abode of several reputed educational institutions. It provides a platform for schooling as well as higher education. As per 2011 census the average literacy rate in the district is 74.63% whereas 82.64% for males and 66.57% for females.

The district has several centres of attraction which allures many travellers from local areas and also different parts of the country. Namakkal is also called as "Namagiri", the name of the rock formation at the centre of the town. The Rock Fort in Namakkal is a special feature of the Town. The Fort covers an area of one and half acres of flat surface and is accessible from South-West by a flight of narrow steps. Namakkal is famous because of Sri Namagiri Thayar's merciness, the greatness of Lakshmi Narasimha cave temple and the greatness of Lord Hanuman. The name Namakkal immediately brings to mind "Namakkal Anjaneya" – the temple of Hanuman at Namakkal. Namakkal is famous for a life-size Hanuman (Anjaneyar) Statue carved out of a single stone in the Anjeneyar Temple. The idol of Hanuman is approx. 18 feet in height, and stands under open sky. It is believed that the Hanuman statue keeps growing and to stop the growth a priest put a magic needle at the top of the statue's head. The Narasimma Samy Temple along with Amman Temple is situated behind the Rock Fort in the heart of the town. The famous Tamil Poet "Namakkal Kavingnar Ramalingam Pillai" was born in this district. The Tamil Nadu Secretaritae building was built in 1975 and was named Namakkal Kavingyar Maaligai in the memory of the poet, and the State government has established an arts and science college for women in this district.

## 4. Geology of Namakkal District:-

Namakkal District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. The famous Sittampundi Anorthosite Complex which is known for its complex geology and occurrences of Platinum Group of Elements is situated in this district. Hornblende Biotite Gneisses are the oldest rocks in four taluks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places. The Charnockites are coarse grained, massive and foliated at places and their colour is bluish dark to grey. They are the second largest rock type present in the district. They are massive and less weathered than the gneisses. They exhibit 2 to 3 distinct set of joints and most of them are vertical with steep dips. Iron ore deposits associated with quartz feldspathic gneiss and garnetiferous quartz gneisses are present in some areas.

These rocks are highly folded and jointed and less weathered. Quartzite and crystalline lime stones are exposed in patches in north and central parts of the district. The thickness of these bands varies from a few metres to ten metres and the length extends to few kilometres. Numerous lenses of dunite with magnesite veins of various dimension are exposed within gneiss .There are number of basic dykes present in the study area. Granites are found in some parts of the district. They are massive and jointed poorly. Thin veneer of alluvium is found along the course of the Cauvery and Thirumanimuthar. However, alluvium of few metres thickness is found near the junction of river Thirumanimuthar and river Cauvery. Several faults and shears are occurring mostly with north east-southwest trend. They are expected to influence the course of groundwater movement, its storage and developmental potentials in the district.

4(a). Different type of rock with area (PWD-2001)

| Sl. No | Rock type | Area in sq km |
|---|---|---|
| 1 | Alluvium | 196.43 |
| 2 | Zone of breciation | 26.40 |
| 3 | Dolerite | 5.66 |
| 4 | Granite Gneiss, Granitoids with pegmatite | 96.02 |
| 5 | Pyroxene granulite | 195.77 |
| 6 | Charnockite | 1052.88 |
| 7 | Hornblende Biotite Gneiss (Gneissic rock) | 1812.46 |
| 8 | Ultrabasic with magnesite | 12.79 |

(Source: Vignesh J et al, 2015)

**4(b). Stratigraphy of the area**

| Age | Group | Lithology |
|---|---|---|
| Quaternary | | Fluvial<br>( Sand, Silt, Gravel,Clay) |
| | Acid intrusive | Granite<br><br>(Tiruchengode Granite) |
| | Alkali Group | Ankerite gneiss<br>Ultramafics(younger) |
| Proterozoic | Basic intrusive | Basic dyke |
| Archaean | Charnockite Group | Magnetite quartzite<br>Ultramafics/Pyroxenite<br>Pyroxene granulite<br>Charnockite |
| | Khondalite Group | Calc granulite and Limestone |
| | Bhavani Group (Peninsular Gneiss younger phase) | Pink Migmatite<br><br>Hornblende biotite gneiss |
| | Sittampoondi Complex | Basic, Ultra basic complex |
| | Sathyamangalam Group | Amphibolite<br><br>Fuchsite-kyanite-quartzite, maganetite quartzite,Sillimanite, Quartzite , Sericite quartzite |

***Source: GSI, Pub., 2005***

## 4(c). Minor Mineral Wealth of Namakkal District:

***Granite:***

Granite is found mainly in Paramathivelur Taluk. Generally, two type of granite are mined commercially viz. normal granite (Leuco Granite) and multi coloured granite. The normal variety is light colour, coarse grained, mainly non foliated but developed crude foliation at places, hard and compact, composed of quartz, orthoclase and rich in plagioclase with little amount of hornblende and intruded criss cross by thin quartz veins. These are per-aluminous to meta-aluminous A-type granitiods of Neo-Proterozoic age. Multicoloured granites are mainly migmatite. These are pink to red colour, coarse grained, foliated, exhibit flow structure, ptygmatic folding, composed of quartz plagioclase and rich in orthoclase with less amount of garnet and amphibole. Due to migmatisation, the rock exhibits beautiful colour banding and high demand in market. The Granite quarries are loactaed mainly in Paramathi-Velur Taluk.

***Charnockite (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, greyish colour, medium to coarse grained, composed quartz, feldspar and orthopyroxene. At places, metamorphic gneissic banding (alternate dark and black colour) in charnockite is noticed. Top portion, it gives gneissic appearance but 1-5m depth below it is typical charnockite of grey colour. Rough stone quarries are seen mainly in Rasipuram, Namakkal, Senthamanglam, Tiruchengode and few in Paramathivelur.

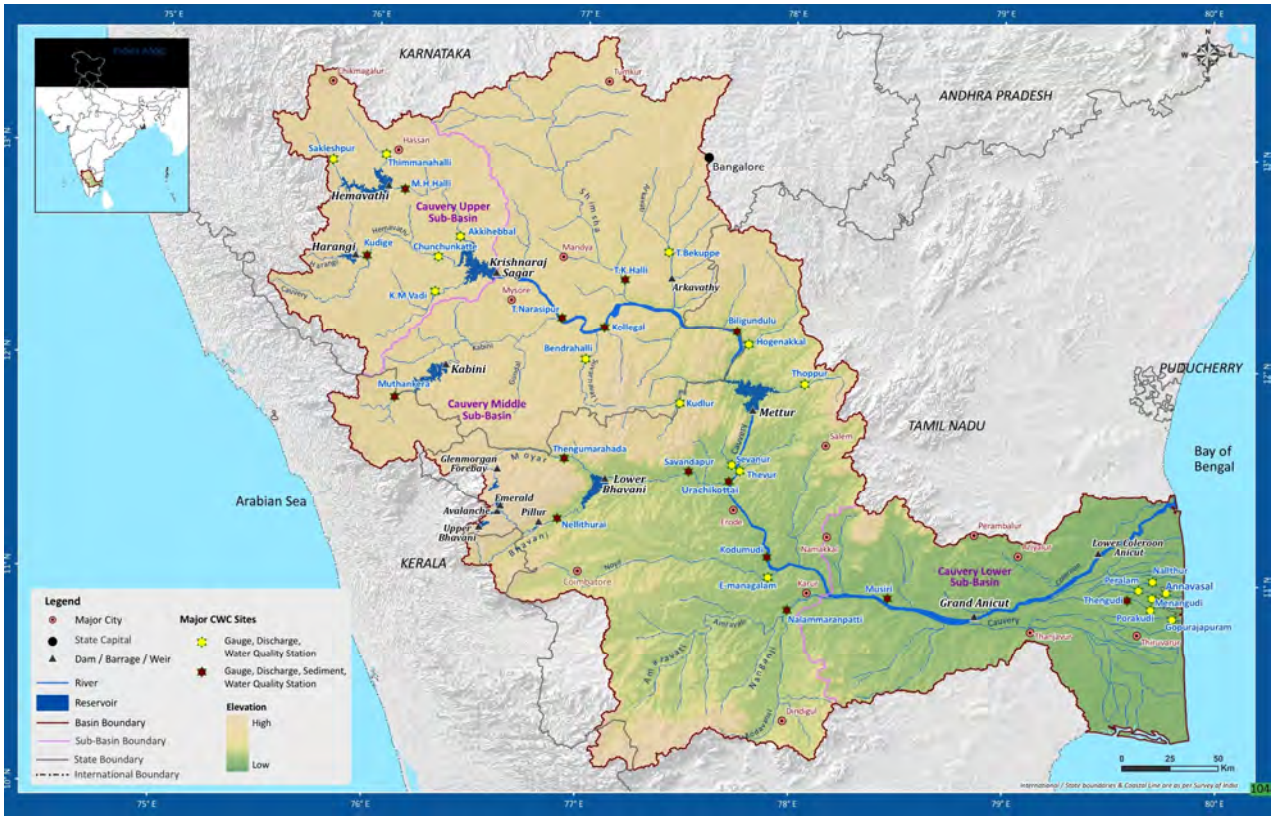
***Quartz-Feldspar***:

Quartz and feldspar spar are extensively mined for Glass industry, steel industry and Pottery manufacturing. These are occurred as younger intrusive (Vein and reef type) within host like hornblende biotite gneiss, anorthosite, limestone etc.

These veins have more than hundred meters of strike length but limited width. Mineralogically, it composed of Quartz (Smooky, transparent, milky varities), feldspar (orthoclase, plagioclase) and less mica books. Transparent verity contains more 95% of silica with 1-2% iron hence readily used in glass industry. Pink feldspar (Orthoclase) is its main application being as a constituent of both body and glaze in true porcelain, white ware, and vitrified sanitary ware and of the "slip" (underglaze) and glaze in so-called "porcelain" sanitary ware and enamelled brick. The amount of feldspar in the body of these wares generally falls between 15 and 35 per cent, though in some it is less and in some more. In glazes the percentage of feldspar is as a rule between 30 and 50.

## 5.0 DRAINAGE OF IRRIGATION PATTERN

### 5.a CAUVERY RIVER



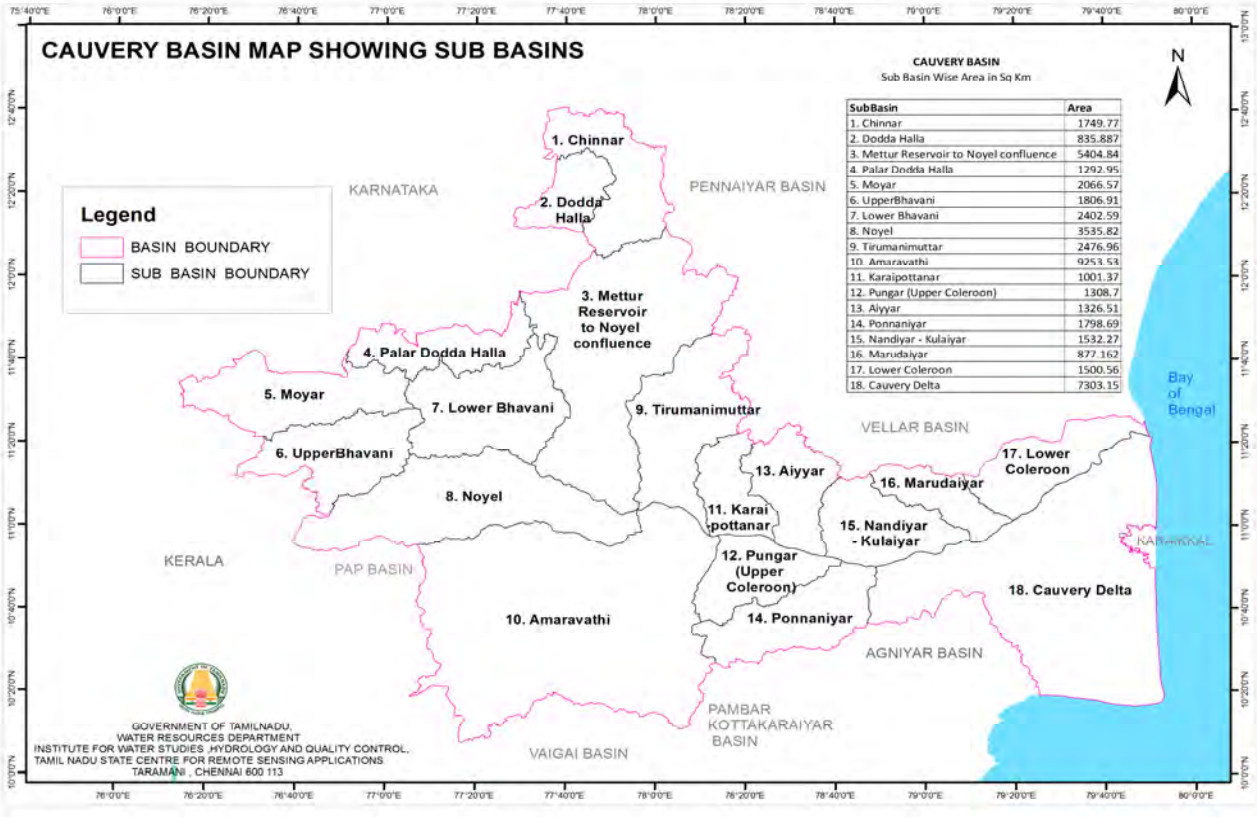

The River Cauvery originates at Talakaveri in Coorg District of Karnataka in Brahmagiri Range of hills in the Western ghats at an elevation of 1341 m. (above MSL) and drains a total area of 81,155 Sq.Kms. of which 34,273 Sq.Kms lies in Karnataka, 43,856 Sq.Kms. in Tamil Nadu, 2,866 Sq.Kms. in Kerala and 160 Sq.Kms in Union Territory of Pondicherry. The Cauvery basin is bounded by Tungabhadra

sub-basin of Krishna basin on the Northern side and Vaigai basin on the Southern side. The Western ghats form the Western boundary. The Nilgiris, an offshore of Western ghats, extend Eastwards to the Eastern ghats and divide the basin into two natural and political regions i.e., Karnataka plateau in the North and the Tamil Nadu plateau in the South. In Tamil Nadu, the Eastern part of the basin is in the elevation range of 0 to 150 m sloping gently up from the sea.

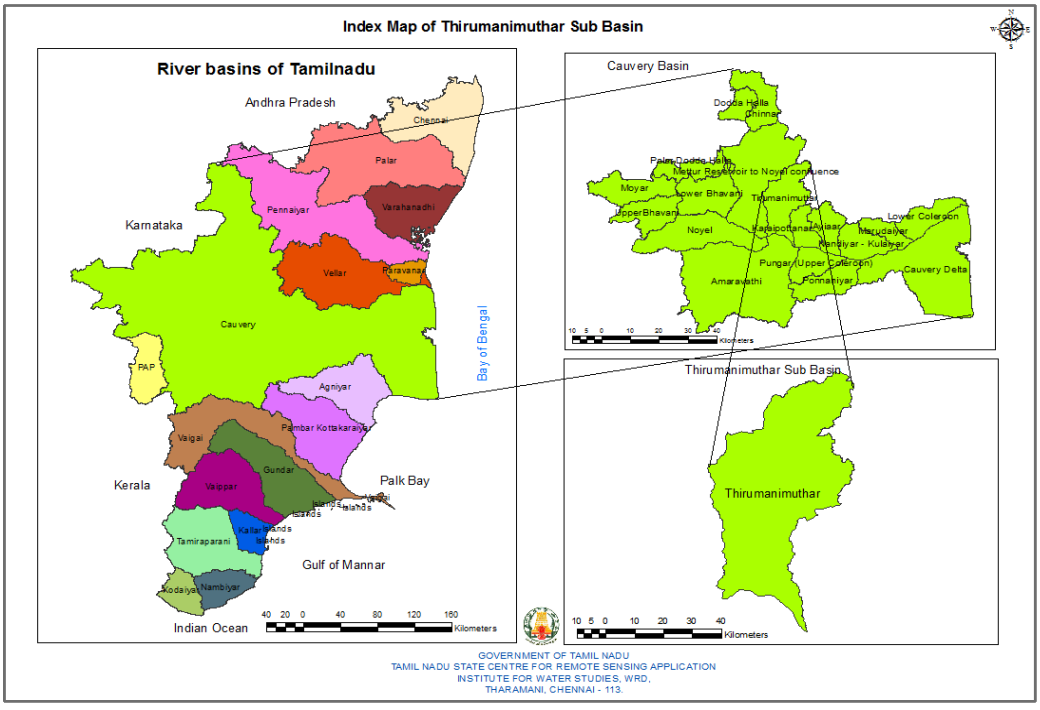
In the initial reaches of the Basin there are four important reservoirs namely 1) Harangi, 2) Hemavathi, 3) Kabini and 4) Krishnaraja Sagara. In the reaches downstream of Krishnaraja Sagara, at Shivanasamudram, the river branches off into two parts and falls through a height of 91 m. in a series of falls and rapids. The falls at this point is utilized for power generation. The power station at Shivanasamudram was built in as early as 1902. The two branches of the river join after the fall and flow through a wide gorge, which is known as "Mekedatu" (Goats leap) and continues its journey to form the boundary between Karnataka and Tamil Nadu States for a distance of 64 Kms. At Hogenakkal Falls, it takes southernly direction and enters the Mettur Reservoir which was constructed in 1934. A tributary called Bhavani joins Cauvery on the Right bank about 45 Kms below Mettur Reservoir. Thereafter it takes easternly course to enter the plains of Tamil Nadu. Two more tributaries Noyyal and Amaravathi join on the right bank and here the river widens with sandy bed and flows as "Akhanda Cauvery".

Immediately after crossing Tiruchirapalli District, the river divides into two parts, the Northern branch being called "The Coleroon" and Southern branch remains as Cauvery and from here the Cauvery Delta begins. After flowing for about 16 Kms, the two branches join again to form "Srirangam Island". On the Cauvery branch lies the “Grand Anicut” said to have been constructed by a Chola King in 2nd Century A.D. Below the Grand Anicut, the Cauvery branch splits into two, Cauvery and Vennar. These branches divide and sub-divide into small branches and form a network all over the delta. A brief description of the delta in the Karaikal region is given separately under para-1.2.1.The total length of the river from the origin to its outfall into the sea is 800 Kms. of which 320 Kms. is in Karnataka, 416 Kms. in Tamil Nadu and 64 Kms. forms the common border between the Karnataka and Tamil Nadu states.

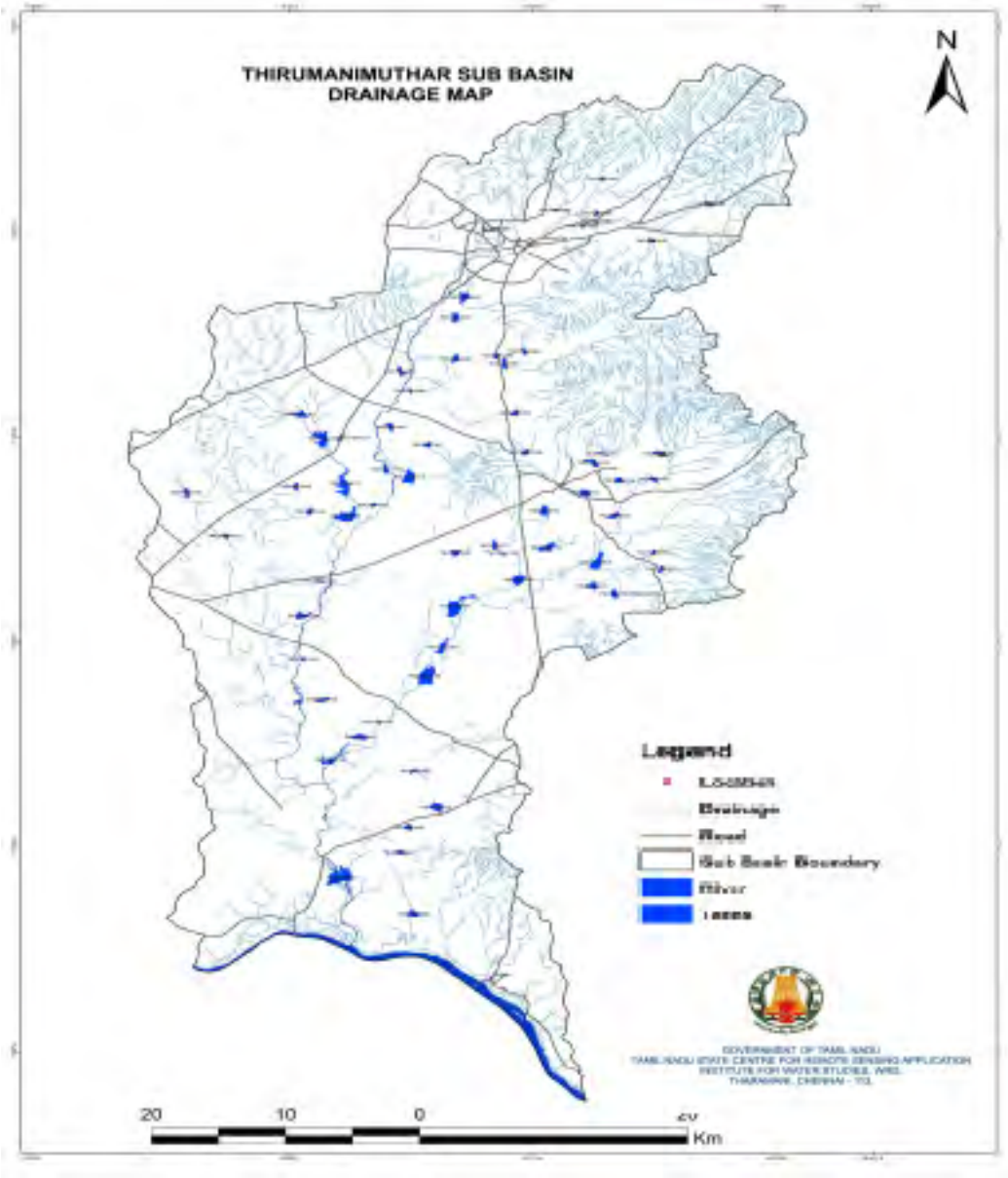
The Cauvery basin is fan shaped in Karnataka and leaf shaped in Tamil Nadu. The run-off does not drain off quickly because of its shape and therefore no fast rising floods occur in the basin.




## 5.b THIRUMANIMUTHAR RIVER SUB BASIN:

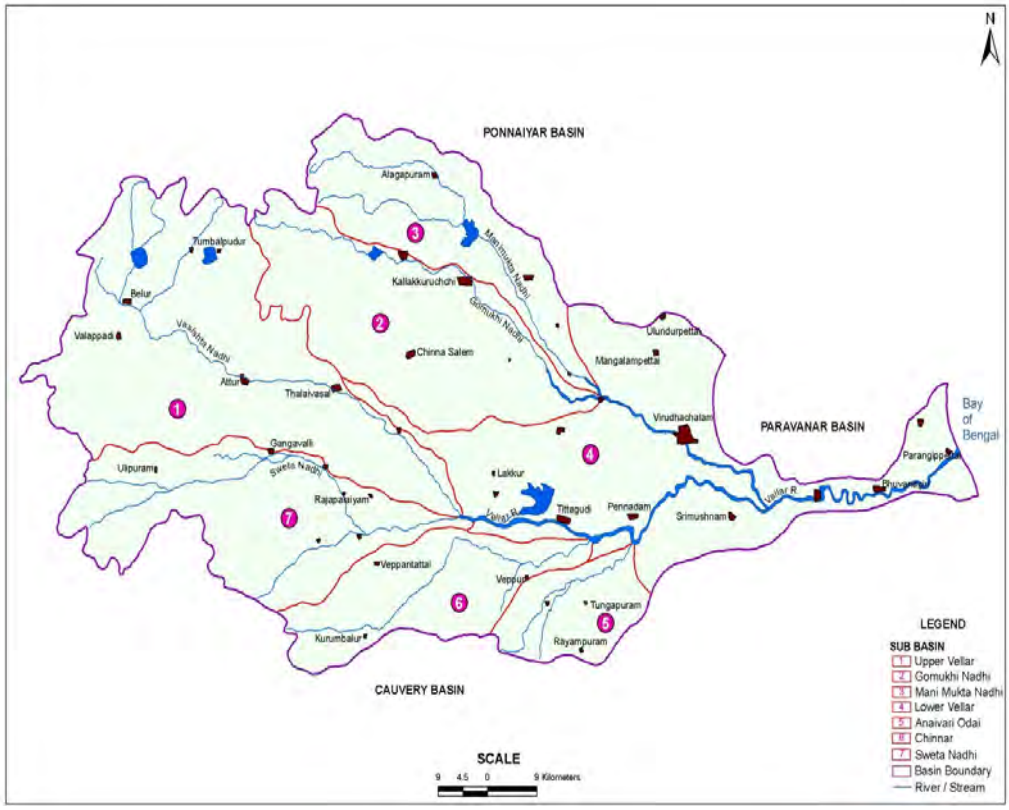


Thirumanimuthar River is one of the tributary of River Cauvery. Thirumanimuthar river originating from Arunuthimalai Hills and Shevroy's hills in the northern part of Salem District. It traverses through Valappadi, Yercaud, Salem, Rasipuram, Namakkal and Paramathivelur taluks in Salem and Namakkal Districts and Confluences with river Cauvery near Nanchai Idayar village in ParamathiVelur Taluk of Namakkal District. Total length of the river is about 105kms.




There are 41 nos. of anicuts constructed across the river and are feeding 63 Nos. Tanks to irrigate an ayacut of 17,995 Acres.

## 5.c SWETHA NADHI SUB-BASIN




Swetha Nadhi is tributary of Vellar River. Sweta Nadhi orginates at Kolli hills of Namakkal District and Patchimalai hills of Salem District. Total length of the river is 96Kilometre. The river Vellar is having 6 tributaries. They are 1.Anaimaduvu 2.Swethanadhi 3.Kallar 4.Chinnar 5.Manimukthanadhi 6.Gomukhi. A portion of Dharmapuri, Salem, Namakkal, Perambalur, Trichy, Villupuram and Cuddalore Districts are covered in Vellar river basin. Manimukthanadhi, which is the major tributary, also originates from Kalrayan hills in Villupuram District, traverses about 111 km and joins Vellar near Srimushnam in Chidambararm taluk of Cuddalore District. Upper Vellar drains the water from the southern slopes of the Kalrayan hills.

## 5.d Karaipottanar Sub Basin

Karaipottanar river is tributary of River Cauvery. Karaipottanar River originates from Kolli hills of Namakkal District. It confluences with Cauvery River at Kaduvetti village of Trichy District. Total length of the river is about 52km.

## 5.1 IRRIGATION PRACTICES

| Sl.No. | Land Classification | Area (In Ha) as on 31.03.2013. |
|---|---|---|
| 1 | Forest | 1401.39 |
| 2 | Barren and Uncultivable uses | 24539.015 |
| 3 | Land put to Non Agricultural uses | 38697.790 |
| 4 | Cultivable Waste | 4759.730 |
| 5 | Permanent Pastures and Other Grazing Land | 6663.990 |
| 6 | Land Under Miscellaneous Tree crops and Groves not included in net area sown | 3769.215 |
| 7 | Current Fallows | 57256.625 |
| 8 | Other fallows | 9291.555 |
| 9 | Net area sown | 147832.520 |
| 10 | Geographical Area according to Village records | 294211.830 |
| 11 | Total Cropped Area | 182255.285 |
| 12 | Area sown more than once | 34422.765 |
| 13 | Reserve forest | 42507.602 |

## 6. Land utilisation Pattern in the District: Forest, Agricultural, Horticultural, Mining, etc.,

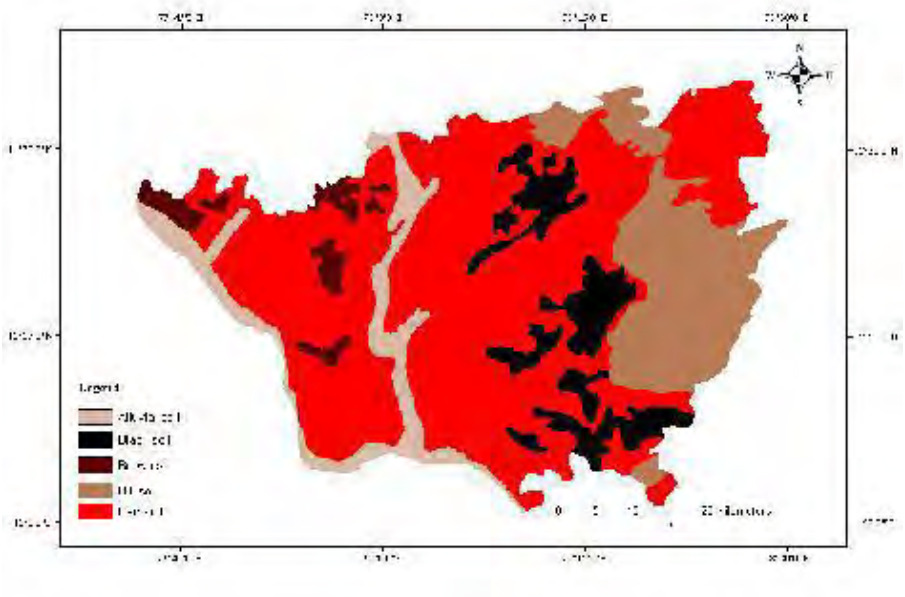
The land use pattern in the District is influenced by types of soil, groundwater, rainfall and irrigation projects. The major land use type in the area are barren land, crop land, dense forest and plantations, dry crop land, hill, shrub land, medium dense forest, reserved forest, and settlements. Around 22% of the total area is under irrigated cultivation, forest and barren land are 13% and 7.3% respectively.

| Sl. No. (1) | Classification (2) | Year 2016-17 (3) | Year 2015-16 (4) |
|---|---|---|---|
| 1. | Forest | 1401.390 | 1401.390 |
| 2. | Barren and Uncultivable uses | 24454.355 | 24454.355 |
| 3. | Land put to Non-Agricultural Uses | 38787.015 | 38738.32 |
| 4. | Cultivable Waste | 4759.730 | 4759.730 |
| 5. | Permanent Pastures and Other Grazing Land | 6663.290 | 6663.290 |
| 6. | Land Under Miscellaneous Tree Crops and Groves not included in Net Area Sown | 3767.74 | 3767.74 |
| 7. | Current Fallows | 65726.30 | 49130.620 |
| 8. | Other Fallows Land | 9321.455 | 9321.455 |
| 9. | Net Area Sown | 139330.555 | 155974.930 |
| 10. | Geographical Area According to Village Papers | 294211.830 | 294211.830 |
| 11. | Total Cropped Area | 165910.085 | 207844.835 |
| 12. | Area sown more than once | 26579.525 | 51869.905 |
| 13. | Reserve Forest | 42507.602 | 42507.602 |

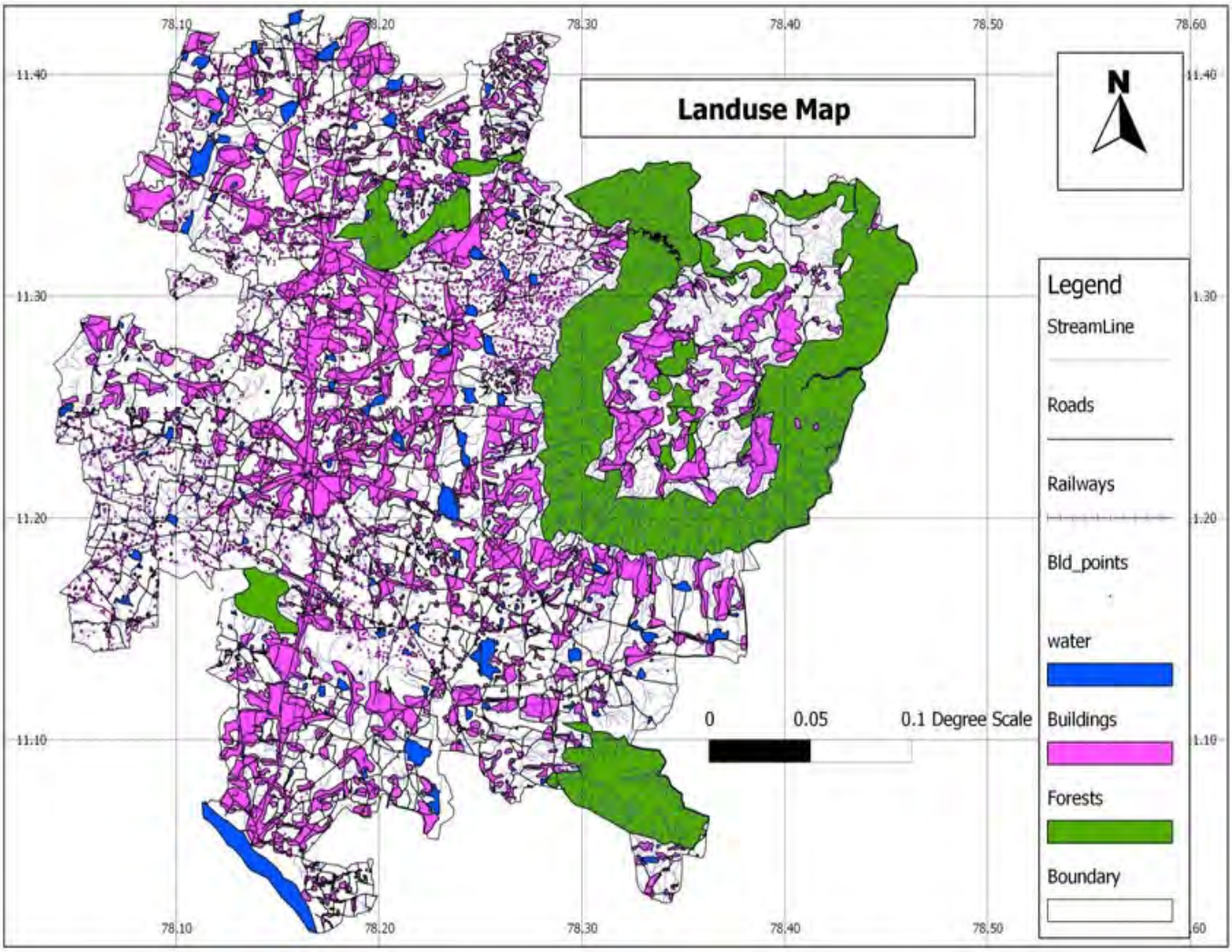
Soil is one of the natural resources that impact the agricultural development of an area. The soils of Namakkal district can be broadly classified into 5 major soils types viz. Red Soil, Black Soil, Brown soil, Alluvial and Mixed Soil The major part of the area is characterised by red gravelly soil (in deeply buried pediments and moderately buried pediments) with red loamy soil . 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 age. The black soils are limited Namakkal taluk. They are fine textured with low permeability. The brown soils are limited to small part of Tiruchengode taluk and they characterised by low permeability. The alluvial soil (in the flood plains) is seen along the river courses in Namakkal, Paramathi and Tiruchengode taluks. Mixed soil is the second major soil type occurring all the taluks of the district.

**Type of soil**

| Sl. No | Type of soil | Area (sq. km) |
|---|---|---|
| 1 | Red soil | 2075.54 |
| 2 | Brown soil | 98.99 |
| 3 | Black soil | 359.89 |
| 4 | Alluvium | 278.18 |
| 5 | Mixed soil | 591.70 |
| 6 | Total = 3004.30 | |



# Land Use Map of the Namakkal District



## 7. Surface Water and Ground water scenario of the District

Namakkal district is underlain entirely by Archaean Crystalline formations with recent alluvial deposits occurring along the river courses and Colluvium at the foothills. The important aquifer systems in the district are constituted by weathered & fractured crystalline rocks and Colluvial deposits. The porous formations in the district are represented by alluvium and colluvium. The alluvial deposits are confined to the major river courses only. Ground water occurs under phreatic conditions. The maximum saturated thickness of these aquifers is up to 5m depending upon the topographic conditions. The area lying at the foot hill zoneswhich are seen in the northern parts of the district is underlain by the colluvial material derived from the near by hill ranges comprising sands and gravels. The maximum saturated thickness of these aquifers is up to 20 m depending upon the topographic conditions. Ground water occurs under phreatic conditions. The hard consolidated crystalline rocks of Archaean age represent weathered and fractured formations of Granite Gneiss, Granite, Charnockite and other associated rocks. Ground water occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones. The thickness of weathered zone in the district ranges from <1m to 30m. It is within the depth of 20 m in major part of the district while in the western and extreme north-north-eastern parts of the district, they are more than 20 m. The depth of the dug wells ranged from 7 to 45mbgl. The yield of the open wells range from <50 to 200 m3/day in weathered crystalline rocks and up to 400 m3/day in recent alluvial formations along major drainage course.

The ground water development in the district, in general, is high when compared to many other districts in the state. 10 out of 15 blocks in the district have been categorized as either ‘overexploited’ or ‘critical’. The trend analyses of historical ground water level data also indicate a long-term fall in a major part of the district. Based on the factors mentioned, it is inferred that a major part of the district could be considered vulnerable to various environmental impacts of water level depletion such as declining ground water levels, drying up of shallow wells and decrease in yield of bore wells.

| Over exploited (Greater than 100%) | Critical (Between 90 and 100%) | Semi – Critical (70 – 90%) | Safe (Less than 70%) |
|---|---|---|---|
| Erumapatti<br>Namagiripettai<br>Puduchatram<br>Rasipuram<br>Sendamangalam<br>Vadavadur | Mallasamudram<br>Namakkal | Kabilarmalai<br>Mohanur<br>Pallipalayam<br>Paramathi<br>Tiruchengode | Elachipalayam<br>KolliMalai |

Source : State Ground and Surface water resources Data Centre.

## ACTUAL AREA IRRIGATED BY SOURCE OF SURFACE WATER

**Year : 2012-13**

| Source (1) | Number (2) | Area Irrigated in Hectares | |
|---|---|---|---|
| | | Net (3) | Gross (4) |
| 1. Canals: | | | |
| (i) Government Canals | 3 | 2510 | 3114 |
| (ii) Private Canals | - | - | - |
| **2. Tanks:-** | - | - | - |
| (i) Large | 67 | 24.00 | 48.00 |
| (ii) Small | 192 | 50.00 | 50.00 |
| **3. Flow Irrigation:** | | | |
| (i) Major & Medium | -- | -- | -- |
| (ii) Minor | -- | -- | -- |
| **4. Lift Irrigation:** | | | |
| (i) Major & Medium | -- | -- | -- |
| (ii) Minor | -- | -- | -- |
| **5. Ponds:** | | | |
| **(i)** Lift Irrigation | -- | -- | -- |
| **(ii)** Minor | -- | -- | -- |
| **6.Other Sources:-** | | | |
| (i) Lift Irrigation | -- | -- | -- |
| (ii) Flow Irrigation | -- | 3443.93 | 3804.93 |
| **11. Ground Water** | | | |
| 1. Public | -- | -- | -- |
| 2. Private Tube Wells | 5828 | 6961.04 | 8354.66 |
| 3. Dug Wells | -- | -- | -- |
| 4. (i). With Pumpsets | 70014 | 58136.74 | 73708.02 |
| (ii). Without Pumpsets | -- | -- | -- |
| **TOTAL** | **76104** | **71125.71** | **89079.61** |

**Source G Return**

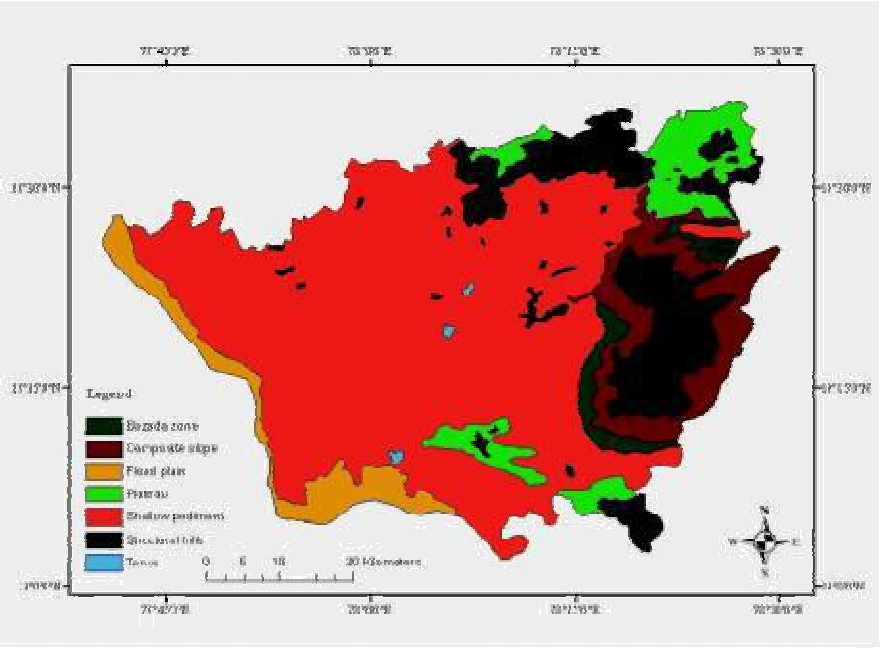
## PHYSIOGRAPHY OF THE DISTRICT

Namakkal district forms part of the upland plateau region of Tamil Nadu with many hill ranges, hillocks and undulating terrain with a gentle slope towards east. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Structural hills, 2) Bazada zone, 3) Valley fill, 4) Pediments, 5) Shallow Pediments and (6) Deep Pediments.

A number of hill ranges are located in the eastern and north-eastern parts of the district, whereas the southern, western and northern parts of the districtare plain to undulating, dotted with a few isolated hillocks. The important hill ranges in the district are Kollimalai hills, Bodamalai hills, Naraikinaru hills and Pachamalai hills. The highest peak in the district is the Kollimalai hill peak with an elevation of 1293 m. above MSL. Other important peaks are Kedda Malai (1284 m) and Melur hill in the Bodamalai hill range.

Area of different type of geomorphology (CGWB, 2008)

| Sl. No | Geomorphic feature | Area in sq km |
|---|---|---|
| 1 | Structural hill | 513.35 |
| 2 | Plateau | 237.519 |
| 3 | Flood plain | 179.936 |
| 4 | Composite slope | 275.336 |
| 5 | Bazada zone | 82.79 |
| 6 | Shallow pediment | 2115.339 |




Geomorphology Map of Namakkal District (PWD).

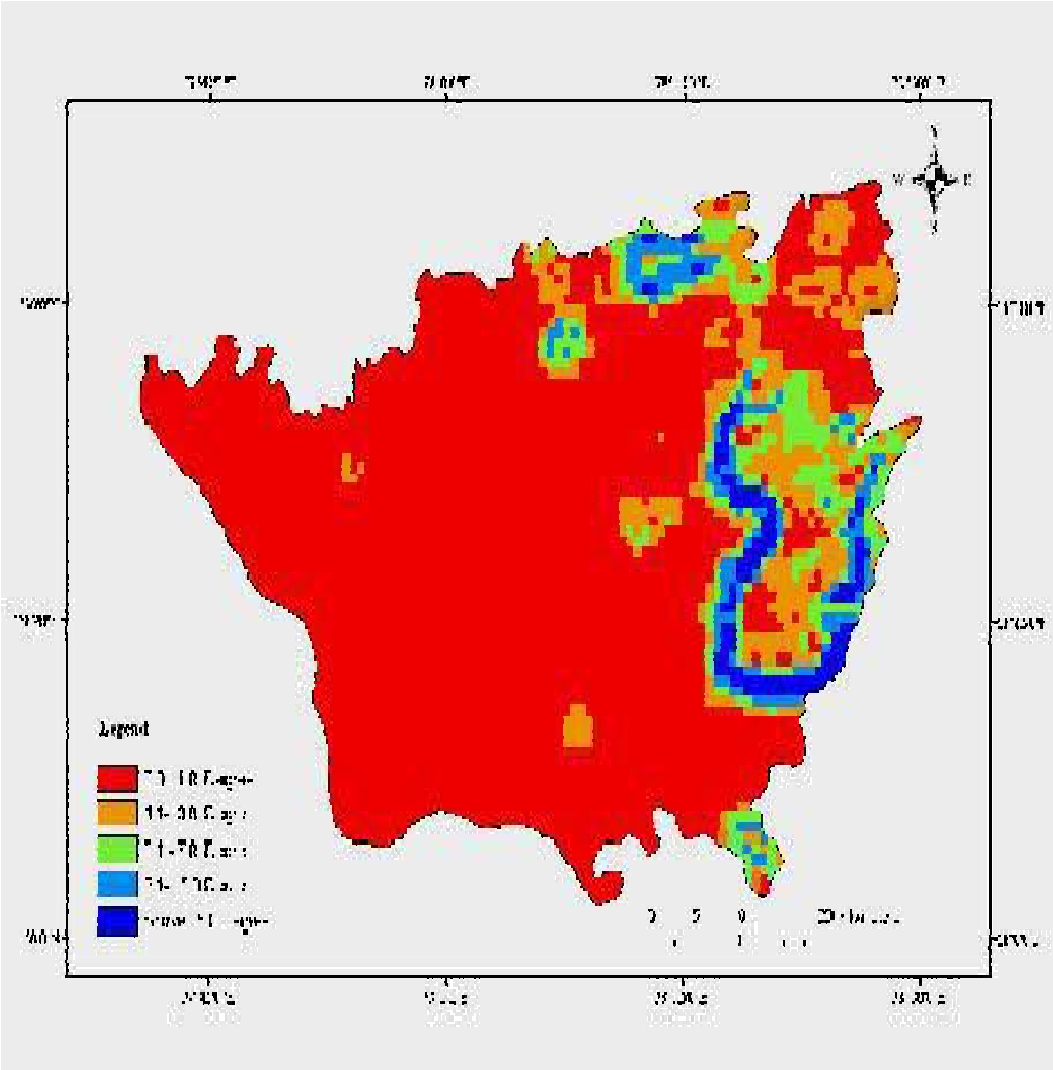
**Drainage:**

Cauvery river, which is perennial in nature, flows along the western and southern boundaries of the district. Tirumanimuttar river, which is the most important tributary of Cauvery in the district, has its origin in Manjavadi area of ***Shevroy*** hills in Salem district and traverses the district before its confluence with Cauvery at Nanjai Edayar village of Paramathi taluk. A small area in the northeastern part, which is drained mainly by ***Vasista Nadi*** and ***Sweta Nadi*** rivers, which are tributaries of ***Vellar*** River

**Slope:**

Slope of an area is an indicator of the infiltration rate. The contact period of water with the surface is less where the slope is more and thereby the infiltration rate will be less. In places where the slope is relatively less, the terrain is almost plain and the contact of the run off water with surface is high and it results in good groundwater recharge. The contour map is prepared in 1:50000 scale from SOI topo sheets. TIN map is created from contour map. Based on the TIN map, slope map is prepared for the study area. The slope map of the study area reveals that the slope is high in hilly

terrains which are present in north and east parts. The most part of the study area contains a gentle slope of 0- 1 degree. The slope map of Namakkal district is given below.




Slope map of Namakkal District.

## 8. CLIMATIC CHARACTERISTICS

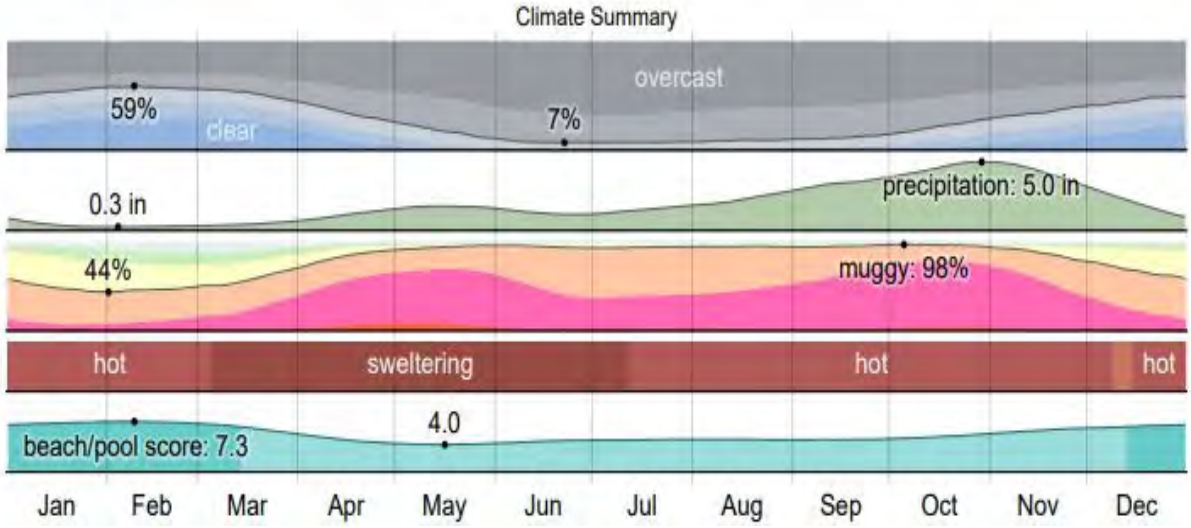
The District receives the rain under the influence of both southwest and northeast monsoons. The northeast monsoon chiefly contributes to the rainfall in the District. Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal. The southwest monsoon rainfall is highly erratic and summer rains are negligible.

Rainfall data from six stations over the period 1901-2000 were utilized and a perusal of the analysis shows that the normal annual rainfall over the District varies from about 640 mm to 880 mm. It is the minimum around Paramathi (640.50 mm) in the southwestern part of the District. It gradually increases towards north, northeast and east and attains a maximum around Rasipuram (880.5 mm) in the northern part.

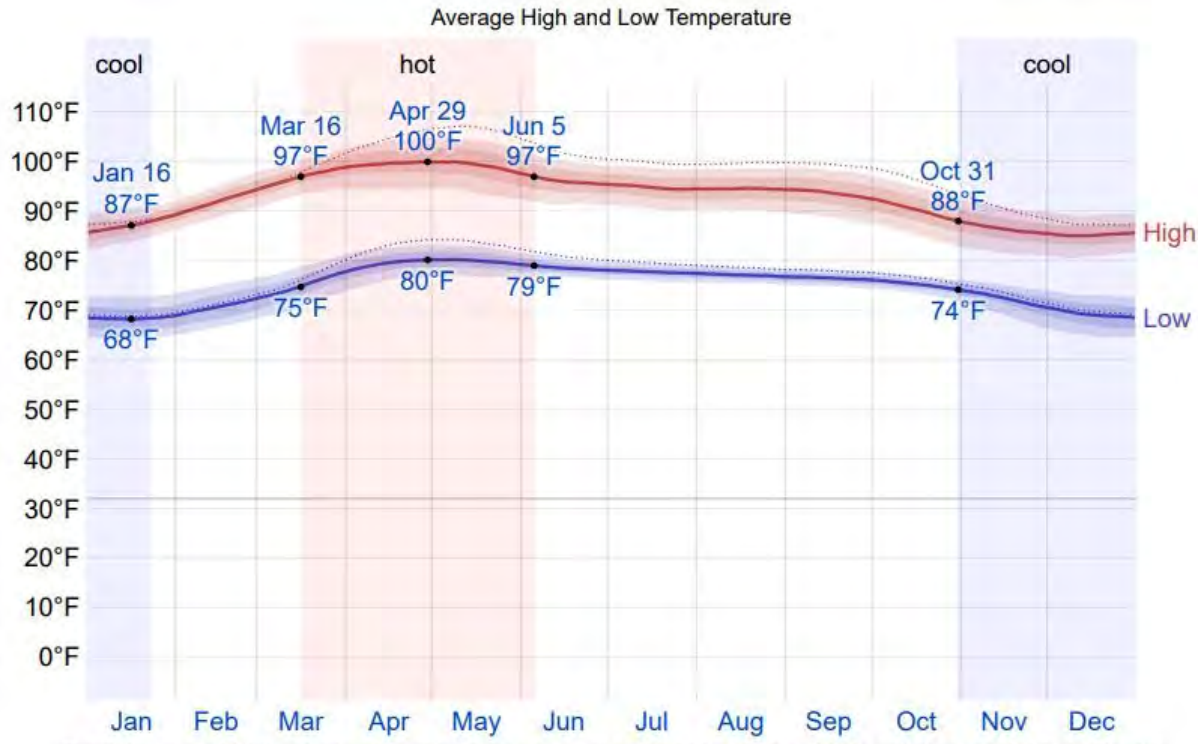
The District enjoys a tropical climate. The weather is pleasant during the period from November to January. Mornings in general are more humid than the afternoons, with the humidity exceeding 78% on an average. In the period June to November the afternoon humidity exceeds 66% on an average. In the rest of the year the afternoons are drier, the summer afternoons being the driest.

The hot weather begins early in March, the highest temperature being felt in April and May. Weather cools down progressively from about the middle of June and by December, the mean daily maximum temperature drops to 30.2°C, while the mean daily minimum drops to 19.2°C and 19.6°C in January in Salem and Mettur Dam 7 respectively. Though the maximum temperatures in February are about the same as in July, the nights are much cooler in February. Being an interior District, the diurnal range of temperature is large, particularly in the dry and hot seasons. In February-March the mean diurnal range of temperature is as high as 13.7°C while in October-November it is only about 9°C.

## 8.a CLIMOGRAPH OF NAMAKKAL DISTRICT




## 8.b TEMPERATURE GRAPH




*The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.*

**8.c RAINFALL**

Namakkal District generally experiences hot and dry climate. Hot weather in March and reaches maximum during April to between October to December. The average annual rainfall is 58 cm to 70cm, mainly during November.

| Month | Average rainfall | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| January | 1.31 | 0.8 | 0 | 0 | 0 | 24.9 | 0 | 6.58 |
| February | 3.34 | 5.6 | 0 | 14.2 | 0 | 3.44 | 0 | 0 |
| March | 16.35 | 2.6 | 0 | 1.9 | 0 | 2.56 | 0 | 19.17 |
| April | 54.13 | 146.3 | 41.4 | 27.4 | 14.4 | 105.42 | 7.74 | 24.12 |
| May | 89.07 | 68.6 | 40.2 | 29.4 | 97.6 | 78.29 | 74.57 | 98.59 |
| June | 22.75 | 12.7 | 4.2 | 44.4 | 27.5 | 45.89 | 23.84 | 8.21 |
| July | 36.82 | 42.9 | 52.8 | 12.8 | 32.2 | 25.19 | 106.4 | - |
| August | 99.74 | 101.6 | 52.4 | 123.4 | 69.2 | 58.8 | 44.24 | - |
| September | 84.37 | 50.4 | 78 | 104.7 | 99.3 | 165.41 | 28.11 | - |
| October | 149.4 | 149.1 | 164.1 | 112 | 207.9 | 129.66 | 22.34 | - |
| November | 123.5 | 123.7 | 52.4 | 65.5 | 44.5 | 175.57 | 6.26 | - |
| December | 35.76 | 18 | 0.6 | 16.6 | 8.4 | 28.27 | 23.76 | - |
| **Total** | **716.54** | **722.3** | **486.1** | **552.3** | **601** | **843.4** | **337.26** | **156.67** |

## 8.d HUMIDITY

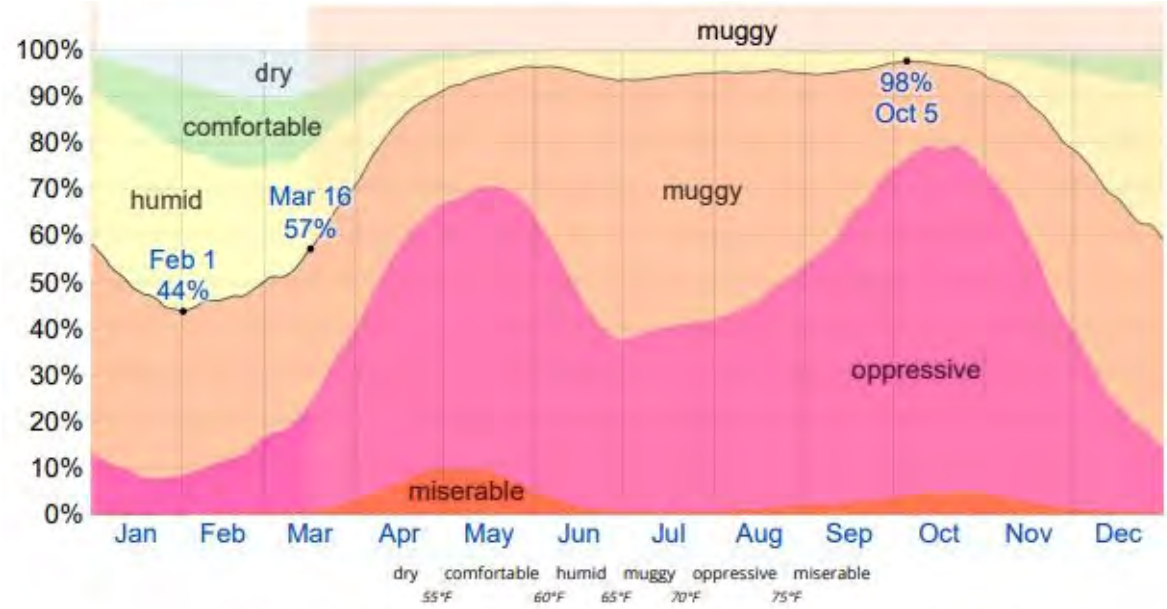
We base the humidity comfort level on the dew point, as it determines whether perspiration will evaporate from the skin, thereby cooling the body.

Lower dew points feel drier and higher dew points feel more humid. Unlike temperature, which typically varies signicantly between night and day, dew point tends to change more slowly, so while the temperature may drop at night, a muggy day is typically followed by a muggy night. Nāmakkal experiences extreme seasonal variation in the perceived humidity.

The muggier period of the year lasts for 9.6 months, from March 16 to January 2, during which time the comfort level is muggy, oppressive, or miserable at least 57% of the time. The muggiest day of the year is October 5, with muggy conditions 98% of the time.

The least muggy day of the year is February 1, with muggy conditions 44% of the time.

### 8.d.1 Humidity Comfort Levels




*The percentage of time spent at various humidity comfort levels, categorized by dew point.*

## 8.e WIND

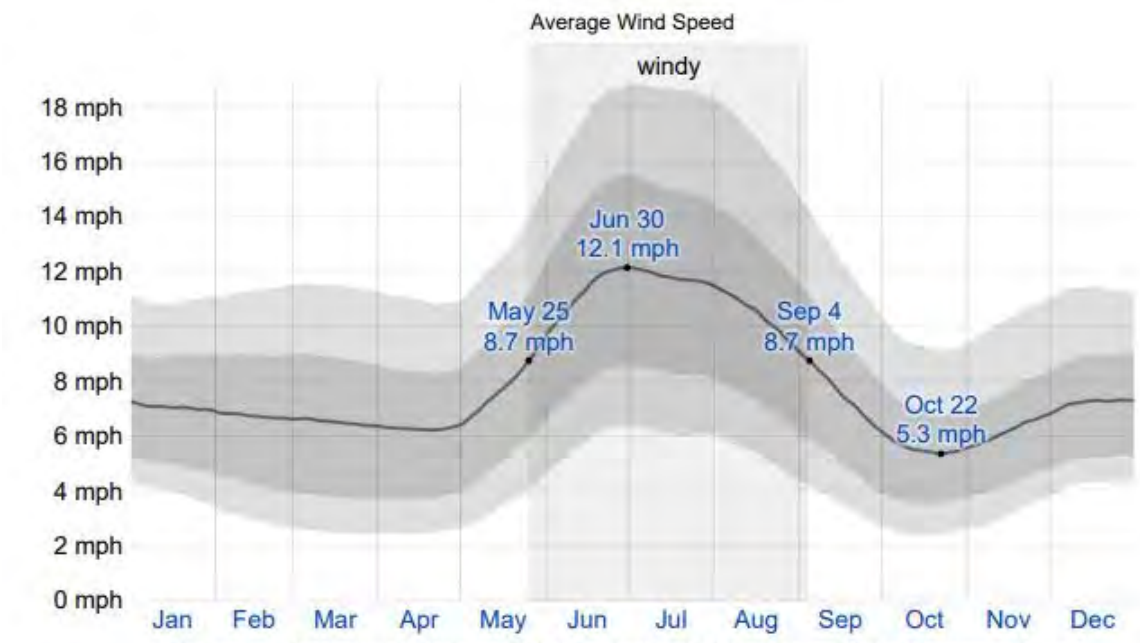
This section discusses the wide-area hourly average wind vector (speed and direction) at 10 meters above the ground. The wind experienced at any given location is highly dependent on local topography and other factors, and I stantaneous wind speed and direction vary more widely than hourly averages.

The average hourly wind speed in Nāmakkal experiences signicant seasonal variation over the course of the year.

The windier part of the year lasts for 3.3 months, from May 25 to September 4, with average wind speeds of more than 8.7 miles per hour. The windiest day of the year is June 30, with an average hourly wind speed of 12.1 miles per hour.

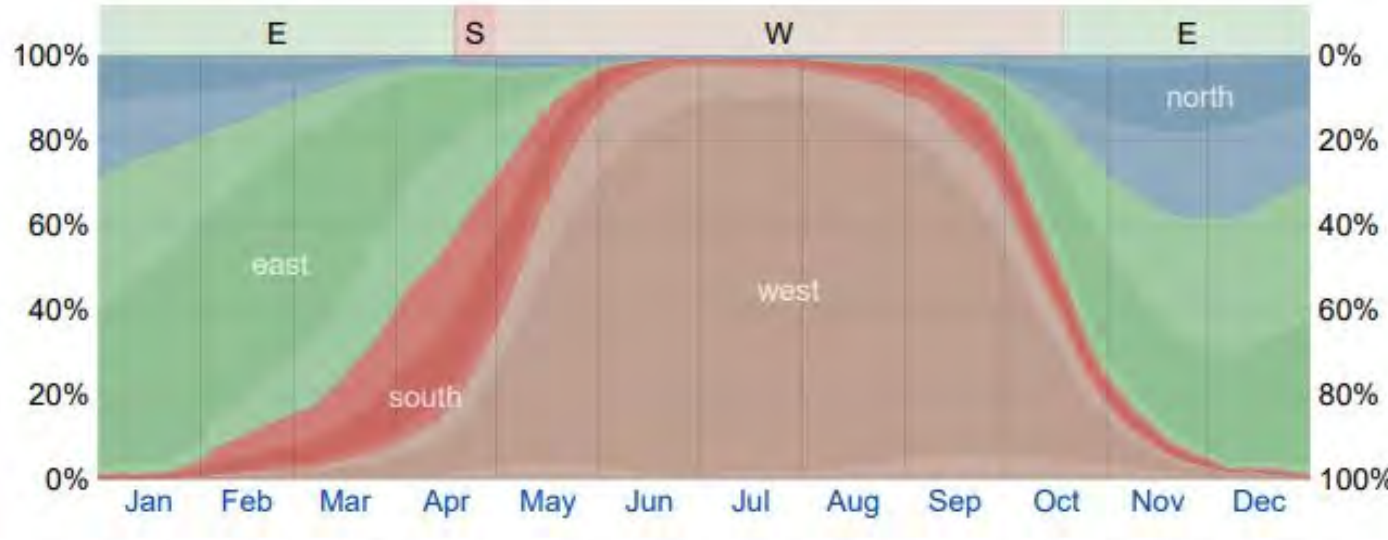
The calmer time of year lasts for 8.7 months, from September 4 to May 25. The calmest day of the year is October 22, with an average hourly wind speed of 5.3 miles per hour.

### 5.e.1 AVERAGE WIND SPEED DIAGRAM




*The average of mean hourly wind speeds (dark gray line), with 25th to 75th and 10th to 90th percentile bands.*

## 8.e.2 WIND DIRECTION DIAGRAM




*The percentage of hours in which the mean wind direction is from each of the four cardinal wind directions, excluding hours in which the mean wind speed is less than 1.0 mph. The lightly tinted areas at the boundaries are the percentage of hours spent in the implied intermediate directions (northeast, southeast, southwest, and northwest).*

## 9. Details of Mining Leases in the District:-

### Name of the Mineral : Colour Granite

| 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 Operations | 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 | From | To | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1 | Colour Granite | Tvl. P.R.P. Exports, | Velu Complex, Madurai MainRoad Melur – 625 106, Madurai – District. | G.O.No.3(D) No.61 Industries(MMB2) Dept.dt.21.7.2005 | 1.63.0 | 09.08.2005 | 08.08.2025 | - | - | 09.08.2005 | Non Working | Non Captive | No | Paramathi-Velur (Tk) Periyasolipalayam (V), 636/2 (P), 669/1A(P), 669/1B, 669/1c(p), 669/1D1(p), 669/1D2(p)- N $11^0$ 09’00’’ E $77^0$ 55’ 00” | Opencast |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Colour Granite | Tvl.P.R.P. Granites, | Veerakaliamman kovil Arukil,Keelvalavu, Melur- Tk,Madurai – District | G.o.3(D)No.62Ind (MMB2) Dept.dt.21.7.2005. | 1.21.5 | 09.08.2005 | 8.08.2025 | - | - | 09.08.2005 | Non Working | Non Captive | No | Paramathi-Velur (Tk) Periyasolipalayam (V), 637/1, 637/2A, 2B, 638/2A, 638/2B(P), 638/3A1 N 11$^0$ 09’00’’ E 77$^0$ 55’ 00” | Opencast |
| 3 | Colour Granite | Tvl. P.R.P. Exports, | Velu Complex, Madurai Main Road, Melur – 106, Madurai – district. | G.O.No.3(D)No.17 Industries (MMB2) Dept. dt.30.01.2006) | 1.23.0 | 20.02.2006 | 19.02.2026 | - | - | 20.02.2006 | Non Working | Non Captive | No | Namakkal (Tk), Pudukombai (V), 12/2p(part), 12/3p(part) 21/1A2(part) 21/1p(Part) 21/10/A(Part) N 11$^0$ 14’30” E 78$^0$ 16’00” | Opencast |
| 4 | Colour Granite | P.K.K. Exports, | 31.Elango Adigal Street, K.K.Nagar, Madurai-625 020. | G.O.No.3(D)No.30 Industries(MMB2) De dt. 21.02.2007 -) | 2.42.9 | 05.04.2007 | 04.04.2027 | - | - | 05.04.2007 | Non Working | Non Captive | No | Paramthi-VelurTk Sithampoondi(V) 488/1B(p)- 503/3(p) N 11$^0$ 15’00” E 77$^0$ 54’10” | Opencast |
| 5 | Colour Granite | B.R.Granites Pvt ltd, . | No.11 Gopalakrishnan street, T.Nagar, Chennai-17 | G.O.3(D) No.85 (Ind)Dept. (MMB) dt: 09.05.1994 | 4.19.0 | 02.01.2008 | 01.01.2028 | - | - | 02.01.2008 | Non Working | Non Captive | No | Paramthi-VelurTk Ramadevam (V), 464/1B 468/1, 468/2B, 468/3 N 11$^0$ 15’ 00” E 75$^0$ 00’ 00” | Opencast |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6. | Black Granite | Thiru.P.Karuppannan S/o Periyannan, | Door No.2/253, Kanthasamyputhur, Arasantham Post, Attur Taluk Salem District – 636 107. | G.O.3(D) No.6(Ind) MMB2)Dept. dt:17.2.2010 | 1.03.0 | 23.03.2010 | 22.03.2030 | - | - | 23.03.2010 | Non - Working | Non Captive | No | Rasipuram Mulluchurichi 161/3B, 161/4B, 161/5, 165/3B, 165/5C2 N 11$^0$ 27'40" E 78$^0$ 26'07" | Opencast |
| 7. | Colour Granite | A.Kanndappan S/o.Arumugagounder | 3/316, Brindavan Road, Farilands, Salem-636 004. | G.O.3(D) No.16 (Ind)(MMB1) Dept.dt:11.3.08 | 1.95.5 | 10.04.2008 | 09.04. 2028 | - | - | 10.04.2008 | Non - Working | Non Captive | No | Namakkal (now) Sendamangalam Pottanam 225/1B(p) 225/2A N 11$^0$ 16" E 78$^0$ 11" | Opencast |
| 8. | Colour Granite | M/s.M.P.Granite, | No.131/29, R.R.Complex, Kollapatti, Animoor (Po),Tiruchengode (Tk), Namakkal (Dt). | G.O.(3D) No.24 / Industries (MMB-2) dt.01.09.2014 | 1.79.5<br>0.69.5<br>2.49.0 | 28.10.2014 | 27.10.2034 | - | - | 28.10.2014 | Non-Working. | Non Captive | Yes 14.08.14 | Paramathi Velur Tk Sithampoondi 501/1 501/2B N 11$^0$ 14'50" to 11$^0$ 14'57" E 77$^0$ 54'14" to 77$^0$ 54'21" | Opencast |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9. | Colour Granite | P.K.K. Exports, | 31.Elango Adigal Street, K.K.Nagar, Madurai-625 020. | G.O.(3D) No.6 / Industries (MMB-2) Dept. dt.10.03.2015 | 4.86.0 | 17.04.2015 | 16.04.2035 | - | - | 17.04.2015 | Non Working | Non Captive | Yes 11.02.15 | Paramathi Velur Tk Sithampoondi 488/1B(P) 488/2(P) ,489/3P, 489/4P, 489/5A(P), 497, 503/3(P)<br>N $11^0$ 14'40'' To $11^0$ 14'47''<br>E $77^0$ 54'18" To $77^0$ 54'" | Opencast |
| 10. | Colour Granite | M/s.Blue Line Minerals Pvt Ltd., | 165, Poombukar Nagar,Edayarpalayam, Coimbatore. | G.O.(3D) No.13 / Industries (MMB-2) Dept. dt.08.04.2015 | 1.59.0 | 03.06.2015 | 02.06.2035 | - | - | 03.06.2015 | NonWorking | Non Captive | Yes 27.03.15 | Paramathi Velur Tk, Manickanatham 120/1A<br>N $11^0$ 09'15'' to $11^0$ 09'21''<br>E $77^0$ 59'12" to $77^0$ 59'16" | Opencast |
| 11 | Colour Granite | P.Velmani, S/o. Palanigounder, | Narasingapuram Post, Nethaji Nagar, Attur Taluk, Salem. | G.O.(3D) No.26 / Industries (MMB-2) Dept. dt.19.10.2015 | 3.00.5<br>1.33.5<br>4.34.0 | 02.12.2015 | 01.12.2035 | - | - | 02.12.2015 | Non Working | Non Captive | Yes 13.10.15 | Paramathi Velur Tk, Nadandhai Irukkur 456, 25/1<br>N $11^0$ 10' 41" to $11^0$ 10' 49"<br>E $77^0$ 58'19" to $77^0$ 58'28" | Opencast |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | Colour Granite | P.Mayilvahanan,<br>Prop: M/s. Swathi Exports,<br>S/o. Periyasamy, | 24, F.Indira Gandhi Road,<br>Fairlands,<br>Salem – 636 016. | G.O.(3D) No.44 / Industries (MMB-2) Dept.<br>dt.10.12.2015 | 4.94.5 | 05.01.2016 | 04.01.2036 | - | - | 05.01.2016 | Working | Non Captive | Yes 24.11.15 | Paramathi Velur Tk,<br>Sullipalayam<br>142/1<br>N $11^0$ 15’ 58<br>To<br>$11^0$ 15’ 08 ”<br>E $77^0$ 54’21”<br>To<br>$77^0$ 54’31” | Opencast |
| 13 | Colour Granite | M.Sengottuvel,<br>S/o.M.marimuthu, | D.No.20 & 21,<br>Poochakkadu,<br>Mandagapalayam,<br>Kumaramangalam (Po),<br>Tiruchengode Taluk,<br>Namakkal District. | G.O.(3D) No.50 / Industries (MMB-2) Dept.<br>dt.30.12.2015 | 2.28.5 | 17.02.2016 | 16.02.2036 | - | - | 17.02.2016 | Working | Non Captive | Yes 01.12.15 | Paramathi Velur Tk<br>Sithampoondi<br>503/1<br>N $11^0$ 14’ 46”<br>to<br>$11^0$ 14’ 52”<br>E $77^0$ 54’15”<br>to<br>$77^0$ 54’22” | Opencast |
| 14 | Colour Granite | M/s.M.P.Granite, | No.131/29,<br>R.R.Complex,<br>Kollapatti, Animoor (Po),<br>Tiruchengode (Tk),<br>Namakkal (Dt). | G.O.(3D) No.11/ Industries (MMB-2) Dept. dt.23.01.2016 | 2.11.0 | 19.02.2016 | 18.02.2036 | - | - | 19.02.2016 | Non Working | Non Captive | Yes 05.01.16 | Tiruchengode<br>Elayampalayam<br>41/2A etc.,`<br>N $11^0$ 18’ 22”<br>To<br>$11^0$ 18’ 29”<br>E $77^0$ 53’01”<br>To<br>$77^0$ 53’07” | Opencast |
| 15 | Colour Granite | L.Selvi,<br>W/o. Loganathan, | No.3B, 3rd Cross,<br>Power House Colony,<br>Krishnagiri Town,<br>Krishnagiri District. | G.O.(3D) No.23<br>Industries (MMB-2) Department dated 15.02.2016 | 4.40.5 | 25.02.2016 | 24.02.2036 | - | - | 25.02.2016 | Non Working | Non Captive | Yes 08.02.16 | Paramathi Velur Nadan<br>494/1<br>494/2<br>N $11^0$ 10’ 51”<br>to<br>$11^0$ 10’ 41”<br>E $77^0$ 57’51”<br>to<br>$77^0$ 58’01” | Opencast |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | Colour Granite | M/s. M.M.Exports, | No.77-E, Upstairs, Kaveri Avenue, MDS Nagart, Salem – 636 007. | G.O.(3D) No.71 Industries (MMB-2) Department dated 30.11.2016. This Office Rc.No.156/Mines/15 | 2.75.5 | 05.01.2017 | 04.01.2037 | - | - | 05.01.2017 | Working | Non Captive | Yes 18.11.16 | Paramathi Velur Nadandhai 483/2A<br>N $11^0$ 10’ 46.54” to $11^0$ 10’ 56.38’’<br>E $77^0$ 58’09.58” to $77^0$ 58’18.70” | Opencas |
| 17 | Colour Granite | M/s. M.M.Exports, | No.77-E, Upstairs, Kaveri Avenue, MDS Nagart, Salem – 636 007. | G.O.(3D) No.70 Industries (MMB-2) Department dated 30.11.2016 This Office Rc.No.157/Mines/15 | 2.73.0 | 05.01.2017 | 04.01.2037 | - | - | 05.01.2017 | Working | Non Captive | Yes 18.11.16 | Paramathi Velur Nadandhai 492/2<br>N $11^0$ 10’ 40.92” to $11^0$ 10’ 47.91’’<br>E $77^0$ 58’01.02” to $77^0$ 58’07.32’’ | Opencas |
| 18 | Colour Granite | Thiru.P.Mayilvaganan Proprietor: M/s. Swathi Exports, | 24, F-Indira Gandhi Road, Fairlands, Salem – 636 016. | G.O.(3D) No.69 Industries (MMB-2) Department dated 30.11.2016 This Office Rc.No.253/Mines/15 | 3.64.37 | 05.01.2017 | 04.01.2037 | - | - | 05.01.2017 | Working | Non Captive | Yes 18.11.16 | Paramathi Velur Tk, Sullipalayam 141/1A<br>N $11^0$ 14’ 59.30” to $11^0$ 15’ 04.07’’<br>E $77^0$ 54’ 08.76” to $77^0$ 54’ 21.58’’ | Opencas |
| 19 | Colour Granite | Tmt.V.Punitha, W/o.Velmani, | 109, Narasingapuram (Po), Nethaji Nagar, Attur (Tk), Salem (Dt). | G.O.(3D) No.27 Industries (MMB-2) Department dated 29.11.2017 This Office Rc.No.457 / Mines / 2016 | 2.86.5 | 03.01.2018 | 02.01.2038 | - | - | 03.01.2018 | Working | Non Captive | Yes 24.11.17 | Paramathi-Velur Nadandhai 482<br>N $11^0$ 10’53.37” to $11^0$ 10’59.34”<br>E $77^0$ 58’07.05” to $77^0$ 58’15.44” | opencast |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | Colour Granite | M/s. Kalpa Exports, Managing Partner: G.P.Panneer, | 3/196, Sithampoondi Village, Paramathi-Velur Tk, Namakkal Dt. | G.O.(3D) No.10 Industries (MMB-2) Department dated :05.03.2018 This Office Rc.No.309 / Mines / 2017 | 4.35.0 | 05.04.2018 | 04.04.2038 | - | - | 05.04.2018 | Working | Non Captive | Yes 23.02.18 | Paramathi-Velur Tk Sithampoondi 504, 505/1, 205/2, 856/2A<br>N $11^0$ 14' 48.84" to $11^0$ 14' 58.59"<br>E $77^0$ 54' 05.72" to $77^0$ 54' 15.16" | opencast |
| 21 | Colour Granite | M/s. Sivasakthi Rock Exports, | No.G-3, Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District. | G.O.No.(3D) No.11 / Industries (MMB-2) / Department dated: 12.03.2018 This Office Rc.No.770 / Mines / 2017 | 1.62.0 | 12.04.2018 | 11.04.2038 | - | - | 12.04.2018 | Working | Non Captive | Yes 23.02.18 | Paramathi Velur Tk Nadandhai 480/1(P)<br>N $11^0$ 11' 06.75" to $11^0$ 11' 12.64"<br>E $77^0$ 58' 09.58" to $77^0$ 58' 14.66" | opencast |
| 22 | Colour Granite | S.K.P.Murugaen, S/o. Kandasamy, | F/2, Jain Akshaya, 15, Thirumurthy Street, T.Nagar, Chennai – 600 017. | The G.O. 3(D), No.12, Industries (MMB.2) Department dated: 19.03.2018. | 0.77.5<br>0.73.0<br>1.50.5 | 18.04.2018 | 17.04.2038 | - | - | 18.04.2018 | Working | Non Captive | Yes. 23.02.18 | Paramathi Velur Tk Sithampoondi 348(P) ,349/2(P)<br>N $11^0$ 14' 39.62" to $11^0$ 14' 42.43"<br>E $77^0$ 54' 45.84" to $77^0$ 54' 52.57" | opencast |

**10. Details of Royalty or Revenue Received in last three years(2016-17 to 2018-19)**

The Minor mineral wise revenue collection for the last three years is given below:

**Name of the Mineral : Granite**

| Sl.No. | Year | Revenue (in Rs). |
|---|---|---|
| 1. | 2016-17 | 35017287 |
| 2. | 2017-18 | 27251491 |
| 3. | 2018-19 | 19246850 |

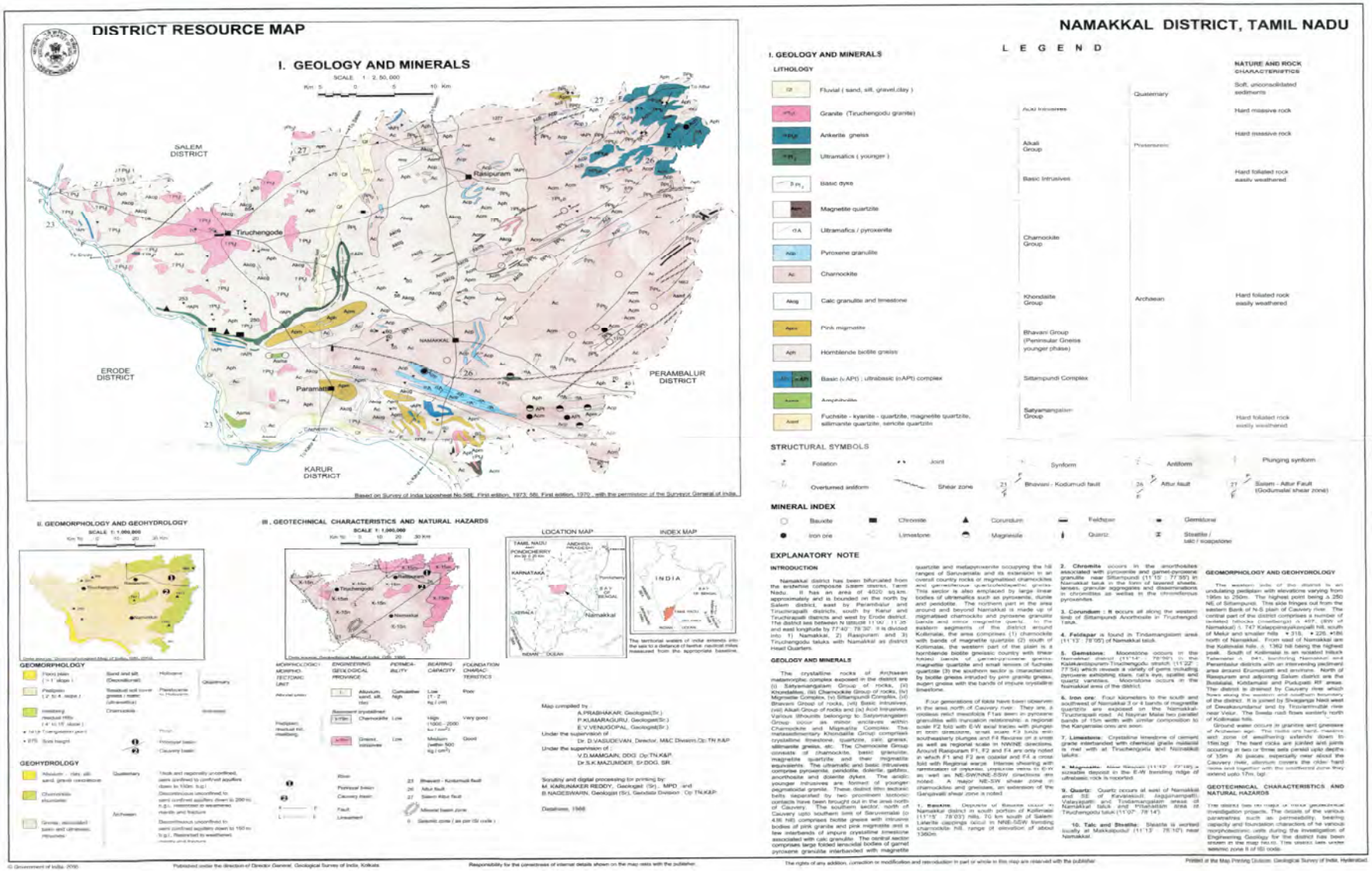
**11. Details of Production of Minor Mineral in last three years (2016-17 to 2018-19)**

The year wise production of Minor Minerals during the last three years is given below:

**Name of the Mineral : Granite**

| **Year** | **Colour Granite** |
|---|---|
| **1** | **2** |
| 2016 - 17 | 15065.968 |
| 2017 - 18 | 13115.412 |
| 2018 - 19 | 8723.285 |

## 12. Mineral Map of the district:-



## 13. List of Letter of Intent (LOI) Holders in the district along with its validity:-

**Nil**

## 14. Total Mineral Reserves available in the district:-
## Name of the Mineral : Colour Granite

| 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 Operations | 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) | Total Geological Research |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | From | To | From | To | | | | | | M.Cub |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1 | Colour Granite | Tvl. P.R.P. Exports, | Velu Complex, Madurai MainRoad Melur – 625 106, Madurai – District. | G.O.No.3(D) No.61 Industries(MMB2) Dept.dt.21.7.2005 | 1.63.0 | 09.08.2005 | 08.08.2025 | - | - | 09.08.2005 | Non Working | Non Captive | No | Paramathi-Velur (Tk) Periyasolipalayam (V), 636/2 (P), 669/1A(P), 669/1B, 669/1c(p), 669/1D1(p), 669/1D2(p)- N $11^0$ 09’00’’<br><br>E $77^0$ 55’ 00” | 31200 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Colour Granite | Tvl.P.R.P. Granites, | Veerakaliamman kovil Arukil,Keelvalavu, Melur- Tk,Madurai – District | G.o.3(D)No.62Ind (MMB2) Dept.dt.21.7.2005. | 1.21.5 | 09.08.2005 | 8.08.2025 | - | - | 09.08.2005 | Non Working | Non Captive | No | Paramathi-Velur (Tk) Periyasolipalayam (V), 637/1, 637/2A, 2B, 638/2A, 638/2B(P), 638/3A1 N 11$^0$ 09'00'' E 77$^0$ 55' 00" | 31500 |
| 3 | Colour Granite | Tvl. P.R.P. Exports, | Velu Complex, Madurai Main Road, Melur – 106, Madurai – district. | G.O.No.3(D)No.17 Industries (MMB2) Dept. dt.30.01.2006) | 1.23.0 | 20.02.2006 | 19.02.2026 | - | - | 20.02.2006 | Non Working | Non Captive | No | Namakkal (Tk), Pudukombai (V), 12/2p(part), 12/3p(part) 21/1A2(part) 21/1p(Part) 21/10/A(Part) N 11$^0$ 14'30" E 78$^0$ 16'00" | 25200 |
| 4 | Colour Granite | P.K.K. Exports, | 31.Elango Adigal Street, K.K.Nagar, Madurai-625 020. | G.O.No.3(D)No.30 Industries(MMB2) De dt. 21.02.2007 -) | 2.42.9 | 05.04.2007 | 04.04.2027 | - | - | 05.04.2007 | Non Working | Non Captive | No | Paramthi-VelurTk Sithampoondi(V) 488/1B(p)- 503/3(p) N 11$^0$ 15'00" E 77$^0$ 54'10" | 55700 |
| 5 | Colour Granite | B.R.Granites Pvt ltd, . | No.11 Gopalakrishnan street, T.Nagar, Chennai-17 | G.O.3(D) No.85 (Ind)Dept. (MMB) dt: 09.05.1994 | 4.19.0 | 02.01.2008 | 01.01.2028 | - | - | 02.01.2008 | Non Working | Non Captive | No | Paramthi-VelurTk Ramadevam (V), 464/1B 468/1, 468/2B, 468/3 N 11$^0$ 15' 00" E 75$^0$ 00' 00" | 58000 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6. | Black Granite | Thiru.P.Karuppannan S/o Periyannan, | Door No.2/253, Kanthasamyputhur, Arasantham Post, Attur Taluk Salem District – 636 107. | G.O.3(D) No.6(Ind) MMB2)Dept. dt:17.2.2010 | 1.03.0 | 23.03.2010 | 22.03.2030 | - | - | 23.03.2010 | Non - Working | Non Captive | No | Rasipuram Mulluchurichi 161/3B, 161/4B, 161/5, 165/3B, 165/5C2 N $11^0$ 27'40" E $78^0$ 26'07" | 16415 |
| 7. | Colour Granite | A.Kanndappan S/o.Arumugagounder | 3/316, Brindavan Road, Farilands, Salem-636 004. | G.O.3(D) No.16 (Ind)(MMB1) Dept.dt:11.3.08 | 1.95.5 | 10.04.2008 | 09.04. 2028 | - | - | 10.04.2008 | Non - Working | Non Captive | No | Namakkal (now) Sendamangalam Pottanam 225/1B(p) 225/2A N $11^0$ 16" E $78^0$ 11" | 7683 |
| 8. | Colour Granite | M/s.M.P.Granite, | No.131/29, R.R.Complex, Kollapatti, Animoor (Po),Tiruchengode (Tk), Namakkal (Dt). | G.O.(3D) No.24 / Industries (MMB-2) dt.01.09.2014 | 1.79.5<br>0.69.5<br>2.49.0 | 28.10.2014 | 27.10.2034 | - | - | 28.10.2014 | Non-Working. | Non Captive | Yes 14.08.14 | Paramathi Velur Tk Sithampoondi 501/1 501/2B N $11^0$ 14'50" to $11^0$ 14'57" E $77^0$ 54'14" to $77^0$ 54'21" | 247680 |
| 9. | Colour Granite | P.K.K. Exports, | 31.Elango Adigal Street, K.K.Nagar, Madurai-625 020. | G.O.(3D) No.6 / Industries (MMB-2) Dept. dt.10.03.2015 | 4.86.0 | 17.04.2015 | 16.04.2035 | - | - | 17.04.2015 | Non Working | Non Captive | Yes 11.02.15 | Paramathi Velur Tk Sithampoondi 488/1B(P) 488/2(P) ,489/3P, 489/4P, 489/5A(P), 497, 503/3(P) N $11^0$ 14'40'' To $11^0$ 14'47'' E $77^0$ 54'18" To $77^0$ 54'" | 485810 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | Colour Granite | M/s.Blue Line Minerals Pvt Ltd., | 165, Poombukar Nagar,Edayarpalayam, Coimbatore. | G.O.(3D) No.13 / Industries (MMB-2) Dept. dt.08.04.2015 | 1.59.0 | 03.06.2015 | 02.06.2035 | - | - | 03.06.2015 | NonWorking | Non Captive | Yes 27.03.15 | Paramathi Velur Tk, Manickanatham 120/1A<br>N $11^0$ 09'15'' to $11^0$ 09'21''<br>E $77^0$ 59'12" to $77^0$ 59'16" | 150300 |
| 11 | Colour Granite | P.Velmani, S/o. Palanigounder, | Narasingapuram Post, Nethaji Nagar, Attur Taluk, Salem. | G.O.(3D) No.26 / Industries (MMB-2) Dept. dt.19.10.2015 | 3.00.5<br>1.33.5<br>4.34.0 | 02.12.2015 | 01.12.2035 | - | - | 02.12.2015 | Non Working | Non Captive | Yes 13.10.15 | Paramathi Velur Tk, Nadandhai Irukkur 456, 25/1<br>N $11^0$ 10' 41" to $11^0$ 10' 49"<br>E $77^0$ 58'19" to $77^0$ 58'28" | 669457 |
| 12 | Colour Granite | P.Mayilvahanan, Prop: M/s. Swathi Exports, S/o. Periyasamy, | 24, F.Indira Gandhi Road, Fairlands, Salem – 636 016. | G.O.(3D) No.44 / Industries (MMB-2) Dept. dt.10.12.2015 | 4.94.5 | 05.01.2016 | 04.01.2036 | - | - | 05.01.2016 | Working | Non Captive | Yes 24.11.15 | Paramathi Velur Tk, Sullipalayam 142/1<br>N $11^0$ 15' 58 To $11^0$ 15' 08 "<br>E $77^0$ 54'21" To $77^0$ 54'31" | 492840 |

## 15) Quality/ Grade of Mineral available in the district

### Colour Granite:-

The Garnet are embedded in sequence Pattern in the formation and Popularly termed as Ivory white, Ivory Gold , Colonial Ivory, Ivory cream estra, , Black Fantacy, Royal Ivory, Harvest Green etc., are available in the District.

## 16. Use of Mineral

## Coloured Granite

Granite is the most sought-after among all building stones. Presently, cut and polished granite slabs of 20 mm thickness are preferred for flooring, while tiles of 10 or 12 mm thickness are used for cladding. In addition, gravestones and monuments of various shapes and sizes are also in vogue. The flexibility of the cutting tools have engendered creation of many artifacts of granite for decorative purposes.

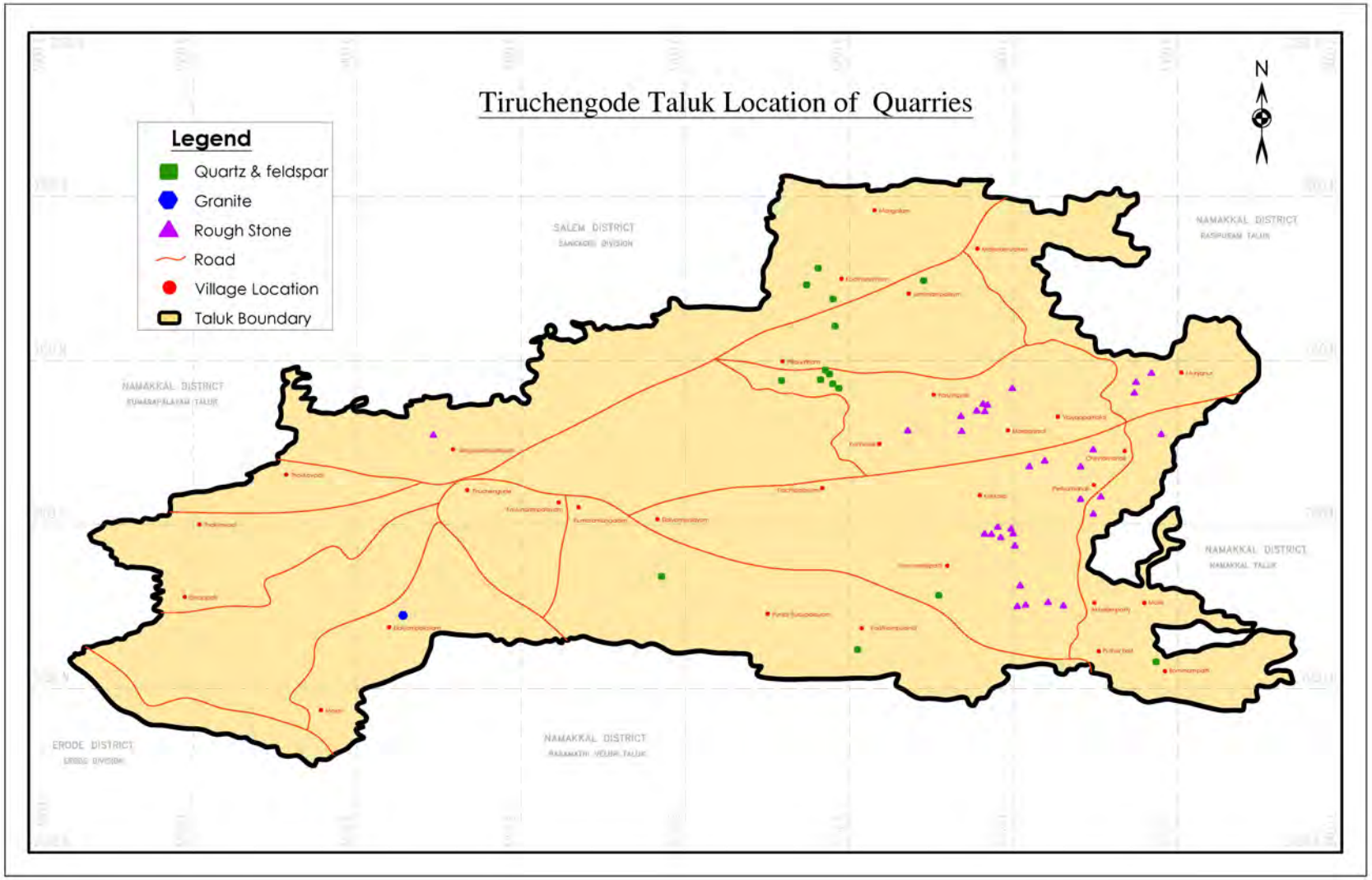
Granite also finds its application in making garden furniture, such as, benches, fountains and many other articles which are used for landscaping and/or decorative purposes. The cut-to-size small blocks are used as cobblestone, kerbstone, road sidings and for many other innovative purposes.

## 17. Demand and supply of the Mineral in the last three years:-

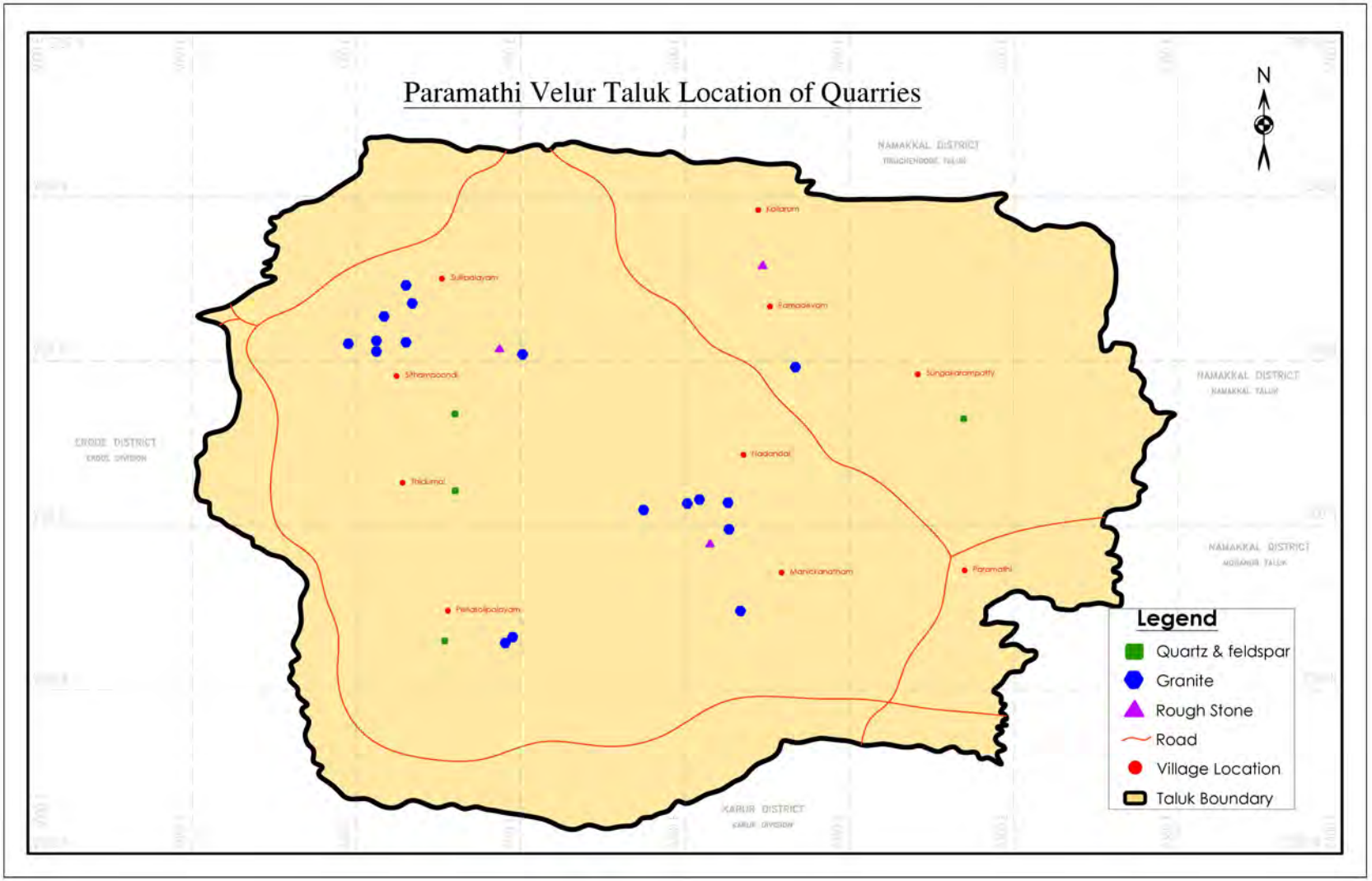
The granites are mined for dimension stone and highly demanded in international market.

**18. Mining Leases marked on the map of the district:-**

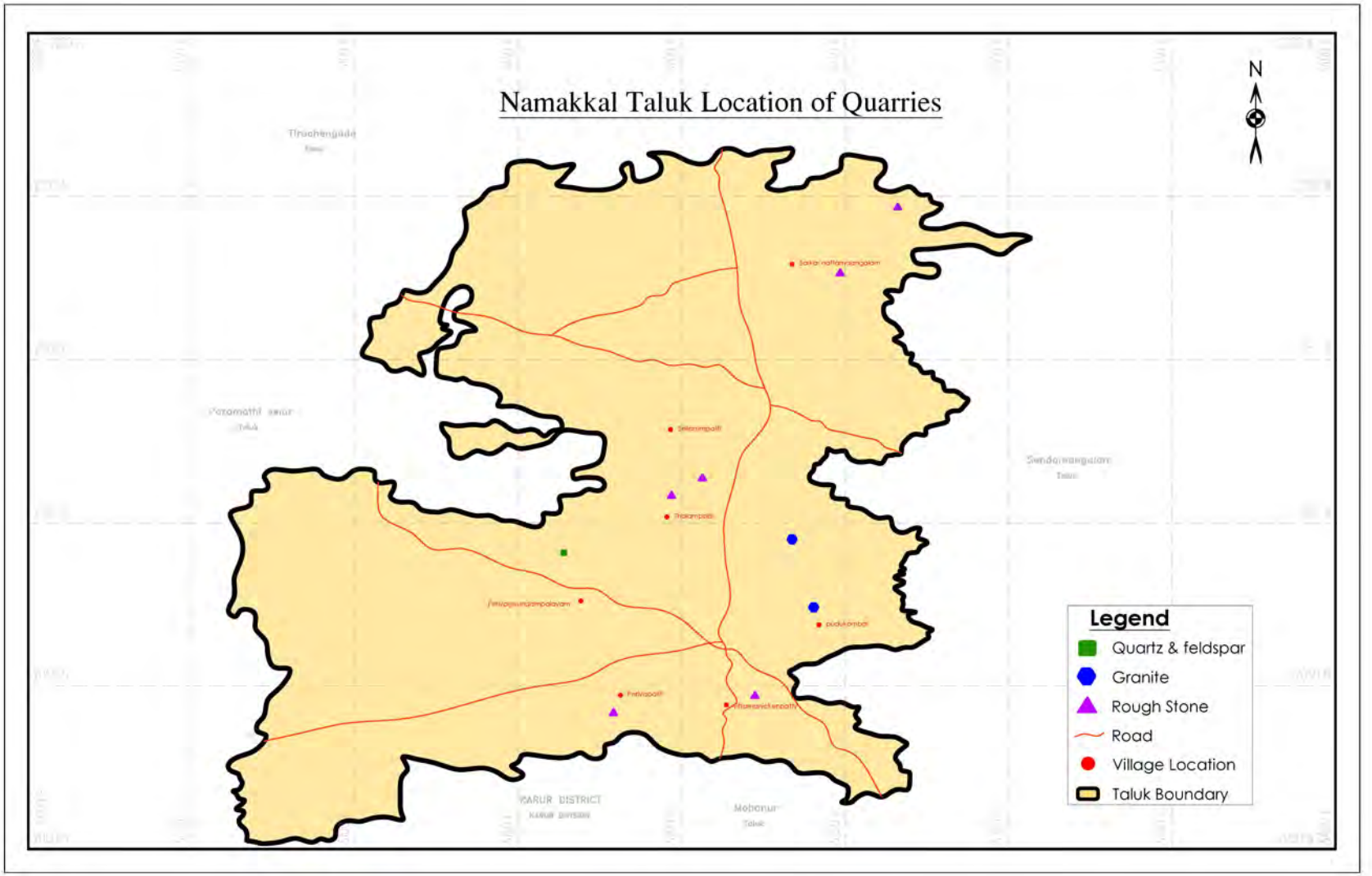
**Mining leases marked in the Tiruchengode Taluk map**



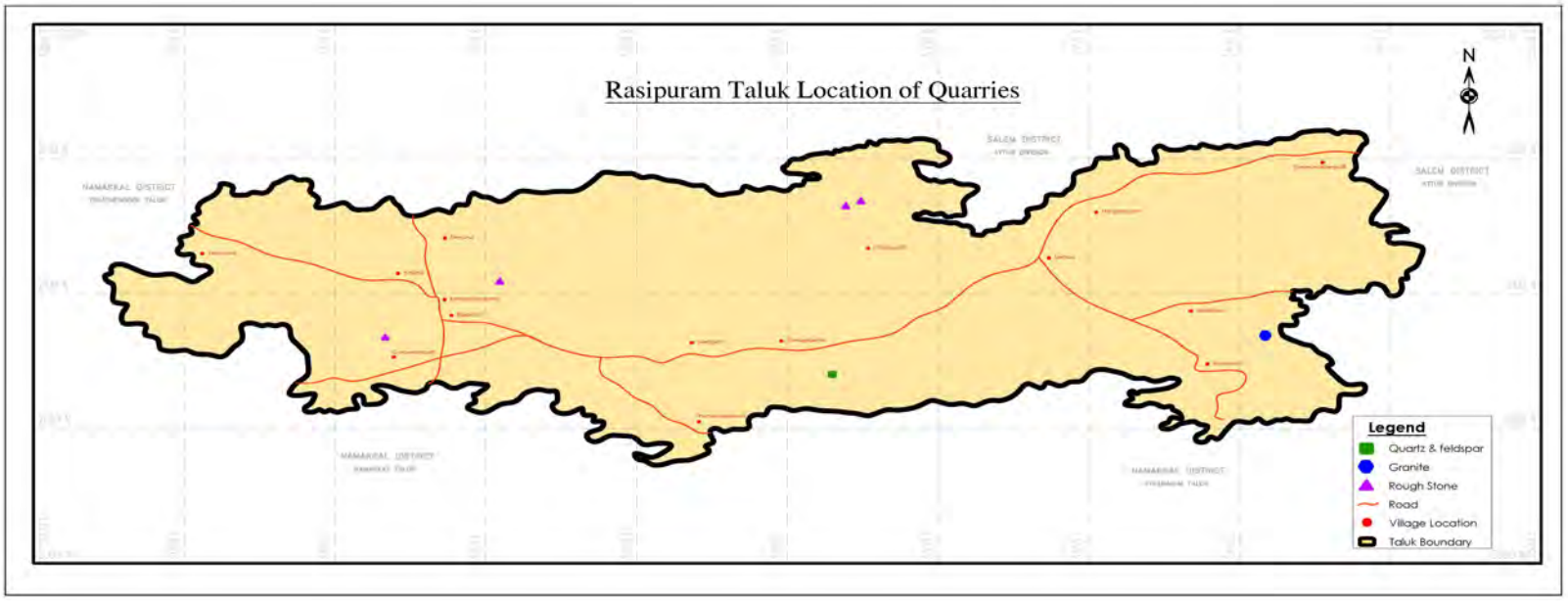
**Mining leases marked in the Paramathi- Velure Taluk map**



**Mining leases marked in the Namakkal Taluk map**



# Mining leases marked in the Rasipuram Taluk map



**19. Details of the area of where there is a cluster of the mining leases:-**

**Name of the Mineral :Granite**

| S.No. | Name of the Taluk | Name of the Village | No.of Mining leases | Location of the Mining lease | |
|---|---|---|---|---|---|
| | | | | Latitude | Longitude |
| 1 | Paramathi-Velur | Sittampoondi | 6 | $11^0$14’ 39.62”<br>$11^0$ 14’ 42.43”<br><br>$11^0$14’ 50”<br>$11^0$ 14’ 57” | $77^0$ 54’ 45.84”<br>$77^0$ 54’ 52.57”<br><br>$77^0$ 54’ 14”<br>$77^0$ 54’ 21” |
| | | Nadanthai | 8 | $11^0$10’ 40.92”<br>$11^0$ 10’ 47.91” | $77^0$ 58’ 01.02”<br>$77^0$ 58’ 07.32” |

## 20. DETAILS OF ECO-SENSITIVE AREA,IF ANY, IN THE DISTRICT:

**Nil**

## 21.0 IMPACT ON THE ENVIRONMENT DUE TO MINING ACTIVITY:-

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

1. Environmentaldegradation
2. Environmental pollution
3.

**ENVIRONMENTAL DEGRADATION:**

Degradation of topography, fauna and flora in variably 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 locito dump the over burden. Filling up of the natural drainage channels creates problem in the water way system. Degradating 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 i happening at presentin 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 majority 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 topo graphic 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 get saccentuated from increase duse of jet burners (flames cutters). Ground vibration on account of blasting are at times worst, simulating seimic 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 following remedial measures to be taken during mining

### 22.1 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
- Development of green belt / plantation around mine, along the roads, backfilled area in various undisturbed areas within the mine lease areas etc.,

### 22.2 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 pumping of ground water is involved.

**22.3 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 may lead to less noise generation.
- 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 ear muff's 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.

**22.4 REMEDIAL MEASURES TO REDUCE IMPACT ON LAND ENVIRONMENT:**

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

**22.5 REMEDIAL MEASURES TO REDUCE IMPACT ON BIOLOGICAL ENVIRONMENT**

- 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.
- Conservation plan for schedule –I species if any to be prepared in consultation with the Forest Department and the proposals given in the conservation plan to be strictly implemented.
- Effluents generated in the mining areas to be treated properly.

## 23. Reclamation of Mined out area (Best practice already implemented in the district, requirement as per rules and regulation, proposed reclamation plan):-

Under Rule 23A, Mine Closure Plan: Every mine shall have Mine Closure Plan, which shall be of two types:-

(i) Progressive mine closure plan; and

(ii) Final mine closure plan.

**Conceptual Final Landform-**

The broad rehabilitation objective for the post-quarry landform is to establish a similar land use on the disturbed areas, with the exception of the final void. The topography of the final landform will consist of a large number of stepped benches formed in an amphitheater configuration, each with a re-vegetated bench as shown in Figure-1.

.

**Figure 1: Example of Bench Rehabilitation**

Once operations have ceased, all buildings and infrastructure will be removed. These areas will be reshaped and ripped where necessary for top-soiling and re-vegetation. The top benches will be vegetated with appropriate native species. The lower benches will be formed as a shallow depression of retention pond/ rain water harvesting structure.

## 24. 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.

### 1) 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.

### 2) 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.

### 3) 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.

### 4) 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.

**5) 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.

**6) STORES AND EQUIPMENT :-**

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

**7) TRANSPORT SERVICES:-**

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

**8) 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.

**9) SECURITY :-**

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

**10) CATERING & REFRESHMENT :-**

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

**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)**

**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 | 2018 | Nil | 1753 |
| 2 | 2017 | Nil | 1575 |
| 3 | 2016 | Nil | 1422 |
| 4 | 2015 | Nil | |
| 5 | 2014 | Nil | |

**26. Plantation of Green Belt development in respect of leases already granted in the District:-**

***Green Belt Development***

- A well planned Green Belt with multi rows (Three tier) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul rods to prevent air, dust noise propagation to undesired places. Efforts will be taken for the enhancement of survival rate since the soil is alkaline in nature.

***Species Recommended for Plantation***

Following points have been considered while recommending the species for plantation:

- Natural growth of existing species and survival rate of various species.

- ❖ Suitability of a particular plant species for a particular type of area.
- ❖ Creating of bio-diversity.
- ❖ Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- ❖ Efficient in absorbing pollutants without major effects on natural growth.
- ❖ The following species may be considered primarily for plantation best suited for the prevailing climatic condition in the area.

**Recommended species to plant in the greenbelt**

| S.No | Name of the plant (Botanical) | Family Name | Common Name | Habit |
|---|---|---|---|---|
| 1. | Azadirachta indica | ***Meliaceae*** | Neem, Vembu | Tree |
| 2. | Albizia falcatoria | ***Fabaceae*** | Tamarind, Puliyamaram | Tree |
| 3. | Polyalthia longifolia | ***Annonaceae*** | Kattumaram | Tree |
| 4. | Borassus flabellifer | ***Arecaceae*** | Palmyra Palm | Tree |

## 27. Any other information:-

The well developed Environmental management plan and Remedial measures is proposed to carryout in all mining areas in the District.

CER/CSR activities shall be carried out by providing social and welfare measures to the local community of the nearby villages. The main activities would be like drinking water facilities for the government schools children, public toilets to the local community and government schools, conducting free medical camps, providing solar lights to the villages besides encouraging the local cultural activities of the area. Any other CSR and CER activities as guided by the DEAC during the grant of Environmental Clearance Shall be implemented.

Further, several welfare measures are also taking for the mine affected People /mine affected Villages through District Mineral Foundation Trust Fund which is remitted by the Quarry lease holders.

This District Survey Report has been prepared by carrying out field work. The details related to the occurrence of mineral resources and other data of the district are subject to updation from time to time. Mining can become more environmentally sustainable by developing and integrating practices that reduce the environmental impact of mining operations. These practices include measures such as reducing water and energy consumption, minimizing land disturbance and waste production, preventing soil, water, and air pollution at mine sites, and conducting successful mine closure and reclamation activities.

Before granting of any quarrying lease, parameters related to geosciences and sustainable developments have 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 sustainable development.