



## **TAMIL NADU WATER SUPPLY AND DRAINAGE BOARD**

**Environmental Impact Assessment (EIA)  
And  
Environmental Management Plan (EMP)  
For  
The proposed unit of 8.70 MLD Sewage Treatment Plant  
at Thiruvannamalai Municipality.**

*Submitted by*



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## 1.0 PREAMBLE

Thiruvannamalai is one of the Pancha Bootha Sthalangal representing the fire element along with Chidambaram, Sri Kalahasti, Thiruvanaikoil and Kanchipuram representing sky, air, water and earth respectively.



Four Brahmotsavams are celebrated every year, the most famous of which is the one celebrated during the Tamil month of Karthikai (November/December). The ten day event culminates on the day of Karthigai Deepam. On that evening, a huge lamp is lit in a cauldron with three tons of ghee at the top of the Annamalai hill.

Every full moon night, tens of thousands of pilgrims worship Shiva by circumambulating the Arunachala hill barefoot. The circumambulation covers a distance of about 14 km. On the yearly Chitra Pournami (full moon) night in the Tamil calendar year, hundreds of thousands of pilgrims from across the world visit the town.



Thiruvannamalai is located at  12°13'N 79°04'E 12.22°N 79.07°E<sup>[4]</sup>. It has an average elevation of 171 meters (561 feet). Thiruvannamalai is situated 185 km from Chennai and 210 km from Bangalore. Saathanoor Dam across Thenpennai\_River is a tourist place near Thiruvannamalai. The height of the Arunachala\_hill is approximately 1,600 feet. The district is bounded on the North and West by Vellore district and on the South West by Krishnagiri district on the South Villupuram district and on the East by Kanchipuram district.

Advaita Vedanta guru Ramana Maharshi lived in Thiruvannamalai for fifty three years until his death in 1950. His ashram, Ramanasramam, is located at the foot of the Arunachala hill, to the west of the town. Seshadri Swamigal and Yogi RamSurat Kumar are examples of two other gurus who lived in this city.

The Tamil Nadu Government has sanctioned UGSS Schemes and Sewage treatment Plants (STP) for the District Headquarters to provide basic sanitation facility.

## **2.0 REVIEW OF LAWS, LEGISLATION AND POLICIES**

### **2.1. TNUIFSL POLICY OUTLINE**

The Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL) has been set up to manage a Trust fund for Tamil Nadu Urban Development Fund (TNUDF). The trust has been established to manage urban infrastructure projects in Tamil Nadu. The deployment of funds will be on the basis of a management contract and will be managed by TNUIFSL. Eligible borrowers include Urban Local Bodies (ULBs), Statutory Boards, Public Undertakings and potential Private Investors. TNUIFSL has implemented projects by applying the Environmental and Social Framework (ESF) with a view to develop projects with environment safeguard and prevailing laws on environment and on social policies. This UGSS is implemented with funds allotted by TNUIFSL under World Bank's TNUDF-III.



### **2.1.1. CATEGORISATION OF URBAN INFRASTRUCTURE PROJECTS**

The urban infrastructure projects depending on location and the nature of project activities will have varying impacts on urban environment. The rigor of environmental assessment required to identify and mitigate the impacts largely depends upon the complexities of project activities.

### **2.1.2. The E1, E2 and E3 categories are defined as follows**

E-1 projects are those wherein TNUIFSL foresees major environmental impacts thus necessitating Environmental Assessment Reports (EAR). A proposed project is classified as E1 if it is likely to affect sensitive environmental components (SEC) such as those mentioned in Table 1.2. Those projects/activities, which require environmental clearance as per the EIA notification published by Ministry of Environmental and Forest will also be categorized as E1. As per the guidelines in the ESF this STP project falls under E1 Category and hence this need for EIA report.

## **2.2 REVIEW OF LAWS AND LEGISLATIONS**

The Laws legislations and policies governing the Environmental protections are listed below.

- a) Constitutional Provisions
- b) Environmental Protection Act 1986
- c) EIA Notification
- d) Water Protection act 1974
- e) Air Protection act 1981
- f) Forest Conservation Act 1980
- g) Manufacture, Storage and Import of Hazardous chemicals act 1989
- h) TamilNadu Timber Transit rules
- i) CRZ Rules and Regulations
- j) Fly ash regulations.



## **2.2.a) CONSTITUTIONAL PROVISIONS**

“The natural resources of the earth, including the air, water, land flora and fauna and especially representative sample of the nature ecosystem must be safeguard for the benefits of present and future generations through careful planning or management, as appropriate... Nature conservation including wildlife must therefore receive importance in planning for economic development”.

To comply with the principles of the Stockholm Declarations adopted by the International Conference on Human Environment, the Government of India, by the Constitution 42nd Amendment Act, 1976 made the express provision for the protection and promotion of the environment, by the introduction of Article 48-A and 51-A (g) which form the part of Directive Principles of State Policy and the Fundamental Duties respectively. The amendment provided for the following:

**Article 48 A:** By the Constitution (42nd Amendment) Act, Section 10 (w.e.f. 3.1.1977).  
Protection and improvement of environment and safeguarding of forests and wild life:-

"The State shall endeavour to protect and improve the environment and to safeguard the forest and wildlife of the country".

### **Fundamental Duty**

**Article 51-A (g): By Constitution (42nd Amendment) Act, 1976. Section 11 (w.e.f. 3.1.1977)**

"It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures".

Thus the Indian Constitution makes two fold provisions.

- (a) On the one hand, it gives directive to the State for the protection and improvement of environment.
- (b) On the other hand the citizens owe a constitutional duty to protect and improve natural environment.

In protecting the natural environment Article 48-A is of immense importance today. The Government of India to accelerate the pace for environment protection. Further amended the constitutional text by making the following changes.



### **Seventh Schedule of the Constitution:**

- (I) In the Concurrent List, 42nd Amendment Inserted.
- (a) Entry 17-A, providing for forests.
  - (b) Entry 17-B, for the protection of wild animals and birds.
  - (c) Entry 20-A, providing for population control and family planning.

### **Eleventh Schedule of the Constitution.**

- (1) This new schedule is added by the Constitution 73rd Amendment Act, 1992. This received the assent of the President on 20.4.1993. This schedule has 8 entries (2, 3, 6, 7, 11, 12, 15 and 29) providing for environmental protection and conservation

### **Twelfth Schedule of the Constitution.**

- (1) The entry number 8 of this schedule added to the constitutional text by the 74th Amendment Act, 1992, which received the assent of the President on 20.4.1993 provided for the Urban Local bodies, with the function of environment and promotion of ecological aspects to them.

### **2.2.b) ENVIRONMENTAL PROTECTION ACT 1986 AND AS AMENDED**

The Environment (Protection) Act, popularly known as EP Act, is an umbrella legislation that supplements existing environmental regulations. Empowered by the EP Act, the Ministry of Environment & Forests (MoEF), Government of India has issued the following notifications regulating siting of industry and operations, procuring clearance to establish industries and development of projects with appropriate EIA studies, coastal zone regulations and other aspects of environment care:

- Empowers the Government of India (section 6) to make rules to regulate environmental pollution by stipulating standards and maximum allowable limits to prevent air, water, noise, soil and other environmental pollutants
- Prohibits operations that emit pollutants in excess of standards (section 7)
- Regulates handling of hazardous substances and identifies persons responsible for discharges and pollution prevention (section 9)
- Section 17 deals with offences committed by Government Departments
- Formulated Environmental (Protection) Rules, 1986, Hazardous Wastes (Management and Handling) Rules, 1989 and Manufacture, Storage & Import of Hazardous Chemical Rules, 1989 in accordance with the sections 6, 8 and 25 of EP Act.



### **2.2.c) EIA Notification dated 14th September, 2006.**

A new EIA notification was published on 14th September, 2006 for imposing certain restrictions and prohibitions on new projects or activities, or on the expansion or modernisation of existing projects or activities based on their potential environmental impacts as indicated in the schedule to the notification, being undertaken in any part of India, unless prior environmental clearance has been accorded in accordance with the objectives of National Environment Policy as approved by the Union Cabinet on 18th May, 2006 and the procedure specified in the notification, by the Central Government or the State or Union territory Level Environment Impact Assessment Authority (SEIAA).

The notification has listed out the Projects or activities requiring prior environmental clearance under Category “A” and “B” based on the spatial extent of potential impacts and Potential impacts on human health and natural and man made resources. Category “A” projects require prior environmental clearance from MoEF on the recommendations of an Expert Appraisal Committee (EAC) and Category “B” projects require prior environmental Clearance from State or Union territory Level Environment Impact Assessment Authority (SEIAA) on the recommendations of a State or Union territory Level Expert Appraisal Committee (SEAC). In the absence of a duly constituted SEIAA or SEAC, a category “B” Project shall be treated as a Category “A” project.

The environmental clearance process for projects will comprise of a maximum of four stages, all of which may not apply to few of the particular cases. These four stages in sequential order are:-

- Stage (1) Screening (only for category “B” projects and activities)
- Stage (2) Scoping
- Stage (3) Public Consultation
- Stage (4) Appraisal



### **2.2.d) WATER (PREVENTION AND CONTROL OF POLLUTION) ACT 1974**

Water Act is the first environmental regulation that was introduced at the State and Centre levels, Pollution Control Boards to control / regulate environmental pollution in India.

Amended twice in 1978 and 1988, the Act vests regulatory authority on the State Pollution Control Boards and empowers them to establish and enforce effluent standards for industries and local authorities discharging effluents. This provide for the prevention and control of water pollution besides maintaining and restoring of the wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance on health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

### **2.2.e) AIR (PREVENTION AND CONTROL OF POLLUTION) ACT 1981 AND TAMIL NADU AIR (PREVENTION OF CONTROL OF POLLUTION) RULES 1983**

An Act to provide for the prevention, control and abatement of air pollution, for the establishment, with a view to carrying out the aforesaid purposes, of Boards, for conferring on and assigning to such Boards powers and functions relating thereto and for matters connected therewith.

### **2.2.f) FOREST CONSERVATION ACT 1980**

Forest (Conservation) Act, 1980 was enacted to halt rapid deforestation and governments cannot de-reserve forest land or direct that it be used for non-forest purposes. Municipal projects with activities falling in reserved forest areas need a clearance from MoEF.



### **2.2.g) MANUFACTURE, STORAGE AND IMPORT OF HAZARDOUS CHEMICALS ACT 1989**

These rules aim at providing control for the generation, storage and Import of hazardous chemicals. According to these rules, the user of hazardous chemicals has to perform the following and dispose the hazardous waste as mentioned in the rules

- Identify the potential hazards of the chemicals and to take adequate steps for the prevention and control of such hazards
- Develop or provide information about the chemical in the form of safety data sheet and
- Label the specified information on container of hazardous chemical and Chlorine used for disinfection of water is categorised as hazardous chemical as according these rules and usage of these chemicals above 10 tons per year attracts the provisions of these rules. Some of the water projects funded by TNUIFSL could handle Chlorine above 10 tons per year and those projects will attract the provision of these rules.

### **2.2. h) TAMILNADU TIMBER TRANSIT RULES**

The Rule States “No person shall move timber into or from, or within the State by land, water or air unless such timber is accompanied by a permit prescribed therefore under rule 4”. This is applicable in sub projects such as roads where cutting of trees are involved.



## **2.3 WORLD BANK'S OPERATIONAL POLICIES AND DIRECTIVES**

The Operational Policies and & Directives of World Bank is emphasizing the importance of the Environmental Mitigation Management and the methodology is explained. The Following operational policies have been followed in preparation of the EIA.

### **A) OP 4.01 Environmental Assessment:**

The Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making.

### **B) OP 4.04 Natural Habitats:**

The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development.

### **C) OP 4.11 Cultural Resources:**

This policy addresses physical cultural resources, which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.



#### **D) OP 4.36: Forests:**

This identifies a project with the potential for conversion or degradation of natural forests or other natural habitats that is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented is classified as Category A; projects otherwise involving forests or other natural habitats are classified as Category B, C, or FI, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its environmental impacts.

### **2.4. PERMISSIONS / CLEARANCES**

#### **A. CONSENT FROM TNPCB.**

Consent Establishment for the proposed unit of 8.7MLD STP At Thiruvannamali Municipality has been obtained from TNPCB on 12/01/2010.

#### **B. PERMISSION FROM HIGHWAY DEPARTMENT.**

Permission for laying pipe line along the road was obtained from the Highway Department.

### **3.0 DISTRICT LOCATION**

#### **3.1 THIRUVANNAMALAI MUNICIPALITY.**

Thiruvannamalai is located at   $12^{\circ}13'N$   $79^{\circ}04'E$   $12.22^{\circ}N$   $79.07^{\circ}E$ <sup>[4]</sup>. It has an average elevation of 171 meters (561 feet). Thiruvannamalai is situated 185 km from Chennai and 210 km from Bangalore. Saathanoor Dam across Thenpennai River is a tourist place near Thiruvannamalai. The height of the Arunachala hill is approximately 1,600 feet.

The district is bounded on the North and West by Vellore district and on the South West by Krishnagiri district on the South Villupuram district and on the East by Kanchipuram district.

#### **3.2 TRANSPORT**

##### **I) ROADS**

Thiruvannamalai is well connected to many cities and towns in Tamil\_Nadu, Karnataka and Andhra Pradesh by road. This town lies on the junction of the Chittoor - Cuddalore state highway and the Puduchery - Bengalooru national highway (NH 66).



## **II) RAIL**

A railway line between Vellore and Villupuram passes through Thiruvannamalai. The nearest major railway station is at Tindivanam (63 km).

## **III) AIR**

The nearest airport is at Chennai 170 km.

### **3.3 RAINFALL.**

The general climate is tropical. The district receives rainfall from North East and South West monsoons. The total rainfall in monsoons this district was 1028.7 mm.

### **3.4 TEMPERATURE IN THE DISTRICT**

1. Maximum: 34.98 C
2. Minimum: 19.36 C

This district is industrially backward. The district is enriched in mineral deposits such as black granites, multi-coloured granites, and soap and magnesite deposits.

### **4.0 PLANT LOCATION**

Thiruvannamalai being the head quarters of the district, the municipal administration as decided to implement underground drainage scheme for sewage collection and treatment plant to treat the sewage. The proposed location of plant is shown in the map and layout enclosed. Following are the salient details regarding the proposed site.

#### **a) Archaeological monuments**

The location has the Swami Annamalayar Temple with in the radius of 6 Km. However there is no hinderence to the temple site due to the proposed project.

#### **b) Biological resources**

It was found during study period that the location is devoid of any endangered flora and fauna in 10 km radius.

#### **c) Cultural Monuments**

This proposed unit does not have any cultural monuments in nearby 10 km radius.

#### **d) Defence**

There is no defence installation located within 25 km radius.



**e) Employment Generation**

This proposed unit generates the employment in the immediate surroundings of the people during the construction stage.

**f) Highway**

This town lies on the junction of the Chittoor - Cuddalore state highway and the Puduchery - Bengaluru National Highway (N.H.66). The proposed STP Site located about 3km away from the State and National highways. The setting up of this unit will not harm the traffic and unwanted settlement in the vicinity of highway.

**g) Geography**

The location is geographically suitable for setting up of Sewage Treatment Plant, as the unit will not be disturbed by climatic and other geographical condition.

**h) Transportation facilities**

The site is well connected by road. The important townships falling within 7 km radius is Thiruvannamalai town the nearest railway station is Thiruvannamalai and Airport is Chennai.

**i) Socio-economic**

This Sewage Treatment Plant will improve the economy at state/national level.

**j) Land use and availability**

The proposed site allotted by the Thiruvannamalai Municipal Corporation is notified as waste land and presently vacant.

**k) Meteorology**

Both micro and macro meteorology is found to be suitable for this proposed unit.

**l) Natural disaster**

The area is devoid of natural disasters like earthquake, cyclone, landslides etc.

**m) Power**

The power will be sourced from State Electricity Board. There will be a stand by DG power plant in case of power failure.



**n) Sensitive area**

There are no sensitive components like schools, hospitals etc. However there are two small ponds lying within 300 mtr radius from the plant. These are presently not in use and mostly serve as rain catchment area during monsoon and this will not have any impact due to STP. Site sketch with near by features is provided in the annexure.

**o) Topography**

The topography is plain and will not lead to any disaster by accumulation of air pollutants

**5.0 PROPOSED SEWAGE TREATMENT PLANT DETAILS**

8.70 MLD Sewage Treatment Plant based on Activated Sludge Process method is proposed on continuous operation basis. A brief description of process and components are given below for better understanding.

**5.1 PROCESS DESCRIPTION OF PROPOSED SEWAGE TREATMENT PLANT**

The raw municipal wastewater received from the collection system through rising main from the Thiruvannamalai town is received into the Sewage Treatment Plant at a delivery head of 6.28 m to achieve the discharge standards specified for the treated sewage.

Activated Sludge Process method is adopted in the proposed STP vide flow chart enclosed. The Treatment comprises of three sub section viz., Pre treatment section – comprising of sewage receipt, screenings removal, grit removal and primary treatment, Secondary Treatment section – comprising the heart of the system Bioreactor with secondary clarifier and the activated sludge recirculation system. The treated sewage is proposed to be let into the agreed discharge point. Sludge management systems – comprising of the primary sludge receipt and thickening of the primary and secondary sludge and digestion of sludge. The digested sludge is dewatered and disposed into the existing municipal composting / disposal yard.



As per agreement the expected Raw Sewage Quality and the agreed Treated Sewage Characteristics shall be as follows.

**a) Raw Sewage Quality**

Sl.No.	Parameter	Values	Unit of measurement
1	Bio-chemical Oxygen Demand	204 to 212	Mg/l
2	Chemical Oxygen demand	177 to 178	Mg/l
3	Total suspended solids	160	Mg/l
4	Total Kjeldahl Nitrogen (as N)	95 - 108	Mg/l
5	Ammonia Nitrogen (as N)	86 - 99	Mg/l
6	Total Phosphorous (as P04)	9 – 11	Mg/l
7	Sulphate	72 – 94	Mg/l
8	Fecal Coliform	INTC	MPN/100 ml
9	Total coliform	7000 to10000	MPN/100 ml
10	Chlorides	280 – 320	Mg/l
11	PH	6 to7.5	
12	Oil and grease	42	Mg/l
13	Total dissolved solids	1430 – 1510	Mg/l

**b) Treated Effluent Quality**

Sl.No.	Parameters/Pollutants	Values	Unit of measurement
1	Bio-chemical Oxygen Demand (as BODs)	20 or less	Mg/l
2	Total suspended solids	30 or less	Mg/l
3	Chemical oxygen demand	250 or less	Mg/l
4	PH	5.5-9	Mg/l
5	Oil and grease	Less than or equal to 5 mg/l	Mg/l
6	Ammonia Nitrogen	Less than or equal to 50 mg/lit	Mg/l
7	Nitrate Nitrogen as NO3	5 or less	Mg/l
8	Total Phosphorous (as P04)	5 or less	Mg/l
9	Total Coliform	Less than or equal to 1000 no/100 ml.	

Reference: Agreement No: CE/NR/08/2009-10 dt.10-7-2009



## **5.2 PRE-TREATMENT UNITS**

This section primarily receives the raw sewage and the screenings and grit particles are removed followed by solids and BOD removal in Primary Clarifier.

### **5.2.1 INLET CHAMBER**

The pumped sewage shall be received into the inlet chamber of 60 seconds retention time. The inlet chamber reduces the turbulence of the incoming raw sewage and facilitates a laminar flow conditions for passage to screens. The inlet chamber will be provided with gates to enable isolation and maintenance of screens and a walkway connecting the inlet chamber, screen chamber and the grit removal system. A Plant bypass arrangement connecting to the bypass channel is also provided in the inlet chamber with overflow weir.

### **5.2.2 SCREENS-COARSE AND FINE SCREEN CHAMBER**

#### **(MECHANICAL & MANUAL)**

The raw sewage from the inlet chamber will flow through 1 no. (Mechanical & Manual) of Coarse Screen of bar spacing of 25 mm capable of removing medium and large floating material like floating rags, debris, weeds, cloth etc. and 1 no. (Mechanical & Manual) fine bar screen of bar spacing of 10 mm for manual screen and 6 mm for mechanical screen to remove fine materials such as hairs, weeds, papers, rages etc.

Each channel for the Coarse and Fine Screens are designed for peak flow. The velocity in the channel will be 0.30 m/sec during minimum flow conditions and not more than 1.2 m/sec during peak flow conditions.

Gates will be provided at the inlet and at the outlet at each screen channel for isolation purpose and to take up maintenance works whenever necessary the screenings removed from the mechanical screen and / or manual screen designed to remove the screens at peak flow loads will be transferred to a belt conveyor and finally to the collection bin. Ultimate disposal of screenings will be to a nearby tipping ground.



### **5.2.3 DEGRITTING SYSTEMS / GRIT CHAMBER**

The screened sewage after passing through the Coarse and Fine screens will flow to degritting systems by gravity via channels into two grit chambers (1 working + 1 standby) of size 4.6 x 4.6 x 0.7m SWD for grit removal. Each unit is capable of handling peak flow of 19.58MLD for removal of grit / sand. Degritting is essential to protect the moving mechanical equipment and pump elements from abrasion and abnormal wear and tear. The grit chambers shall be of RCC construction. The grit collected in the grit sump will also contain organic material to be returned back to the stream. Degritting shall be accomplished with grit washing to ensure the grit is free from organic matter before disposal.

### **5.2.4 PRIMARY DISTRIBUTION CHAMBER**

The de-gritted sewage shall be conveyed to the Primary distribution chamber through a conveying channel. The distribution chamber is provided with gates to the passage of liquid to the outlet pipes one leading to primary clarifier and the other pipe by passing the treatment to the river.

### **5.2.5 PRIMARY CLARIFIER**

Two No.s primary clarifiers each of 14.50 m dia x 3m SWD are provided with a surface loading of less than 35 m<sup>3</sup>/ m<sup>2</sup> /day at average flow and less than 60 m<sup>3</sup>/ m<sup>2</sup> /day at peak flow. The Primary clarifiers receive flow from the Primary Clarifier Distribution Chamber. Each clarifier is designed for average flow plus return flows from Digester supernatant and centrate from Centrifuge. The primary clarifiers are provided with central driven scraper mechanism .The settle-able solids, which are settling on the floor of the clarifier is scrapped to the central pit from where it is conveyed to the Primary Sludge Sump. The sludge is withdrawn at a consistency of 4%.

The V-notch overflow weir, provided at the overflow launder of the Primary clarifiers, ensures smooth overflow of the primary treated sewage into the overflow launders and then to common channel, leading to the Bioreactor. About 60% removal of suspended solids and 30 - 45% removal of BOD are achieved in the Primary Clarifiers.



### 5.3 SECONDARY TREATMENT SECTION

Secondary Treatment is provided with activated sludge process for further reduction of carbonaceous BOD and Suspended Solids in the influent sewage.

The Aeration tank is provided in RCC construction which has two compartments. It is designed for a flow of 8.70 MLD with Food to Micro organism 0.37 per day and Mixed Liquor Suspended solids of 3000 mg/l. The Bioreactor will have HRT of about 4.02 hrs and SRT of 7 days.

The aeration tank receives the primary treated sewage and the return activated sludge at the inlet of Bioreactor and the combined flow enters the Bioreactor through a selector zone at the bottom and overflows into the aeration tank over a weir. The selector zone helps to achieve good performance of secondary clarifier against bulking and rising sludge problems. Isolation gates are provided at the inlet to for isolation of Aeration tank.

The recycle of activated sludge from the secondary clarifier ensures the desired MLSS to be maintained, in the Aeration tank. 3 nos. (2W + 1S) Aeration Air Blowers provides the required oxygen for the microbial respiration through Fine bubble Diffusers. The dissolved oxygen (D.O.) shall be maintained close to 2 mg/l in the aeration tank. The Mixed liquor from the aeration tank each compartment shall be collected over weirs into outlet launder and is conveyed at the end to the secondary clarifier through a pipe line with isolation valve to facilitate isolation of any one clarifier, for maintenance.

Two nos. Secondary clarifiers each of size 15.80m dia x 3.0 m SWD are provided with a maximum surface loading of 25 m<sup>3</sup>/day/m<sup>2</sup>. The mixed liquor enters the Secondary clarifiers from the outlet launder of aeration tank. The aerated MLSS settles down and is scrapped to the centre by a Central driven mechanical scraper mechanism. The V-notch overflow weir provided at the peripheral overflow launder of the secondary clarifiers ensures smooth overflow of the clarified treated sewage, reducing the chances of carry over of solids. The sludge, which shall be settling on the floor of the clarifier, is scrapped to the central pit from where it is conveyed to the inlet of the inlet channel of aeration tank by pumping to maintain the MLSS level in aeration tank.



The sludge withdrawal is continuous from each clarifier. A Sludge recirculation sump is provided to receive the secondary bio sludge from the secondary clarifiers. The recycle bio sludge is pumped by submersible Return Activated Sludge pumps, each designed for 100% recirculation with 2W + 1S. The excess sludge from the delivery header of RAS pumps will be branched and routed to Primary Clarifier.

#### **5.4 DISINFECTION**

##### **5.4.1 CHLORINE CONTACT TANK**

In order to meet the requirements, the treated sewage after secondary sedimentation tank is disinfected by chlorination. One no. Chlorine Contact Tank is provided with a retention time of 30 minutes. The tank is provided with internal baffles to achieve mixing of Secondary clarifier overflow with the chlorine dosed.

The treated / disinfected water will into an outlet chamber and flows through a pipe leading to the disposal into the River.

#### **5.5 SLUDGE HANDLING SECTION**

##### **5.5.1 SLUDGE DIGESTER**

The primary sludge settled at the bottom of Primary clarifier is pumped by primary sludge pumps thro timer controlled valve which opens the sludge line for discharging 15 minutes for every one hour to the Digester. Two nos. Sludge Digesters are provided for collection of Primary Sludge from the Primary Clarifier. The Digester will have a holding capacity of 10 Days (SRT) to enable equal/uniform digestion

The Digesters are equipped with mixing arrangements to accelerate the rate of digestion.



### **5.6 GAS FLARE ARRANGEMENT**

The methane/mixed gas produced from the digester taken to a flare arrangement and flared up. The digester pressure is maintained at pressure 250mmWC. When the pressure delivered at 255mmWC the flare arrangement with auto flare opens the supply valve to flare & flare is ignited automatically. The flare will be closed when the pressure goes below 125mmWC. If the flare does not work due to any choke during operation, the safety release valve installed in the top of digester will open at 300mmWC & shutoff at 125mmWC.

### **5.7 SECONDARY SLUDGE (RAS) SUMP**

The secondary sludge consisting of RAS sludge and excess sludge is drained by gravity into One no. Secondary Sludge sump. The sump is provided with RAS pumps of submersible type with Two (1W + 1S) each of capacity to pump 100% inflow to the plant as RAS including excess sludge to be disposed are provided to maintain the MLSS in the Aeration tank and to bleed the excess sludge to the Primary Clarifier.

### **5.8 DIGESTED SLUDGE SUMP**

The digested sludge flows to a sump by gravity and it is pumped to the Centrifuge thro centrifuge feed pump (1 w + 1 S).

### **5.9. DISPOSAL OF SLUDGE**

Sludge management systems comprise of the primary sludge receipt from the sump, thickening of the primary and secondary sludge, leading to digestion of sludge. The digested sludge is dewatered and disposed into the existing municipal composting / disposal yard.

### **5.10 SLUDGE DEWATERING SYSTEM (Centrifuges)**

Two Nos. (1W + 1S) centrifuges shall be provided for the dewatering of 4 – 5% thickened sludge. The centrifuges shall be of solid bowl type and shall operate for 16 hours a day. The dewatered sludge shall fall directly through a chute on to the collection bin beneath the centrifuge platform. Two Nos. (1W + 1S) centrifuge feed pumps shall be provided to feed the thickened sludge from Thickener to centrifuges.



## **5.11 SUPERNANT CENTRATE SUMP & PUMPS**

The supernant overflow from Thickener and the centrate from Centrifuge will be collected in the sump. The sump is provided with submersible type pumps to transfer the recycle liquors into the Distribution chamber at the inlet end of Primary clarifier.

## **5.12 CHEMICAL SECTION**

### **5.12.1 CHLORINATOR**

The chlorination system required for disinfection is provided with two Chlorinators (1W+1S) designed for a maximum dosage of 8 mg/L at average flow and each of 4.0 kg/h capacity. The chlorination building is provided with a tonner room sufficient to store chlorine tonners and an adjacent chlorination room with no interconnecting door. The chlorine building will be provided with access ramp for enabling the loading / unloading of tonners from the trucks. The Chlorine house shall be provided with necessary crane facility for lifting of tonners and weighing the tonners.

### **5.13 POLYELECTROLYTE DOSING SYSTEM**

Two Nos. (1W + 1S) Polyelectrolyte solution preparation tanks shall be provided. Each tank shall be fitted with an agitator. Two Nos. (1W + 1S) polyelectrolyte solution dosing pumps shall be provided to dose the polyelectrolyte to centrifuges to improve the dewatering characteristics of the thickened sludge.

### **5.14 TREATED EFFULENT DISPOSAL**

After the process of chlorination the treated water will be sent to outlet chamber and then flows through a pipe line length of almost 1740m leading to the agreed disposal point, as per approval of TNPCB. The treated effluent Quality already discussed in section 5.1 b). The treated effluent qualities are complied with Agreement and MoEF standards.

The possibility of using the treated water for cultivation purpose in association with local bodies is also active consideration.



### **5.15 POWER AND FUELS**

Total Power requirement of the Plant will be 2800 KWH per day during the design flow of 8.70 MLD. Total Power will be obtained from State Electricity Board. There will be a stand by Diesel generator to meet any power shut down. During construction period, there will be a demand of 50 kva power supply. This will also be met by State Electricity Board temporary power connection backed up by a stand by Diesel Generator.

### **5.16 RAW WATER**

The total requirement of raw water for this unit will be 20 KLD During construction and 8.7 KLD during the operation and maintenance of the STP(6.5 KLD For Poly dosing solution and 1.5 KLD for Chlorine solution. 0.7 KLD for flushing and drinking purpose) The flushing and gardening will be done thro the treated effluent. Municipal drinking water will be used for drinking purpose.

### **5.17 LAND**

The total area allotted for this purpose is 8.46 Acres. Out of 3.5 acres utilised for plant and green belting. The balance land earmarked for future expansion.

### **5.18 MANPOWER**

The total work force including staff and workers during construction will be 26.

The total workforce including staff and workers during operation and maintenance of the plant will be 8.



## **6.0 BASE LINE ENVIRONMENT STUDIES**

### **6.0 A) Site Descriptions**

The proposed STP site is located nearly 1.5km far away from heart of the city. Very few houses are there around 200m away from the STP site boundary.

As part of Rapid Environmental Impact Assessment study, an area covering 2 km radius around the STP site was considered and study undertaken to establish baseline environmental status with respect to various attributes and the status is as follows.

#### **6.1) Air Environment**

Meteorological data has been collected for wind speed, wind direction, relative humidity, temperature, rainfall and cloud cover. This data has been collected for the study period of **Aug 2008 to Aug 2009**. Wind rose pattern of the study period indicated that predominant wind is blowing from **South East (SE), South west (SW), North East (NE) and North West (NW)** directions accordingly the locations are decided as below.

#### **Ambient air sampling: Location Details**

<b>Sl.No</b>	<b>Name of Location</b>	<b>Direction</b>	<b>Distance from STP Boundary</b>
1	a1	South East (SE)	200m
2	a2	South west (SW)	200m
3	a3	North East (NE)	200m
4	a4	North West(NW)	200m

Ambient air quality monitoring was carried out continuously for 24 Hours (Every 8 Hours Sampling) **26.11.2009 – 27.11.2009**. At all the 4sampling stations “SPM”, “RSPM” as well as gaseous pollutants like “SO<sub>2</sub>” and “NO<sub>x</sub>” were monitored round the clock. The values of all the parameters of ambient air at the below mentioned locations were found to be well within permissible levels.( as per National Air Quality for Ambient Air prescribed by central pollution control board vide Gazette Notification DT: .11-04-1994. ), and in general varied as follows.



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Parameters	Location a1: South Eastern (SE)		
	Sample I	Sample II	Sample III
Total suspended Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	106.9	139.6	117.8
Respirable Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	35.8	45.9	36.4
Sulphur Dioxide ( $\mu\text{g}/\text{m}^3$ )	10.0	9.0	8.2
Oxides of Nitrogen ( $\mu\text{g}/\text{m}^3$ )	15.6	13.5	11.8
Parameters	Location a2: South west (SW)		
	Sample I	Sample II	Sample III
Total suspended Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	67.7	75.4	58.4
Respirable Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	22.0	23.5	18.6
Sulphur Dioxide ( $\mu\text{g}/\text{m}^3$ )	12.4	11.1	10.5
Oxides of Nitrogen ( $\mu\text{g}/\text{m}^3$ )	20.5	18.2	15.4
Parameters	Location a3: North East (NE)		
	Sample I	Sample II	Sample III
Total suspended Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	120.9	58.9	82.5
Respirable Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	37.5	19.2	25.4
Sulphur Dioxide ( $\mu\text{g}/\text{m}^3$ )	12.8	8.6	10.2
Oxides of Nitrogen ( $\mu\text{g}/\text{m}^3$ )	19.8	15.2	17.7



Parameters	Location a4: North West(NW)		
	Sample I	Sample II	Sample III
Total suspended Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	95.8	82.4	74.5
Respirable Particulate Matter ( $\mu\text{g}/\text{m}^3$ )	29.4	25.6	22.0
Sulphur Dioxide ( $\mu\text{g}/\text{m}^3$ )	11.2	10.5	9.3
Oxides of Nitrogen ( $\mu\text{g}/\text{m}^3$ )	16.8	15.0	12.5

## 6.2) Water Environment

**Water Environment in and around site was studied.** There are two ponds lying around 300m from the boundary of the proposed site which are in abandoned stage, and will not receive any impact due to the plant. The Ollayar River is around 2kms away from the plant.

### 6.2.1) Water quality sampling:

The assessment of water quality in critical locations, around STP (W1) and near discharge point (W2) was undertaken during the study period.

#### Location Details

Sl.No	Location Name	Distance
1	W1: Well (GW)	80m (From STP Site Boundary)
2	W2: Olaiyaru River (SW)	1740m (From Plant outlet point)

GW = Ground Water

SW = Surface water

### 6.2.2) SAMPLING:

Water quality was monitored once during the month to assess the baseline status. Bacterial examination was also carried out to identify faecal contamination of water sources. Selected chemical parameters have been used for describing the baseline status of water environment.

Water was collected on **21.10.2009** to assess the water quality status in the region. The results along with reference values are as below. (It shall be ensured that the parameters like BOD are also included while monitoring the water quality)



**Surface and Ground water Test Results.**

PARAMETER	UOM	W1-GW	W2-SW	Standards as per IS:10500
pH	-	7.3	7.8	6.5-8.5 (NR)
Colour	Hazen	2	3	5(25)
Taste	-	Ag	Ag	Agreeable
Odour	-	UO	UO	U.O
Conductivity	µS/cm	1430	1285	\$
Turbidity	NTU	2	2	5 (10)
TDS at 180°c	mg/l	900	844	500 (2000)
Total Hardness as CaCO <sub>3</sub>	mg/l	440	490	300 (600)
Total Alkalinity as CaCo3	mg/l	289	268	200 (600)
Calcium as Ca	mg/l	144	104	75 (200)
Magnesium as Mg	mg/l	31.6	38.9	30 (100)
Residual Chlorine	mg/l	<0.1	<0.1	0.2 Min.
Boron	mg/l	0.09	0.12	1.0
Sulphate as SO <sub>4</sub>	mg/l	37.9	20.9	200 (400)
Fluoride as F	mg/l	0.7	0.6	1.0 (1.5)
Nitrate as NO <sub>3</sub>	mg/l	26	8.0	45 (NR)
Sodium as Na	mg/l	103	100	\$
Cyanide as CN	mg/l	<0.02	<0.02	0.05 (NR)
Anionic Detergents	mg/l	<0.01	<0.01	0.2 (1.0)
Mineral Oil	mg/l	<0.01	<0.01	0.01 (0.03)
Cadmium as Cd	mg/l	<0.01	<0.01	0.01 (NR)
Copper as Cu	mg/l	<0.01	<0.01	0.05 (1.5)
Lead as Pb	mg/l	<0.01	<0.01	0.05 (NR)
Manganese as Mn	mg/l	0.01	0.02	0.1 (0.3)
Iron as Fe	mg/l	0.09	0.17	0.3 (1.0)
Chromium as Cr <sup>+6</sup>	mg/l	<0.01	<0.01	0.05 (NR)
Selenium as Se	mg/l	<0.01	<0.01	0.01 (NR)
Zinc as Zn	mg/l	<0.01	<0.01	5 (15)
Aluminum as Al	mg/l	0.02	0.03	0.03 (0.2)
Mercury as Hg	mg/l	<0.001	<0.001	0.001 (NR)
Pesticides	mg/l	Absent	Absent	Absent
E.Coli	-	Absent	Absent	Absent
Total Coli forms	MPN/ 100 ml	Nil	<2	10



### 6.3) Noise Environment

Noise level assessment around STP plant site has been carried out with the objective of assessing the impact of total noise generated in the site on its workers and human settlements within and around plant site. The noise level in the study region was below the permissible levels of MoEF with respect to day / night.

Sl.No	Name of Location	Direction	Distance from STP Boundary
1	N1	South East (SE)	200m
2	N2	South west (SW)	200m
3	N3	North East (NE)	200m
4	N4	North West(NW)	200m

Ambient Noise monitoring was carried out continuously for 24 Hours **26.11.2009** – **27.11.2009** at **4 locations** to assess the air quality status in the region.

Location Code	L <sub>10</sub>	L <sub>50</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>day</sub>	L <sub>night</sub>	L <sub>dn</sub>
N1	63.7	50.3	38.2	61.1	54.0	43.6	52.4
N2	46.5	40.8	36.7	42.4	42.9	38.6	45.7
N3	46.0	41.1	37.2	42.4	43.1	38.5	45.7
N4	46.7	41.3	34.1	43.9	43.0	38.6	45.7

Standards: As per MOEF vide gazette notification dated 26<sup>th</sup> December 1989 and as amended in Feb - 2000 Standards for Day & Night time Ambient Noise level are 55 db (A) & 45 db (A).



#### **6.4 Soil Environment**

Soil was collected on **26.11.2009** at **STP site Location: S1 200 m Distance from STP Boundary (Near to Plant outlet point)** to assess the soil quality status in the region. The values of all the parameters were found to be well within permissible levels in the soil, and in general varied as follows.

<b>Sl.No</b>	<b>PARAMETERS</b>	<b>UOM</b>	<b>RESULT</b>
1	pH (1:5 Aqueous Extract )	-	7.3
2	Electrical Conductivity (1:5 Aqueous Extract)	µs/cm	110
3	Available Nitrogen as N	mg/kg	13.6
4	Available phosphorous as P	mg/kg	35.5
5	Exchangeable Potassium as K	mg/kg	78.5
6	Exchangeable Magnesium as Mg	mg/kg	230.6
7	Exchangeable Calcium as Ca	mg/kg	2810
8	Sulphate as SO <sub>4</sub>	mg/kg	44.2
9	Organic matter	%	1.2
10	Organic carbon	%	0.06
11	Bulk Density	g/cc	1.1
12	Chloride as Cl	mg/kg	62.7

#### **6.5. BIOLOGICAL ENVIRONMENT**

It was observed during the survey of STP site that there are no well grown trees or matured plants except bushes and small plants. There are no rare or endangered species at and around STP site.

#### **6.6 COMMUNITY ENVIRONMENT**

There are no community structures, schools, hospitals or residences.



## **7.0 PUBLIC CONSULTATIONS:**

Due consultations with Public and various stakeholders have been made during feasibility study and subsequent stages by the ULB. Disclosure about the project locations have been made through display boards also. ULB have conducted a hearing meeting and the same was conveyed through their ward representatives and resolution was passed to implement this project. Subsequently a specific meeting is also conducted with Melathikkan panchayat to discuss about disposal arrangements and utilisation of treated water for cultivation purposes. The Public in general, have welcomed the implementation of this project and desired to complete the project early. (Refer Annexure 1&5)

## **8.0 ASSESSMENT OF ENVIRONMENTAL IMPACTS**

### **A. GENERAL**

The first attempt to assess the environmental impacts was done using the basic data from this Study, following the general recommendations for elaboration of the environmental impacts, using updated information and detailed Environmental Impact Study was made to assess possible impacts during construction and operation.

In the construction and operational phases, three main groups of environmental elements were analyzed, possible impacts were identified and mitigation measures were proposed.

The following environmental elements were analyzed:

- Natural Environment:

Topography and geology (including ground subsidence);

Water quality: Groundwater, Surface water/river Olaiyaru water quality (including bottom sediment);

Hydrology of the river Olaiyaru; Biodiversity/ flora an fauna;

Air quality (including meteorology);

Landscape and visual effect and Water use.



- Social Environment: Involuntary resettlement and Land acquisition; Livelihood and local economy; Institutions as local decision-making; Public infrastructure and services; Misdistribution of benefits and loss/damage; Local conflicts of interest; Archaeological and cultural heritage; Health and safety (including infectious diseases).
- Public hazards:
  - Noise and vibration;
  - Waste;
  - Soil pollution

## **B. METHODOLOGY**

The impacts are assessed using qualitative assessment of the following parameters

Type: Positive (+); Negative (-)

Magnitude: A – large, B-medium and C-low

Extent: Local impact (at the site); wider impact (in the Surrounding area)

Duration: Permanent impact; Temporary impact

Timing: Immediate; Delayed Reversibility: Reversible; Irreversible

### **8.1. CONSTRUCTION IMPACTS**

No severe impacts are anticipated during construction which will affect quality of Air, Noise, Water, Soil or Biological environment considering the strategically location of site. The traffic and general public will not face any impact. The impacts largely due to construction activities and deployment of labour /machineries are identified as mentioned below and will be minimised by suitable environmental management plan as given in the Table 9.1

- a) Preparatory works at the location of the STP and excavation works;
- b) Transport and disposal of surplus excavated material;
- c) Construction of the structures of the STP
- d) Disposal of construction waste;
- e) Installation of the equipment;
- f) Facilities for the workers (water supply, sewerage, waste disposal).



## **8.2. OPERATIONAL IMPACTS**

The impacts during operation will largely be governed by the following:

- Treatment technology/ operation of the equipment for sewerage treatment and effluent production;
- Operation of equipment for sludge production (digester and biogas production);
- Sludge and treated effluent disposal.

The possible impacts were identified and listed under table 9.2. There are no possible impacts due to inflammable gases/chlorine handling systems as the process will be done in closed controlled chamber.

## **9.0 MITIGATION MEASURES**

### **9.1 CONSTRUCTION PHASE**

#### **i) WATER QUALITY/GROUND WATER IMPACTS.**

There is Low negative, temporary impact is expected during the construction of the STP due to evacuation of the groundwater from the construction trenches and its discharge downstream. All the structures are falling above ground level excepting few components such as chlorine contact tank, Supernatant sump. During construction of the STP facilities, there is no negative impact is expected on the groundwater level, as the excavation works will not significantly disturb the aquifer level.

The ground water quality can be impacted by improper disposal of the construction waste on the construction site and surrounding. Another type of medium negative impact is related to possible pollution of the Groundwater due to leakages of fuels and oils from the heavy vehicles and machinery used for construction and due to applied chemicals during this phase.



The facilities for daily accommodation of the workers, supervision staff and other Utility offices are equipped with systems for water supply and sewerage and adequate wastewater treatment. Improper operation of the sewerage system and wastewater treatment of such temporary facilities can have medium negative impact (due to duration and quantity of the impact) on the groundwater, as they can provoke pollution.

### **ii) MITIGATION MEASURES.**

Safe drainage and evacuation of the pumped groundwater, in order to avoid possible suffusion erosion control and soil conservation during excavation; definition of the characteristics of the heavy vehicles and machinery according to the required standards.

During construction, all measures foreseen in the Final design must be fully respected and applied. At the construction site, in order to avoid pollution of the ground water, the following measures should be applied: construction waste shall be, regularly and timely transported from the construction site and disposed at the designated landfill for construction waste; refuelling or servicing of the vehicles and machinery shall be done only on impermeable ground; special measures to be design and foreseen to avoid potential spills leaks; washing of vehicles and equipment on the site to be restricted; chemicals and other liquid and solid dangerous materials must be managed properly (it covers: manipulation and storage); wastewater from the accommodation facilities shall be collected and adequately treated and solid waste shall be collected and disposed at an identified, safe place.

### **iii) WATER USE IMPACTS**

During construction phase, there will be significant emission of dust. In order to reduce that emission, usual method is to spray water at the site. This will have negative impact of low magnitude on the water use at the site; specifically. Water at the construction site will be used also for drinking and sanitary purposes, mainly for the workers and other staff. This impact is assessed as negative of Low magnitude, as there will not be large number of workers and other staff.



#### **iv) MITIGATION MEASURES.**

In order to mitigate the above mentioned negative impact, it is recommended that water of low quality shall be used and the cisterns for spraying shall use the water efficiently. As the construction site is very close to the River Olaiyaru, water for spraying can be abstracted from the river or from wells at nearby locations. In order to minimize the water use for drinking and sanitary purposes, it is recommended to use the water efficiently and to apply water saving techniques.

### **9.2. OPERATION PHASE**

#### **9.2.1 WATER QUALITY/GROUNDWATER**

Operation of the STP will have large positive impact on the quality of the groundwater, as there will be no direct discharges of wastewater into the River. Treated water shall be disposed as per agreed discharge arrangement. The qualities of treated water comply with the agreed quality / MOEF norms.

#### **9.2.2 WASTE IMPACTS**

Operation of the STP generates large quantities of sludge. To avoid large impact on all media (soil, groundwater, air, etc).the quantities of sludge shall be disposed as per the approved arrangements.

#### **9.2.3. NOISE**

Noise generated from the STP would be minimized by the following preventive measures.

- i) The sound producing equipments to be identified and sound reduction measures to be adopted. The sound producing equipments are compressors and Diesel Generating sets.
- ii) The compressors are designed to produce noise less than 85 db at one meter distance from the compressors.
- iii) The DGs are procured with Acoustics enclosure as per TNPCB type design approved acoustic.
- iv) Developing a thick greenbelt.
- v) Providing shock-absorbing technique to reduce impact providing noise barriers, silencers etc. in the equipment.



#### **9.2.4. AIR EMISSIONS**

There will be minimum quantity of Less than 100ppm Co<sub>2</sub> emitted from the Biological treatment unit. But the Biological treatment plants are kept open to the sky. Any possible impact found, will be mitigated by providing stake of more than 5 mtr of a thick green belt all around.

**A. ODOUR:** This will also prevent any un desirable odour nuisance. As for the employees are concern they are to be protected from odour nuisance by proper protective devices like mask.

#### **B. GAS FLARE ARRANGEMENT**

The methane/mixed gas produced from the digester taken to a flare arrangement and flared up above 15mtr level. The flare will be closed when the pressure goes below 125mmWC. If the flare does not work due to any choke during operation, the safety release valve installed in the top of digester will open at 300mmWC & shutoff at 125mmWC. This is an in-built design and shall be complied.

#### **9.2.5 DISCHARGE**

The treated effluent characteristics are with in the acceptable levels. (As per Agreement and MOEF standards). So there is no water pollution due to discharge of treated water at the agreed discharge point.



## 10.0 COMPLIANCE STATUS :

### TAMIL NADU POLLUTION CONTROL BOARD : Consent to Establishment

Consent to Establishment for the proposed unit of 8.7MLD STP At Thiruvannamali Municipality has been obtained from TNPCB on 12/01/2010. The conditions stipulated by TNPCB and status of compliance are summarised below.

Sl.No	Conditions as furnished by TNPCB	Status
1	This consent to establish is valid for establishing the facility for the manufacture of products/by-products – sewage treatment plant of capacity 8.7mld. Any change in the product and its quantity has to be brought to the notice of the board and fresh consent has to be obtained.	The STP is designed for 8.70mld.
2	This consent to establish is valid for establishing the facility with the below mentioned outlets for the discharge of sewage/trade effluent. Any change in the outlet has to be brought to the notice of the board and fresh consent has to be obtained if necessary. Description of outlet - Sewage (8.7mld) Point of disposal – On land for irrigation.	The STP is designed for 8.7mld and the treated effluent will be disposed on land after carrying to a distance of 1740m through pipes.
3	The unit shall provide STP as indicated.	The unit dimensions submitted are from the approved final designs and will be ensured.
4	The municipality shall provide STP as proposed for treating the sewage and ensure that the treated sewage satisfy the standards prescribed by the Board before disposal.	The treated effluent will meet the agreed effluent quality in line with the standards laid down by TNPCB.



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5	The Municipality shall explore the possibility of utilizing the treated effluent for farming activity in lands located surrounding area especially near the Olaiyaru by having on agreement with the farmers instead of discharging the Treated effluent into Olaiyaru.	The steps are taken to motivate the farmers to utilize the treated effluent for the farming activity in the surrounding area near by Olaiyaru. But the farming area surrounding the Olaiyaru River found to be lying above disposal point. Apart from the above, most of the land converted into plotted development. Hence, at present the possibility of utilization of treated water would be less. Municipality had taken up with Melathican village panchayat, who have also expressed the above issues after discussion with panchayat meeting. The copy of resolution as received by the municipality from Melathican village panchayat president enclosed. (Refer Annexure-I)
6	The Municipality shall provide storm water drain all around the STP site.	The storm water drainage arrangement is provided in the GAD which will be constructed.
7	The Municipality shall construct the STP so as to have maximum buffer zone on the residential and State Highway side and to develop dense green belt to control odour nuisance.	Green belt is proposed around the STP as described in section 13.0. Provision for green belt is made in the approved drawing and in the cost estimate and hence will be developed simultaneously.
8	The Municipality shall provide a dense green belt on all sides of the STP site	As above.
9	No flooding of treated /untreated effluent is permitted in the STP site	This will be ensured in the STP site.



## 11.0 ENVIRONMENTAL MITIGATION MEASURES

### A) PRE-CONSTRUCTION PHASE

Sl.No	Potential Negative Impacts	Mitigation Measures	Time frame	Responsible agencies
1	Clearances	i.Consent for establishment was applied vide Letter No: 6926/UGSS/STP/TVM/TNPCB-Correspondence/2006/Dt:20.11.2009 ii. Permission for laying pipe line along the road was obtained from the Highway Department.	Before construction	ULB / TWAD/ Dee-Tech Projects Pvt Ltd.,
2	Tree Cutting	At present there were no trees at the proposed STP site, so no deforestation. Anyhow the minimum greenbelt will be covered.	Pre-construction	ULB / TWAD/ Dee-Tech Projects Pvt Ltd.,
3	Utility Relocation	At present there were no common utilities such as telephone cables, water pipeline, etc.; at the proposed STP site.	Pre-construction	ULB / TWAD/ Dee-Tech Projects Pvt Ltd.,
4	Baseline parameters	Adequate measures shall be taken and checked to control the Baseline parameters of Air, Water and Noise pollution. Base line parameters shall be recorded and ensured conformance till the completion of the project. The monitoring requirements, at minimum shall comply with consent conditions by the pollution control board.	Pre-construction, construction and post-construction phase	ULB / TWAD/ Dee-Tech Projects Pvt Ltd.,
5	Planning of temporary Traffic arrangements	As there is no transportation with in the STP site premises. So there is no need for any temporary Traffic arrangements.	Pre-construction	ULB / TWAD/ Dee-Tech Projects Pvt Ltd.,



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6	Disposal of treated waste water.	<p>i) The construction activities at STP shall be initiated only after consent to establish certificate is secured from the TNPCB.</p> <p>ii) STP operations shall take place only after Consent to Operate certificate is accorded by the TNPCB and the treated water quality shall comply with the consent conditions stipulated by TNPCB or at minimum shall meet the discharge standards depending on the type of receiving water body (stream / nullah /open land /irrigation purposes, etc.)</p> <p>iii) Performance standards shall always be maintained, Ensuring efficient working condition of treatment plant.</p>	Pre-construction & construction phase	ULB / Dee-Tech Projects Pvt Ltd.,
7	Storage of materials	The suitable land for storing materials has been selected and also being approved by the consent engineer.	Pre-construction	ULB / TWAD/ Dee-Tech Projects Pvt Ltd.,
8	Construction of labour camps	All necessary facilities along with temporary accommodation will be provided in a functional and hygienic manner for the labour.	During the construction	ULB / TWAD/ Dee-Tech Projects Pvt Ltd.,



**B: CONSTRUCTION PHASE**

Sl.No	Potential Negative Impacts	Mitigation Measures	Time frame	Responsible agencies
<b>I. Construction of Sewerage Treatment Plant</b>				
1	Compensatory plantation of trees	Two or Three rows of greenbelt will be developed around the STP plant.	Pre-construction and Construction	Dee-Tech Projects Pvt Ltd/ TWAD/ULB
2	Protection of top soil & Environmental enhancing	The top soil to be protected and compacted after completion of work. Top soil from the STP area should be stored in stock piles and that can be used for gardening purposes at STP site which will be an environmental enhancing measure.	During construction	Dee-Tech Projects Pvt Ltd / TWAD
3	Disposal of construction debris and excavated materials.	A suitable site should be identified for safe disposal, in relatively low lying areas, away from the water bodies, residential and agricultural fields etc.,	During construction	Dee-Tech Projects Pvt Ltd / TWAD
4	Pollution from Fuel and Lubricants	Proper maintenance, operation and refuelling of Fuel and Lubricants will be done such that they do not contaminate the ground.	During construction	Dee-Tech Projects Pvt Ltd / TWAD



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5	Contamination of ground water quality	The treated water has quality of PCB standards. So there is no chance for Contaminating of ground water quality.	During construction and operation.	Dee-Tech Projects Pvt Ltd/ TWAD
6	Water Pollution from Construction Wastes	Precautions will be taken for proper disposal of construction waste.	During construction	Dee-Tech Projects Pvt Ltd/ TWAD
7	Impact of surrounding areas	Buffer zone will be provided in the form of greenbelt around the STP site.	During construction	Dee-Tech Projects Pvt Ltd/ TWAD
8	Informatory Signs and Hoardings	Informatory Signs and Hoardings will be provided in English and Local language.	During construction	Dee-Tech Projects Pvt Ltd/ TWAD
9	Risk from Electrical Equipment(s)	<p>1. All required precautions to prevent danger from electrical equipment and ensure that no material shall be stacked or placed as to cause danger or inconvenience to any person or the public will be done.</p> <p>2. All necessary fencing and lights will be provided to protect the public in construction zones.</p> <p>3. All machines to be used in the construction will conform to the relevant Indian Standards (IS) codes, will be free from</p>	During construction	Dee-Tech Projects Pvt Ltd



**Environmental Impact Assessment (EIA)  
And  
Environmental Management Plan (EMP)**

		patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per IS provision and to the satisfaction of the Engineer.		
10	Disposal of sludge	The digested sludge is dewatered and disposed into the existing municipal composting / disposal yard.	Pre-construction / construction and operation stage.	Dee-Tech Projects Pvt Ltd/ TWAD
11	Labour camp & facilities	<p>Setting up of labour camp needs will be done as per the procedures. Adequate potable water facilities, sanitation and drainage etc., in conformity with the Indian labour laws will be ensured.</p> <p>Regarding this, some mandatory points have been considered which are as follows:</p> <p>i) The location, layout and basic facility provision of each labour camp will be submitted to Engineer prior to their construction.</p> <p>ii) The construction will commence only after the written approval of the Engineer.</p> <p>iii) Construction and maintenance of labour accommodation is done in such a fashion that uncontaminated water is available for drinking, cooking and washing.</p> <p>iv) Supply of sufficient quantity of potable water (as per IS) in every</p>	During Pre-construction / construction	Dee-Tech Projects Pvt Ltd/ TWAD



**Environmental Impact Assessment (EIA)  
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		workplace/labor camp site at suitable and easily accessible places and regular maintenance of such facilities will be done. v) The sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place. Adequate water supply will be provided in all toilets and urinals.		
12	Safety Aspects	Adequate precautions shall be taken to prevent the accidents and from the machineries. All machines used shall confirm to the relevant Indian standards Code and shall be regularly inspected by the PIA.	During construction	Dee-Tech Projects Pvt Ltd(A list of safety checks given as Annexure-II)
13	First Aid	A readily available first aid unit including an adequate supply of sterilized dressing materials will be provided and appliances as per the Factories Rules in every work zone. Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital.	During construction	Dee-Tech Projects Pvt Ltd



**Environmental Impact Assessment (EIA)  
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Sl.no	Activities	Management Measures	Time frame	Responsible agencies
<b>II. Construction of Treated Effluent Disposal pipe.</b>				
1	Shifting of common utilities	There are no common utilities along the proposed pipe line. Necessary Permission was obtained from Highway department for laying treated effluent disposal pipe along the road to a distance of 1740m.	Pre-construction & construction phase.	Dee-Tech Projects Pvt Ltd/ TWAD/ULB
2	Compensatory plantation of trees	There is no tree cutting in the pipe line route.	Pre-construction & construction phase.	Dee-Tech Projects Pvt Ltd
3	Disposal of construction debris and excavated materials.	A suitable site should be identified for safe disposal, in relatively low lying areas, away from the water bodies, residential and agricultural fields etc.,	During construction	Dee-Tech Projects Pvt Ltd / TWAD
4	Planning for Temporary Traffic Diversions	All possible traffic diversion will consider and a suitable traffic diversion will implement during the work.	During construction	Dee-Tech Projects Pvt Ltd / TWAD
5	Protection of top soil	The top soil to be protected and compacted after completion of work. Top soil from the STP area should be stored in stock piles and that can be used for gardening purposes at STP site which will be an environmental enhancing measure.	During construction	Dee-Tech Projects Pvt Ltd / TWAD
6	Laying of sewer system	All necessary precaution will take during the work.	During construction	Dee-Tech Projects Pvt Ltd / TWAD
7	Temporary water supply interruptions	There is no water line in the pipe line route.	During construction	Dee-Tech Projects Pvt Ltd / TWAD



**Environmental Impact Assessment (EIA)  
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8	Using of modern machineries	By using modern machineries such as JCBs, backhoes etc., it will reduce the construction period impacts to the near by residents.	During construction	Dee-Tech Projects Pvt Ltd
9	Traffic diversion	All possible traffic diversion will consider and a suitable traffic diversion will implement during the work.	During construction	Dee-Tech Projects Pvt Ltd / TWAD
10	Prevention of accidents	All required barricading, signage boards and lighting etc. was provided during the work to prevent accidents involving human beings, animals or vehicles falling or accidents due to open trenches.	During construction	Dee-Tech Projects Pvt Ltd
11	Barricading site	The construction site will barricade at all time in a day with adequate marking, flags, reflectors etc. for safety of general traffic movement and pedestrians.	During construction	Dee-Tech Projects Pvt Ltd
12	Dust Pollution near settlements	To reduce the impact due to dust the following action will be take during the work : i) All earth work will be protected in manner acceptable to the engineer to minimize generation of dust. Area under construction shall be covered & equipped with dust collector. ii) Construction material shall be covered or stored in such a manner so as to avoid being affected by wind direction.	During construction	Dee-Tech Projects Pvt Ltd



**Environmental Impact Assessment (EIA)  
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		<p>iii) Unpaved haul roads near / passing through residential and commercial areas to be watered thrice a day.</p> <p>iv) Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage.</p>		
13	Protection of residential / sensitive receptors.	<p>To protect the residential / sensitive receptors the following action will be take during the work :</p> <p>Noisy construction operations in residential and sensitive areas should be done only between 7.30 am and 6.00 pm.</p> <p>ii) Preventive maintenance of construction equipment and vehicles to meet emission standards and to keep them with low noise.</p> <p>iii) Provision of enclosing generators and concrete mixers at site.</p> <p>iv) Sound barriers in inhabited areas shall be installed during the construction phase.</p> <p>v) Adequate barricading / other measures to protect dust pollution near sensitive receptors like schools and hospital etc to be ensured.</p>	During construction	Dee-Tech Projects Pvt Ltd
14	Vehicular noise at residential / sensitive receptors.	<p>i) Idling of temporary trucks or other equipment should not be permitted during periods of loading / unloading or when they are</p>	During construction	Dee-Tech Projects Pvt Ltd/ TWAD/ULB



**Environmental Impact Assessment (EIA)  
And  
Environmental Management Plan (EMP)**

		<p>not in active use. The practice must be ensured especially near residential / commercial / sensitive areas.</p> <p>ii) Stationary construction equipment will be kept at least 500m away from sensitive receptors.</p> <p>iii) All possible and practical measures to control noise emissions during drilling shall be employed. The PIA may direct to take adequate controls measures depending on site conditions.</p>		
15	Noise from vehicles, plants and equipments	<p>i) Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced.</p> <p>ii) Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum.</p>	During construction	Dee-Tech Projects Pvt Ltd
16	Storage of construction materials	Site for storage of pipes and construction materials to be identified, without affecting the traffic and other common utilities.	During construction	Dee-Tech Projects Pvt Ltd



**Environmental Impact Assessment (EIA)  
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17	Waste Disposal	A suitable site should be identified for safe disposal, in relatively low lying areas, away from the water bodies, residential and agricultural fields etc.,	During construction	Dee-Tech Projects Pvt Ltd / TWAD
18	Pollution from Fuel and Lubricants	Proper maintenance, operation and refuelling of Fuel and Lubricants will be done such that they do not contaminate the ground.	During construction	Dee-Tech Projects Pvt Ltd / TWAD
19	Pollution from Construction Wastes	All precautionary measures to prevent the wastewater generated during construction (e.g. during the testing of pipeline) from entering into streams, water bodies or the irrigation system. All waste arising from the project is to be disposed off in the manner that is acceptable by the Engineer. The engineer shall certify that all liquid wastes disposed off from the sites meet the discharge standard.	During construction	Dee-Tech Projects Pvt. Ltd / TWAD
20	Risk from Electrical Equipment(s)	1. All required precautions to prevent danger from electrical equipment and ensure that no material shall be stacked or placed as to cause danger or inconvenience to any person or the public will be done. 2. All necessary fencing and lights will be provided to protect the public in construction zones. 3. All machines to be used	During construction	Dee-Tech Projects Pvt. Ltd / TWAD



**Environmental Impact Assessment (EIA)  
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		in the construction will conform to the relevant Indian Standards (IS) codes, will be free from patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per IS provision and to the satisfaction of the Engineer.		
21	Safety Aspects	Adequate precautions shall be taken to prevent the accidents and from the machineries. All machines used shall conform to the relevant Indian standards Code and shall be regularly inspected by the PIA.	During construction	Dee-Tech Projects Pvt Ltd
22	First Aid	A readily available first aid unit including an adequate supply of sterilized dressing materials will be provided and appliances as per the Factories Rules in every work zone. Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital.	During construction	Dee-Tech Projects Pvt Ltd



**Environmental Impact Assessment (EIA)  
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**C: OPERATION PHASE**

Sl.No	Expected Impact	Type of Impact	Mitigation Measures	Scope
1	Ground water Pollution due to operation of plant	Large positive impact	i. All Hydraulic Structures in plant are Leak proof structures. ii. Proper disposal of effluent by providing septic tank to the Labour Camps.	Dee-Tech Projects Pvt.Ltd
2	Ground water Pollution due to disposal of treated effluent.	Low negative Impact	The treated effluent will meet the agreed effluent quality in line with the standards laid down by TNPCB.	Dee-Tech Projects Pvt.Ltd
3	Air Pollution due the CH4 gas produced on operation of plant.	Low negative Impact	Plant in open sky only. Further the green belt proposed around the STP will mitigate any odour from the plant.	Dee-Tech Projects Pvt.Ltd
4	Noise pollution due to operation of equipment & machinery.	Low Negative impact	Developing three rows of greenbelt along the plant boundary.	Dee-Tech Projects Pvt.Ltd
5	Risk from Electrical Equipment(s)	Low Negative impact	All Site Engineers take required precautions to prevent danger from electrical equipment. All necessary fencing and lights will be provided to protect the public in construction zones.	Dee-Tech Projects Pvt.Ltd
6	Staff Quarters	Low Negative impact	i. All equipment rooms are acoustic proof structures, so impact due to noise was less. By Planting trees near to reduce the odour. ii. Proper disposal of effluent by providing septic tank to the Labour Camps.	Dee-Tech Projects Pvt.Ltd
7	First Aid	Low Negative impact	Provide a readily available first aid unit including an adequate supply of sterilized dressing materials.	Dee-Tech Projects Pvt.Ltd



## 12.0 Environmental Monitoring Plan.

### (I) Air Quality Monitoring

Sl.No	Description			
1	<b>PROJECT STAGE</b>			
	Preconstruction Period	Construction Period	Operation Period	
	√	--	--	
2	<b>PARAMETER</b>			
	SPM, RPM, SO <sub>2</sub> , NO <sub>x</sub> , CO and Pb In Addison to this odour will be monitor for operation phase.			
3	<b>SAMPLING METHOD</b>			
	Use method specified by CPCB for analysis			
4	<b>STANDARDS</b>			
	Air (Prevention and Control of Pollution) Rules, CPCB, 1994			
5	<b>FREQUENCY</b>			
	Preconstruction Period	Construction Period	Operation Period	
	Monitoring was conducted on 26.11.2009.	Once every season.	Once every season.	
6	<b>DURATION</b>			
	Continuous 24 hours / or for 1 full working day			
7	<b>LOCATION</b>			
	Sl.No	Location Name	Direction	Distance from STP Boundary
	1	a1	South Eastern (SE)	200m
	2	a2	South West (SW)	200m
	3	a3	North East (NE)	200m
	4	a4	North West(NW)	200m
8	<b>MEASURES</b>			
	As Per standards			
9	<b>IMPLEMENTATION</b>			
	Preconstruction Period	Construction Period	Operation Period	
	Monitoring was conducted by M/s.Vimta Labs Ltd.(Approved monitoring agency)	Monitoring will be conducted during construction period.	Monitoring will be conducted during operation period.	
10	<b>SUPERVISION</b>			
	Supervising by TWAD Board			



**(II) Water Quality Monitoring**

Sl.No	Description		
1	<b>PROJECT STAGE</b>		
	Preconstruction Period	Construction Period	Operation Period
	√	--	--
2	<b>PARAMETER</b>		
	pH, BOD, COD, DO, TDS, Pb, Oil & Grease and Detergents for surface water Water pH, TDS, Total hardness, Sulphate, Fluorides, Chloride, Fe, Pb for Ground water		
3	<b>SAMPLING METHOD</b>		
	As per Standard method		
4	<b>STANDARDS</b>		
	Indian standards for Inland Surface Water (IS; 2296, 1982) and for Drinking water (IS; 10500,1991)		
5	<b>FREQUENCY</b>		
	Preconstruction Period	Construction Period	Operation Period
	Monitoring was conducted on 26.11.2009.	Twice a year (pre monsoon and post monsoon seasons).	Monthly for location 1&2. Twice a year (pre monsoon and post monsoon seasons) for location 3, 4 &5 (Alternative sampling between location 3 & 5).
6	<b>DURATION</b>		
	Grab sampling		
7	<b>LOCATION</b>		
	Sl.No	Location Name	Distance
	1	Inlet chamber	
	2	Outlet sump	
	3	W1:Well (Ground water)	80m (South East on STP Boundary)
	4	W2:Olaiyaru River (Surface water)	1740m (From Plant outlet point)
	5	Pond (Surface Water)	100 m (South side on STP Boundary)
8	<b>MEASURES</b>		
	As Per standards		
9	<b>IMPLEMENTATION</b>		
	Preconstruction Period	Construction Period	Operation Period
	Monitoring was conducted by M/s.Vimta Labs Ltd.(Approved monitoring agency)	Monitoring will be conducted during construction period.	Monitoring will be conducted during operation period.
10	<b>SUPERVISION</b>		
	Supervising by TWAD Board		



**(III) Noise Level Monitoring**

Sl.No	Description			
1	<b>PROJECT STAGE</b>			
	Preconstruction Period	Construction Period	Operation Period	
	√	--	--	
2	<b>PARAMETER</b>			
	Noise level on dB (A) scale noise levels on dB (A) scale			
3	<b>SPECIAL GUIDANCE</b>			
	Free field at 1 m from the equipments whose noise level are being determined. Equivalent noise levels using an integrated noise level meter kept at a distance of 15m from edge of pavement			
4	<b>STANDARDS</b>			
	MoEF Noise Rulers, 2000			
5	<b>FREQUENCY</b>			
	Preconstruction Period	Construction Period	Operation Period	
	Monitoring was conducted on 26.11.2009.	Once every season	Once every season	
6	<b>DURATION</b>			
	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged			
7	<b>LOCATION</b>			
	Sl.No	Location Name	Direction	Distance from the process Equipment
	1	N1	South East (SE)	200m
	2	N2	South West (SSE)	200m
	3	N3	Air blower (NE)	200m
	4	N4	DG (NW)	200m
8	<b>MEASURES</b>			
	As Per standards			
9	<b>IMPLEMENTATION</b>			
	Preconstruction Period	Construction Period	Operation Period	
	Monitoring was conducted by M/s.Vimta Labs Ltd.(Approved monitoring agency)	Monitoring will be conducted during construction period.	Monitoring will be conducted during operation period.	
10	<b>SUPERVISION</b>			
	Supervising by TWAD Board			



**(IV) Soil Quality Monitoring**

Sl.No	Description		
1	<b>PROJECT STAGE</b>		
	Preconstruction Period	Construction Period	Operation Period
	√	--	--
2	<b>PARAMETER</b>		
	Monitoring of Pb, SAR and Oil & Grease		
3	<b>SAMPLING METHOD</b>		
	Sample of soil collected to be acidified and analyzed using absorption spectrophotometer		
4	<b>STANDARDS</b>		
	Threshold for each contaminated set by IRIS database of USEPA until national standards are promulgated		
5	<b>FREQUENCY</b>		
	Preconstruction Period	Construction Period	Operation Period
	Monitoring was conducted on 26.11.2009.	During the pre monsoon post monsoon seasons	During the pre monsoon post monsoon seasons
6	<b>DURATION</b>		
	Grab sampling		
7	<b>LOCATION</b>		
	Sl.No	Location Name	Distance from STP Boundary (Near to Plant outlet point)
	1	S1	South East (SE) 200m
8	<b>MEASURES</b>		
	As Per standards		
9	<b>IMPLEMENTATION</b>		
	Preconstruction Period	Construction Period	Operation Period
	Monitoring was conducted by M/s.Vimta Labs Ltd.(Approved monitoring agency)	Monitoring will be conducted during construction period.	Monitoring will be conducted during operation period.
10	<b>SUPERVISION</b>		
	Preconstruction Period	Construction Period	Operation Period
	Supervising by TWAD Board		

#-S1 sample has been taken for pre construction operation.



### 13.0 Green Belt

Greenbelt is developed inside the factory premises covering a total area of about 1.0 acre. The unit will also develop the nearby area around the STP for three or two rows of greenbelt. The inter-spaces are laid with shrubs.

The following table shows the space provided for greenbelt around the proposed STP Plant.

Sl.No	Directions	Space provided around STP area	No. of rows
1	North	15m	Three
2	South	14m	Three
3	East	6m	Two
4	West	6m	Two

As per the above table the space is provided around the STP site with different varieties of trees like Neem, buble tree etc. A person is also allotted to take the responsibility of the trees regularly and thus he takes care of the trees periodically.

### 14.0 Budgetary Allocation for Environmental Monitoring

**(A) Construction Period:** Estimated as per conditions stipulated in EMP.

Sl.No	Description	No. Of Sample	Cost (Rs)/Sample	Amount Rs.
1	Air Quality Monitoring	24	2330	55920
2	Water Quality Monitoring	8	2500	20000
3	Noise Level Monitoring	24	375	9000
4	Soil Quality Monitoring	4	4500	18000
5	Mobilisation charges for Monitoring		--	5000
			<b>Total</b>	<b>107920</b>



**(B) Operation Period (Per Annum)**

Sl.No	Description	No. Of Sample	Cost (Rs)/Sample	Amount Rs.
1	Air Quality Monitoring	4x3 = 12	3000	42000
2	Water Quality Monitoring	2x12 + 2x2 = 28	1000	28000
3	Noise Level Monitoring	4x3 = 12	1000	12000
4	Soil Quality Monitoring	1x2 = 2	4000	24000
5	Mobilisation charges for Monitoring			8000
		<b>Total (Per Annum)</b>		<b>92,000</b>
		<b>Total for Five years.</b>		<b>4,60,000</b>

**(C) Budgetary Allocation for Greenbelt**

Sl.No	Description	Capital investment (Rs)	Maintenance cost (Rs)
1	Tree plantation : 150 Nos.	50,000	-
2	Maintenance	-	25,000
		<b>Total</b>	<b>75,000</b>

Budgetary Allocation for Environmental Management including Monitoring in Construction Period & Green belt was provisioned under Submission and acceptances of detailed Environmental Assessment Report vide Price Schedule for Construction. Similarly for Monitoring in Operation Period was provisioned under Fixed cost vide O&M Price Schedule.

**15.0 Environment, Safety and Health Monitoring**

The environment, safety and health-monitoring shall be done on a continuous basis and the report on implementation on EMP shall be furnished to the Engineer so as to ensure strict compliance to the requirements. The survival status and upkeep of trees shall also be monitored and reported.

**16.0 Conclusions**

This report presents the major negative and positive impacts from the construction and operation of the STP. Where ever there are impacts found, suitable mitigation measures have been identified and provided in the report. These mitigation measures and EMP shall be implemented during construction and operation phases to ensure safeguard of environment.

For The TAMILNADU WATER SUPPLY AND DRAINAGE BOARD

ADMINISTRATOR.



# **ANNEXURE**



# **ANNEXURE-1**



**தீர்மான நகல்**

200 ஆம் ஆண்டு ..... 10.11.2000 ..... மாதம் ..... 4.10 ..... தேதி ..21.11.2000, கிழமை  
காலை / மாலை ..... 11:30 ..... மணிக்கு மேலத்திக்கான் ஊராட்சியின்  
சாத்தானை / சிறப்பு / கிராம சபா / கூட்டம் தலைவர் திரு. C. ரவி அவர்கள் தலைமையில் ஊராட்சி  
மன்ற அலுவலக கட்டிடத்தில் நடைபெற்றது. அதுசமயம் நடைபெற்ற கூட்ட நடவடிக்கைகள்.

மொத்த உறுப்பினர்கள் : 1+6

வருகை தந்த உறுப்பினர்கள் : 1+6

பொருள் எண்: 19

திருவண்ணாமலை நகராட்சியில் பாதாள சாக்கடை திட்டம் செயல்படுத்தப்படுகிறது அந்த பாதாள சாக்கடையின் மூலம் வரும் கழிவுநீரை சுத்திகரித்து மேலத்திக்கான் ஊராட்சி பாசனத்திற்கு பயன்படுத்திக் கொள்ள ஊராட்சி மன்ற தீர்மானம் இயற்றித் தருமாறு நிர்வாகப் பொறியாளர், பாதாள சாக்கடை திட்டக்கோட்டம், தமிழ்நாடு குடிநீர் வடிகால் வாரியம் திருவண்ணாமலை, அவர்களால் கோரப்பட்டது.

மேற்படி மேலத்திக்கான் ஊராட்சி, விலை நிலங்கள் மேடான பகுதியாக இருப்பதாலும், அதிகப்படியான இடங்கள் மனைப்பிரிவுகளாக மாறிவிட்டதாலும் மேற்படி சுத்திகரிக்கப்பட்ட தண்ணீரை மேலத்திக்கான் கிராம விலை நிலங்களுக்கு பயன்படுத்திக் கொள்ள இயலாத நிலை உள்ளது.

மேலதிக கூட்டத்தில் உள்ள ஒலை ஆற்றில் மேற்படி சுத்திகரிக்கப்பட்ட நீரை விட்டால் எங்கள் ஊராட்சியில் உள்ள கிணறுகளின் நீர்மட்டம் உயரும் தண்ணீர் பற்றாக்குறையும் ஏற்படாது என இந்த சுத்திகரிக்கப்பட்ட தண்ணீரை அருகில் உள்ள ஒலை ஆற்றில் கொண்டுவிட ஆவண செய்யுமாறு நிர்வாகப் பொறியாளர் பாதாள சாக்கடை திட்ட கோட்டம் தமிழ்நாடு குடிநீர் வடிகால் வாரியம் திருவண்ணாமலை அவர்களை கேட்டுக் கொள்ள மன்ற அங்கீகாரம் கோரப்படுகிறது.

தீர்மான எண்: 19

மன்றத்தில் ஏகமனதாக அங்கீகரித்து தீர்மானிக்கப்பட்டது.

/உண்மை நகல்/

1-11-2000  
தலைவர், 2000  
மேலத்திக்கான் ஊராட்சி  
திருவண்ணாமலை ஒன்றியம்

(ஒ.ம) C.ரவி  
தலைவர்,  
மேலத்திக்கான் ஊராட்சி  
திருவண்ணாமலை ஒன்றியம்



## **ANNEXURE-2**



**Environmental Impact Assessment (EIA)  
And  
Environmental Management Plan (EMP)**

**O&M CHECK LIST –STP ASP METHOD**

	Unit	Capacity	Process issues	Remedial action	Mechanical issues	Remedial measures
1	Manual screens	1 * 100% for each of coarse and fine screen	Nothing expected if routine manual cleaning practiced		Nothing expected	Manual screens will be used when either of mechanical coarse or fine screen breakdown or conveyor break down.
2	Mechanical screens	1 * 100% for each of coarse and fine screen. Covey your common to both manual and mechanical screen	Nothing expected unless mechanical failures take place		Regular preventive maintenance required	Weekly once screens and conveyor is taken out of service and maintenance is to be carried out. Manual screens will be used at this time
3	Grit separator	2*100 %	Each grit separator is designed to handle full peak flow. Normally both will be in operation		Possible break down of gear box internals or chain	Monthly once lubrication and topping of oil to be done. Chain alignment is to be checked. At this time full flow is allowed thro other grit separator
4	Primary clarifier	2*50%	Nothing expected	In the event of mechanical failure of one unit, for short term while entire flow can be fed thro each clarifier. Alternatively 50% of flow to be bye passed.	Possible wear and tear of turn table with time	As preventive maintenance greasing and lubrication is done say once in two months or as per manufacturer's recommendation. Keep in stock essential spares and take one unit out of service in the event of break down.
5	Aeration tank	2*50%	D.O drop. Filamentous bacteria	Regulating the feed and also return sludge	Diffuser choking might occur	Isolating valves provided for each drop pipe for cleaning the diffusers
6	Secondary clarifier	2*50%	Rising of sludge.	Regulating return sludge.	Wear & tear of internals of drive	Routine lubrication is done as preventive maintenance as recommended by manufacturer. In the event of break down, one clarifier is taken out of service and flow to aeration tank regulated by passing sewage after primary clarifier
7	Sludge Digester	1 *100%	No mechanical fixtures except safety valve			
8	Centrifuge	2 *100%	Since 100% standby provided and only 16 hours of operation per day, no risk involved			Since standby is provided, the stand by unit will be operated for 1day once in a week.
9	Primary clarifier sludge pumps	2W +1 S	Dedicated pumps for each primary clarifier provided with common standby.		Pump choking, impeller wear & tear	The stand by pump will be operated one day every week to keep the pump in working condition



**Environmental Impact Assessment (EIA)  
And  
Environmental Management Plan (EMP)**

10	Return sludge pumps	1W +1 S			Pump choking, impeller wear & tear	The stand by pump will operated one day every week to keep the pump in working condition
11	Digester recirculation pumps	1W +1 S			Pump choking, impeller wear & tear	The stand by pump will be operated one day every week to keep the pump in working condition
12	Centrifuge feed pumps	1W +1 S			Pump choking, Stator wear & tear	The stand by pump will be operated one day every week to keep the pump in working condition
13	Blower for aeration tank	2W +1 S	Dedicated blower for each aeration tank with common stand by provided		Vanes wear and tear.	The common stand by blower will be operated one day every week to keep the blower in working condition
14	Blower for sludge mixing	1W +1 S	Stand by blower provided		Vanes wear and tear.	Standby blower will be operated one in a week
15	Chlorinator	1W +1 S	Standby unit provided		Internal components wear and tear	Standby unit will be operated once in a month for one day.
16	Chlorine tonner	1 W+ 1 S				One container will last for one month
17	Chlorinator booster pump	1W +1 S	Standby unit provided		Impeller wear	Stand by will be operated for one day every for night
18	Power interruption/failure	1W				DG set will be operated
19	Electricity	1W	Dual substation sources.		Nothing expected.	DG set will be operated.
20	Gas flare Arrangements	1W	No mechanical fixtures except safety valve		Nothing expected.	Safety release valve will be adequacy.





N

8.7 MLD STP Site T. Malai

N4  
a4

a2  
s1  
a1

a1  
N1

N3  
a3

W1

W2  
1740 m

SH 68

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Thamarai Nagar

Anna Nagar

8.7 MLD STP Site T. Malai

Treated Effluent  
Disposal Pipe Line  
(1740 meters)

Treated Effluent Disposal Point

Image © 2010 GeoEye





# தி.மலை பாதாள சாக்கடை திட்டத்திற்கு பொதுமக்களிடம் இன்று கருத்து கேட்பு

திருவண்ணாமலை, அக்.23- திருவண்ணாமலையில் செயல்படுத்தப்பட உள்ள பாதாள சாக்கடை திட்டம் பற்றி பொதுமக்களிடம் இன்று நகராட்சி நிர்வாகம் கலந்தாய்வு நடத்துகிறது.

மாவட்டத்தின் தலைநகராக உள்ள திருவண்ணாமலைக்கு மாவட்டத்தின் பிற்பகுதிகளில் இருந்து ஆயிரக்கணக்கானோர் தினமும் வந்து செல்கின்றனர். இதனால் திருவண்ணாமலை நகரம் எப்போதும் ஜே ஜே என பரபரப்பாக காணப்படுகிறது.

2001ம் ஆண்டு கணக்குப்படி திருவண்ணாமலை நகராட்சியின் மக்கள் தொகை 1 லட்சத்து 30 ஆயிரத்து 567 ஆகும். இது 2008ல் 1 லட்சத்து 44 ஆயிரத்துக்கு மேலும், 2038ல் 2 லட்சத்து 6 ஆயிரத்துக்கு மேலாகவும் இருக்கும் என கணக்கிடப்பட்டுள்ளது.

இவ்வாறும் பெருகும் மக்கள் தொகையை கணக்கில் கொண்டு திருவண்ணாமலையில் 53.61 கோடி ரூபாய் செலவில் பாதாள சாக்கடை திட்டத்தை செயல்படுத்த முடிவுசெய்து அதற்காக அடிக்கல்லும் நாட்டப்பட்டது. இத்திட்டப்படி முதல் கட்டமாக திருவண்ணாமலை நகராட்சியில் உள்ள 21 வார்டுகளிலும், இரண்டாவது கட்டமாக 18 வார்டுகளிலும் செயல்படுத்தப்படும்.

இந்த பகுதிகளில் இருந்து சேகரிக்கப்படும் 19.06 மில்லியன் லிட்டர் கழிவு நீர் வேட்டவலம் சாலையில் உள்ள

பண்டாரகுளத்தில் அமைக்கப்பட உள்ள கழிவுநீரேற்று நிலையத்தில் சேகரிக்கப்பட்டு புதிய பைபால் சாலையில் உள்ள சித்தேரி அரசு புறம்போக்கு நிலத்தில் நவீன தொழில்நுட்பரீதியில் சுத்திகரிக்கப்பட்டு குழாய் மூலம் கீழநாட்சிப்பட்டு கிராமத்தில் உள்ள பெரிய ஏரியில் நிரப்பப்படும். இவ்வாறு மறுசுழற்சி மூலம் சுத்திகரிக்கப்படும் நீரை விவசாயத்திற்கும், மீன் வளர்ப்பதற்கும் பயன்படுத்தலாம்.

இப்பணி விரைவில் தொடங்கப்பட்டு 18 மாதங்களில் செயல்படுத்த திட்டமிடப்பட்டுள்ளது. இந்தத்திட்டத்திற்கு மக்களின் பங்களிப்பு தொகையும், பராமரிப்பு கட்டணமும் செலுத்தப்பட வேண்டும்.

இத்திட்டத்தினால் ஏற்படும் நன்மை தீமைகளை பொதுமக்களிடம் விளக்கவும், பொதுமக்களிடம் இதுதொடர்பான கருத்துக்களை கேட்டு ஆய்வு செய்யவும், கலந்தாய்வு கூட்டம் இன்று 23ந் தேதி காலை 10 மணிக்கு திருவண்ணாமலை சன்னதி தெருவில் உள்ள விளச்சி திருமண மண்டபத்தில் நடைபெற உள்ளது.

இந்த கூட்டத்தில் முக்கிய பிரமுகர்களும், பொதுமக்களும் கலந்துகொண்டு பாதாள சாக்கடை திட்டம் குறித்து தங்களின் கருத்துக்களை தெரிவிக்கலாம் என திருவண்ணாமலை நகராட்சி தலைவர் மற்றும் ஆணையாளர் வெளியிட்டுள்ள செய்திக்குறிப்பில் தெரிவிக்கப்பட்டுள்ளது.

# வடகிழக்கு பருவமழை துவங்கியது தமிழகம் முழுவதும் மழை கொட்டியது

சென்னை, அக்.23- வடகிழக்கு பருவமழை துவங்கியதையடுத்து தமிழகம் முழுவதும் மழை கொட்டியது.

தமிழ்நாட்டில் அக்டோபர், நவம்பர் மாதங்களில் வடகிழக்கு பருவமழை தொடங்கும். இந்த ஆண்டு பருவமழை தொடங்குவதற்கான அறிகுறிகள் கடந்த சில நாட்களுக்கு முன்பு காணப்பட்டது. சென்னையிலும், கடலோர மாவட்டங்களிலும் அவ்வப்போது 2 நாட்களாக மழை பெய்தது.

இதுபோல் புதுவை மற்றும் தமிழக கடலோர மாவட்டங்களிலும், கிருஷ்ணகிரி, தர்மபுரி, கன்னியாகுமரி, கோவை, நீலகிரி மவட்டங்களிலும் பலத்த மழைபெய்தது.

நேற்று அதிகப்பட்சமாக கிருஷ்ணகிரி மாவட்டம் ஊத்தங்கரையிலும், தஞ்சை மாவட்டம் ஓரத்தநாட்டிலும் 9 செ.மீ. மழை பெய்தது. திருவண்ணாமலையிலும் நேற்று காலையிலும், மாலையிலும் மழை பெய்தது.

தென்மேற்கு வங்கக்கடலில் ஏற்பட்டுள்ள குறைந்த காற்றழுத்த தாழ்வு மண்டலம் காரணமாக நேற்று தமிழகம் முழுவதும் பரவலாக மழை பெய்தது. இந்த குறைந்த காற்றழுத்த தாழ்வு நிலை மேலும் வலுபெற்றால் புயல் சின்னமாக மாறும் இந்த குறைந்த தாழ்வுநிலையுடன், வலிமண்டலத்தின் சுழற்சி காரணமாக தமிழகம் முழுவதும் மேலும் 24 மணி நேரத்திற்கு மழை நீடிக்கும் என்று சென்னை வானிலை ஆராய்ச்சி மையம் தெரிவித்துள்ளது.

# சரக்குகளை ஏற்ற மறுத்தால் பறிமுதல்

வாரியானால் கோள விாசு கடுமீ எச்சரிக்கை





# பங்களிப்பு தொகை-மாதாந்திர கட்டணம் குறைக்க வேண்டும்

திருவண்ணாமலை, அக்.24: தி.மலையில் ரூ.28.93 கோடி மதிப்பில் பாதாள சாக்கடை திட்டப் பணிகள் விடுவிறுப்பாக தொடங்கியுள்ளது. இதற்காக ரூ.16.18 கோடியை தமிழக அரசு மான்யமாக அளிக்கிறது. மேலும், தமிழ்நாடு நகர உட்கட்டமைப்பு வளர்ச்சி நிதி நிறுவனம் ரூ.4.71 கோடி கூடுதலாக அளிக்கிறது. ரூ.8.04 கோடி நிதியை பொதுமக்கள் தங்களுடைய பங்களிப்பு நிதியாக செலுத்த வேண்டும்.

திருவண்ணாமலை நகரின் மொத்த பரப்பளவு 13.20 சதுர கி.மீ சாலைகளின் நீளம் 105 தற்போதைய மக்கள் தொகை 1.30 லட்சம்.

அது 2038ம் ஆண்டில் 2.6 லட்சமாக உயரலாம் என கணக்கிடப்பட்டுள்ளது. அதற்கேற்றபடி திட்டம் தயாரிக்கப்பட்டுள்ளது. நாளொன்றுக்கு ஒரு நபர் வெளியேற்றும் கழிவு நீர் 90 லிட்டராக இருக்கலாம்.

அதன்படி, பாதாள சாக்கடை திட்டம் ரூ.53.61 கோடியில் தயாரிக்கப்பட்டுள்ளது. முதற்கட்டமாக ரூ.28.93 கோடியில் 21 வார்டுகளில் செயல்படுத்துகின்றனர். பாதாள சாக்கடை மூலம் வெளியேற்றப்படும் கழிவு நீரை சுத்திகரிக்க, நகருக்கு ஒதுக்குப்புறமாக மூன்று இடங்களில் சுத்திகரிப்பு நிலையங்கள் அமைய உள்ளன.

இந்நிலையில், பொதுமக்கள் செலுத்த வேண்டிய பங்களிப்பு தொகை,

## கலந்தாய்வு கூட்டத்தில் வலியுறுத்தல்

கலந்தாய்வு நடத்தியது. வி.என்.சி திருமண மண்டபத்தில் நேற்று நடந்த கலந்தாய்வு கூட்டத்தில், எம்.எல்.ஏ. பிச்சாண்டி, நகராட்சித் தலைவர் இரா.ஸ்ரீதரன், துணைத் தலைவர் ஆர்.செல்வம், ஆணையர் நடராஜன், நகர அமைப்பு அலுவலர் பிச்சாண்டி மற்றும் அதிகாரிகள் கலந்துகொண்டனர்.

மேலும், அறங்காவலர் குழுத் தலைவர் வ.தனுசு, ஓட்டல் உரிமையாளர்கள் சங்க நிர்வாகி ராமசந்திர உபாத்தியாயா, வியாபாரிகள் சங்க நிர்வாகி மாசிலாமணிப்பிள்ளை, வடிவேல், எக்ஸனோரா இந்திரராஜன், ராஜமாணிக்கம், த.சம்பத், கவுன்சிலர்கள் குணசேகரன், ராஜாங்கம்,

முன்னாள் கவுன்சிலர் கராத்தேபாண்டு, ஏ.டி.எம் பன்னீர் செல்வம் உள்பட பலர் கலந்துகொண்டு கருத்து தெரிவித்தனர்.

திட்டத்தை கால தாமதம் செய்யாமல் விரைவாக முடிக்க வேண்டும். சாலைகளில் பாதாள சாக்கடை அமைக்க தோண்டப்படும் பள்ளங்களை உலுக்குவன சீர் செய்ய வேண்டும்.

தாமதமானால் விபத்துகள் ஏற்பட வாய்ப்பு உள்ளது. குறிப்பாக, கிரிவலப்பாதையில் திட்டப்பணியை தாமதம் செய்யக் கூடாது என பொதுமக்கள் தரப்பில் தெரிவிக்கப்பட்டது.

மேலும், 500 சதுர அடி வரை உள்ள கட்டடங்களுக்கு பங்களிப்பு தொகை ரூ.5 ஆயிரம்,

வர்த்தக கட்டடங்களுக்கு ரூ.10 ஆயிரம் என நிர்ணயிக்கப்பட்டுள்ளது. 1200 சதுர அடி வரை உள்ள கட்டடங்களுக்கு ரூ.6 ஆயிரம், வர்த்தகத்துக்கு ரூ.12 ஆயிரம் என நிர்ணயிக்கப்பட்டுள்ளது. மாதாந்திர கட்டணமும் ரூ.70 முதல் 100 வரை நிர்ணயிக்கப்பட்டுள்ளது.

இதனால், நடுத்தர, மாதாந்திர ஊதியம் பெறுகிறவர்கள் பெரிதும் பாதிக்கப்படுவார்கள். எனவே, கட்டணங்களை குறைக்க வேண்டும்.

பங்களிப்பு தொகை 5 தவணைகளுக்கும் மேலாக செலுத்த வாய்ப்பு அளிக்க வேண்டும் என பொதுமக்கள் தரப்பில் கருத்து தெரிவிக்கப்பட்டது. இது குறித்து அரசுக்கு தெரிவித்து நடவடிக்கை எடுப்பதாக அதிகாரிகள் உறுதி அளித்தனர்.

வேலூர்-நானா ஊட்டியூ-முநீபாலாசி dts திருப்பத்தூர்- மீனாட்சி dts திருப்பத்தூர்- ஸரஸ்வதி திருவண்ணாமலை- சக்தி dts செல்வம்-கனோசர் ஆய்யர்-சாய்சக்தி dts வானியம்புடி-சிவாஜி A/C dt போளூர்-அருள் குடியாத்தம்-மகாலக்ஷ்மி dts என்ஸ்பீகே- ராஜேஸ்வரி dts சேனிப்பேர்-சுமதி செய்யாறு- செல்லம்பேரடைஸ் அரக்கோணம்- கற்பகம் dts ஆரணி-ராஜேஸ்வரி

உண்மையான மிரட்டல் அடி

மலைக்கேள்வியை

+

5

முன்நி ம்  
செய்து  
ர்.  
ர்களுடைய  
யது 27),  
பொர்ராஜ  
வந்தது.

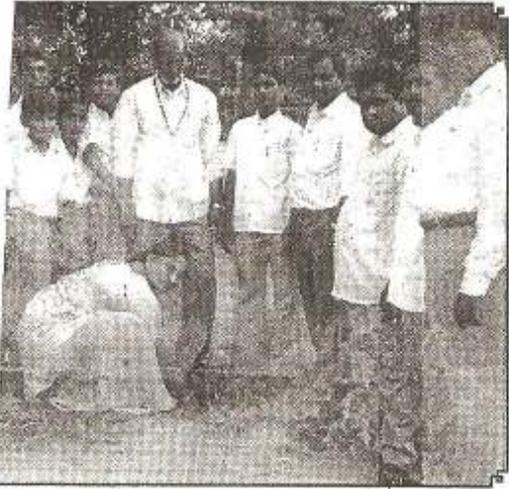
ழியர்  
ர்ந்திமட்டும்  
அடுத்த  
பகுதியை  
ஏற்கனவே  
ள போள  
ர் சைக்கிள்  
பராகவேலை  
கடந்த சில  
புவேலையில்  
டார்.  
த்தில் இருந்து  
ந்துச்செல்லும்  
தரிந்திருந்தது.  
ரையில் உள்ள

லட்சம் மற்றும் ரூ.1 லட்சத்து 46  
ஆயிரத்திற்கான காசோலைகள்  
மற்றும் கொள்ளை சம்பவத்துக்கு  
பயன்படுத்திய கார் ஆகியவற்றை  
போலீசார் பறிமுதல் செய்தனர்.  
இந்த கார் கிருஷ்ணமூர்த்திக்கு  
சொந்தமானது என்பது தெரிய  
வந்தது. கைது செய்யப்பட்ட 3  
பேரும் சிறையில் அடைக்கப்  
பட்டனர்.

### 3 பேருக்கு வலைவீச்சு

மேலும் இந்த கொள்ளை  
சம்பவத்தில் தொடர்புடைய  
சென்னை சேர்ந்த தேவ  
சகாயம் என்பவர் சென்னை  
எழும்பூர் நீதிமன்றத்தில் சரண்  
அடைந்தார்.

மேலும் தலைமறைவாக உள்ள  
செந்தில், சுந்தரம், செல்வ  
பாண்டியன் ஆகிய 3 பேரை  
போலீசார் வலைவீசி தேடி  
வருகின்றனர்.



ள்ளத்தில்

ம் விழா

வலம், அக்.25-  
லைமாவட்டம்  
அடுத்த

த

ணம்  
ாக்கினார்

து

ஒரு நாள் சம்பத்  
ராதலிப்பதாகவும்,  
செய்துகொள்ள  
தாகவும் கூறினார்.  
ரணிடம் ஆசை

அண்டம்பள்ளம் அரசு மேல்  
நிலைப்பள்ளியில் தேசிய  
பசுமைப்படை சார்பில் மரம்  
நடும் விழா நடந்தது. தலைமை  
ஆசிரியர் வி.எஸ்.திருவேங்கடம்  
விழாவை தொடங்கி வைத்தார்.  
உதவி தலைமை ஆசிரியை சத்யா  
மரக்கன்றுகளை நட்டார்.

ஆசிரியர்கள் சந்திரன், வெங்க  
டேசன், கண்ணன், ரவிச்சந்திரன்  
ஆகியோர் முன்னிலைவகித்தனர்.  
தேசிய பசுமைப்படை ஒருங்கி  
ணைப்பாளர் ஆசிரியர் முர்த்தி  
வரவேற்றார். முடிவில் ஆசிரியர்  
மணி நன்றி கூறினார்.

### சேத்துப்பட்டில்

வளர்கல்வி பணியாளர்களுக்கு  
பயிற்சி முகாம்

சேத்துப்பட்டு, அக்.25-  
திருவண்ணாமலை மாவட்டம்  
சேத்துப்பட்டு வட்டார வள  
மையத்தில் வளர் கல்வி பணி



பாதாள சாக்கடை செயலாக்க கலந்தாய்வு கூட்டத்தில்  
பிச்சாண்டி எம்.எல்.ஏ. பேசியபோது எடுத்த படம். அருகில்  
நகரமன்ற தலைவர் ஸ்ரீதரன் மற்றும் அதிகாரிகள் உள்ளனர்.

### திருவண்ணாமலையில்

## பாதாள சாக்கடை திட்ட

## செயலாக்க கலந்தாய்வு கூட்டம்

### நகராட்சி தலைவர் இரா.ஸ்ரீதரன் தலைமையில் நடந்தது

திருவண்ணாமலை,

அக்.25-  
திருவண்ணாமலையில்  
பாதாள சாக்கடை திட்ட  
செயலாக்கம் குறித்து பொது  
மக்களுடன் கலந்தாய்வு  
கூட்டம் நகராட்சி தலைவர்  
இரா.ஸ்ரீதரன் தலைமையில்  
நடந்தது.

### பாதாள சாக்கடை திட்டம்

திருவண்ணாமலை நகரில்  
ரூ.28 கோடியே 93 லட்சம்  
மதிப்பில் பாதாள சாக்கடை  
திட்டம் நிறைவேற்றப்பட  
உள்ளது. இந்த திட்டத்துக்காக  
தமிழக அரசு மானியமாக ரூ.16  
கோடியே 18 லட்சமும், தமிழ்நாடு  
நகர உள்கட்டமைப்பு வளர்ச்சி  
நிதி நிறுவனம் கடன் தொகையாக  
ரூ.4 கோடியே 71 லட்சமும்,  
பொதுமக்கள் பங்களிப்பு  
தொகையாக ரூ.8 கோடியே 4  
லட்சமும் பெறப்பட்டு இந்த திட்டம்  
நிறைவேற்றப்பட உள்ளது.

### கலந்தாய்வு கூட்டம்

இந்த திட்டம் குறித்து நகர  
பொதுமக்களுடன் கலந்தாய்வு  
கூட்டம் திருவண்ணாமலை  
வி.என்.சி.திருமண மண்டபத்தில்  
நடந்தது.

கூட்டத்துக்கு நகராட்சி  
தலைவர் இரா.ஸ்ரீதரன் தலைமை  
தாங்கினார். பிச்சாண்டி எம்.எல்.  
ஏ., நகராட்சி துணை தலைவர்  
ஆர்.செல்வம், பொறியாளர்  
சந்திரன், அருணாசலேஸ்வரர்  
கோவில் அறங்காவலர் குழு  
தலைவர் தனுசு, எக்ஸ்சனோரர்

அமைப்பு செயலாளர் இந்திர  
ராஜன், வியாபாரிகள் சங்க  
தலைவர் மாசிலாமணி, நகராட்சி  
உறுப்பினர்கள், பொதுமக்கள்  
கலந்து கொண்டனர்.

கூட்டத்தில் பொதுமக்களின்  
பங்களிப்பு தொகை மற்றும்  
பராமரிப்பு கட்டணம் குறித்து  
ஆலோசிக்கப்பட்டது. முடிவில்  
நகராட்சி ஆணையாளர்  
நடராஜன் நன்றி கூறினார்.



தெள்ளாரில்

## செயல்வழி கற்றல் பயிற்சி முகாம்

வந்தவாசி, அக்.25-  
திருவண்ணாமலை மாவட்டம்  
தெள்ளார் வட்டார வள  
மையத்தில் செயல்வழி கற்றல்  
பயிற்சி முகாம் 3 நாட்கள் நடந்  
து. இம் 44 வளர்கல்வி மையம்

அழகிய (திருவண்ணாமலை)  
துரிஞ்சாபுரம்  
உள்ள வட  
காரியந்தல், செ  
மட்டப்பாறைய  
உள்பட 10 சத்  
களுக்கு நேற்று  
ஊராட்சி ஒன்றி  
இருந்து முட்டை  
பட்டது.

இந்த முட்டை  
மையங்களில் வே  
துர்நாற்றம் வீசி  
தகவல் அறிந்து  
மன்ற தலைவர்  
லாரன்ஸ், ஒன்றி  
சாந்திராஜ்குமார்  
சத்துணவு மைய  
றனர்.

அங்கு வேகை  
களை உடைத்து  
முட்டை அழகி  
வந்தது. உடனே  
முட்டை வழங்க  
பட்டது.

எம்.எல்.ஏ. |

மேலும் இது  
கிருஷ்ணமூர்த்தி  
தகவல் தெரி  
அவர் வடக  
சத்துணவு மையத்  
முட்டைகளை வா  
பார்த்தார்.

முட்டைகள்  
அழகி இருந்தது  
களுக்கு முட்டை  
வேண்டாம் எ  
சத்துணவு பணி  
கேட்டுக்கொண்ட

யாற்று ஏற்

பின்னர்



பொறுப்பாளர்களு  
தேதி வரை அந்தந்  
தொடக்கப்பள்ளிகள  
பயிற்சி அளிக்கப்ப  
இதற்கான ஏற்பாடுக  
திட்ட ஒருங்கிண  
டி-ரமேஷ் செய்துள்ள

ஒண்ணுப்பு

ஊராட்சி மன்ற

கண்ணமங்கல்

திருவண்ணாமலை நகராட்சிக்கு பாதாள சாக்கடை திட்டம் குறித்தான கலந்தாய்வு கூட்டத்தின் நடவடிக்கைகள்:

நாள்: 26.12.2007

இடம்: மாவட்ட ஆட்சியர் அலுவலகம்  
திருவண்ணாமலை.

மாவட்ட ஆட்சியர் அலுவலகம், திருவண்ணாமலையில் 26.12.07 அன்று பாதாளசாக்கடை திட்டம் குறித்தான கலந்தாய்வு கூட்டம் மாண்புமிகு திரு.எ.வ.வேலு, உணவுத்துறை அமைச்சர் தலைமையிலும் மாவட்ட ஆட்சியர் மற்றும் திரு.கு.பிச்சாணர், சட்ட மன்ற உறுப்பினர் திருவண்ணாமலை அவர்களின் முன்னிலையிலும் நடைபெற்றது.

கூட்டத்தில் கலந்து கொண்ட அலுவலர்கள்:

1. மாவட்ட காவல் கண்காணிப்பாளர், திருவண்ணாமலை. X
2. மாவட்ட வருவாய் அலுவலர், திருவண்ணாமலை.
3. மாவட்ட ஊராட்சி குழு தலைவர், திருவண்ணாமலை. *MS*
4. நகரமன்ற தலைவர், திருவண்ணாமலை நகராட்சி.
5. மேற்பார்வைப் பொறியாளர், த.கு.வ.வாரியம், வேலூர்
6. நிர்வாகப் பொறியாளர் த.கு.வ.வாரியம், பா.சா.தி. திமலை
7. நிர்வாகப் பொறியாளர் த.கு.வ.வா ஊ.கு. திட்ட கோட்டம், திமலை *Rajy*
8. நிர்வாகப் பொறியாளர் த.கு.வ.வா. நகர கோட்டம், வேலூர். X
9. கோட்ட வருவாய் அலுவலர், திருவண்ணாமலை. — *சி. சண்முகம் 21/10/08*
10. ஆணையாளர், திருவண்ணாமலை நகராட்சி. — *ர. சிவசுந்தரன் 3.1.08*
11. பொறியாளர், திருவண்ணாமலை நகராட்சி.
12. நிர்வாக பொறியாளர், நெ.சா.து., திருவண்ணாமலை. *21/10/08*
13. கோட்ட அலுவலக ஆய்வாளர், தியணைப்பு துறை திமலை. X
14. செயற்பொறியாளர், மின்சார வாரியம், திருவண்ணாமலை.
15. உதவி கோட்ட பொறியாளர், தொலைதொடர்புத் துறை, திமலை. *R. Selva 21/11*

பாதாள சாக்கடை திட்ட கலந்தாய்வு கூட்டத்தில் திட்டம் வேகமாக செயல்படுத்தவும், குறைபாடுகளை நிவர்த்தி செய்யும் பொருட்டு கீழ்க்கண்ட நடவடிக்கைகள் மேற்கொள்ள உத்தேசிக்கப்பட்டுள்ளது.

1. பாதாள சாக்கடை திட்டம் குறித்து கோட்ட வருவாய் அதிகாரி தலைமையில் சம்மந்தப்பட்ட துறை அலுவலர்களை ஒருங்கிணைத்து ஒருங்கிணைப்பு குழு கூட்டம் இருவாரங்களுக்கு ஒரு முறை

குறித்த புகார் மீது அளித்தால் அந்த மனுவினை பரிசீலனை செய்ய நடவடிக்கை எடுக்கப்படும்

(கோ.வ.அ/த.கு.வ.வா.)

2. ஒருங்கிணைப்பு குழு கூட்டம் மாவட்ட ஆட்சியாளர் தலைமையில் இருமாதங்களுக்கு ஒரு முறை சம்மந்தப்பட்ட துறை அலுவலர்கள் உடன் நடைபெறும். இந்த கூட்டத்தில் பாதாள சாக்கடை திட்டம் குறித்த குறைபாடுகள் கவனவும் வேகமாக இத்திட்டம் செயல்படுத்தவும் நடவடிக்கை எடுக்கப்படும்.

(த.கு.வ.வா./நகராட்சி)

3. நவீன தொழில் நுட்பத்துடனான கழிவுநீர் சுத்திகரிப்பு நிலையம் சித்தேரி பகுதியில் அமைய உள்ளது. இதற்கு நிலம் கிடைப்பதில் ஏதாகிலும் நிர்வாக சிக்கல்கள் ஏற்பட்டால் மாற்று நிலத்தை, நில மாற்றம்/நில ஆர்ஜிதம் செய்ய பூர்வாங்க பணிகள் மேற்கொள்ள வேண்டும்.

(வருவாய் துறை/த.கு.வ.வா.)

4. நெடுஞ்சாலைகளில் பதிக்கும் குழாய்களுக்கு, ஒப்பந்தக்காரர்களே சாலைகளை செப்பணிட்டு தருவதால் நெடுஞ்சாலை துறைக்கு இழப்பீட்டு தொகை தராமல் அத்துறையின் பொறுப்பாளர்கள் மேற்படி சாலை செப்பணிடும் பணிகளை மேற்பார்வையிடாமலே கேட்டுக்கொள்ளப்படுகிறது.

(நெடுஞ்சாலை துறை/த.கு.வ.வா.)

5. பணிகள் மேற்கொள்ளும்போது அந்தந்த துறையை சார்ந்த பொறுப்பாளர்கள் பணியினை மேற்பார்வையிடாமலே கோரப்படுகிறது. பணிவிவர அட்டவணையை நகராட்சி மற்றும் த.கு.வ.வா.ரி.யம் தயாரித்து கொடுக்க வேண்டும்.

(அனைத்து துறைகள்)

6. பணிகள் மேற்கொள்ளும்போது, போக்குவரத்துக்கான மாற்று வழிதடங்களை ஆராய்ந்து திட்டப்பணிகள் வேகமாக செயல்படுத்த பூர்வாங்க பணிகள் மேற்கொள்ள கோரப்படுகிறது.

(நகராட்சி/காவல்துறை/வட்டாரபோக்குவரத்து அலுவலர்,)

ஓம்/-28.12.2007

மாவட்ட ஆட்சியர்,

திருவண்ணாமலை மாவட்டம்.

/உத்தரவு படி/

  
நிர்வாக பொறுப்பாளர், த.கு.வ.வா.  
பா.ச.தி.கோட்டம், திமலை.

அனுப்பப்பட்டது,  
கோ.வ.அ.

திருவண்ணாமலை நகராட்சிக்கு பாதாள சாக்கடை திட்டம் குறித்தான கலந்தாய்வு கூட்டத்தின் நடவடிக்கைகள்:

நாள்: 26.12.2007

இடம்: மாவட்ட ஆட்சியர் அலுவலகம்  
திருவண்ணாமலை.

மாவட்ட ஆட்சியர் அலுவலகம், திருவண்ணாமலையில் 26.12.07 அன்று பாதாளசாக்கடை திட்டம் குறித்தான கலந்தாய்வு கூட்டம் மாண்புமிகு திரு.எ.வ.வேலு, உணவுதுறை அமைச்சர் தலைமையிலும் மாவட்ட ஆட்சியர் மற்றும் திரு.கு.பிச்சாண்டி, சட்ட மன்ற உறுப்பினர் திருவண்ணாமலை அவர்களின் முன்னிலையிலும் நடைபெற்றது.

கூட்டத்தில் கலந்து கொண்ட அலுவலர்கள்

1. மாவட்ட காவல் கண்காணிப்பாளர், திருவண்ணாமலை.
2. மாவட்ட வருவாய் அலுவலர், திருவண்ணாமலை.
3. மாவட்ட ஊராட்சி குழு தலைவர், திருவண்ணாமலை.
4. நகர்மன்ற தலைவர், திருவண்ணாமலை நகராட்சி.
5. மேற்பார்வைப் பொறியாளர், த.கு.வ.வாரியம், வேலூர்
6. நிர்வாகப் பொறியாளர் த.கு.வ.வாரியம், பா.சா.தி. திமலை
7. நிர்வாகப் பொறியாளர் த.கு.வ.வா ஊ.கு. திட்ட கோட்டம், திமலை
8. நிர்வாகப் பொறியாளர் த.கு.வ.வா. நகர கோட்டம், வேலூர்.
9. கோட்ட வருவாய் அலுவலர், திருவண்ணாமலை.
10. ஆணையாளர், திருவண்ணாமலை நகராட்சி.
11. பொறியாளர், திருவண்ணாமலை நகராட்சி.
12. நிர்வாக பொறியாளர், நெ.சா.து., திருவண்ணாமலை.
13. கோட்ட அலுவலக ஆய்வாளர், தீயணைப்பு துறை திமலை.
14. செயற்பொறியாளர், மின்சார வாரியம், திருவண்ணாமலை.
15. உதவி கோட்ட பொறியாளர், தொலைதொடர்புத் துறை, திமலை.

பாதாள சாக்கடை திட்ட கலந்தாய்வு கூட்டத்தில் திட்டம் வேகமாக செயல்படுத்தவும், குறைபாடுகளை நிவர்த்தி செய்யும் பொருட்டு கீழ்க்கண்ட நடவடிக்கைகள் மேற்கொள்ள உத்தேசிக்கப்பட்டுள்ளது.

1. பாதாள சாக்கடை திட்டம் குறித்து கோட்ட வருவாய் அதிகாரி தலைமையில் சம்மந்தப்பட்ட துறை அலுவலர்களை ஒருங்கிணைத்து ஒருங்கிணைப்பு குழு கூட்டம் இருவாரங்களுக்கு ஒரு முறை நடைபெறவும்

இந்த கூட்டத்தில் பொதுமக்கள் பாதாள சாக்கடை திட்டம் குறித்த புகார் மனு அளித்தால் அந்த மனுவினை பரிசீலனை செய்ய நடவடிக்கை எடுக்கப்படும்.

(கோ.வ.அ/த.கு.வ.வா.)

2. ஒருங்கிணைப்பு குழு கூட்டம் மாவட்ட ஆட்சியாளர் தலைமையில் இருமாதங்களுக்கு ஒரு முறை சம்மந்தப்பட்ட துறை அலுவலர்கள் உடன் நடைபெறும். இந்த கூட்டத்தில் பாதாள சாக்கடை திட்டம் குறித்த குறைபாடுகள் கலையவும் வேகமாக இத்திட்டம் செயல்படுத்தவும் நடவடிக்கை எடுக்கப்படும்.

(த.கு.வ.வா./நகராட்சி)

3. நவீன தொழில் நுட்பத்துடனான கழிவுநீர் சுத்திகரிப்பு நிலையம் சித்தேரி பகுதியில் அமைய உள்ளது. இதற்கு நிலம் கிடைப்பதில் ஏதாகிலும் நிர்வாக சிக்கல்கள் ஏற்பட்டால் மாற்று நிலத்தை, நில மாற்றம்/நிலஆர்ஜிதம் செய்ய பூர்வாங்க பணிகள் மேற்கொள்ள வேண்டும்.

(வருவாய் துறை/த.கு.வ.வா.)

4. நெடுஞ்சாலைகளில் பதிக்கும் குழாய்களுக்கு, ஒப்பந்தக்காரர்களே சாலைகளை செப்பணிட்டு தருவதால் நெடுஞ்சாலை துறைக்கு இழப்பீட்டு தொகை தராமல் அத்துறையின் பொறுப்பாளர்கள் மேற்படி சாலை செப்பணிடும் பணிகளை மேற்பார்வையிடமாறு கேட்டுக்கொள்ளப்படுகிறது.

(நெடுஞ்சாலை துறை/த.கு.வ.வா.)

5. பணிகள் மேற்கொள்ளும்போது அங்கத்த துறையை சார்ந்த பொறுப்பாளர்கள் பணியினை மேற்பார்வையிடமாறு கோரப்படுகிறது. பணிவிவர அட்டவணையை நகராட்சி மற்றும் த.கு.வ.வாரியம் தயாரித்து கொடுக்க வேண்டும்.

(அனைத்து துறைகள்)

6. பணிகள் மேற்கொள்ளும்போது, போக்குவரத்துக்கான மாற்று வழிதடங்களை ஆராய்ந்து திட்டப்பணிகள் வேகமாக செயல்படுத்த பூர்வாங்க பணிகள் மேற்கொள்ள கோரப்படுகிறது.

(நகராட்சி/காவல்துறை/வட்டாரபோக்குவரத்து அலுவலர்)

மாவட்ட ஆட்சியர்,  
திருவண்ணாமலை மாவட்டம்.

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