

## **Revival, Rehabilitation and Maintenance of Water Bodies**

The Commissioner of Municipal Administration, Chennai-5 now invites Consultancy firms and individual Consultant to register their interest in participating in the assignment for conducting orientation workshop on Revival, Rehabilitation and Maintenance of water bodies among the stake holders of city development and for the preparation of Action Plan for Revival, Rehabilitation and Maintenance of water bodies in eight City Municipal Corporations of Tamil Nadu, by sending the following information.

a.	Name, address and fax number of the Consultancy firm
b.	Ownership and Organizational Structure of the firm
c.	Financial Statement for the last three years
d.	Name and short CVs of Key Staff
e.	Details of Experience in Similar nature of the assignment

Expression of Interest (5 copies) must be submitted for the above assignment during office hours on or before 28.02.2011 to the above address. Documents received thereafter will not be accepted.

On the basis of obtained information from interested Consultants, the Commissioner of Municipal Administration will prepare and short-list of Six Consultants who will be invited to submit their proposals.

Interested parties may obtain further information about the Consultancy assignment from the following officials at the address mentioned below:

Contact Person:

Thiru R. Lingasamy, Procurement & Administrative Officer (i/c),  
Mobile No.9444343063

Thiru G. Manian, Urban Development Specialist, TNUDP-III at telephone  
No.044 – 28550200, Mobile No.98845 64311

Contact hours : 10.00 a.m. to 5.45 p.m.

**Commissioner of  
Municipal Administration**

# Terms of Reference

## **Revival, Rehabilitation and Maintenance of Water Bodies in Corporation Areas.**

### **1. Background**

Demand for water is growing in most cities as every citizen requires almost double the amount of water compared to his counter part in rural areas. India is most rapidly urbanizing. Not long ago, most of our cities were self sufficient in meeting their water needs from extensive water bodies to supply water to their citizen. Today, water bodies have shrunk in area. Municipalities have been stretched to their limits to find water for the growing urban population. Ground water is being extracted by public institutions and private parties.

As an alternative source of supply, the engineering structures had been designed and constructed in various parts of the State for capturing and storing of rain water, particularly during monsoon. These structures were constructed and maintained to channelise the storm water during monsoon period to flow by gravity into lakes, ponds, oorani, temple tanks, or aquifers which were re-charging the ground water in an integrated manner. Because of the vagaries of the monsoon, highly seasonal rainfall, nature of topography, a large number of water bodies had been built in and around the urban and rural settlements in the State to ensure a reliable supply of water for various uses of the community including drinking and irrigation. Discharge from residential/ industrial effluent goes unnoticed in spite of efforts to regulate them and this creates a situation where these water bodies are slowly vanishing.

There is, therefore, an urgent need to prepare an action plan for Revival, Rehabilitation and Maintenance of water bodies in cities to capture and store the precious rainwater for the best use of the community and to conduct a workshop among the stakeholders of the cities.

## **2. Objectives of Revival, Rehabilitation and Maintenance of Water Bodies.**

The objective of the study is:

- (i) To prepare an Action Plan for Revival, Restoration and Maintenance of the water bodies in the 9 Corporation areas in the State except Chennai. Actual number of water bodies with name and ownership in each corporation, basic profile of the city and future anticipated growth pattern are given in the Annexure.
- (ii) To conduct a workshop among various stakeholders involved in city development, to impart knowledge on Revival and Restoration of Water Bodies.

## **3. Detailed Tasks to be performed:**

The tasks to be carried out are as follows:

- (i) Collect data on water bodies within cities with ownership and formulate sketches. Make a detailed study of the existing water bodies in and around the 8 Corporation areas i.e. Madurai, Thiruchirapalli, Salem, Tirunelveli, Erode, Tiruppur, Thoothukudi and Vellore Corporations with their supply channels with reference to the topographical maps, satellite imagery, revenue records, Town Survey Registers, etc. The designed capacity and the present carrying capacity of the water bodies need to be studied in detail.
- (ii) Collecting and updating information regarding flood levels in the study area during rainfall of different intensity. Also to study the present status of functioning of inlets and outlets of the water bodies, and the reasons for their non-functioning with suitable engineering drawings and the details of the locations along the water bodies, from where the polluted water is discharged into the

water bodies and the agencies responsible for causing such pollution.

- (iii) Explore possibilities of using efficient microbes to clean water bodies.
- (iv) Suggest suitable measures to intensify rain water harvesting to capture the rainfall over the geographical area of the cities to a maximum level, and recommend policy guidelines for the ULBs and the Government for Revival, Rehabilitation and Maintenance of the water bodies.
- (v) Conduct a workshop among the stake holders of the city development on Revival, Rehabilitation and Maintenance of water bodies.
- (vi) Prepare an Action Plan to Revive, Rehabilitate and Maintain the water bodies in the Corporation areas, recommending suitable engineering measures.
- (vii) Prepare costing of revival of water bodies in a phased manner
- (viii) Use water bodies as a place for entertainment.
- (ix) Sustain the efforts through NGO participation.

#### **4. Tasks under Action Plan for Revival of Water Bodies**

The tasks under the Action Plan include the following:

i **Profile of Water Bodies:**

This includes geographical location, area of water bodies, and source of water, ownership and use of the water bodies.

ii. **Profile of the Catchment Area :**

This includes nature and type of catchment area, population in the catchment area having impact on water bodies, identification of sources of pollution from catchment area, quantification of pollution load to the water bodies and encroachments suggested by lab tests/field tests.

iii. **Profile of Storm water Drains:**

This includes:

- a. Topographical survey and inventory of the existing water bodies (lakes and ponds), storm water drainage system and estimation of their existing capacity for disposal of storm water and demarcation of inundation area within the city clearly, showing probable depth of water accumulation. Topographical survey for lakes and other water bodies in the city has to be made for a radial distance of 300 metre from the boundary of the water body to indicate broad land use and physical features exist in the area. Bathymetry survey has to be undertaken in water bodies to assess the water holding capacity of water bodies.
- b. Study of the flood water holding ponds/zones, open gardens or playgrounds along with the arrangements to dispose off the accumulated water to the nearest outfall or to conserve the water.
- c. Preparation of a most suitable cost effective storm water drainage system duly identifying the outfall points with levels that will facilitate the disposal.
- d. Utilizing proven and readily available computer modeling software, carry out an analysis of the existing situation of storm water drains in the cities, to identify deficiencies and develop alternative strategies and options for expansion/augmentation of the existing system to address the deficiencies.
- e. Suggest ways for sustainable maintenance.

iv. **Profile of Water quality**

This includes physical, chemical characterization and biological profile. Details on water quality silt and waste water characteristics are required based on actual samples taken on site and parameters need to be obtained only from laboratory tests.

v. **Other Tasks:**

a. The other tasks that are included in the action plan:

Identification of site for specific development and beautification measures for the water bodies; Survey and suggest suitable resettlement programme for the encroachers of the water bodies, and IHSDP/\_Rajiv Awaz Yojana for slums located near/on water bodies.

b. Suggest Community participation /Public Private Partnership in Reviving, Protecting and Maintenance of water bodies, and projects on PPP mode for Real Estate promoters for the best use of lands abutting the water bodies. Identify NGO/Private agency in each city for maintenance of water bodies, who would establish and operate recreational and commercial facilities along the water bodies for mutual benefit with Urban Local Bodies

c. Indicate the potential uses/users after the project completion need to be an outcome of the study.

d. Preparation of Cost Estimates for Restoration, and Rehabilitation of water bodies with O&M cost, and preparation of DPR and Bid Document for the finalized Development works.

- e. Conduct workshop among the stake holders of the cities on Revival, Restoration and Maintenance of water bodies in the cities.

**5. Data inputs and Services from the Client/ULBs**

The Client/ ULB will provide to the Consultant all the available data, documentation and maps available with them. The Client /ULBs shall make available its senior officers for consultation purposes and furnish the available relevant data and documentation, maps for consultant’s reference and study.

**6. Study Area**

The study will be taken in Madurai, Tiruchirapalli, Salem, Tirunelveli, Tiruppur, Erode, Vellore, & Thoothukudi City municipal Corporations.

**7. Outputs, Reporting and Schedule for Completion of the Assignment:**

<b>Outputs</b>	<b>Time from Start</b>	<b>Payments (%to Total)</b>
<p><b><u>Inception Report ( 20 Copies)</u></b>  Reconnaissance survey and Field Visits to the ULBs - Methodology for conducting field survey in the Corporations -Work Plan, Staffing Schedule for completion of the assignment.  Submission of the Inception Report for review of the Review committee.</p>	1month	10%
<p><b><u>Interim Status Report ( 20 copies)</u></b>  Profile of water bodies, Catchment area, Supply channel, Storm water drains, profile of water quality – Topographical and bathymetry survey – Assessment of water holding capacities of water bodies- Details of functioning of inlets &amp; outlets – Flood level during rainfall of different intensity - Source of pollution and agencies responsible for pollution-Results of analysis of water quality, silt and waste water characteristics based on</p>	3months	40%

<p>Lab. tests. Measures for rainwater harvesting          –Identification of site for specific development and beautification measures for water bodies- Resettlement programme for encroachers- Survey and selection of slums located on /near water bodies and proposal for relocation/rehabilitation under IHSDP/RajivAwasYojana</p> <p>Submission of the Interim Status Report with drawings for review of the Review committee.</p>		
<p><b><u>Draft Final Report (20 Copies)</u></b></p> <p>(i) Analysis of the Existing situation of the storm water drains in the city with computer modeling software</p> <p>(ii) Identification of deficiencies in the drainage system in the city and develop alternative strategies and option for expansion /augmentation of the existing system to address the deficiencies.</p> <p>(iii) Formulation of Most suitable effective storm water drainage system for the town duly identifying the outfall points with levels.</p> <p>(iv) Indicate potential uses/users after the project completion of the project.          Identification of NGO/Private agency in each city for maintenance of water bodies, who would establish and operate recreational and commercial facilities along the water bodies for mutual benefit with Urban Local Bodies</p> <p>(v) Indicate Financial Estimate and Organizational requirement in the ULBs to carry out the tasks mentioned above.          Submission of the Draft Final Report for review of the Review committee. (6 copies)</p>	5Months	30%

<p><b><u>Final Report &amp; Conducting Workshop ( 30 Copies)</u></b></p> <p>(i) DPR and Bid Document for the finalized development works in the cities.</p> <p>(ii) Suggestion on Community participation / Public –Private participation in reviving, rehabilitating and maintenance of green space in cities</p> <p>(iii) Identification of Projects on PPP mode for the best use of lands abutting the water bodies.</p> <p>(iv) Suggestion on suitable amendment to the City Municipal Acts/ Tamil Nadu District Municipalities Act to Revive, Rehabilitate and Maintain the water bodies in cities.</p>	6 Months	20%
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### **8. Composition of the Review Committee**

The Review committee includes:

1. The Commissioner of Municipal Administration or his nominee
2. Managing Director & Chief Executive Officer, TNUIFSL or his Nominee
3. The Joint Commissioner of Municipal Administration.
4. The Chief Engineer, Commissioner of Municipal Administration.
5. Corporation Commissioners /City Engineer Concerned
6. Chief Engineer (WRO) or his nominee – External Member
7. Representative from Tamil Nadu Pollution Control Board.

### **9. Skill Requirement**

The following Key Professionals are to be engaged by the Consultant along with required support staff. The C.V. of the following professional will be reviewed for technical evaluation.

<b>Specialization</b>	<b>Requirement</b>
Urban Infrastructure Specialist / Team Leader	Master's Degree in Engineering ( Hydrology) or equivalent qualification with about 10 years experience in water conservation projects
Urban Environment Specialist	Master's Degree in Environment Engineering with about 5 years experience in Environment Management Plan
Urban Engineering Specialist	Master's Degree in Civil / Urban Engineering or equivalent with 5 years experience in infrastructure works.
Urban Planner	Master's Degree in Urban Planning or equivalent qualification with about 5 years experience in land use planning
Urban Finance Specialist	Master's Degree in Financial Management / CA or equivalent qualification with around 5 years experience in Urban Financing
Urban Ecologist	Master's Degree in Environment Sciences with about 5 years experience in Urban Ecological studies.
Urban Sociologist	Master's Degree in Social work or equivalent qualification with 5 years experience in social survey, Resettlement & Rehabilitation or similar work
GIS Expert (Optional)	Bachelor's Degree in Civil Engineering /Architecture with 5 years experience in GIS Application

**Annexure:**

**1. Erode Corporation  
Proforma on Hydrological data:**

<b>Name of the Town</b>	<b>Name of the Water Body</b>	<b>Hydrological data</b>	
		Location	NIL
		Survey ward No	NIL
		T.S.No	NIL
		Area of the Water Body	NIL
		Storage Capacity	NIL
		Max. Flood Level	NIL
		Annul Average Rainfall in mm	105 MM
		Monthly Rainfall during NE Monsoon	
		October	20 MM
		November	25 MM
		December	30 MM
		Location of Inlet & Outlet	NIL
		Details on inlet	NIL
		Details on outlet	NIL
		Details on Catchment area	NIL

**Proforma on Profile of town – Erode Corporation**

<b>Name of the Town</b>	<b>Profile</b>	<b>Data</b>
	Area in sq.km	8.35 Sq.km.
	Population - 2001	1,50,541
	-2010	1,58,186
	Distribution of Prominent Land uses	
	i. Residential	483 Hect.
	ii. Commercial	133 Hect.
	iii. Industrial	60 Hect.
	iv. Public & Semi Public uses	44 Hect.
	v. Open space & Recreational Uses	1943.65 Sq.m.
	vi. Area under Agriculture use	95 Hect.
	vii. Area under water bodies	NIL
	viii. Major Industrial establishments in the town.	NIL
	Future Direction of growth of the City	North and West

## **2. Madurai Corporation - Proforma on Hydrological Data**

<b>Sl. No.</b>	<b>Name of the Town</b>	<b>Name of the Water Body</b>	<b>Location</b>	<b>Details of Inlet</b>	<b>Details of Outlet</b>
1.		<b>Madurai Vandiyur</b>	Left bank of river vaigai near vandiyur village	One sluice in function for Irrigation 30m width	One surplus weir Length 8.50m
2.		<b>Madurai Veeramudayan</b>	9° 53' N Latitude 78° 5' E Longitude Bank of river vaigai lies near the village of veeramudiyan hamlet of No:148 Madakulam village	-	Surplus weir 7.1 m long Bye wash 152.44 m
3.		<b>Madurai Madakulam</b>	West of No:148 Madakulam village	Supply channel 12.8 length long	3 Sluices one surplus weir 20 m long
4.		<b>Madurai S. Kodikulam</b>	Left bank of river vaigai lies outside of corporation limit & lies within LPA limit.	-	One surplus weir

**Proforma on profile of Town: Madurai Corporation**

<b>Name of the Town</b>	<b>Profile</b>	<b>Data</b>
	Area in sq.km	57.96 sq km
	Population – 2001	10,28,869(Census 2001)
	Distribution of Prominent Land uses	
	i. Residential	2145.07 ha
	ii. Commercial	198.50 ha
	iii. Industrial	210.15 ha
	iv. Public & Semi Public uses	265.19 ha
	v. Open space & recreational Uses	10355 sqm
	vi. Area under Agriculture use	947.95 ha
	vii. Area under water bodies	502.82 ha
	viii. Major Industrial establishments in the town.	2.00 sq.km
	Future Direction of growth of the City	Towards North west (Madurai) Towards North (Madurai- Trichy Road)

### 3. Salem Corporation

#### Proforma on Hydrological data:

Name of the Town	Name of the Water Body	Hydrological data	
<b>Salem Corporation</b>	<b>Pallapatti Eri</b>	Location	Suramangalam main road Pallapatty.
		Survey ward No.	-
		T.S.No.	Ward-T, Block-16,T.S.No.3.
		Area of the Water body	17.97000.0 Hectares
		Storage Capacity	
		Max.Flood Level	
		Annual AV. Rainfall in mm	1062.7 mm
		Monthly Rainfall during NE Monsoon	
		October	161.5mm
		November	111.3mm
		December	-
		Location of Inlet & Outlet	Angammal Colony Yercard Hills - Varattaru
		Details on inlet	From Yercad Hills
		Details on outlet	Agriculture purpose and Thirumanimutharu River
		Details on Catchment area	48.00 Hectares

<b>Name of the Town</b>	<b>Name of the Water Body</b>	<b>Hydrological data</b>	
<b>Salem Corporation</b>	<b>Panamarathupatty lake</b>	Location	Panamarathupatty
		Survery ward No.	<b>151</b>
		T.S.No.	-
		Area of the Water body	821.21.0 Hectares
		Storage Capacity	Annual storage - 36.54 millions of cubic
		Max.Flood Level	
		Annual AV. Rainfall in mm	1062.7 mm
		Monthly Rainfall during NE Monsoon	
		October	161.5mm
		November	111.3mm
		December	-
		Location of Inlet & Outlet	On upstream a single stream for hillock
		Details on inlet	
		Details on outlet	Discharge 2257 cubic
		Details on Catchment area	free = 3.8 sq miles combined=8.5 sq miles

<b>Name of the Town</b>	<b>Name of the Water Body</b>	<b>Hydrological data</b>	
<b>Salem Corporation</b>	<b>Ammapet Kumaragiri Eri</b>	Location	Ammapet
		Survey ward No.	-
		T.S.No.	Ward-AL, Block-1, T.S.No.1.
		Area of the Water body	15.88.51 Hectors
		Storage Capacity	5 Metre Depth
		Max.Flood Level	
		Annual AV. Rainfall in mm	1062.7 mm
		Monthly Rainfall during NE Monsoon	
		October	161.5mm
		November	111.3mm
		December	-
		Location of Inlet & Outlet	Agri purpose & Rajavayvaikal
		Details on inlet	From Kumaragiri Hills
		Details on outlet	Agriculture purpose & Rajavayvaikal
		Details on Catchment area	25.00 Hectares

### Proforma and Profile of Town: Salem Corporation

<b>Name of the Town</b>	<b>Profile</b>	<b>Data</b>
Salem Corporation	Area in sq.km	91.34 sq.km
	Population -2001	6,96,760
	-2010	8,16,230
	Distribution of Prominent Land uses	
	i.Residential	3091 Hectares
	ii.Commercial	461 Hectares
	iii. Industrial	465 Hectares
	iv. Public & Semi Public uses	315 Hectares
	v. Open Space & Recreational Uses	Open - 212307 Sq.m Recreational- 23108 Sq.m
	vi. Area under Agriculture use	a) Wet -1240 Hectares b) Dry -2465 Hectares
	vii. Area under water bodies	855.07 Hectares
	viii. Major Industrial establishments in the town.	141.16 Hectares
	Future Direction of growth of the City	Around City

#### 4. Thoothukudi Corporation

##### Proforma on Hydrological data :

Name of the Town	Name of the Water Body	Hydrological data	
Thoothukudi	Buckle Canal	Location	
		Survey Ward No	List enclosed
		T.S. No.	List enclosed
		Area of the Water Body	4.122 hect.
		Storage Capacity	18.530 m <sup>3</sup> /s
		Max. Flood level	
		Annual Average Rainfall in mm	750 mm
		Monthly rainfall during the NE Monsoon  October November December	98.63 mm 253.70 mm 126.50 mm
		Location of Inlet and Outlet	<u>Inlet</u> :Junction point of Subramanian road and palai & Tuthookudi road junction near Korampallam village <u>Outlet</u> :Gulf of Mannar near Therespuram, Thoothukudi
		Details on inlet	From 3 <sup>rd</sup> Mile, Thoothukudi
		Details on outlet	at Threspuram
		Details on catchment area	24 contribution catchment area 5.50 sq

**4. Thoothukudi Corporation: Proforma on Profile of town:**

<b>Name of the Town</b>	<b>Name of the Water Body</b>	<b>Hydrological data</b>	
<b>Thoothukudi</b>	<b>Buckle Canal</b>	Area in sq.km	<b>13.47 sq.km</b>
		Population – 2001	<b>2 16 054</b>
		2010	<b>2 31 040</b>
		<b><u>Distribution of Prominent Land uses</u></b>	
		i. Residential	<b>710 hect.</b>
		ii. Commercial	<b>64 hect.</b>
		iii. Industrial	<b>38 hect.</b>
		iv. Public & Semi Public use	<b>58 hect.</b>
		v. Open space & Recreational use	<b>15 hect.</b>
		vi. Area under agriculture use	<b>212 hect.</b>
		vii. Area under water bodies	<b>4.12 hect</b>
		viii. Major industrial establishment in the town	<b>38 hect</b>
		Future direction of growth of the City	

**Details of survey ward no and T.S. No. of water body (Buckle canal)**

Sl. no	Survey Ward No.	Block No.	T.S. No.
1	C	42	26
2	C	42	27
3	C	38	1
4	C	40	1
5	C	39	1
6	C	25	4
7	C	25	8
8	C	24	3, 6, 7
9	C	12	1
10	C	12	31
11	C	12	31A
12	C	1	36
13	C	1	20
14	4	32A	4120
15	4	32A	4121/2
16	4	32A	4122/3
17	4	32A	4123/3
18	4	21A	3458
19	4	21A	3457
20	4	21A	3456/1A, 1B, 2
21	4	21B	3454/1
22	4	21B	3451
23	4	21B	3448
24	4	21C	3447, 3445/1
25	4	10	1938/1
26	4	8	1606/1C
27	4	7	1555
28	4	1	1
29	4	47	5670
30	5	1A	2, 3
31	5	1B	21/1
32	5	8	1937, 1915
33	6	8	617
34	6	8	626/1
35	6	14	1749

## 5. TIRUPPUR CITY MUNICIPAL CORPORATION

### Proforma on Hydrological Data

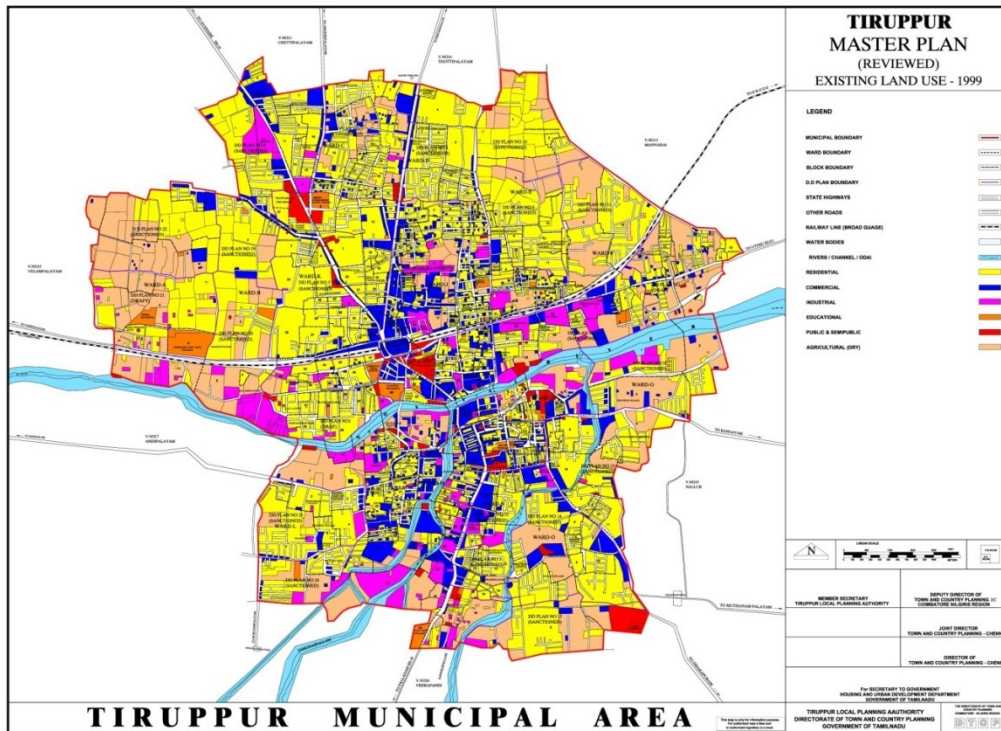
Name of the Town	Name of the Water Body	Hydrological Data	
Tiruppur Corporation (Proposed Corporation Area)	Andipalayam	Location	S F No.187/1A Andipalayam Village
		Survey War No	
		T.S.No	
		Area of the Water Body	
		Storage Capacity	
		Max flood level	
		Annual Average Rainfall in mm (2009)	20.69 mm
		Monthly Rainfall during NE Monsoon (2009)	
		October	21 mm
		November	127.6 mm
		December	Nil
		Location of Inlet & Outlet	2 sluices
		Details on inlet	**
		Details on outlet	**
		Details on Catchment area	6.896 Sq. miles

### Proforma on Hydrological Data - Tiruppur

<b>Name of the Town</b>	<b>Name of the Water Body</b>	<b>Hydrological Data</b>	
Tiruppur Corporation (proposed Corporation area)	Mannarai Tank	Location	SF No.170, 179 and 200 Mannarai Village
		Survey War No	
		T.S.No	
		Area of the Water Body	22 Acre
		Storage Capacity	3.50 M Cft
		Max flood level	2.75 m
		Annual Average Rainfall in mm (2009)	
		Monthly Rainfall during NE Monsoon (2009)	
		October	21 mm
		November	127.6 mm
		December	Nil
		Location of Inlet & Outlet	1 sluice
		Details of Inlet & Outlet	1 sluice
		Details on inlet	**
		Details on outlet	**
		Details on Catchment area	2.560 Sq. miles

## Proforma On Profile Of Town: Tiruppur

Name of the Town	Profile	Date
Tiruppur Corporation	Area in Sq.Km	.. 27.20 Sq.km
	Population 2001	.. 3,44,543
	2010	.. 4,52,186
	Distribution of Prominent Land uses	
	i) Residential	20.64 Sq.km
	ii) Commercial	.. 2.20
	iii) Industrial	.. 3.20
	iv) Public & Semi Public uses	.. 0.80
	v) Open space & Recreational uses	..
	vi) Area under Agriculture use	.. 0.36
	vii) Area under water bodies	..
	vii) Major Industrial establishments in the town	..
	Future Direction of growth of the City	.. Along all arterial roads



## 6. TIRUNELVELI CITY MUNICIPAL CORPORATION

### Proforma on Profile of town

Name of the Town	Profile	Data
<b>TIRUNELVELI CORPORATION</b>	Area in Sq.km	108.65
	Population - 2001 - 2010	4.11 lakhs 4.64 lakhs (appx)
	Distribution of Prominent Land uses	
	i. Residential	19.98
	ii. Commercial	1.83
	iii. Industrial	1.59
	iv. Public & Semi Public uses	3.25
	v. Open space & Recreational Uses	0.25
	vi. Area Under Agriculture use	41.48
	vii. Area under water bodies	9.42
	viii. Major Industrial establishments in the town	-
	Further Direction of growth of the City	East Direction in Palayamkottai South-East direction in Melapalayam Ward Around the New Bus Stand area and both sided by Bye pass road

### Tirunelveli - Proforma on Hydrological Data

Sl. No.	Name of the Town	Name of the Water Body	Location	Details of Inlet	Details of Outlet
1.	Melapalayam	Chettikulam	Melapalayam Village	Eastern side	Northern side
2.	Melapalayam	Chettikulam	Melapalayam Village	Eastern side	Western side
3.	Melapalayam	Kannimarkulam	Melapalayam Village	Eastern side	Rainfed tank
4.	Melapalayam	Veilukanthankulam	Kulavanigarpuram Village	South side	North side
5.	Melapalayam	Periakulam	Kulavanigarpuram Village	-	-
6.	Melapalayam	Anaiyarkulam	Kulavanigarpuram	South side	Eastern side
7.	Melapalayam	Watcharkulam	Kulavanigarpuram	-	-
8.	Melapalayam	Watcharkulam	Kulavanigarpuram	Southern side	Eastern side
9.	Melapalayam	Nagureddiarkulam	V.M.Chattram Village	Southern side	Eastern side
10.	Melapalayam	Rajagopalapuram Kulam	Rajagopalapuram Village	Eastern side	Southern side
11.	Tirunelveli	Pettaikulam	Pettai Village	Northern side	Southern side
12.	Tirunelveli	Manimoor theswaramkulam	Manimoor theswaramkulam	Western side	Eastern side
13.	Tirunelveli	Chattampudukulam	Chattrampudukulam village	Western side	Eastern side
14.	Tirunelveli	Samuga Rangaiyan kattalai kulam	Manimoortheeswaram village	Northern side	Eastern side
15.	Tirunelveli	Kandiaperikulam	Kandiaperi Village	Northern side	Southern side
16.	Tirunelveli	Kandiaperikulam	Kandiaperi Village	Western side	Eastern side
17.	Tirunelveli	Narasinganallur kulam	Narasinganallur Village	Souther side	Northern side
18.	Tirunelveli	Narasinganallur kulam	Narasinganallur Village	Northern side	Eastern side
19.	Tirunelveli	Narasinganallur kulam	Narasinganallur Village	Western side	Northern side
20.	Tirunelveli	Tirunelvelikulam	Tirunelveli Village	Western side	Eastern side
21.	Tirunelveli	Pirayankulam	Pirayankulam Village	Western side	Eastern side
22.	Tirunelveli	Pirayankulam	Pirayankulam Village	Western side	Eastern side

23.	Tirunelveli	Alaganeri Kulam	Alaganeri Village	Western side	Eastern side
24.	Tirunelveli	Kandiaperi II Kulam	Kandiaperi Village	Western side	Northern side, Eastern side
25.	Tirunelveli	Kandiaperikulam	Kandiaperi Village	Western side, Northern side	Eastern side
26.	Tirunelveli	Kandiaperikulam	Kandiaperi Village	North & West side	Eastern side
27.	Tirunelveli	Karuvelankulam	Karuvelankulam Village	Western side	Southern side
28.	Tirunelveli	Alaghanerikulam	Alaganeri Village	Western side	Eastern side
29.	Tirunelveli	Vagaikulam	Vagaikulam Village	West & North side	Eastern side
30.	Tirunelveli	Vagaikulam	Vagaikulam Village	Western side	Eastern side
31.	Palayamkottai	Thamaraikulam	Vellakovil village	East side	West side
32.	Palayamkottai	Paranthankulam	Palayamkottai – III Village	Southern side	Northern side
33.	Palayamkottai	Mullikulam Eanthal	Palayamkottai – II Village	Western side	Eastern side
34.	Palayamkottai	Mullikulam Eanthal	Palayamkottai – II Village	Western side	Eastern side
35.	Palayamkottai	Mullikulam Eanthal	Palayamkottai – II Village	Western side	Eastern side
36.	Palayamkottai	Mullikulam Eanthal	Palayamkottai – II Village	Western side	Eastern side
37.	Palayamkottai	Mullikulam Eanthal	Palayamkottai – II Village	Western side	Eastern side
38.	Palayamkottai	Mullikulam Eanthal	Palayamkottai – II Village	Western side	Eastern side
39.	Palayamkottai	Mullikulam Eanthal	Palayamkottai – II Village	Western side	Eastern side
40.	Palayamkottai	Panaiyankulam	Panaiyankulam Village	North side	Eastern side
41.	Palayamkottai	Oorani	Panaiyankulam Village	Northern side	Eastern side
42.	Palayamkottai	Madathukulam	Panaiyankulam Village	Northern side	Western side
43.	Palayamkottai	Sivanadiyarkulam	Sivanadiyarkulam Village	Northern side	Sothern side
44.	Palayamkottai	Nadukkamudaiyar	Nadukkamudaiyar	Sothern	Northern

		kulam	Village	side	side
45.	Palayamkottai	Kuthiraikattalai kulam	Thiruvannanathapuram Village	Southern side	Northern side
46.	Palayamkottai	Kuthiraikattalai kulam	Thiruvannanathapuram Village	Southern side	Northern side
47.	Palayamkottai	Sundankattalai kulam	Thiruvannanathapuram Village	Western side	Northern side
48.	Palayamkottai	Sundankattalai kulam	Thiruvannanathapuram Village	Western side	Northern side
49.	Palayamkottai	Ammankovilkulam	Thiruvannanathapuram Village	Western side	Northern side
50.	Palayamkottai	Ammankovilkulam	Thiruvannanathapuram Village	Western side	Northern side
51.	Palayamkottai	Beerankulam	V.M. Chatram Village	Northern side	Southern side
52.	Palayamkottai	Alankulam	V.M. Chatram Village	Northern side	Southern side
53.	Palayamkottai	Puliankulam	V.M. Chatram Village	Northern side	Southern side
54.	Palayamkottai	Puliankulam	V.M. Chatram Village	Northern side	Southern side
55.	Palayamkottai	Puliankulam	V.M. Chatram Village	Northern side	Southern side
56.	Palayamkottai	Pirayankulam	V.M. Chatram Village	Northern side	Southern side
57.	Palayamkottai	Beerankulam	V.M. Chatram Village	Northern side	Southern side
58.	Palayamkottai	Moorthinainarkulam	V.M. Chatram Village	East, West & North side	South side
59.	Palayamkottai	Notchikulam Kanmai	V.M. Chatram Village	Western side	Eastern side
60.	Palayamkottai	Moolikulam	Thimmarajapuram Village	Western side	Eastern side
61.	Palayamkottai	Pottalkulam	Thimmarajapuram Village	Western side	Northern side
62.	Palayamkottai	Pottalkulam	Thimmarajapuram Village	Western side	Northern side
63.	Palayamkottai	Pillaikulam	Thimmarajapuram Village	Western side	Northern side

## 7. Vellore - Proforma on Profile of town

Name of the Town	Name of the Water Body	Hydrological data	
Vellore Corporation	Otteri Lake	Location	Virupachipuram
		Survey ward No.	S.F.No.110
		T.S.No.	
		Area of the Water Body	107.53 Acres
		Storage Capacity	435 Million Litres
		Max. Flood Level	
		Annual AV. Rainfall in mm	
		Monthly Rainfall during NE Monsoon	
		October	34.50 mm
		November	157.80 mm
		December	51.00 mm
		Location of Inlet & Outlet	Inlet – Vaniyankulam Outlet – Palla Idayampatti
		Details on inlet	To collect water from Vaniyamkulam area through Channels (via) Naiyakaneri hills, Kulavimedu, Vaniyankulam
		Details on outlet	Through the vent lies in north side of the lake for emergency purpose. Over flow water flow through Channel
		Details on Catchment area	Around Naickaneri Hills is situated 5 kms from Otteri lake

**Proforma on Profile of town - Vellore**

Name of the Town	Profile	Data
Vellore City Municipal Corporation	Area in sq.km	11.65 Sq.Km.
	Population - 2001	177143
	- 2010	195154
	i. Residential	3.05 Sq.Km
	ii. Commercial	0.32 Sq.Km
	iii. Industrial	0.11 Sq.Km
	iv. Public & Semi Public uses	0.83 Sq.Km
	v. Open space & Recreational Uses	0.18 Sq.Km
	vi. Area under Agriculture use	3.97 Sq.Km
	vii. Area under water bodies	0.50 Sq.Km
	viii. Major Industrial establishments in the town	-
	Future Direction of growth of the City	North west direction

## 8. TIRUCHIRAPPALLI CITY MUNICIPAL CORPORATION

### Proforma on Hydrological Data

Sl. No.	Name of the Water Body	Location	Details of Inlet	Details of Outlet
1.	Valathiyarkulam	Ex-Serviceman colony	-	-
2.	Vadaku mulli kulam	M.K. Kottai	-	-
3.	Thattan kulam	M.K. Kottai	-	-
4.	Mavadi kulam	Ponneriuram	-	-
5.	Sembattu kulam	Sembattu	-	-
6.	Kottapattu kulam	Kottapattu	-	-
7.	Sathanoorkulam	K. Sathanoor	-	-
8.	Sathanoorkulam	K. Sathanoor	-	-
9.	Kanakkan kulam	K. Sathanoor	-	-
10.	Vadugapattykulam	Vadugapatty	-	-
11.	Udaiyanpattikulam	Udaiyanpatti	-	-
12.	Chetty kulam / kuttai	Udaiyanpatti	-	-
13.	Senkurichi mookan kulam	Senkurichi	-	-
14.	Senkurichi kulam	Senkurichi	-	-
15.	Panjapur Oorani	Panjapur	-	-
16.	Korai channel	Panjapur	-	-
17.	Anthonyar kovil channel	Panjapur	-	-
18.	Airport channel	Panjapur	-	-
19.	Airport channel	Panjapur	-	-
20.	Uyyakondan lead channel	Panjapur	-	-
21.	Uyyakondan lead channel	Panjapur	-	
22.	Srirangam Theppakulam	Srirangam Theppakulam	Kaveri	Kaveri
23.	T.V.Kovil Gandhi Road Theppakulam	T.V.Kovil Gandhi Road Theppakulam	inlet South side 12 Sq.ft.	inlet North side 12 Sq.ft.
24.	T.V. Kovil Theppakulam	T.V. Kovil Theppakulam	2.25 Sq.ft.	Nil
25.	Rock Fort Theppakulam	Rock Fort Theppakulam	Corporation pipe line	Nil
26.	Kollankulam	Edamalaipattipudur	Korai river	Karumandapam, Uyyakondan
27.	Bishop kulam	Bishop Road	Uyyakondan river	--
28.	Uyyakondan Post Office paraikulam	Uyyakondan Thirumalai	-	-
29.	Nachiyar Koil	Nachiyar Kovil	-	-

	Kulam	Sannathi Street		
30.	Gandhipuram Kulam Devar Colony	Devar Colony	-	-
31.	Panjavarna Samy kulam	Panjavarna Swamy Kovil Street	-	-
32.	Dindigul main road channel	K.Abishekhapuram Village	Korai river	Dindigul main road, Murugan Nagar Karumandapam
33.	Selva Nagar Channel	K. Abishekapuram Village	Kollankulam	Uyyakondan River
34.	Rettai vaikkal	Rettai Vaikkal	Kollankulam	Uyyakondan River
35.	Rettai Vaikkal	Virupatchipuram Channel	Kudamuruti River	Uyyakondan River
36.	Rettai Vaikkal	Ramalinganagar Vaikkal	Kudumuruti River	Uyyakondan River
37.	Rettai Vaikkal	Salai road rettai vaikkal	Kottai channel	Thillainagar
38.	Rettai Vaikkal	Solairajapuram Vaikkal	Kottai channel	Thillainagar
39.	Rettai Vaikkal	Kasivilangi Palayam Vaikkal	Cauvery River	Uyyakondan River
40.	Rettai Vaikkal	Konakkarai	Cauvery River	Uyyakondan River
41.	Ariyamangalam Village		Uyyankonddan channel	
42.	Ammakulam		Field	
43.	Ariyamangalam Village		Field	
44.	Kamaraj Nagar		Uyyakondan channel	
45.	Varaganeri		Uyyakondan channel	
46.	East boulieward		Dharanallur channel	
47.	Tanjore road		Erattai channel	