

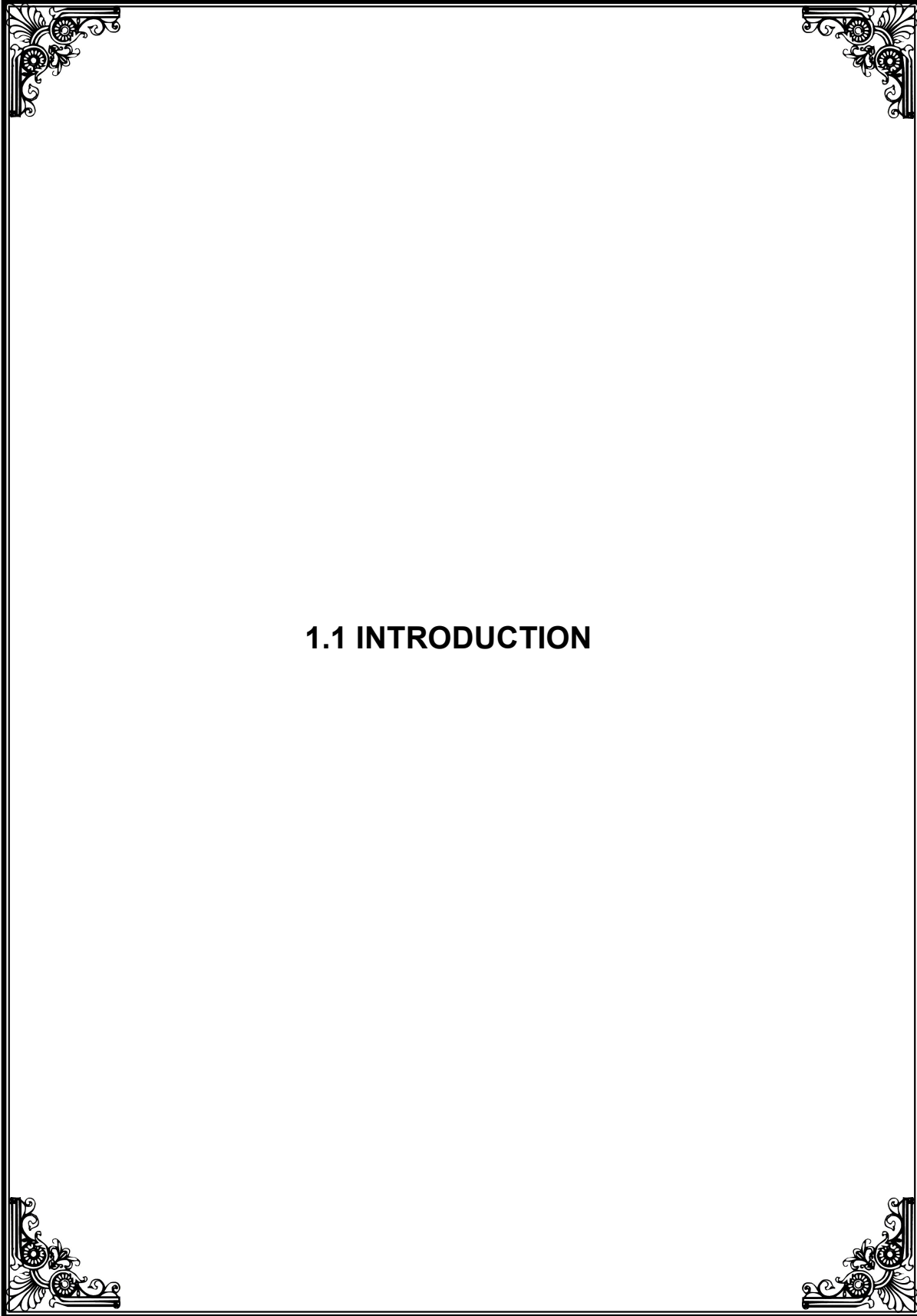


**TN IAMWARM PROJECT**

**SALIKULAM-ARU SUB BASIN**

**DETAILED PROJECT REPORT  
WATER RESOURCES DEPARTMENT**





## **1.1 INTRODUCTION**

## I. SALIKULAM ARU Sub basin

### 1.1 GENERAL:

Agriculture is the dominant sector in the Indian economy. TamilNadu, which is supposed to be the next state to Rajasthan in receiving average annual rain fall, depends largely on the surface water irrigation as well as ground water irrigation. The State has used the surface and ground water potentials to the maximum limit and hence the future development and expansion depends only on the efficient and economical use of water potential and resources available.

To achieve the water use efficiency, it is necessary to improve and upgrade the existing conveyance system and also to introduce modern irrigation methods. With the above objectives, a comprehensive programme has been proposed with Multi disciplinary approach.

### 1.2 DESCRIPTION OF THE KALLAR BASIN

The Kallar River basin is located in the North East part of Thoothukudi District in Tamil Nadu State, between the geographic co-ordinates Latitudes 8° 41'00" N to 9° 10'30" N and Longitude 77° 48'00" E to 78° 15' 00" E. This Basin is surrounded by Vaippar basin in the North, Tamiraparani basin in West and South and Gulf of Mannar. The total area of this basin is 1509 Sqkm

The Kallar River basin has been divided into 3 sub basins, they are Kallar, salikulam-aru and korampallam-aru sub basins.

SI.No	Name of the Sub basin	Area (Sq.km)	Blocks	District
1	Kallar	664	Kovilpatti Vilathikulam Kayathar Ottapidaram	Thoothukudi
2	Salikulam-Aru	233	Ottapidaram Thoothukudi	Thoothukudi
3	Korampallam-Aru	612	Ottapidaram Thoothukudi Kaunkualam	Thoothukudi

### **1.3 DESCRIPTION OF THE SALIKULAM-ARU SUB BASIN**

The Salikulam-Aru sub basin is constituted by small streams originating from Salikulam Reserved forest area at an altitude of +60meter above mean sea level and flows through East to Southeast direction and the streams of this salikulam-Aru sub basin are in different places of Ottapidaram Taluk confluence with Gulf of Mannar. The Sub basin is located between latitude 8° 50'01" N to 8° 56'07" N and Longitude 77° 56'43" E to 78° 11' 48" E. having an area of 233 Sq.km and surrounded by Kallar, and Korampallam-Aru sub basins. It has no reservoir.

#### **1.3.1 Details of Ayacut**

The total registered ayacut under the purview of PWD is 662.01 Ha. In which the average cultivation area is 331.40 Ha and Temporary gap area is 173.39Ha and the Permanent gap area is 156.22 Ha

NonSystem Tanks --- 6 Nos 662.01Ha

The total ayacut Falls in Ottapidaram Taluk and Block of Thoothukudi District. List of Tanks appended separately in next page

### **1.5 Anicuts**

There are totally 2 anicuts in the Salikulam-Aru sub basin and They are

1. Pattinamarudur Anicut
2. Mela arasaradi anicut

The above 2 Anicut do not have direct ayacut.

### **1.6 Village Benefited**

By the implementation of this scheme the following villages will be benefited.

1. Pattinamarudur
2. Tharuvaikulam
3. A.N.Patti
4. Ottapidaram
5. Periyadam
6. Velaithapuram

## LIST OF NON SYSTEM TANKS

Sl. No	Name of Tank	Benefited Village	Block	Taluk	District	Direct Ayacut Area in Ha
1	Ottapidaram Tank	Ottapidaram	Ottapidaram	Ottapidaram	Thoothukudy	100.40
2	Perianatham Tank	Sillanatham Periyatham				41.71
3	Velaythapuram Tank	Velaythapuram				79.32
4	Tharuvaikulam New Tank	A. N. patti, Tharuvaikulam				162.11
5	Tharuvaikulam Old tank	A. N. patti, Tharuvaikulam				157.09
6	Pattinamarudur Tank	Pattinamarudur				121.38
Total Ayacut in Ha						662.01

**TANKS MAINTAINED BY PANCHAYAT UNION IN SALIKULAMAR**  
**ARU SUB BASIN**

<b>Sl.No.</b>	<b>Name of tank</b>	<b>Name of village</b>	<b>Ayacut in Ha</b>
		<b>OTTAPIDARAM UNION</b>	
1	Sevalkulam	Jambulingapuram	33.61
2	Melakulam	Ottapidaram	37.89
3	Peekulam	Ottapidaram	3.04
4	Sankarapuram	Ottapidaram	28.54
5	Ottankulam	Ottapidaram	3.29
6	Vaniankulam	Ottapidaram	22.22
7	Thittankulam	Ottapidaram	27.60
8	Therkuaraikulam	Ottapidaram	13.29
9	Therkkuthittankulam	Kulasekaranallur	11.16
10	Puliakulam	Kulasekaranallur	8.30
11	Sevalkulam	Kulasekaranallur	25.90
12	Veppankulam	Kulasekaranallur	40.39
13	Kumarankulam	Kulasekaranallur	23.55
14	Nachiarkulam	Kulasekaranallur	23.55
15	Manthaikulam	Kulasekaranallur	16.95
16	Kumarankulam	Kulasekaranallur	23.35
17	Nachiarkulam	Kulasekaranallur	28.32
18	Irukkankulam	Akilandapuram	31.59
19	Ottankulam	Akilandapuram	31.4
20	Puliakulam	Akilandapuram	8.30
21	Kujarakulam	Gounagiri	9.96
22	Athalakulam	Gounagiri	30.19
23	Thirusittampalaberi	Puthiamputhoor	18.04
	<b>Total Ayacut in Ha</b>		<b>500.43</b>









## 1.2. HYDROLOGY

## 1.2.HYDROLOGY

### 1.2.1GENERAL

The Salikulam-Ar sub basin is constituted by small streams originating from Salikulam Reserved forest area at an altitude of +60meter above mean sea level and flows through East to Southeast direction and the streams of this salikulam-Aru sub basin are in different places of Ottapidaram Taluk confluence with Gulf of mannar.

### 1.2.2 LOCATION

The Sub basin is located between latitude 8° 50'01" N to 8° 56'07" N and Longitude 77° 56'43" E to 78° 11' 48" E. having an area of 233 sq.km and surrounded by Kallar, and korampallam-Aru sub basins. It has no reservoir.

SI No	Sub basin Name	Name of the Block	Area in sq.km	Sub basin area in sq km.
1	Salikulam aru sub basin	Ottapidaram	221	233
2		Thoothukudi	12	

### 1.2.3 CATCHMENT AREA :

The catchment area of this Sub Basin is 233SqKm. This Sub Basin receives rain fall from North – East monsoon . During summer, the rain fall received is more or less equal to that of South – West monsoon. There are 6 non – system tanks under the control of WRO, PWD with a total registered ayacut of 662.01 Ha.

### 1.2.4 Physiography and Drainage

This area is plain terrain in the western side whose maximum elevation is 60m above MSL. Eastern side is also plain terrain with lowest elevation of 5m to 6m above MSL.

This sub basin is constituted by small streams originating from Salikulam Reserved forest area at an elevation of + 60m and flows through East to Southeast direction. These small streams are scattered in the villages Panchalankurichi, Periyatham , Puliymarattuaranadhi, Ottapidaram, Pudiampattur, Nainapuram and Pudurpandiyapuram villages and finally confluence with the Gulf of Mannar.

### 1.2.5 Hydro metrology

The hydrometeorology parameters include rainfall, temperature, humidity, Wind flow, evaporation and duration of sunshine which determine the climate of this minor sub basin.

#### 1.2.5.1 RAINFALL

The Salikulam basin has an area of 233 Sq.km. spreading over in Thoothukudi District. There are 3 raingauge stations in the sub basin. The various agencies which are maintaining these raingauge stations, and the number of raingauge stations maintained by each agency are listed below:

**Raingauge Stations in salikulam sub Basin**

Sl. No.	Raingauge stations	Taluk	District	Latitude	Longitude	Data Base
1	Arasadi	Ottapidaram	Thoothukudi	08 <sup>0</sup> 52' 00"	78 <sup>0</sup> 06' 00"	1971-1990
2	Ottapidaram	Ottapidaram	Thoothukudi	08 <sup>0</sup> 55' 00"	78 <sup>0</sup> 02' 00"	1971-2004
3	Thoothukudi	Thoothukudi	Thoothukudi	08 <sup>0</sup> 48' 00"	78 <sup>0</sup> 09' 00"	1971-2004

#### 1.2.5.1.1 Monsoon and Non-monsoon periods

Salikulam-Aru sub basin lies within the tropical monsoon zone. Based on the hydrometeorological features of the basin, one year is divided into 2 periods (i.e.)

- 1) Monsoon period spanning from June to December and
- 2) Non-monsoon period spanning from January to May.

The monsoon period is further sub-divided into Southwest monsoon period spanning from June to September (4 months) and Northeast monsoon period spanning from October to December (3 months). Similarly, the non-monsoon period is

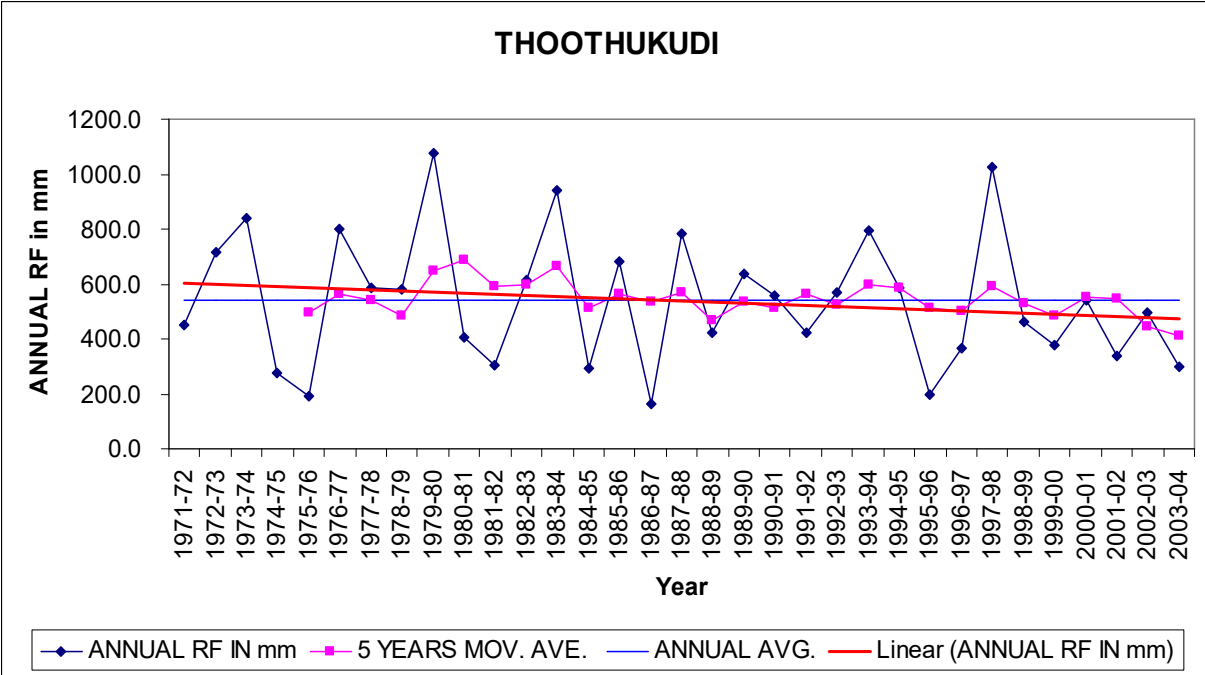
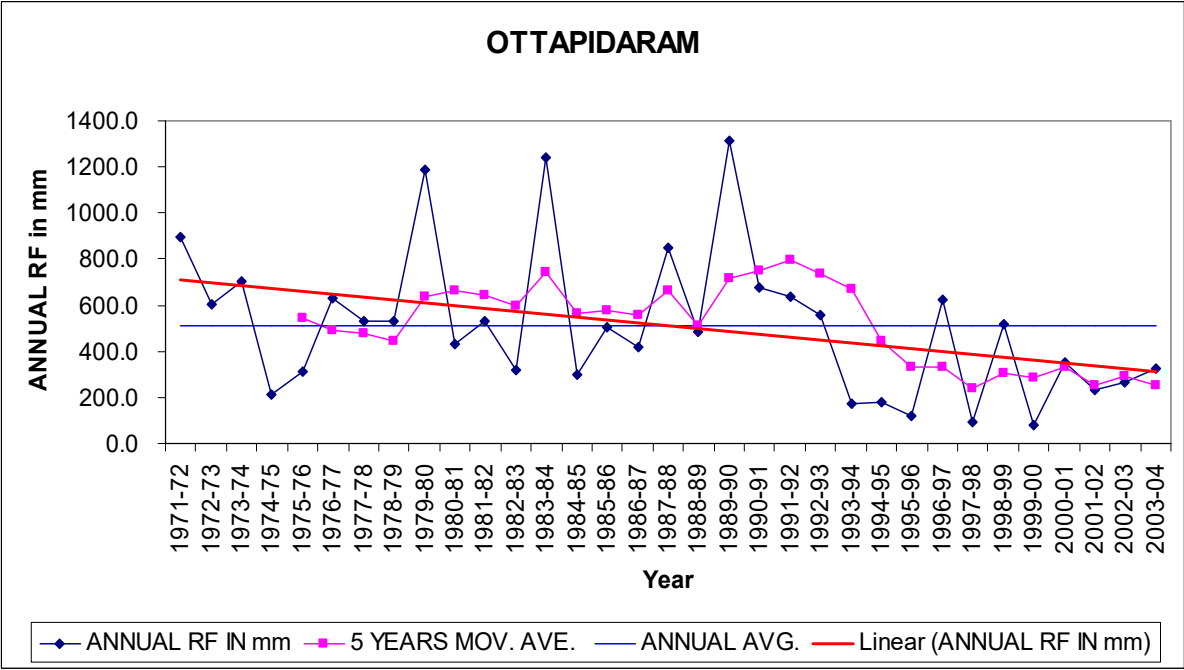
further sub-divided into Winter period spanning January and February (2 months) and Summer period spanning from March to May (3 months). As the monsoon period brings heavy rainfall, it improves the recharging of groundwater as well as storage of surface water. Hence, the monsoon period is hydrologically significant for water resources analysis. But in the case of non-monsoon, the rainfall is insignificant.

#### 1.2.5.1.2 Maximum, minimum and average rainfall

The maximum, minimum and average annual rainfall and season wise rainfall i.e. southwest, northeast, winter for 25%, 50%, 75% and 90% dependabilities for various raingauge stations have been analysed. The following observations are made. Ottapidaram received the minimum annual rainfall of 82mm (1999-2000) and Tiruchendur received the maximum annual rainfall of 1599mm (200-2001). Average annual rainfall varies from 510 mm at Ottapidaram to 716mm at Kovilpatti.

#### 1.2.5.1.3 Seasonal Rainfall

*The southwest monsoon maximum rainfall varies from 109mm to 430 mm and the minimum rainfall varies from 0 to 18 mm. For Southwest monsoon, the average varies from 25mm to 163mm. The Northeast monsoon maximum rainfall varies from 624 mm to 1360mm and the minimum varies from 0 to 148 mm. The northeast average rainfall varies from 330mm to 556mm for the basin. In winter, the maximum rainfall varies from 212 mm to 314 mm and the minimum is 0. The average varies from 31 to 67 mm. In summer, the maximum rainfall varies from 221 to 413 mm and the minimum varies from 0 to 12 mm. The summer average varies from 75 mm to 137 mm for the basin. The annual maximum rainfall varies from 1029 mm to 1599 mm and the minimum varies from 82mm to 419mm. The annual average rainfall varies from 510 mm to 761 mm for the basin.*



### 1.2.5.2 CLIMATE

The weather station considered is furnished below:

Name of the weather station	Maintained by
<b>Thoothukudi (Harbour)</b>	IMD

The climatological values of this river basin are given in the following Table.

S. No	<i>Climatological Parameter</i>	Thoothukudi
1	Average monthly temperature Maximum. in. ° Celsius	33.83
2	Average monthly temperature Minimum. in. ° Celsius	24.07
3	Average mean temperature in ° Celsius	28.44
4	Average relative humidity in % @8.30 hrs	77.73
5	Average wind velocity in km/hour	14.19
6	Average Sunshine hours / day	7.44

### 1.2.5.3 TEMPERATURE

The maximum and minimum monthly mean temperature observed in the above climatological station are given below:

#### ***Maximum and Minimum in Mean temperature***

Name of the Climatological Station	Minimum in Mean Temperature	Maximum in Mean Temperature
Thoothukudi (Harbour) (1980 – 2007)	24.35° C in January 86	31.85° C in May 2003.

The monthly average maximum temperature varies from 28.60° C (January 1984) to 37.60° C (June 1990) and the average Minimum temperature varies from 19.80° C (January 1986) 29.00° C (May 2003).

#### 1.2.5.4 RELATIVE HUMIDITY

The monthly average relative humidity@ 8.30 hours varies from 62.00% (July 2000) to 92.00% (February 2002) .

#### 1.2.5.5 WIND SPEED

Wind velocity is an important meteorological parameter which has considerable influence on evaporation and evapotranspiration phenomena. Wind has direct impact on climate and vegetation and is linked with circulation pattern of the monsoon. The average monthly wind velocity varies from 9.00 km/hour to 24.00 km/hour

#### 1.2.5.6 SUNSHINE

The monthly average sunshine hours varies from 4.00 hour (December 1983) to 10.20 hour (February 1983)

#### 1.2.5.7 EVAPOTRANSPIRATION

The monthly average ETo in 235.25mm for the climatological station is estimated using Blaney Criddle Method

### 1.2. 6 LAND HOLDINGS:

More than 47 % of the land holdings are below 1 Ha followed by 36 % of land holding with 1 to 2 Ha size medium farmers having 2 to 5 ha are 14% and big farmers contributes to 3% only. The total Nos of land holdings is 2547 .

Category	Size of Holdings	Numbers	% to total
Marginal	Below 1.00 ha	1257	52.7
Small	1.00 – 2.00 ha	915	38.40
Medium	2.00 – 5.00 ha	135	5.66
Big	5.00 ha & above	77	3.22
	TOTAL	2547	

### 1.2.7.DEMOGRAPHY:

There are two blocks lying partially in this Sub Basin. They are Ottapidaram and Thoothukudi block of Thoothkudy District, The population details were obtained from the Director of Statistics , Chennai are used for calculation of domestic water requirement.

Name of sub basin	Total number of blocks	Total number of villages	Population			
			2004	2010	2020	2025
Salikulam aru Sub Basin	2	27	0.036	0.0477	0.0527	0.0572

### 1.2.8 SOILS

#### 1.2.8.1 Soil Type

Soil is one of the Natural resources which has the most direct impact on Agricultural development. It becomes necessary to take steps for its proper conservation and management. Soil survey provide nature of soils , their extent and physico chemical characteristics etc.,

The predominant soil types found in this sub basin are Inceptisols, Alfisol Entisol and Vertisol are the common soil types found in this Sub Basin.

#### 1.2.8.2 Crops Grown

The annual crops that are grown in this sub basin are Coconut, Sugarcane, Banana, Sapota, Mango, Areca nut, Tapioca as annual crops, along with seasonal crops such as Paddy maize, etc.

#### 1.2.8.3 Infiltration Values

Recharge of ground water largely depends upon the infiltration values of various soil types. These are given in Table



### Infiltration Values

Sl. No.	Type of Major soil series	Infiltration (in cm/hour)
1	Saline coastal alluvium	36.00
2	River alluvium	32.00
3	Black Cotton soil	0.86
4	Red sandy soil	4.00
5	Deep Red soil	4.00

#### 1.2.8.4 Soil Moisture Content

Average soil moisture content varies from 8% during August to 21% during November.

### CROPPING PATTERN

Name of the sub Basin	: <b>Salikulamar</b>	Fully Irrigated	170.90	Ha
District	: Tuticorin	Partially Irrigated	102.30	Ha
Registered Ayacut Area	: 662.01 Ha	Gap	388.81	Ha
		Total Ayacut Area	<b>662.01</b>	Ha

S.No.	Crop	Without Project				With Project				Increase
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
<b>I</b>	<b>Perennial crop</b>									
		-	-	-	0.00	-	-	-	0.00	0.00
	<b>Sub Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.00
<b>II</b>	<b>Annual crop</b>									
	Banana	4.00	-	-	4.00	-	-	-	0.00	-4.00
	<b>Sub Total</b>	<b>4.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	-4.00
<b>III</b>	<b>1<sup>st</sup> crop</b>									
1. a	Paddy	5.00	-	-	5.00	-	-	-	0.00	-5.00
b	Paddy - SRI	-	-	-	0.00	5.00	-	-	5.00	5.00
2	Cotton	5.90	-	-	5.90	-	-	-	0.00	-5.90
3	Maize	-	-	-	0.00	21.20	-	-	21.20	21.20
4	Cumbu	74.58	-	-	74.58	25.00	-	-	25.00	-49.58
5	Cholam	15.00	-	-	15.00	10.50	-	-	10.50	-4.50
6	Pulses	13.10	102.30	-	115.40	180.50	-	-	180.50	65.10
7	Sunflower	-	-	-	0.00	25.00	-	-	25.00	25.00
8	Chillie	28.00	-	-	28.00	60.00	-	-	60.00	32.00
9	Gingelly	10.00	-	-	10.00	-	-	-	0.00	-10.00
10	Brinjal	8.20	-	-	8.20	20.00	-	-	20.00	11.80
11	Tomato	7.12	-	-	7.12	20.00	-	-	20.00	12.88
12	Prosopis	-	-	294.81	294.81	-	-	294.81	294.81	0.00
13	Fallows	-	-	94.00	94.00	-	-	-	0.00	-94.00
	<b>Sub Total</b>	<b>166.90</b>	<b>102.30</b>	<b>388.81</b>	<b>658.01</b>	<b>367.20</b>	<b>0.00</b>	<b>294.81</b>	<b>662.01</b>	4.00
	<b>Grand Total (I+II+III)</b>	<b>170.90</b>	<b>102.30</b>	<b>388.81</b>	<b>662.01</b>	<b>367.20</b>	<b>0.00</b>	<b>294.81</b>	<b>662.01</b>	0.00
<b>IV</b>	<b>2 nd Crop</b>									
1	Cotton	-	-	-	0.00	-	-	-	0.00	0.00
2	Maize	-	-	-	0.00	50.00	-	-	50.00	50.00
3	Pulses	-	-	-	0.00	50.00	-	-	50.00	50.00
4	Sunflower	-	-	-	0.00	-	-	-	0.00	0.00
	<b>Sub Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>100.00</b>	100.00

V	3 rd Crop	0	0	0	0.00	0			0	
	<b>Total</b>									
	<b>Great Grand Total</b>	<b>170.90</b>	<b>102.30</b>	<b>388.81</b>	<b>662.01</b>	<b>467.20</b>	<b>0.00</b>	<b>294.81</b>	<b>762.01</b>	100.00
	<b>Cropping Intensity</b>				<b>41.27%</b>				<b>70.57%</b>	

### CROP WATER REQUIREMENT WITHOUT PROJECT

NAME OF CROP	Extent in Ha	Field Water requirement		Irrigation water requirement at source n=0.43
		mm	MCUM	
<b>1. Annual Crop</b>				
Banana	4.00	1208	0.048	0.11
<b>Sub total</b>	<b>4.00</b>		<b>0.048</b>	<b>0.11</b>
<b>2. First Crop</b>			0.000	0.000
Paddy	5.00	1248	0.062	0.15
Cotton	5.90	446	0.026	0.06
Cumbu	74.58	302	0.225	0.52
Cholam	15.00	193	0.029	0.07
Pulses	115.40	300	0.346	0.81
Ground nut	18.00	413.00	0.074	0.140
Chillies	28.00	729	0.204	0.47
Gingelly	10.00	212	0.021	0.05
Brinjal	8.20	462	0.038	0.09
Tomato	7.12	382	0.027	0.06
<b>Sub Total</b>	<b>269.20</b>		<b>0.98</b>	<b>2.28</b>
<b>Grand Total</b>	<b>273.20</b>		1.03	2.39

## CROP WATER REQUIREMENT WITH PROJECT

NAME OF CROP	Extent in Ha	Field Water requirement		Irrigation water requirement at source n=0.43
		mm	MCUM	
<b>1. First Crop</b>			0.000	0.000
Paddy SRI	5.00	874	0.044	0.08
Maize	21.20	424	0.090	0.17
Cumbu	25.00	302	0.076	0.14
Cholam	10.50	193	0.020	0.04
Pulses	180.50	300	0.542	1.02
Sunflower	25.00	456	0.114	0.22
Chillies	60.00	729	0.437	0.83
Brinjal	20.00	462	0.092	0.17
Tomato	20.00	382	0.076	0.14
<b>Sub Total</b>	<b>367.20</b>		<b>1.49</b>	<b>2.81</b>
<b>2. Second Crop</b>				
Maize	50.00	424	0.212	0.40
Pulses	50.00	300	0.15	0.28
<b>Sub Total</b>	<b>100.00</b>		<b>0.36</b>	<b>0.68</b>
<b>Grand Total</b>	<b>467.20</b>		<b>1.85</b>	<b>3.50</b>

### Water potential

Surface water potential	=	14.92 Mcm
Ground Water Potential	=	6.54 Mcm
<b>Total Potential</b>	=	<b>21.46 Mcm</b>

### Water Demand Without Project

Domestic	=	3.93 Mcm
Livestock	=	1.91 Mcm
Industrial	=	1.91 Mcm
Irrigation WRO	=	2.39 Mcm
PU & GW	=	15.61 Mcm
<b>Total Water Demand</b>	=	<b>25.75 Mcm</b>

**Water Balance Without Project = -4.29 Mcm**

### Water Demand With Project

Domestic	=	3.93 Mcm
Livestock	=	1.91 Mcm
Industrial	=	1.91 Mcm
Irrigation WRO	=	3.50 Mcm

PU & GW	=	15.61 Mcm
<b>Total Water Demand</b>	<b>=</b>	<b>26.86 Mcm</b>
<b>Water Balance With Project</b>	<b>=</b>	<b>-5.40 Mcm</b>



## 1.3 HYDRAULICS OF THE COMPONENTS

## HYDRAULIC PARTICULARS

### a) ANICUT

SI.No	Name of Anicut	Village	Ayacut (Ha)	Length of Anicut(M)	Crest level of Anicut (M)	Front (M)	Free Sq.km	Combined Sq.km	Maximum flood discharge Cusecs	Head sluice Location	Vent(M)	Sill Level sluice (M)	Discharge cumecs	Supply Channel					Remarks
														Length (m)	Bed width (M)	FSD (M)	Bed slope	Sluice	
1	Arasaradi Anicut	Melaarasa radi	157.09	8.50										4120	6	0.9	1:2000		
2	Pattinamar udur	Melamaru dur	283.49	30.45										5000	6	0.9	1:2000		
														4150	6	0.9	1:2000		

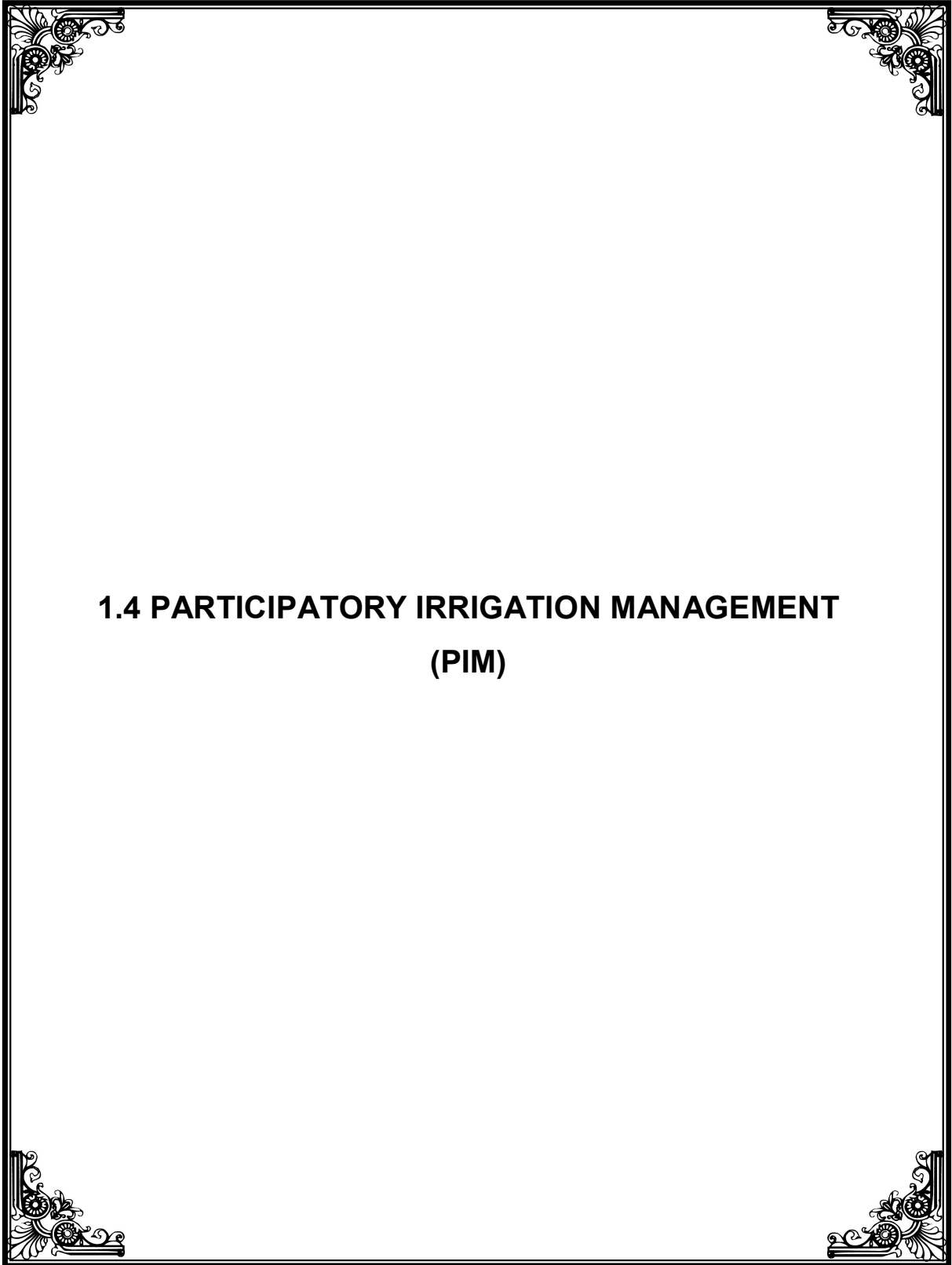
**b) TANKS (Separate statement for System & Non System Tanks)**

Sl. No	District	Taluk	Name of Work	Ayacut in Ha	Capacity in Mcft	Number of Fillings	Free catchment in SqKm	Combined Catchment in Sq.Km	Water spread area(Sq.Km)	FTL in M	MWL in M	No. of Sluices	Nos and Length of weir (m)		Discharge in Cusecs	Length of bund (M)	Length of Supply Channel (M)	Upper Tank	Lower Tank
													Nos	Length in m					
1	Thoothukudy	Ottapidaram	OttapidarmTank	100.40	36.71	1.12	6.3068	14.058	7073.28	+46.465	+47.065	2	1 1scour vent	19.30 3.40	3142.68	2130	8000	-	Perianatham Tank
2			Perianatham Tank	41.71	28.32	0.9295	15.6886	39.083	6578.95	+23.570	+24.170	2	3	30.50 25.15 23.10	5234.04	1620	1500	OttapidaramTank	Tharuvaikulam Old tank
3			Velythapuram Tank	79.30	15.06	2.00	53.877	133.35	+10.615	+11.215	2	1	65	2100	3200				
4			Tharuvaikulam Old tank	157.09	71.84	0.88	34.998	74.7865	621.46	4.91	5.51	2	2	36.35	115.648	3450	4200	Perianatham Tank	
5			Tharuvaikulam New Tank	162.11	63.06	0.456	8.2058	94.095	590.90	3.84	4.44	2	1	58.85	251.765	3030	3942		
6			Pattinamarudur Tank	121.38	61.16	0.61	24.44	46.57	371.52	4.835	5.435	3	2	53.6	170.532	5130	7120		



### C) SUPPLY CHANNELS HAVING DIRECT AYACUT

Sl. No.	Name of supply channel	Start Point		End Point		Length in metres	Bed width	Bed slope	Side slope	MFD	Depth of flow	Remarks
		Location	Sill level	Location	Sill level							
	- - - NIL - - -											



**1.4 PARTICIPATORY IRRIGATION MANAGEMENT  
(PIM)**

## 1.1 SALIENT FEATURES OF IMPLEMENTATION OF PIM IN SALIKULAM-ARU SUB-BASIN

1. **The Sub-Basin:** This is one of the three sub-basins of the Kalla River Basin. Totally 6 irrigation tanks and 2 Anicuts are under the control of Water Resources Organization (WRO) of Public Works Department (PWD) in this sub-basin. The list of Infrastructures covered with more details are furnished in the **Annexure -1**. These Infrastructures are located within the Sub-Basin's hydraulic boundary spread over 27 villages of 2 Taluks in Thoothukudi Districts. The Total Command area under these Infrastructures workout to 662.01 Ha. (**Annexure1**).

2. **Command area :**

system tanks	: ----
Non system tanks	: 662.01 Ha
Anicuts	: ----
<b>Total</b>	<b>: <u>662.01Hectare</u></b>

3. **An Assessment of number of WUAs.**

i)	Association already formed under WRCP	NIL
ii)	Associates proposed to be formed under IAMWARM Project covering 6 tanks, 4Anicuts in 6 Villages only.	5 Nos. (662.01) Hectare.
ii)	The Total command area covered by the above (5) WUAs works out to	662.01 Hectare.

More details about formation of WUA's in the Sub-Basin are made available in the Annexure-1

**4. An account of “Awareness creation” among the farming community:**

**Activities undertaken and “Walkthrough Survey” carried out :**

- i) There are 6 Tanks, 2 Anicuts in the Sub-Basin spreading over 6 villages as detailed out in Annexure – 01. All these Villages were visited by the WRO officials and awareness about various activities, contemplated under IAMWARM project has been created.
- ii) Details of villages covered, walkthrough surveys conducted, farmers attended, list of works suggested by the farmers, list of works analyzed and finalized by WRO officials, are all furnished in the Annexure -02 and Annexure -03:

**5. Schedule for completion of delineation and preparation for WUA documents, comprising of :**

- i) Form – I : Details to be notified by Districted Collectors (End of June -09)
- ii) Form – II : WUA document to be notified by District Collectors (End of July – 09)
- iii) Completion of preparatory works for the conduct of Elections for WUAs (End of September -09)

**6. Schedule for conduct of Elections in the Sub-Basin for forming Management Committees (End of July – 2009)**

**7. Support Organization (SOs).**

- i) Initiating and completing the process of publishing EOI to hire Support Organisation at Sub-Basin level (End of March '2009)
- ii) Short listing and Providing Request for Proposals (RFPs) p all the short listed agencies, and obtaining Technical and Cost Proposals (Middle of April'2009)
- iii) Selection and deployment of Support Organization to the Sub-Basin (End of May '2009)

**8. Appointment and the Role of Competent Authorities:**

- i) Section 26 of the Tamil Nadu Farmer’s Management of Irrigation Systems (TNFMIS) Act provides for the appointment of “Competent Authorities” to assist the respective Organization (WUA, Distributory Committee and Project Committee), in the Implementation and

execution of all decisions taken by such farmers organization. Similarly, every farmer's organization shall extend such co-operation or assistance, as may be required by the competent Authority, for carrying out all the tasks related to implementation of TNFMIS Act.

- ii) Appointment of Competent Authorities for the WUAs proposed to be formed under IAMWARM project is based on the "WRO section Officer wise" distribution as indicated below.

Name of the WRO Sub Divisional Officers working in the Salikulam -aru Sub-Basin:

- a. Korampallam aru basin Sub Division, kovil patti WUAs 1 to 3  
 b. Korampallam aru basin Sub Division, Thoothukudi WUAs 4 & 5

a.	Er. Amutha.S Assistant Engineer, WRO, Korampallam aru basin Section, Ottapidaram	WUAs 1 to 3
b.	Er R.Selvarajan Assistant Engineer, WRO, Korampallam aru basin Section, Thoothukudi	WUAs 4 & 5

**9. Involvement of farmers in the preparation "Scheme Modernization Plans".**

- i) Based on the outcome of the "Awareness Creation Programme" and walkthrough survey carried out with the involvement of farmers, a list of tasks proposed to be taken up for "Modernization" under IAMWARM Project was discussed with 75 No. of farmers from 6 Villages. The final list of tasks was also prepared and exhibited in the Notice Board of the Village Administrative Officers Office and Panchayat Office. These details were also discussed with the farmers and the tasks to be taken up under scheme modernization finalized on 15/03/2009.

- ii) During the meeting, the farmers present were also informed that soon after finalization of contract for carrying out “Modernization of Irrigation Systems” a “Notice Board” with the details about the nature of works, its cost, period of contract and Name of the contractor will all be fixed at the site of work, as well as the Executive Engineer of WRO, who has been designated as the Nodal Officer for the Sub-Basin concerned.
- iii) The field Officers of WRO are all aware of the problems in handing over the operation and maintenance responsibilities to the farmers concerned, if the tasks as desired by the farmers in the command area are not included in the modernization of the system and also in case, some of the tasks already included and planned are not implemented due to some reasons or other.
- iv) The WRO officers were also informed that they are personally responsible for handing over the irrigation systems, under IAMWARM Project.

**10. Current status of Recovery of water charges :**

- i) An enquiry conducted with the “Village Administrative Officers” (VAOs) of randomly selected villages (6 numbers out of 6 Villages) located within the Sub-Basin the normal water charges recovery as informed by the VAO, works out to 40-50% only, about the expected percentage of 80-90%.
- ii) With the proposal to form new WUAs under IAMWARM in “Salikulam Sub-Basin” the Managing Committee will be trained to take up the responsibility of improving the water charges recovery percentage. These will be followed up, after completing the modernization tasks and handing over of the O & M responsibilities to WUAs.

**11. “Capacity Building” of the WUA farmers:**

- i) The “Support Organization Group” will prepare “Training Modules” required for building the capacity of the WUA farmers, based on a “Training Needs” Analysis. They will also organize various “Capacity Building” programs at suitable locations within the Sub-Basin command area, to benefit the farmers of the WUAs in the Sub-Basin.

ii) The “Support Organization” will also arrange for organization the “Study Tours” both within and outside the state to enhance their knowledge and experiences which will help them to improve the crop productivity and there by the farmer’s income.

iii) The support Organization will also conduct necessary “Awareness programme” and impart training to educate the farmers of the WUAs in all aspects of the TNFMIS Act, TNFMS Rules and Election procedures for constituting the “Managing Committee” of the WUAs.

The “Component Authorities” appointed for the Sub-Basin will also be trained to effectively to interact with WUA farmers and maintain good report and relationship with the farming community in the Sub-Basin.

Annexure: 1

**AN ASSESSMENT OF COMMAND AREA AND WUAs UNDER THE CONTROL OF WRO OF PWD IN SALIKULAM-ARU SUB - BASIN**

WUA No	Name of Irrigation Systems and Tanks	Command Area in (Ha)	Location of the Command Area			Coverage of Command area under different projects (Ha)		Status of formation of WUAs in the Sub-Basin	
			Villages	Taluk	District	WRCP and Others	IAMWARM	Formed under WRCP	To be formed under IAMWARM
WUA - 1	Ottapidaram tank	100.40	Ottapidaram	Ottapidaram	Thhothukudi	-	100.40	-	Yes
WUA - 2	Periyathan tank	41.71	Periyathan	Ottapidaram	Thhothukudi	-	41.71	-	Yes
WUA - 3	Velaythapuram Tank	79.32	Velaythapuram	Ottapidaram	Thhothukudi		79.32	-	Yes
WUA - 4	Tharuvaikulam Old tank & Tharuvaikulam New Tank	319.20	Tharuvaikulam and A.N. Patti	Ottapidaram	Thhothukudi	-	319.20	-	Yes
WUA - 5	Pattinamarudur	121.38	Pattinamarudur And pallarpatti	Ottapidaram	Thhothukudi	-	121.38	-	Yes
		662.01					662.01		



## ABSTRACT

1.	Command Area already covered under WRCP and other Project / Schemes	Nil
2.	Command Area proposed to be covered under IAMWARM Project	662.01 Hectares
3.	Total command area controlled by WRO of PWD in the Sub Basin	662.01 Hectares
4.	Total No. of WUAs already formed under WRCP	Nil
5.	Total No. of WUAs proposed to be formed under IAMWARM	5 Nos.
6.	Total No. of WUAs that will cover the entire Sub-Basin	5 Nos.

## Annexure: 2

### Details of "Awareness Creation Activities and Walk - Through Surveys"

Sl. No	Date of Visit	Names if the Villages Visited	Awareness Programme (No.of farmers attended) (Prepare the list of farmers with acknowledgement seperately and attach)	Walk - Through Survey (No.of farmers Participated) (Prepare the list of farmers with acknowledgement seperately and attach)	Remarks
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(1)	(2)	(3)	(4)	(5)	(6)
1	26.09.08	Tharuvaikulam, A.N.Patti, pattinamarudur, Periyatham and Ottapidaram		25	
2	13.12.08	Tharuvaikulam, A.N.Patti, pattinamarudur, and Ottapidaram		15	
3	26.01.2009	Tharuvaikulam Avd A.N.Patti	100	-	
4	10.02.2009	Pattinamarudur and velaythapuram	12	12	
5	17.02.2006	Pattinamarudur and velaythapuram	30	14	

## WALK THROUGH SURVEY

Sl. No	Walk Through Survey		Farmers request	Technical Solution	Proposals in Plan	Remarks
	Date	Location		WRO	WRO	
1	2	3	4	5	13	21
1	26.12.08	Ottapidaram Tank	1).Desilting of Tank. 2).Repair to Sluice Plug & Plug rod. 3).Shutter for Weir I 4).Provision for Ramp on 5 Places. 5).Desilting the supply channel from Araikulam Anicut I to LS.4000-7000M. 6).Construction of Flood Protection wall in Breach places. 7).Providing shutter to Anicut I. 8).Desilting the supply odai upstream of Anicut.	1).Desilting of Tank. to be done 2).Repair to Sluice Plug & Plug rod. 3).Shutter for Weir I to be done 4).Provision for Ramp on 5 Places necessary 5).Desilting the supply channel from Araikulam Anicut I to LS.4000-7000M to be done 6).Construction of Flood Protection wall in Breach places to be done. 7).Providing shutter to Anicut I to be done. 8).Desilting the supply odai upstream of Anicut to be done	1).Desilting of Tank proposed 2).Repair to Sluice Plug & Plug rod provided 3).Shutter for Weir I proposed 4).Provision for Ramp on 5 Places proposed 5).Desilting the supply channel from Araikulam Anicut I to LS.4000-7000M proposed 6).Construction of Flood Protection wall in Breach places proposed 7).Providing shutter to Anicut I proposed 8).Desilting the supply odai upstream of Anicut proposed	

2	26.12.08	Perianatham Tank	<p>1).Bund Standardisation for 1620M.  2).Repair to weir I, II &amp; III.  3).Desilting of supply channel to tank LS.0-1500M.  4).Providing one bathing ghat.  5).Providing Shutter in weir II.  6).Repair to sluice I &amp; II and Providing S.G.Shutter Plug in I &amp; II Sluice.</p>	<p>1).Bund Standardisation for 1620M to be done  2).Repair to weir I, II &amp; III to be done  3).Desilting of supply channel to tank LS.0-1500M to be done  4).Providing one bathing ghat to be done  5).Providing Shutter in weir II.  6).Repair to sluice I &amp; II and Providing S.G.Shutter Plug in I &amp; II Sluice.</p>	<p>1).Bund Standardisation for 1620M proposed  2).Repair to weir I, II &amp; III proposed  3).Desilting of supply channel to tank LS.0-1500M proposed  4).Providing one bathing ghat proposed  5).Providing Shutter in weir II proposed  6).Repair to sluice I &amp; II and Providing S.G.Shutter Plug in I &amp; II Sluice proposed</p>	
3	26.12.08	velythapuram Tank	<p>1).Bund Standardisation for 2100M.  2).Repair to weir I &amp; II.  3).Desilting of supply channel to tank LS.0-3200M.  4).Providing one bathing ghat.  5).Providing Shutter in weir  6).Repair to sluice I &amp; II and Providing S.G.Shutter Plug in I &amp; II Sluice.</p>	<p>1).Bund Standardisation for 1620M to be done  2).Repair to weir I, II &amp; III to be done  3).Desilting of supply channel to tank LS.0-1500M to be done  4).Providing one bathing ghat to be done  5).Providing Shutter in weir II.  6).Repair to sluice I &amp; II and Providing S.G.Shutter Plug in I &amp; II Sluice.</p>	<p>1).Bund Standardisation for 1620M proposed  2).Repair to weir I, II &amp; III proposed  3).Desilting of supply channel to tank LS.0-1500M proposed  4).Providing one bathing ghat proposed  5).Providing Shutter in weir II proposed  6).Repair to sluice I &amp; II and Providing S.G.Shutter Plug in I &amp; II Sluice proposed</p>	

4	26.9.08& 13.12.08	Tharuvaikulam Old Tank	<p>1).Desilting of Tank.and strengthening the tank bund by retaining wall  2).Recons to Sluice I &amp; II and provide s.G. rod Plug &amp; Plug rod.  3).Shutter for Weir I  4).Provision for Ramp on 2 Places.  5).Provision for Model section on 10 Places.  6).Desilting the supply channel from pattinamarudur Anicut I to LS.0-4150M.  7).Construction of Flood Protection wall in Breach places. And retaining wall in weak places of supply chsnnel.  8).Providing shutter to Anicut  9).Desilting the supply odai upstream of Anicut.</p>	<p>1).Desilting &amp; strengthening of Tank. to be done  2). Recons to Sluice I,&amp;II , Plug &amp; Plug rod.  3).Shutter for Weir I to be done  4).Provision for Ramp on 2 Places necessary  5).Provision for Model section on 10 Places.  6).Desilting the supply channel from pattinamarudur Anicut I to LS.0-4150M to be done  7).Construction of Flood Protection wall in Breach places. And retaining wall in weak places of supply channel to be done.  8).Providing shutter to Anicut to be done.  9).Desilting the supply odai upstream of Anicut to be done</p>	<p>1). Desilting &amp; strengthening of Tank proposed  2). Recons to Sluice I &amp; II , Plug &amp; Plug rod provided  3).Shutter for Weir I proposed  4).Provision for Ramp on 5 Places proposed  5).Desilting the supply channel from pattinamarudur Anicut I to LS.0m -4150M to be done  6).Construction of Flood Protection wall in Breach places And retaining wall in weak places of supply channel proposed  7).Providing shutter to Anicut I proposed  8).Desilting the supply odai upstream of Anicut proposed</p>	
5	26.9.08 & 13.12.08	Tharuvaikulam New Tank	<p>1).Desilting of Tank.  2).Repair to Sluice Plug &amp; Plug rod.  3).Shutter for Weir I  4).Provision for Model section on 10 Places.  5).Desilting the supply channel from Pattinamarudur Anicut I to LS.0-3950M.  6).Construction of Flood Protection wall in weaker portion.  7).Providing shutter to Anicut</p>	<p>1).Desilting of Tank. to be done  2).Repair to Sluice Plug &amp; Plug rod.  3).Shutter for Weir I to be done  4).Provision Model section for on 10 Places necessary  5).Desilting the supply channel from Pattinamarudur Anicut I to LS.0-3950M  6).Construction of Flood Protection wall in weaker portion to be done.  7).Providing shutter to Anicut to be done.</p>	<p>1).Desilting of Tank proposed  2).Repair to Sluice Plug &amp; Plug rod provided  3).Shutter for Weir I proposed  4).Provision for Ramp on 5 Places proposed  5).Desilting the supply channel from Pattinamarudur Anicut I to LS.0-3950M proposed  6).Construction of Flood Protection wall in Breach places proposed  7).Providing shutter to Anicut I proposed  8).Desilting the supply odai upstream of Anicut proposed</p>	

6	26.9.08& 13.12.08	Pattinamarudur Tank	<ol style="list-style-type: none"> <li>1).Desilting of Tank.and strengthening the tank bund by retaining wall</li> <li>2).Recons to Sluice I,II &amp; III and provide s.G. rod Plug &amp; Plug rod.</li> <li>3).Shutter for Weir I</li> <li>4).Provision for Ramp on 2 Places.</li> <li>5).Provision for Model section on 20Places.</li> <li>6).Desilting the supply channel from pattinamarudur Anicut I to LS.0-5000M.</li> <li>7).Construction of Flood Protection wall in Breach places. And retaining wall in weak places of supply chsnnel.</li> <li>8).Providing shutter to Anicut</li> <li>9).Desilting the supply odai upstream of Anicut.</li> </ol>	<ol style="list-style-type: none"> <li>1).Desilting &amp; strengthening of Tank. to be done</li> <li>2). Recons to Sluice I,II &amp; III , Plug &amp; Plug rod.</li> <li>3).Shutter for Weir I to be done</li> <li>4).Provision for Ramp on 2 Places necessary</li> <li>5).Provision for Model section on 20 Places.</li> <li>6).Desilting the supply channel from pattinamarudur Anicut I to LS.0-5000M to be done</li> <li>7).Construction of Flood Protection wall in Breach places. And retaining wall in weak places of supply channel to be done.</li> <li>8).Providing shutter to Anicut to be done.</li> <li>9).Desilting the supply odai upstream of Anicut to be done</li> </ol>	<ol style="list-style-type: none"> <li>1). Desilting &amp; strengthening of Tank proposed</li> <li>2). Recons to Sluice I,II &amp; III , Plug &amp; Plug rod provided</li> <li>3).Shutter for Weir I proposed</li> <li>4).Provision for Ramp on 15 Places proposed</li> <li>5).Desilting the supply channel from pattinamarudur Anicut I to LS.2000-5000M to be done</li> <li>6).Construction of Flood Protection wall in Breach places And retaining wall in weak places of supply channel proposed</li> <li>7).Providing shutter to Anicut I proposed</li> <li>8).Desilting the supply odai upstream of Anicut proposed</li> </ol>	
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**ANNEXURE – 03**

**Details of Modernisation works as suggested by the Farmers and as finalised by the officials of WRO**

Sl. No.	Date of Visit	Names of the Villages visited	Outcome of walk through survey and discussions with farmers	
			Works suggested by Farmers	Works finalised by WRO Officials
1	26.12.08	Ottapidram tank	1).Desilting of Tank. 2).Repair to Sluice Plug & Plug rod. 3).Shutter for Weir I 4).Provision for Ramp on 5 Places. 5).Desilting the supply channel from Araikulam Anicut I to LS.4000-7000M. 6).Construction of Flood Protection wall in Breach places. 7).Providing shutter to Anicut I. 8).Desilting the supply odai upstream of Anicut.	1).Desilting of Tank proposed 2).Repair to Sluice Plug & Plug rod provided 3).Shutter for Weir I proposed 4).Provision for Ramp on 5 Places proposed 5).Desilting the supply channel from Araikulam Anicut I to LS.0-7000M proposed 6).Construction of Flood Protection wall in Breach places proposed 7).Providing shutter to Anicut I proposed 8).Desilting the supply odai upstream of Anicut proposed
2	05.12.08	Perianatham Tank	1).Bund Standardisation for 1620M. 2).Repair to weir I, II & III. 3).Desilting of supply channel to tank LS.0-1500M. 4).Providing one bathing ghat. 5).Providing Shutter in weir II. 6).Repair to sluice I & II and Providing S.G.Shutter Plug in I & II Sluice	1).Bund Standardisation for 1620M proposed 2).Repair to weir I, II & III proposed 3).Desilting of supply channel to tank LS.0-1500M proposed 4).Providing one bathing ghat proposed 5).Providing Shutter in weir II proposed 6).Repair to sluice I & II and Providing S.G.Shutter Plug in I & II Sluice proposed
3	26.12.08	Velythapuram Tank	1).Bund Standardisation for 2100M. 2).Repair to weir I & II. 3).Desilting of supply channel to tank LS.0-3200M. 4).Providing one bathing ghat. 5).Providing Shutter in weir 6).Repair to sluice I & II and Providing S.G.Shutter Plug in I & II Sluice.	1).Bund Standardisation for 1620M proposed 2).Repair to weir I, II & III proposed 3).Desilting of supply channel to tank LS.0-1500M proposed 4).Providing one bathing ghat proposed 5).Providing Shutter in weir II proposed 6).Repair to sluice I & II and Providing S.G.Shutter Plug in I & II Sluice proposed

4	26.9.08& 13.12.08	Tharuvaikulam Old Tank	<ol style="list-style-type: none"> <li>1).Desilting of Tank.</li> <li>2).Repair to Sluice Plug &amp; Plug rod.</li> <li>3).Shutter for Weir I</li> <li>4).Provision for Ramp on 2 Places.</li> <li>5).Provision for Model section on 10 Places.</li> <li>6).Desilting the supply channel from melaarasarad Anicut I to LS.0-4200M.</li> <li>7).Construction of Flood Protection wall in Breach places.</li> <li>8).Providing shutter to Anicut</li> <li>9).Desilting the supply odai upstream of Anicut.</li> </ol>	<ol style="list-style-type: none"> <li>1).Desilting of Tank proposed</li> <li>2).Repair to Sluice Plug &amp; Plug rod provided</li> <li>3).Shutter for Weir I proposed</li> <li>4).Provision for Ramp on 5 Places proposed</li> <li>5).Desilting the supply channel from melaarasaradi Anicut I to LS.0-4200M proposed</li> <li>6).Construction of Flood Protection wall in Breach places proposed</li> <li>7).Providing shutter to Anicut I proposed</li> <li>8).Desilting the supply odai upstream of Anicut proposed</li> </ol>
5	26.9.08 & 13.12.08	TharuvaiKulam New Tank	<ol style="list-style-type: none"> <li>1).Desilting of Tank.</li> <li>2).Repair to Sluice Plug &amp; Plug rod.</li> <li>3).Shutter for Weir I</li> <li>4).Provision for Model section on 10 Places.</li> <li>5).Desilting the supply channel from Pattinamarudur Anicut I to LS.0-3950M.</li> <li>6).Construction of Flood Protection wall in weaker portion.</li> <li>7).Providing shutter to Anicut</li> </ol>	<ol style="list-style-type: none"> <li>1).Desilting of Tank proposed</li> <li>2).Repair to Sluice Plug &amp; Plug rod provided</li> <li>3).Shutter for Weir I proposed</li> <li>4).Provision for Ramp on 5 Places proposed</li> <li>5).Desilting the supply channel from Pattinamarudur Anicut I to LS.0-3950M proposed</li> <li>6).Construction of Flood Protection wall in Breach places proposed</li> <li>7).Providing shutter to Anicut I proposed</li> <li>8).Desilting the supply odai upstream of Anicut proposed</li> </ol>
6	26.9.08& 13.12.08	Pattinamarudur Tank	<ol style="list-style-type: none"> <li>1).Desilting of Tank.</li> <li>2).Repair to Sluice Plug &amp; Plug rod.</li> <li>3).Shutter for Weir I</li> <li>4).Provision for Ramp on 2 Places.</li> <li>5).Provision for Model section on 10 Places.</li> <li>6).Desilting the supply channel from Araikulam Anicut I to LS.0-4200M.</li> <li>7).Construction of Flood Protection wall in Breach places.</li> <li>8).Providing shutter to Anicut</li> <li>9).Desilting the supply odai upstream of Anicut.</li> </ol>	<ol style="list-style-type: none"> <li>1).Desilting of Tank proposed</li> <li>2).Repair to Sluice Plug &amp; Plug rod provided</li> <li>3).Shutter for Weir I proposed</li> <li>4).Provision for Ramp on 5 Places proposed</li> <li>5).Desilting the supply channel from pattinamarudur Anicut I to LS.0-5000M to be done</li> <li>6).Construction of Flood Protection wall in Breach places proposed</li> <li>7).Providing shutter to Anicut I proposed</li> <li>8).Desilting the supply odai upstream of Anicut proposed</li> </ol>





## 1.5 IRRIGATION INFRASTRUCTURE

## LIST OF ANICUTS

Sl. No	Anicuts	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity
1	Arasaradi Anicut	Mela arasardi	Ottapidaram	Ottapidaram	Thoothukudy		63.06Mcft
2	Pattinamarudur Anicut	Melamarudur	Ottapidaram	Ottapidaram	Thoothukudy		61.16Mcft

**LIST OF TANKS (Separate statement for System and Non System tanks)**

**NON SYSTEM TANKS**

Sl. No	Tank	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity Mcft.
1	Ottapidaram Tank	Ottapidaram	Ottapidaram	Ottapidaram	Thoothukudy	100.40	36.71
2	Perianatham Tank	Sinthalakattai	Ottapidaram	Ottapidaram	Thoothukudy	41.71	28.32
3	Velaythapuram Tank	Velaythapuram	Ottapidaram	Ottapidaram	Thoothukudy	79.32	15.06
4	Tharuvaikulam New Tank	Tharuvaikulam	Ottapidaram	Ottapidaram	Thoothukudy	162.11	71.84
5	Tharuvaikulam Old tank	Tharuvaikulam	Ottapidaram	Ottapidaram	Thoothukudy	157.09	63.06
6	Pattinamarudur Tank	Pattinamarudur	Ottapidaram	Ottapidaram	Thoothukudy	121.38	61.16

## List of Supply Channel

Sl.No.	Name of Supply Channel	Off take point	Length in Km	Village	Block	Taluk	District	Direct Ayacut in Ha
1	Tharuvaikulam New tank Supply Channel	Pattinamarudur Anicut	3.95	Tharuvaikulam	Ottapidaram	Ottapidaram	Thoothukudy	
2	Tharuvaikulam Old tank Supply Channel	Arasaradi Anicut	4.20	Tharuvaikulam	Ottapidaram	Ottapidaram	Thoothukudy	
3	Pattinamarudur tank Supply Channel	Pattinamarudur Anicut	5.00	Pattinamarudur	Ottapidaram	Ottapidaram	Thoothukudy	
4	Ottapidaram Supply Channel (from LS 5000m-8000m)	Araikulam Anicut	3.00	Araikulam	Ottapidaram	Ottapidaram	Thoothukudy	-
			16.15					

**List of Tanks / Anicuts executed under various schemes**

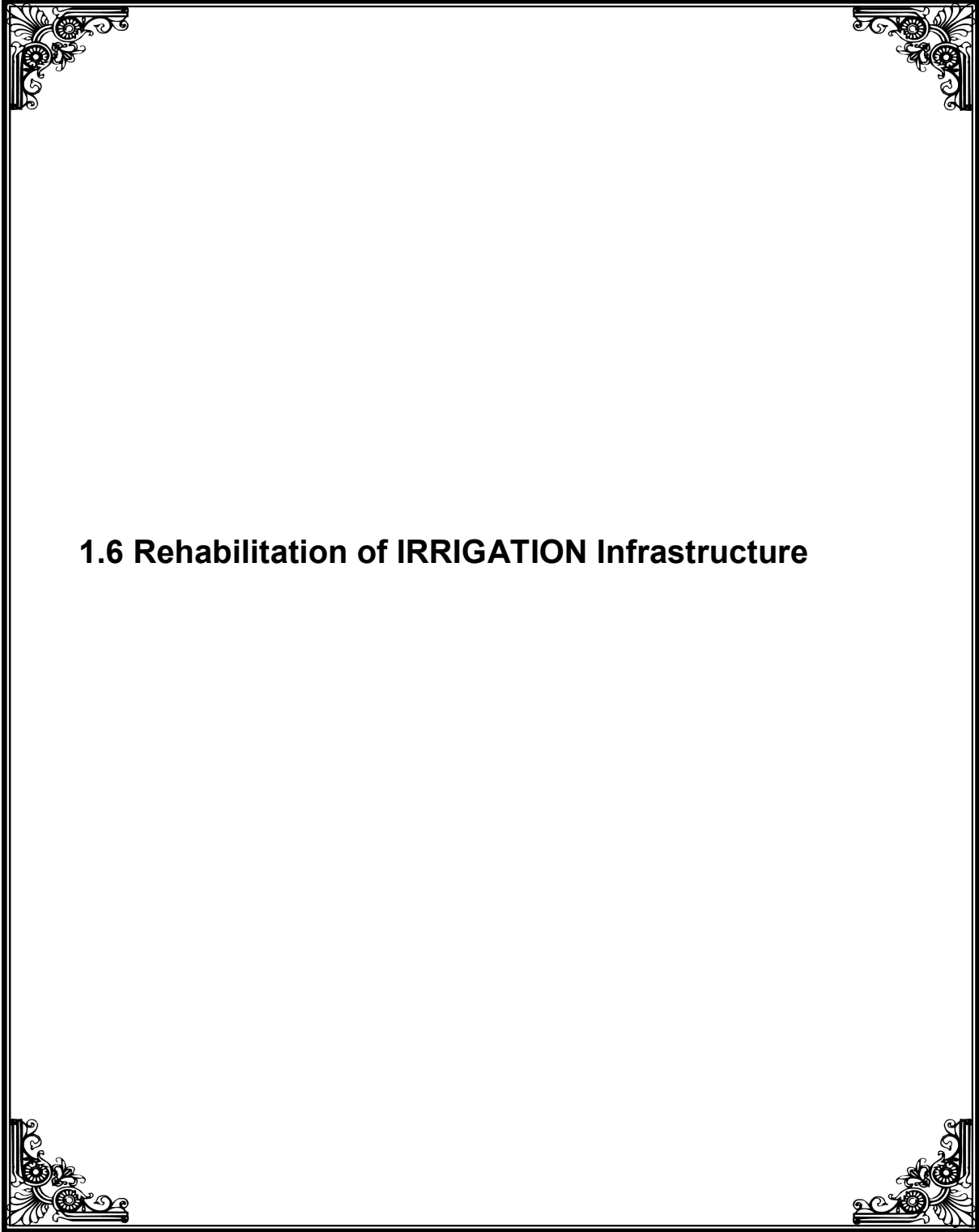
**(Viz, Part II Scheme, NABARD, WRCP I etc.,) since 2000.**

Sl.No.	Name of Anicut / Tank	Ayacut	Scheme in which executed	Amount	Details of components executed	Remarks Details of work to be carried out under IAMWARM
1	Tharuvaikulam old tank	157.09	Part II scheme	36.27 lakhs	Filed channel lining, D/s weir repair and shatter provided, Sluice -1 repairs	Standardisation and Strengthening bund ,Reconstruction of sluice, retaining wall, etc

**ABSTRACT ON THE DETAILS OF IRRIGATION INFRASTRUCTURE AVAILABLE AND WORKS TAKEUP UNDER IAMWARM PROJECT**  
**Name of Sub Basin: Salikulamar**

SL. NO.	DETAILS	ANICUT			SYSTEM TANK			NON- SYSTEM TANK			ANY OTHER SUPPLY CHANNEL		REMARKS
		NOS	SUPPLY CHANNEL IN KM	DIRECT AYACUT	NOS	SUPPLY CHANNEL IN KM	AYACUT	NOS	SUPPLY CHANNEL IN KM	AYACUT	LENGTH	DIRECT AYACUT	
1	Available Infra-structure in sub basin	2	16.15	-				6	1.50	662.01	-	-	
2	Infrastructure exc - luded in IAMWARM Proj -ect since works carried out under various schemes from 2000	-	-	-	-	-	-	1	-	157.09	-	-	
3	Infrastructures that does not require any rehabilitation works	-	-	-	-	-	-	-	-	-	-	-	
4A	Works taken up under WRCP but also taken up in IAMWARM project							1	-	157.09			Component of Works that are not taken up in WRCP alone proposed in IAMWARM project
B	Works taken up in IAMWARM project	2	9.20	-				5	-	504.92	-	-	

1. Certified that the Panchayat Union Tanks are not considered in this project.
2. Certified that the component of works in tanks which were executed under various schemes (Viz, WRCP I, NABARD, PART II schemes etc.,) since 2000 are not proposed in this project.



**1.6 Rehabilitation of IRRIGATION Infrastructure**

## **1.6 Rehabilitation of IRRIGATION Infrastructure**

### **1.6.1. Structural Status & Deficiencies in the System**

The following are the present structural condition of the Salikulam Aru sub-basin system.

1. This system is a old system existing for more than 100 years as such requires Rehabilitation.
2. Heavy accumulation of silt due to hilly region and contour nature of canal system.
3. Lack of adequate control of regulating structures like Anicuts, Head Sluices, Sand/Scour vents etc.,
4. The System, Non system tanks and Anicut are to be rehabilitated

### **Salient Features of Proposals:-**

In order to improve the conveyance and Operational Efficiency in Irrigation, it is now proposed to improve and modernize the irrigation infrastructures in Salikulam Aru Sub Basin.

1. Reconstruction and Repairs to damaged Anicuts
2. Trimming the supply channels by earthwork excavation.
3. Providing Retaining walls in selective area of the Supply channels
4. Repairing, Restoring the traditional water bodies (i.e. tanks)
  - a. Desilting the supply channels to tank.
  - b. Strengthening the bunds of the tanks and channels wherever necessary for effectively storing the water and conveying it to the entire command area and also for conveying agriculture inputs to the field.
  - c. Repairs to the damaged weirs.
  - d. Reconstruction of Damaged weirs.
  - e. Reconstruction of Damaged Sluices
  - f. Repairs to damaged Sluices.
  - g. Providing revetments and retaining walls in selective area of the tanks.
  - h. Providing S.G. Shutter /Plug arrangements to Sluices, Head sluices, Scour vents etc.,
  - h. Removing, Repairing and refixing in position of the existing S.G. shuttering arrangements and providing locking arrangements etc.,



### **1.6.2. Expected Outcome**

1. Increase in conveyance efficiency by from 43% to 53%.
2. The present Gap area of 173.89Ha ha, is to be converted as a fully irrigated area.
3. The following irrigation infrastructure development works are proposed in the sub basin.

Rehabilitation works for 5tanks.

Rehabilitation works for 1Anicut.

Rehabilitation of Supply channel 9.20km

## Details of Proposals in each Infrastructure of Salikulam aru sub basin

Sl.No	Name of tank/ Anicut/ Reservoir	Bund				Sluice				Weir				Anicut				Supply Channel		Measuring Device		Amount in Lakhs
		Length (m)	Std	R . W	Amt	No of Sluice	R ep air	Rec onst ructi on	Amt	No of Wei r	R e p ai r	Recon structi on	Amt	No of Anicut	Rep air	Rec onst ructi on	Amt	Length	Amt	Nos	Amt	
<b>Anicut</b>																						
1	Arasaradi Anicut	-			-	-			-	-			-	1				4200	6.00	-	-	6.00
2	Pattinamarudur Anicut	-			-	-			-	-			-	1	1	12.65	5000	4.58	1.00	0.15	17.38	
<b>Tanks</b>																						
1	Ottapidaram Tank	2100	2100		17.26	2	2		0.35	1	1		0.95	-		-				2.00	0.30	18.86
2	Perianatham Tank	1620	1620		11.04	2	2		0.64	3	3		5.24	-		-				2.00	0.30	17.22
3	Velaythapuram Tank	2100	2100		12.93	2	2		0.64	1	1		1.18	-		-				2.00	0.30	15.06
4	Tharuvaikulam Old Tank	3450	3450		29.48	2	1	1	9.08	1										2.00	0.30	38.86
5	Pattinamarudur Tank	5130	5130		28.67	3	1	2	12.84	2										3.00	0.45	41.96
		14400	14400	0	99.38	11	8	3	23.55	8	5	0	7.37	2	0	1	12.65	9200	10.58	12.00	1.80	155.33

### TANK DETAILS WITH FREE BOARD PROVIDED

I

Sl. No.	Name of the Tank	Maximum Height of Bund	Free Board		Length of Bund (M)
			Provided previously	Provided now	
1	Ottapidaram Big Tank	5.11	1.00	1.50	2100
2	Perianatham Tank	4.94	1.00	1.50	1620
3	Velaythapuram	4.60	1.00	1.50	2100
4	Tharuvaikulam New Tank	4.75	1.00	1.50	3030
5	Tharuvaikulam OldTank	6.12	1.00	1.50	3450
6	Pattinamarudur Tank	6.30	1.00	1.50	5130

Note:-

- 1) For height of bund up to 3.0 m – Free board is 1.25m
- 2) For height of bund more than 3.0m – Free board is 1.50 m

**B. WRO COST TABLE – SALIKULAMAR SUB BASIN**

Sl. No	Description of work	Quantity		Amount in Lakhs	Remarks
<b>I. Tank Component</b>					
1	Bund Standardisation	14400	m	99.38	
2	Retaining wall in Tank		Nos.		
3	Sluice Reconstruction	3	Nos.	14.96	
4	Sluice Repair	8	Nos.	8.59	
5	Weir Reconstruction	--			
6	Weir Repair	5	Nos.	7.37	
7	Anicut Reconstruction	1	Nos.	12.65	
8	Anicut Repair	0	Nos.		
9	Supply channel	9200	m	10.58	
10	Measuring Devicess	12	Nos.	1.80	
	<b>SubTotal</b>			<b>155.33</b>	
<b>II. Non Tank Component</b>					
1	Anicut				
2	Check dam				
3	Supply Channel				
	<b>SubTotal</b>			<b>---</b>	
III	<b>Environment cell</b>			<b>2.50</b>	
IV	<b>Ground water</b>				
	<b>Total</b>			<b>157.83</b>	

1). Tank component = 157.83 Lakhs.  
 2). Non-Tank component = Nil

**Total = 157.83 Lakhs.**



## Package Details

### Package - 1

Sl. No.	Name of Tank / Anicut	Amount in Lakhs
1	Ottapidaram Big Tank	18.55
2	Perianatham Tank	16.92
3	Velaythapuram Tank	14.76
4	Measuring device	0.90
	<b>Total</b>	<b>51.13</b>

### Package - 2

Sl. No.	Name of Tank / Anicut	Amount in Lakhs
1	Arasaradi Anicut	6.00
2	Pattinamarudur Anicut	17.23
3	Measuring Devices	0.90
4	Tharuvaikulam OldTank	38.56
5	Pattinamarudur Tank	41.51
	<b>Total</b>	<b>104.20</b>

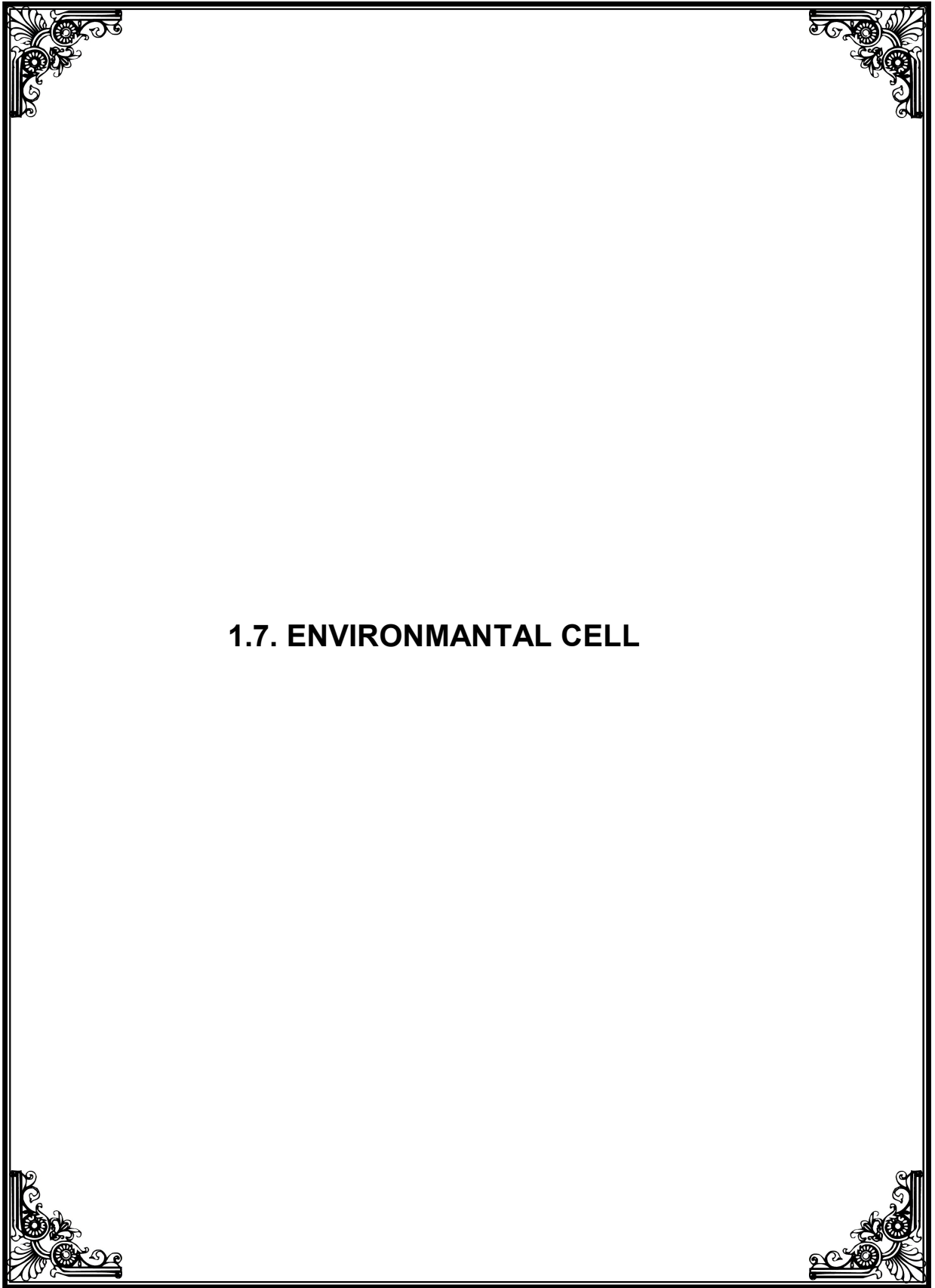






### ABSTRACT

<b>REQUIREMENT OF EQUIPMENTS AND MATERIALS</b>														
PACKAGE NUMBER	EQUIPMENTS REQUIRED IN NUMBERS							MATERIAL REQUIRED						
	HYDRAULIC EXCAVATOR	POWER ROLLER	VIBRATED COMPACTOR	TIPPER / LORRY	WATER LORRY	CONCRETE MIXER MACHINE	CONCRETE VIBRATOR	CEMENT IN M.T.	SAND IN m <sup>3</sup>	STEEL IN M.T.	METAL 40MM IN m <sup>3</sup>	METAL 20MM IN m <sup>3</sup>	RR IN m <sup>3</sup>	FUEL
<b>I</b>	2	2	4	45	4	1	2	56	168	0	149	99	0	0
<b>II</b>	2	2	4	163	4	4	2	314	594	2	713	475	130	0
<b>Total</b>	4	4	8	208	8	5	4	370	762	3	862	575	130	0



**1.7. ENVIRONMANTAL CELL**

## INDEX

Sl. No	Details	Sheet no
1	<b>Environmental Component in Chalikulamaru sub basin</b>	
2	<b>Tanks affected by Aquatic weeds ( Annexure-I)</b>	
3	<b>List of industries ( Annexure-II)</b>	
4	<b>Estimate report</b>	
5	<b>Detailed estimate</b>	
6	<b>Abstract estimate</b>	
7	<b>Baseline Data Collection Proforma</b>	
8	<b>Chalikulamaru sub basin map</b>	

## IAMWARM Project

(Environmental Component in Chalikulamaru Subbasin)

Name of the River Basin	Kallar River Basin
Name of Sub basin	Chalikulamaru Sub basin
Name of WUA	<b>To be formed</b>
Name of Division	The Executive Engineer, PWD-WRO., Korampallam Aru Basin division, Thoothukudi.
Name of Sub division	1.The Assistant Executive Engineer, PWD-WRO, Korampallam Basin Sub division, Thoothukudi.
District	Thoothukudi District
Taluk	Ottapidaram Taluk
Block	Ottapidaram Block
I) Name of tank severely affected by Aquatic weeds	Enclosed Annexure - I
II) Domestic Sewage	In Ottapidaram the solids are dumped into nearby waterbodies like pond.
III) Municipal solid Waste	Tharuvaikulam is the common dumping site of the large quantities of the waste from the Thoothukudi city.
IV) Industries	Enclosed Annexure - II

<p>V) Water quality status</p>	<p>i)Surface water</p> <p>The surface water samples were collected and tested periodically by the Environmental Cell Division, Madurai.The surface water is drawn for usage from tanks are classified as system tank and Non system tank. All the steams and tanks are complied with drinking and irrigation quality standards.</p>
	<p>ii) Ground water</p> <p>Five observation wells are located in this subbasin.Good quality of groundwater is noticed in an observation well located in Ottapidaram village.The chemical constituents of all ions lie within the desirable limit,hence it is suitable for drinking and irrigation purposes.In the rest of the area(Eastern part)the ground water quality is beyond the desirable limits and the TDS is more than 2000 mg/l.</p> <p>The eastern part of Ottapidaram taluk falls in this category.The same trend in water quality is found in the previous decades also.</p>

## ANNEXURE – I

### Tanks affected by Aquatic weeds

Sl. No	Name of tank	Name of village	Ayacut in Ha	Type of weed
1	<b>Pattinamarudur tank</b>	<b>Palarpatti</b>	<b>121.38</b>	<b>Prosopis Juli flora</b>
2	<b>Tharuvaikulam old tank</b>	<b>Tharuvaikulam</b>	<b>157.09</b>	<b>Prosopis Juli flora &amp; Ipomoea cornea</b>
3	<b>Tharuvaikulam New tank</b>	<b>Tharuvaikulam</b>	<b>162.11</b>	<b>Prosopis Juli flora</b>
4	<b>Periyanatham tank</b>	<b>Periyanatham</b>	<b>41.71</b>	-
5	<b>Ottapidaram tank</b>	<b>Ottapidaram</b>	<b>100.40</b>	-
6	<b>Velayuthapuram tank</b>	<b>Velayuthapuram</b>	<b>79.32</b>	-
		Total ayacut	662.01	

## ANNEXURE – II

### Industries

Sl. No	Name of industry	Category	Type	Quantity of effluent(KLD)	
				Sewage	Trade
1	<b>Sujana power limited(Gangai kondan),Keelarasadi</b>	<b>Power plant</b>	<b>R/L</b>		
2	<b>Arasan syntax limited,Ottapidaram</b>	<b>Spinning</b>	<b>O/L</b>		
3	<b>VPS Spinner,Eppodumvendran</b>	<b>Spinning</b>	<b>O/M</b>		
4	<b>Krithiga spinning mill,Eppodumvendran</b>	<b>Spinning</b>	<b>O/M</b>		
5	<b>Kalpage chemicals,Melarasadi</b>	<b>Chemical</b>	<b>R/S</b>		
6	<b>Sree Venkateswara carbides,Pasuvanathanai</b>	<b>Chemical</b>	<b>R/S</b>		
7	<b>Alex match works,Ottapidaram</b>	<b>Matches</b>	<b>R/S</b>		
8	<b>Sri Palani andavar match works,Ottapidaram</b>	<b>Matches</b>	<b>R/S</b>		
9	<b>Pearl city spinning mills,Melarasadi</b>	<b>Spinning</b>	<b>O/M</b>		
10	<b>Sri Murugan spinning,Eppodumvendran</b>	<b>Spinning</b>	<b>O/M</b>		
11	<b>Sujana power limited,Keelarasadi</b>	<b>Power plant</b>	<b>R/S</b>		
12	<b>Arasan Fertilizer's (P) Limited,Kadambur</b>	<b>Fertilizer</b>	<b>R/M</b>		
13	<b>Arasan Phosphates (P) Ltd,Kadambur</b>	<b>Chemicals</b>	<b>R/S</b>		

Note: The total number of industries located in the Chalikulamaru sub basin is around 15, in which all the category industries are given in the table.

Name of work :- Environmental Monitoring on Water and Soil quality and creating awareness & Updating of “Environmental and Social Assessment Report” for Chalikulamaru Sub Basin

***Estimate Cost Rs2.50 Lakhs***

## ENVIRONMENTAL MANAGEMENT FRAME WORK

### INTRODUCTION

Under IAMWARM, with World Bank assistance, special emphasis was given for the first time in WRO, to assess the Environmental status and degradation caused for all River basins in Tamilnadu. An Environmental assessment study has been conducted by Environment Protection Training and Research Institute, Hyderabad and identifies the Environmental issues, social issues and remedial measures for Kallar river basin as follows.

Environmental issues	-Drought prone sub basin
Social issues	-Dry land agriculture
	-Reduction in livestock
	-Women empowerment-SHG
Remedial measures	-Livestock services delivered and managed.
	-Aquatic weed management
	-Solid Waste management

The Environmental Cell of WRO assessed Environmental impact on the quality of Surface water, Ground water and Soil by collecting water & soil samples and testing them. Micro level Environmental Status Report for Kallar River basin was prepared with the assistance of World Bank.



Also awareness programs and Workshops were conducted to create awareness on the Environmental issues and remedies among the Public, Farmers, Government Officials and NGO's. Seminars were conducted to find out new techniques and methods developed recently to solve Environmental problems.

Now under IAMWARM project, focus is at each sub basin level to identify and prioritize the requirements for improvements to storage structures, rehabilitation, new schemes for water harvest and diversification of crops. Any new schemes or rehabilitation of existing one, consideration of the Environmental issues pertaining to that area and remedial action to overcome the problems is must.

#### **DESCRIPTION OF SUB BASIN**

**This Sub basin is constituted by small streams originating from Chalikulam reserved forest area at an elevation of +60m and flows through east to southeast direction. These small streams are scattered in the villages Panchalankurichi, Periyatham, Puliyamarattuaranadhi, Ottapidaram, Pudiampattur, Nainapuram and Pudurpandiyapuram villages and finally confluence with the Gulf of Mannar Ottapidaram and Thoothukudi are the two rain gauge stations in this subbasin. The subbasin has an area extent of 233sq.km. There are two anicuts in this sub basin and the command area under this sub basin comes under non system tank & System tank ayacut feed by 5 PWD tanks.**

#### **ENVIRONMENTAL PROBLEMS**

The following environmental issues were identified in the Chalikulamaru sub basin.

## **WATER WEEDS**

Prosopis Juli flora has invaded the cultivable lands in lower reaches and water bodies' ie,tanks, channels and rivers. Hence, these plants need to be eliminated totally for the conserving precious water resources.

Patinamarudur tank,Tharuvaikulam old tank and Tharuvaikulam new tanks have large infestation of Prosopis Juli flora other than that there is no major water infestation for this sub basin.

## **INDUSTRIAL POLLUTION**

The total number of industries located in the Chalikulamaru sub basin is around 15, which includes the industries like Power plant, Matches, Spinning, Chemical, fertilizer etc, There is no highly polluting Red category Industries.All category industries are listed out in the annexure – IV.

Nearly 12 saltpans are located at Tharuvaikulam.A dried flowers export company at Melarasaradi,Spinning mill at Jegaveerapandiapuram.The liberty seafoods processing plant is located at Patinamaruthur.The water sources for the factories are from their own farms and there is no pollution hazards except for the small quantities of effluents discharges in the village gutters that are of the open type.

The Ottapidaram taluk area under the basin has the following industries.

Oonamakulam - 5 match factories.

Ottanatham - Janning factories.

Trade Effluent from these industries is being monitored periodically by TNPCB. Any improvement to minimize the effect of pollution will be dealt by the TNPCB.

## **SOLID WASTE DIPOSAL**

The problem of Garbage collection and its disposal has assumed importance, in the context of rapid growth of population, Urbanization, industrial growth and development.

In Ottapidaram the solids are dumped into nearby waterbodies like pond. In Thoothukudi municipality, the existing compost yard is located in Tharuvaikulam, approximately 7.5km from town and the area of content is 500 acres.

## **SEWAGE DISPOSAL LET INTO WATER BODIES**

During the field survey, it is found that in many locations, there is no public sanitary complex have been constructed banks of tanks.

The municipalities and Panchayats along the bank of the river are letting the raw sewage directly into the water bodies only. The discharge of the sullage water in the open land, leads to poor sanitation facilities and defecation leads to groundwater pollution. The drainage of the villages is of open type and during the rainy season this sewage is flushed into ponds and ooranies which are constructed for water storage which in turn affects the water quality.

Creating awareness among the Presidents of the local bodies and to motivate them to adopt solid waste management and sewage management wherever required.

## **ACTIVITIES PROPOSED**

To monitor the quality of water and soil and create database regarding the Environmental Status for this sub basin, this proposal has now been proposed with the following activities at sub basin level. The provisions and necessity are explained below.

## **MONITORING WATER QUALITY**

Collection and testing of surface water samples is essential to understand the problem on water quality more precisely. Hence, it is proposed to collect and test the surface water sample in Chalikulamaru river at three selected locations, for a period of three years. Water samples at the following locations will be collected and tested once in 4 months for a period of three years so as to assess the environmental impact on the quality of surface water of this sub basin more precisely.

1. Tharuvaikulam - D/S of of Tharuvaikulam big tank.
2. Ottapidaram - D/S of Ottapidaram tank.
3. Palarpatti - D/S of Pattinamarudur tank.

above locations will be collected and tested once in six months, when flow occurs for physical, Water Samples in these chemical and biological characteristics.

Under this item following provisions have been made.

1. Testing charges for the water samples.
2. Provision for Conveyance, Purchase of Cans, bottles, chemicals, Documentation of water quality data, Driver salary and Computer operator

## **II.ENVIRONMENTAL AND SOCIAL KNOWLEDGE BASE**

Micro level Environmental Status Reports for Kallar river basin have been prepared. In these reports Environmental problems and remedial measures have been documented at the basin level. Moreover Environmental and social assessment on river basins of Tamilnadu have been done by Environmental protection Training & Research Institute, Hyderabad. Based on these report and the data now proposed to be collected, Environmental and social assessment for each sub basins are to be updated and documented in order to program further activities.

Under this item following provisions have been made.

1. Salary for supporting staff i.e.Technical assistant,
2. Expert analysis and development reporting.

### **III.ENVIRONMENTAL AND SOCIAL AWARENESS CREATION**

Awareness programs are necessary to create awareness among the public about environmental problems and the action to be taken by them to remove or reduce the impacts due to the environmental problems.

Hence, to create and motivate the people, awareness programs are to be conducted in the villages where sewage is directly let in to the water bodies. It is also proposed to conduct awareness meeting in schools /institutions to cover the following subjects in addition to placing stickers, tin sheets, and pamphlets containing message related to the following.

- **Sanitation.**
- **Solid waste treatment.**
- **Sewage treatment and converting the same in to gas.**
- **Natural farming.**
- **Conversion of aquatic weeds in to manure etc.**

**As per the instructions of the environmental specialist Mr. Anupham Joshi, the following alterations are made in the proposal,**

In addition to the above, pesticides test for water quality is added and test will be carried out for One locations for once in a year.

Moreover, it is proposed to conduct field visits for environmental monitoring of project activities with respect to environmental safe guards.

It is proposed to study the impact due to project investments and hence, provisions for data collection and development reports have now been added.

Provision for preparing environmental atlas is now inserted in the context of marking all environmental and social issues with consultations of stake holders, line departments and NGOS.

### **MODE OF EXECUTION**

All the works proposed are to be carried out by outsourcing through an educational institution / NGO's.

## **TOTAL COST**

The total proposal cost works out to Rs. **2.50 Lakhs** (Rupees two lakhs and Fifty thousands only)

Name of Work : - Environmental Monitoring on Water and Soil Quality and Creating Awareness & Updating of "Environmental and Social Assessment Report" for Chalikulamaru SUBBASIN

### Detailed Estimate

Sl no	Description of work	No	Measurements			Contents
			L	B	D	
I	Monitoring Water and Soil Quality, Project Works Monitoring					
1	Testing charges for Water samples 3x3x3 =27	27 Nos				27 Nos
2	Testing charges for Water samples (Pesticides) 1x1x3	3 Nos				3 Nos
3	Hiring Jeep driver on service contract basis for the Department vehicle	1 Man months				1 Man months
4	Purchase of Cans, bottles, chemicals and Documentation of water quality data, engaging labour, hire purchase of still camera, engaging labour etc.,	3 years				3 years
5	Provisions for field visits for environmental monitoring of project activities with respect to environmental safeguards.	3 years				3 years
II	Environmental and Social knowledge base					
1	Village level data collection on Environmental and Social state regarding other impacts (2 man month / year x 3 years = 6 Nos)	6 Man months				6 Man months
2	Expert analysis and Development reporting on other impacts	LS				LS
3	Impact studies due to project Investemnts	4 Man months				4 Man months
4	Expert analysis and Development reporting due to project investments (After Project)	LS				LS
III	Environmental and Social Awareness creation					
1	Awareness propagation through Stickers, Tin sheets, Phamlets and Banners	3 years				3years
2	Awarenesss programe for public ( 1 No / year x 2year = 1 Nos)	1 Nos				1 Nos
3	Preparing and publishing of environmental Atlas	LS				LS

4	<b>Documentation of the entire activities, Upgradation of computer and accessories and purchase of Video films and stationaries, engaging computer operator etc.,</b>	<b>LS</b>			<b>LS</b>
IV	Variation in Rates and unforeseen items	<b>LS</b>			<b>LS</b>



Name of Work : - Environmental Monitoring on Water and Soil Quality and Creating Awareness & Updating of "Environmental and Social Assessment Report" for Chalikulamaru SUBBASIN

Abstract Estimate

Sl no	Qty.		Description of work	Rate (Rs)	\Per	Amount
I	Monitoring Water and Soil Quality, Project Works Monitoring					
1	27	Nos	Testing charges for Water samples	1400	Each	37800
2	3	Nos	Testing charges for Water samples (Pesticides) 1x1x3	12000	Each	36000
3	1	Man months	Hiring Jeep driver on service contract basis	3500	1Man month	3500
4	3	year	Purchase of Cans, bottles, chemicals and Documentation of water quality data, engaging labour, hire purchase of still camera, engaging labour etc.,	1500	per year	4500
5	3	year	Provisions for field visits for environmental monitoring of project activities with respect to environmental safeguards.	3000	per year	9000
II	Environmental and Social knowledge base					
1	6	Man months	Village level data collection on Environmental and Social state regarding other impacts (2 man month / year x 3 years = 6 Nos)	5000	1Man month	30000
2		LS	Expert analysis and Development reporting on other impacts	LS	LS	10000
3	4	Man months	Impact studies due to project Investemnts	5000	1Man month	20000
4		LS	Expert analysis and Development reporting due to project investments (After Project)	LS	LS	5000
III	Environmental and Social Awareness creation					
1	3	year	Awareness propagation through Stickers, Tin sheets, Phamlets and Banners	3300	per year	9900
2	1	No	Awarenesss programe for public	15000	Each	15000
3		LS	Preparing and publishing of environmental Atlas	LS	LS	50000

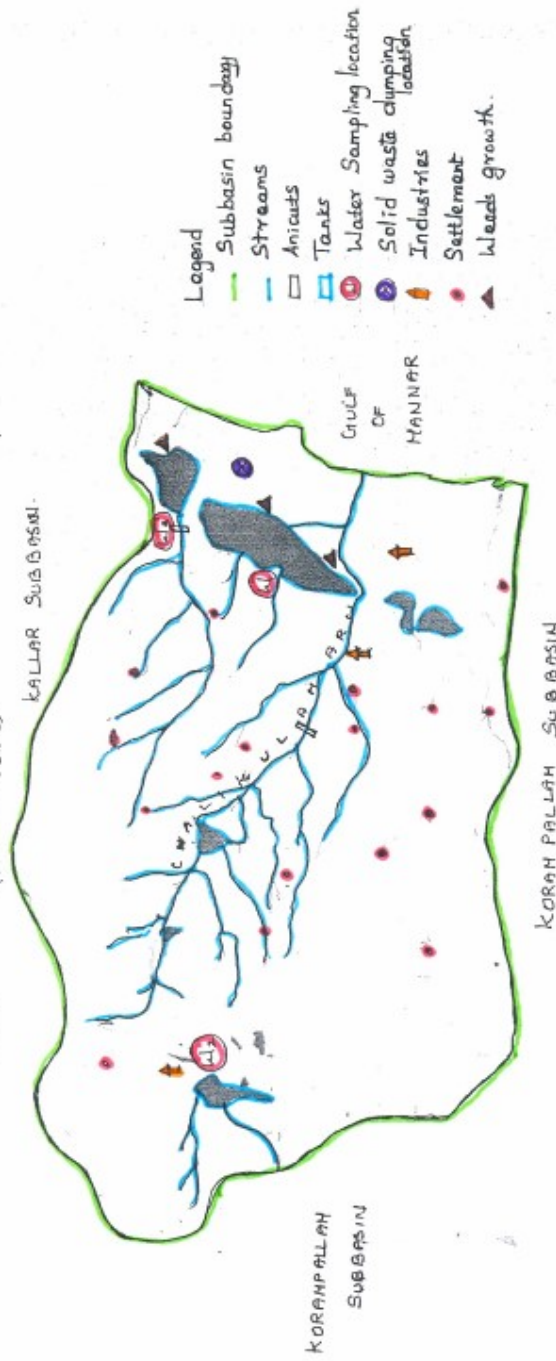
4		LS	<b>Documentation of the entire activities, Upgradation of computer and accessories and purchase of Video films and stationaries, engaging computer operators etc.,</b>	LS		<b>15000</b>
IV	Variation in Rates and unforeseen items					<b>4300</b>
				Total		25000 0

(Rupees two lakhs fifty thousand only)

CHALIKULAM AR SUB BASIN (KALLAR BASIN)

(NOT TO SCALE)

Ä



*J. J. J.*  
05/01/05

Assistant Engineer,  
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Timmaveti

*J. J. J.*

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Executive Engineer, PWD / WRO,  
Environmental Cell Division,



# DESIGN AND DRAWING



## DESIGN OF OTTAPIDARAMTANK SUPPLY CHANNEL

Discharge Required		2.76 m <sup>3</sup> /sec
Bed width		8.00
Manings co efficient (n)		0.025
Free Board		0.50
Bed slope (S)	1 in 2700	0.00037
Depth of water FSD		0.60

Side slope 1.  
5: 1

Area (A) =  $\frac{8.00 + (8.00 + 2) \times 0.30}{2} \times 0.60$

Area (A) = 4.98 m<sup>2</sup>

Wetted perimeter (P) = 9.34

Hydraulic mean depth R=A/P = 0.53

Velocity V=1/nXS<sup>1/2</sup>XR<sup>2/3</sup>

1/n = 40.00

S<sup>1/2</sup> = 0.01925

R<sup>2/3</sup> = 0.6575

V = 0.506 m<sup>3</sup>/sec

Q = A X V

Q = 2.520 cumeecs = 2.38 cumeecs

**Hence Safe**

## DESIGN OF PATTINAMARUDUR TANK SUPPLY CHANNEL

Discharge Required		2.07 m <sup>3</sup> /sec
Bed width		6.00
Manings co efficiant (n)		0.025
Free Board		0.60
Bed slope (S)	1 in 2000	0.00050
Depth of water FSD		0.60

Side slope 1.5:1

Area (A) =  $\frac{6.00 + (6.00 + 2 \times 0.300)}{2} \times 0.60$

Area (A) = 3.78

Wetted perimeter (P) = 7.34

Hydraulic mean depth R=A/P 0.51

Velocity  $V=1/nXS^{1/2}XR^{2/3}$

1/n = 40.00

S<sup>1/2</sup> = 0.02236

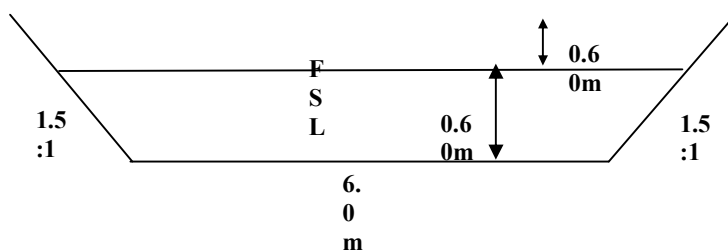
R<sup>2/3</sup> = 0.6424

V = 0.575 m<sup>3</sup>/sec

Q = A X V

Q = 2.172 cumecs = 2.072 cumecs

**Hence Safe**



# DESIGN OF THARUVAIKULAM TANK SUPPLY CHANNEL

Discharge Required		2.07	m <sup>3</sup> /sec
Bed width		6.00	
Manings co efficiant (n)		0.025	
Free Board		0.60	
Bed slope (S)	1 in 2000	0.00050	
Depth of water FSD		0.75	

Side slope 1.5:1

Area (A) =  $\frac{6.00 + \frac{1}{2} \left( \frac{1}{5} \times 6.00 + 6.00 \right) \times 0.375}{2} \times 0.75$

Area (A) = 4.78125

Wetted perimeter (P) = 7.68

Hydraulic mean depth R=A/P = 0.62

Velocity V=1/nXS<sup>1/2</sup>XR<sup>2/3</sup>

1/n = 40.00

S<sup>1/2</sup> = 0.02236

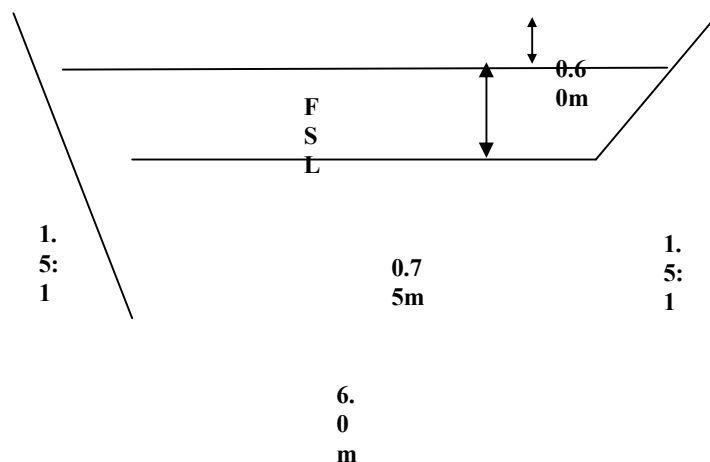
R<sup>2/3</sup> = 0.7293

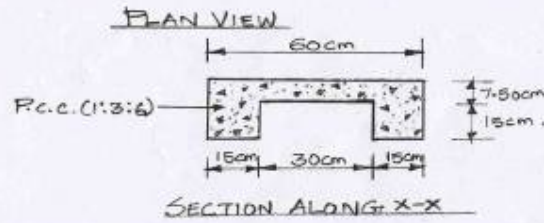
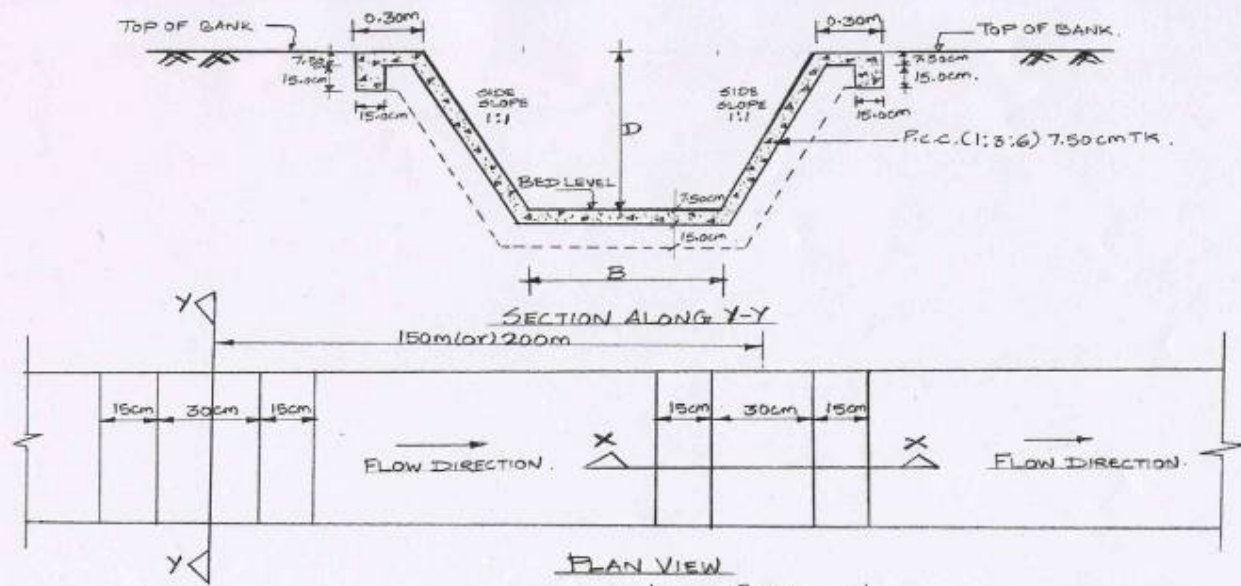
V = 0.652 m<sup>3</sup>/sec

Q = A X V

Q = 3.119 cumecs = 2.678 cumecs

Hence Safe





TYPICAL SECTION OF BEDBAR/MODEL SECTION FOR SUPPLY CHANNEL.

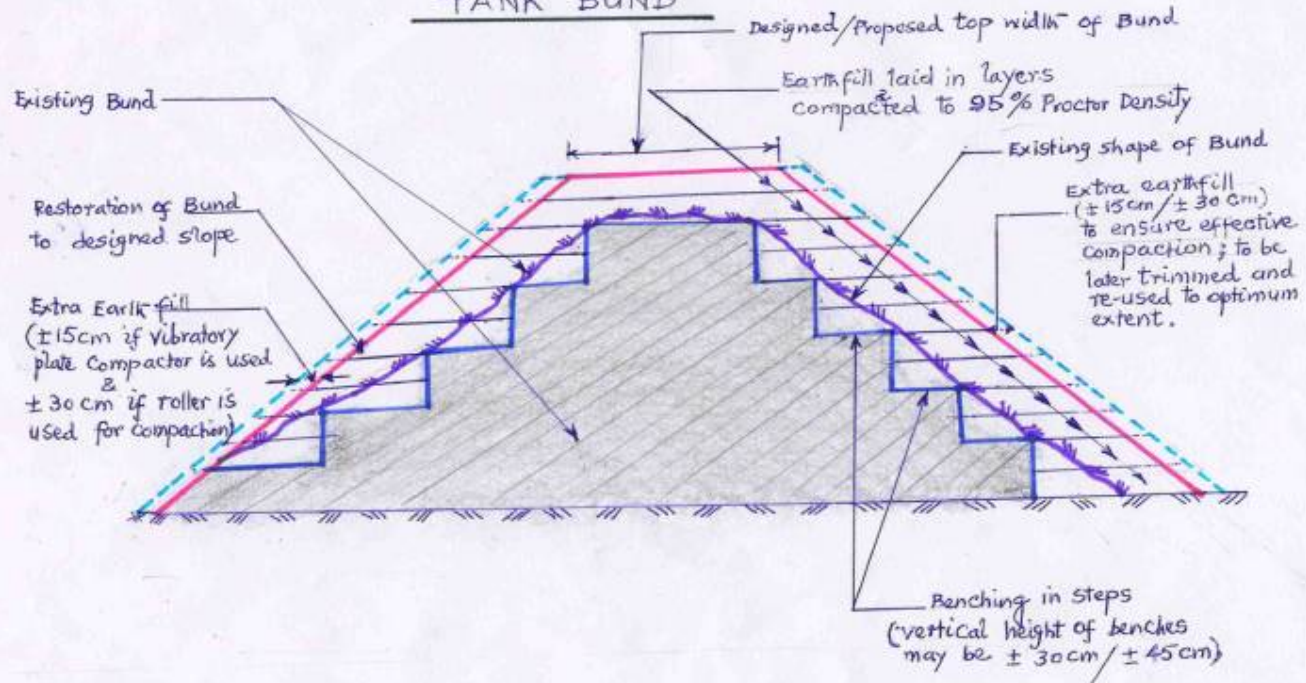
DIMENSIONS TO SUIT SITE CONDITION.

DRAWING NOT TO SCALE.

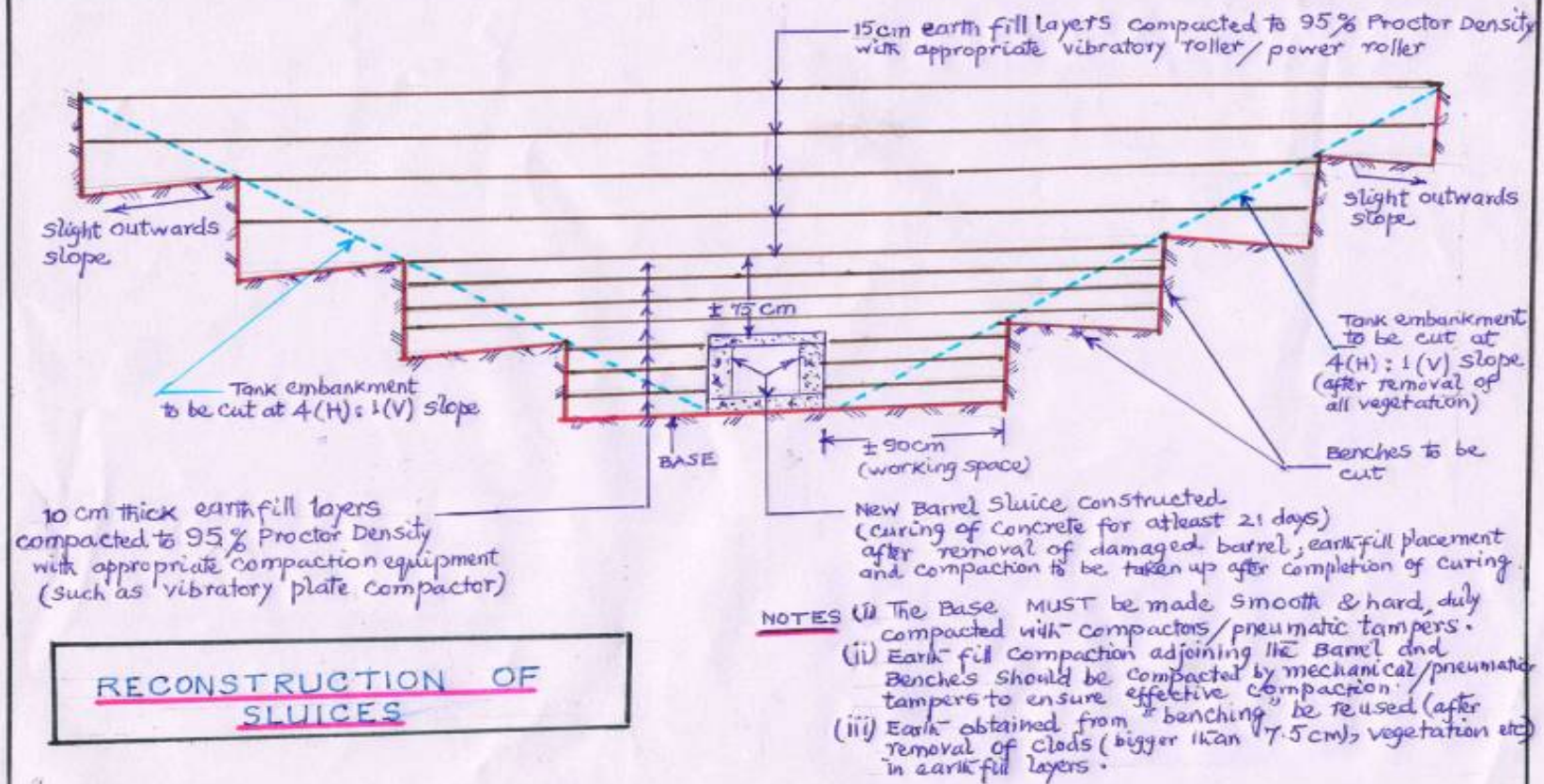


TYPICAL SKETCH

RAISING & STRENGTHENING OF TANK BUND



## TYPICAL SKETCH

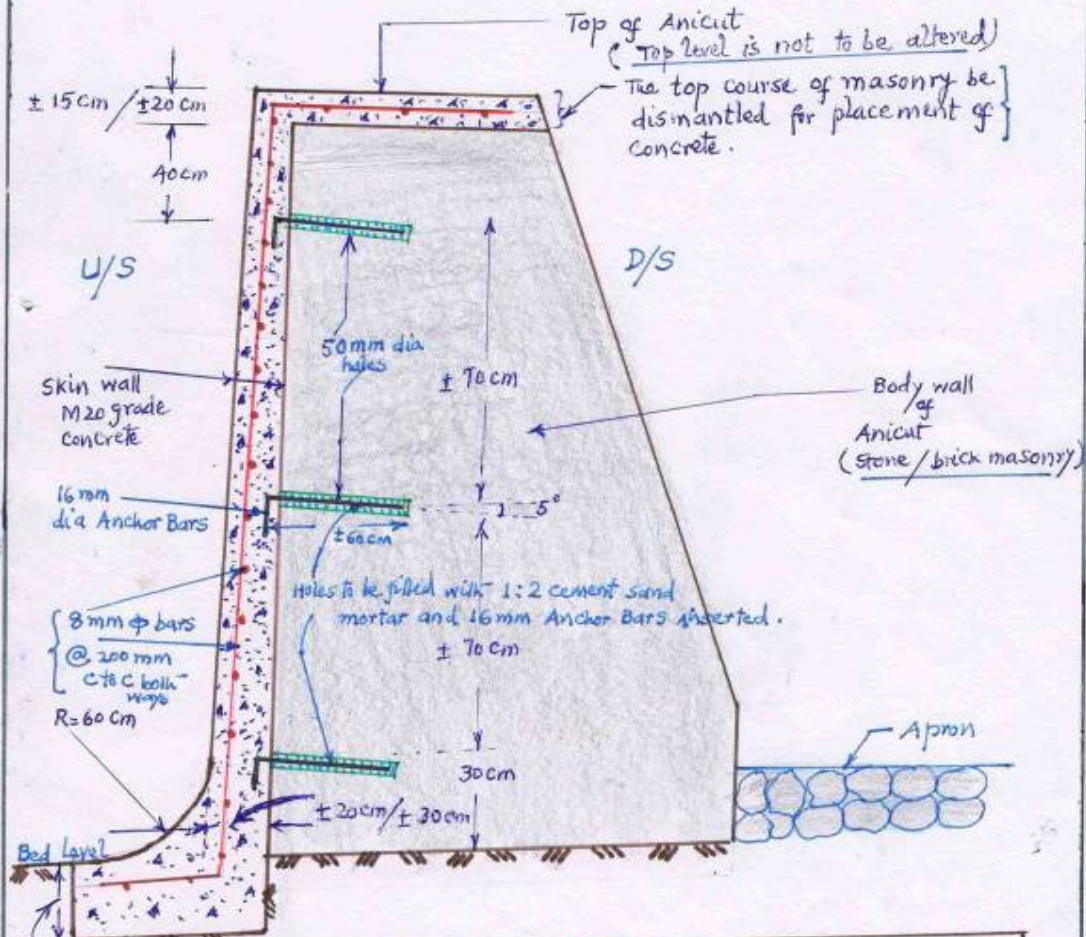


### RECONSTRUCTION OF SLUICES



## TYPICAL SKETCH

### Rehabilitation of Anicut through SKIN WALL Concrete



#### SALIENT FEATURES

- Joints on U/S surface to be taken to 25 mm depth & surface roughened by chipping;
- Drill holes of 50 mm to be filled with 1:2 mortar and 16 mm Anchor Bars to be pushed in. The roughened surface to be kept wet for 72 hours and cement slurry (1:2:5) of 0.70 water-cement ratio be applied over the surface prior to placement of skin concrete.
- Concrete of M20 Grade is to be used with 20 mm maximum aggregate size.
- Curing is to be done for 28 days.
  - Thickness of skin concrete: 15 cm at top & 20 cm at bottom for Anicuts of height upto  $\pm 1.50$  m and 20 cm at top & 30 cm at bottom for Anicuts of height more than  $\pm 1.50$  m.

