



**TN- IAMWARM PROJECT**

**PALAR SUB BASIN**

**WATER RESOURCES DEPARTMENT**

**DETAILED PROJECT REPORT**





## 1.1. INTRODUCTION

## INTRODUCTION

### 1.1.1 GENERAL

Agriculture is the dominant sector in the Indian economy. Tamil Nadu, 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.

To achieve higher water use efficiency, it is necessary to improve and upgrade the existing conveyance system and also to introduce modern irrigation methods.

With the above objective, a comprehensive programme has been proposed with a Multi Disciplinary Approach.

### 1.1.2 Description of the GUNDAR Basin

The Gundar river takes rise from the eastern slope of Varusanadu Hills at an altitude of 1273 m near Kottaimalai of Saptur reserve forest on the eastern slopes of Western Ghats in Madurai District and runs southeast for a distance of 150 km and finally empties into Gulf of Mannar at about 6 km of south east of Sayalkudi of Ramanathapuram District. The Gundar river basin is located between latitude  $9^{\circ} 05' N$  to  $10^{\circ} 03' N$  and longitude  $77^{\circ} 35' E$  to  $78^{\circ} 35' E$  having an area of 569023 Sq.Km and is surrounded by Vaigai Basin on the South, Vaigai Basin on the West and North and Gulf of Mannar / Bay of Bengal on the east. This basin has been divided into nine sub-basins namely as follows;

- 1 Upper Gundar
- 2 Therkkar
- 3 Kanal Odai
- 4 Gridhumal Nadhi
- 5 Paralaiaru
- 6 Uthirakosamangaiaru
- 7 Palar**
- 8 Lower gundar
- 9 Vembar

### 1.1.3 Description of the Palar Sub-Basin

The Gundar Basin has been divided into 9 sub basins and Palar is one of the sub basins. Palar originates from P.Keeranthai and Pollangulam Villages located in kadaladi Taluk. It runs as small stream until it reaches kothankulam Village in Kadaladi Taluk. Beyond Kothankulam it is wider and deeper resembling a small river and confluence near Valinokkam in Gulf of Mannar.

The Palar Sub basin is located between latitude 9<sup>0</sup>10'00" N to 9<sup>0</sup>15'00" N and longitude 78<sup>0</sup>35'00" E to 78<sup>0</sup>40'00" E and is surrounded by Uthiakosamangaiyar Sub Basin on the South and Vembar Sub basin on North. Palar Sub basin area is 279.722. Km with a plain area. The taluks covered in the sub basin are Mudukulathur and Kadaladi Taluk of Ramanathapuram District. It receives an annual average rainfall of 772.50mm, with its major share during North-East Monsoon. The winter water level ranges from 4.00-4.25m and the summer water level varies from 4.50-5.00m.

There are **34** tanks situated within the Palar sub basin catchment area.

Apart from the resources from its own watershed the Palar sub basin gets water from Sikkal nadukal takes off from Rangunatha caveri below Kamuthi regulator. The channel runs for a length of 10km upto Sikkal. It feeds 8Nos in Palar sub basin.

The total No. of tanks in this Palar sub basin is 34 out of this 8 tanks are fed by Sikkal Nadukal. The 34 tanks are non-system tanks having an ayacut of 3051.05ha .









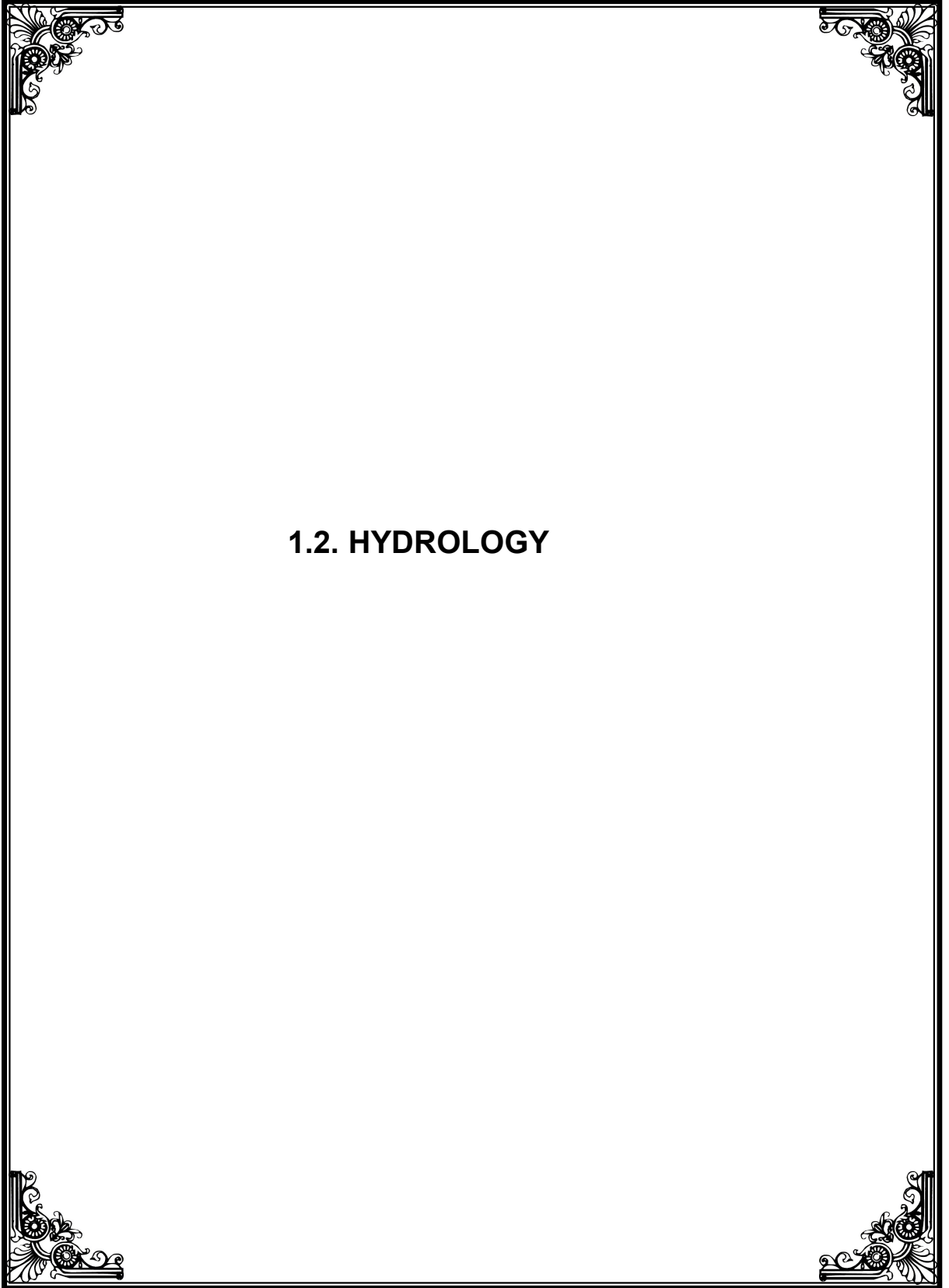












## 1.2. HYDROLOGY

### **1.2.1. GENERAL**

Palar is a separate river in the plain area.

### **1.2.2.LOCATION**

Palar originates from P.Keeranthai and Pollangulam Villages located in kadaladi Taluk. It runs as small stream until it reaches kothankulam Village in Kadaladi Taluk.Beyond Kothankulam it is wider and deeper resembling a small river and confluence near Valinokkam in Gulf of mannar.

Palar Sub Basin area is 279.722 **Sq km** with a plain area .The taluks covered in this sub basin are Mudukulathur and Kadaladi taluk of Ramanathapuram District.

### **1.2.3 CATCHMENT AREA OF PALAR SUB-BASIN**

The Palar Sub Basin has a typical climate, owing to the extensive major catchments area in plains. Palar sub-basin enjoys the benefits of mostly North East monsoon and slightly in summer season.

### **1.2.4 HYDRO METEOROLOGY**

The Hydro Meteorology parameters include rainfall, temperature, humidity, wind velocity, evaporation and duration of sun shine which determine the climate of the basin.

#### **1.2.4 RAIN FALL**

Average annual rainfall of gauging stations influencing this sub basin is as follows

Sl No	Name of Rain gauge Station	North East Monsoon	Summer	South west monsoon	Winter	Annual
1.	Mudukulathur	417	104	148	42	711
2.	Ramanathapuram	486	91	91	49	717
3.	Morekulam	589	112	70	63	834
	AVERAGE	497		103		754

### a. CLIMATE

The Palar basin lies in a low rainfall belt having an annual average rainfall of 754mm. Southwest monsoon contribute 103mm , while NE monsoon contributes 497mm. This basin receives a major share of its rainfall during NE monsoon. This monsoon helps to build up storage in the tanks Non system. This basin lies on the leeward side of Western Ghats on Western sides. Southwest monsoon rainfall, though lesser than the NE monsoon rainfall, still contribute some runoff helping to buildup storage in tanks. For the measurement of Hydro meteorological parameters in the basin area, there is one weather station at Kavalur near Virudhunagar, its data is taken for the study.

### b. SOIL CLASSIFICATION

In this sub basin, due to different stages, Weathering & parent material, the soil types are met with in combination of Inceptisol, Alfisol and Vertisol. More prominent type is Inceptisol.

(Change as suited to this sub-basin)

Inceptisol	Red or brown or grey soil with surface horizon more developed than sub surface. They are developing soils, moderately deep, coarse loamy to loam moderately drained to well drained	Suited for commonly grown crops with exceptions
Alfisol	The red or brown soils having accumulation of alleviated clay in sub surface horizon it well drained, poor water and nutrient holding capacity.	Annual crops with shallow roots systems cum up wells
Vertisols	Black soil	Suitable for cotton, Pulses etc

### c. LAND HOLDINGS

The details of farm holdings and size classes prevalent in Palar Sub basin are given below:

Category	Size of holdings	Numbers	Percentage
Marginal	Below 1.00 Ha	11322	72
Small	1.00 – 2.00 Ha	4413	25

Medium	2.00 – 5.00 Ha	424	3
Big	5.0 ha & above	--	--
Total		16159	

Above table revealed that the marginal farmers alone accounted for 28 percent in the sub basin followed by small farmers. Developmental initiatives will be establishment in marginal and small farmers.

### **1.2.6 DEMOGRAPHY**

Name of Sub Basin	Total No. of Blocks	Total No. of Villages	Population		
			2004	2010	2025
Palar Sub basin	2	34	6,5000	7,5000	9,5000

### **1.2.11 LIVE STOCK - POPULATION**

Name of Sub basin	Cattle	Buffalo	Sheep	Goats	Pigs	Dogs	Others	Poultry
<b>PALAR Sub BASIN</b>	60368	13124	73492	45167	2009	9157	28	7890
<b>Requirement</b>	<b>0.986 Mcum</b>							



## CROPPING PATTERN

Name of the Sub Basin: PALAR Fully Irrigated : **1730.54 Ha**  
 District : Ramanathapuram Partially Irrigated : **952.64 Ha**  
 Registered Ayacut Area : 3051.05 Gap : **367.87 Ha**  
 Total Ayacut Area : **3051.05 Ha**

S. No.	Crop	Without Project				With Project			Increasing
		FI	PI	RE/G	TOTAL	FI	RF/G	TOTAL	
<b>I</b>	<b>Perennial crop</b>								
1		-	-	-	0.00	-	-	0.00	0.00
	<b>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>II</b>	<b>Annual crop</b>								
		-	-	-	0.00	-	-	0.00	0.00
	<b>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>III</b>	<b>1<sup>st</sup> crop(Sep – Jan)</b>								
1.a	Paddy	1605.10	688.13	-	2293.23	1813.00	-	1813.00	-480.23
b	Paddy-SRI	-	-	-	0.00	-	-	0.00	0.00
2	Maize	-	-	-	0.00	150.00	-	150.00	150.00
3	Cotton	48.28	20.20	-	68.48	68.48	-	68.48	0.00
4	Black gram	-	-	-	0.00	150.00	-	150.00	150.00
5	Gingelly	-	12.34	-	12.34	12.34	-	12.34	0.00
6	Chillies	77.16	231.97	-	309.13	676.00	-	676.00	366.87
7	Bhendi	-	-	-	0.00	30.00	-	30.00	30.00
8	Bringal	-	-	-	0.00	20.00	-	20.00	20.00
9	Tomato	-	-	-	0.00	10.00	-	10.00	10.00
10	Fodder Chulam	-	-	-	0.00	15.00	-	15.00	15.00
	Prosopis	-	-	106.23	106.23	-	106.23	106.23	0.00
11	Fallow/Gap	0.00	0.00	261.64	261.64	-	-	0.00	-261.64
	<b>Total</b>	<b>1730.54</b>	<b>952.64</b>	<b>367.87</b>	<b>3051.05</b>	<b>2944.82</b>	<b>106.23</b>	<b>3051.05</b>	<b>0.00</b>
	<b>Grand Total(I+II+III)</b>	<b>1730.54</b>	<b>952.64</b>	<b>367.87</b>	<b>3051.05</b>	<b>2944.82</b>	<b>106.23</b>	<b>3051.05</b>	<b>0.00</b>
<b>IV</b>	<b>2<sup>nd</sup> crop</b>								
	Pulses (Rice Fallow)	-	-	-	0.00	200.00	-	200.00	200.00
	<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>200.00</b>	<b>0.00</b>	<b>200.00</b>	<b>200.00</b>
	<b>Great Grand Total</b>	<b>1730.54</b>	<b>952.64</b>	<b>367.87</b>	<b>3051.05</b>	<b>3144.82</b>	<b>106.23</b>	<b>3251.05</b>	<b>200.00</b>
	<b>Cropping Intensity</b>				<b>87.94%</b>			<b>103.07%</b>	

\*Reason for variation in Gap (With Project).The Gap area 367.87Ha (Without Project) which is of Prosopis(julliflora) jungle is reduced to 106Ha (With Project).

**CROP WATER REQUIREMENT ( WITHOUT PROJECT )**

SI.No.	Name of Crop Ist Crop	Area in Ha	Crop water requirement		Irrigation requirement in Mcum/Ha @ 53% efficiency
			mm	Mcum/Ha	
1	Paddy	2293.23	601	13.78	26.00
2	Cotton	68.48	486	0.33	0.62
3	Gingelly	12.34	169	0.021	0.040
4	Chillies	309.13	656	2.03	3.83
	Sub Total	2683.18			
	Fallow/Gap(Prosopis)	367.87			
	Total Ayacut	3051.05			
	<b>lnd crop</b>	NIL			
	<b>Total Requirement Without Project</b>				<b>30.49mcum</b>

**CROP WATER REQUIREMENT ( WITH PROJECT )****Ist CROP**

Sl. No.	Name of Crop	Area in Ha	Crop water requirement		Irrigation requirement in Mcum/ Ha @ 60 % efficiency			Total
			mm	Mcum/Ha	At source n=0.6	Dripp n=0.80	Sprinkler n=0.70	
1	Paddy	1813	601	10.90	18.17	-	-	18.17
2	Cotton	68.48	486	0.33	0.55	-	-	0.55
3	Gingelly	12.34	169	0.02	0.03	-	-	0.03
4	Maize(Chollam)	150.00	290	0.72	0.73	-	-	0.73
5	Pulses (Black gram)	150.00	284	0.57	0.72	-	-	0.72
7	Vegetables							
	a)Bhendi	30.00	434	0.13	0.22	-	-	0.22
	b)Brinjal	20.00	434	0.09	0.15	-	-	0.15
	c)Tomato	10.00	434	0.09	0.07	-	-	0.07
8	Chillies	676.00	656	4.43	7.38	-	-	7.38
9	Fodder -chollam	15.00	290	0.04	0.07	-	-	0.07
10	Fallow/Gap							
<b>TOTAL</b>								<b>28.09</b>

**Total Requirement with Project : 28.09Mcum.**

**For IInd CROP**

Sl. No.	Name of Crop	Area in Ha	Crop water requirement		Irrigation requirement in Mcum/ Ha @ 60 % efficiency			Total
			mm	Mcum/Ha	At source n=0.6	Dripp n=0.80	Sprinkler n=0.70	
1	Pulses (Rice Fallow)	200.00	284	0.57	0.95			0.95
<b>TOTAL</b>								<b>0.95</b>

**1.2.7 WATER POTENTIAL**

**Surface water potential** : 25.39 Mcum.

**Ground water yield** : 15.42 Mcum

Total : 40.81 Mcum

**WATER DEMAND WITHOUT PROJECT**

i) Domestic : 1.81 Mcum

ii) Live stock : 0.21 Mcum

iii) Industrial : 0.95 Mcum

iv) Irrigation(PWD Tanks) : 30.49 Mcum

v)P.U.Tanks : **9.17Mcum**

**Total** **42.63 Mcum**

**WITH PROJECT**

1.81Mcum

0.21 Mcum

0.95 Mcum

29.04 Mcum

9.17Mcum

**41.18 Mcum**

**WATER BALANCE**

**Deficit – 1.82 Mcum**

**0.37 Mcum**



### **1.3. HYDRAULICS OF THE COMPONENTS**



**1.3.2. SYSTEM TANKS - NIL**  
**1.3.3 NON SYSTEM TANKS**

**NAME OF THE SUB BASIN: PALAR**

Sl. No	District	Taluk	Name of Tank	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	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Ramanathapuram	Mudukulathur	Kumarakuruchi	122.69	24.05	2.1	0.8	0.8	8.46	23.19	23.475	3	1	21.55	5.35	3990	1739	Keelasirupodu, Melapanaiyoor	Keelasirupodu
2			Karumal	86.65	14.5	1.04	0.38	0.38	6.586	13.56	14.02	4	1	13.1	7.81	2470	976	Ragunatha cauveri channel	Ragunatha cauveri channel
3			Sadayaneri	72.44	11.28	1.94	3.01	3.01	6.150	19.130	19.730	3	1	9.60	10.89	3650	1700	Ragunatha cauveri channel	Gokandan tank
4			Melapanaiyur	69.01	21.00	1.09	2.75	2.75	8.400	18.870	19.470	4	1	10.70	10.20	2920	915	Ragunatha cauveri channel	Keelasirupodu
5			Arapodu	43.42	9.57	1.51	1.75	1.88	5.220	20.100	20.700	4	1	8.00	6.61	2250	366	Sikkal Supply channel	Sikkal supply channel
6			Lagal	45.47	0.46	1.40	11.55	11.55	0.833	17.275	17.875	4	1	16.77	20.26	1920	1098	Maruthagam, Uthan, Sikkal Nadukal	Peria ilai
7			Theriruvveli big	138.9	1.38	1.44	2.59	2.509	1.999	18.480	19.000	4	1	13.10	8.85	3015	1870	Ragunatha cauveri	Ragunatha cauveri
8			Theriruvveli small	56.89	20.98	1.17	2.60	2.603	7.860	16.800	17.465	4	1	12.00	9.18	2713	2417	Raagunatha cauveri	Pooseri
9			Pooseri	63.11	28.78	1.85	4.74	7.34	15.700	15.010	15.610	3	1	27.80	25.91	4600	2440	Ragunatha cauveri channel	...
10			Adankottankudi	140.3	31.46	1.84	1.50	1.50	13.920	15.295	15.845	7	1	16.65	12.35	3210	1037	Thondaiman tank	sikkal tank
11	Ramanathapuram	Mudukulathur	Kolikulam	53.21	16.00	1.00	2.45	17.59	1.005	15.120	15.720	3	1	44.40	10.38	2430	1000	Keelasirupodu, Periailai	Kidarakulam, Keerantai, Pannantai
12			Keelasirupodu	157.3	31.50	2.18	4.86	14.30	13.500	16.100	16.660	3	1	47.20	8.85	3840	6700	Gundaru, Kokandan, Melapanaiyoor	Kolikulam
13			Melasirupodu	136.3	24.36	3.00	1.70	1.70	10.060	15.840	16.440	8	1	21.85	16.28	3510	1409	Ragunatha cauveri channel	Sendaneri
14			C.Vagaikulam	44.4	8.27	2.00	2.49	2.49	0.683	13.510	13.750	4	1	10.50	24.18	1580	990	Ragunatha cauveri channel, Poonthandai	Sakkiliangulam
15			Alangulam	50.72	10.09	3.00	2.64	3.96	0.533	12.650	13.170	3	1	15.24	10.38	2340		Rainfed	Pannantai

16	Kadaladi	P.Keeranthai	43.90	18.05	2.00	1.20	9.820	1.026	12.485	10.085	4	1	40.90	25.26	2070		Rainfed, Kolikulam, Kidarakulam,	Puthendhal	
17		Pannantai	44.50	8.75	1.65	1.45	17.500	0.908	12.210	12.810	2	1	43.35	32.42	2790		Rainfed, Kolikulam, Alagankulam	Peykulam	
18		Peykulam	94.10	11.46	1.00	3.66	18.660	1.383	11.455	12.06	6	1	51.21	39.34	2940	2135	Thaniyarendal, Gundar	...	
19		Sokkanai	50.35	8.75	1.00	0.70	0.78	0.375	12.550	13.150	3	1	3.00	2.72	2310	1506	Rain fed,Sikkal branch channel	Peykulam	
20		Maravaikudi	43.14	13.32	1.33	-	-	5.370	15.545	16.154	6	1	17.68	15.00	2797		Chinna kannankudi chinna kanmoi	Vallakulam	
21		Vallakulam	125.5	29.40	1.90	1.59	17.40	10.140	11.900	12.500	4	1	35.10	37.76	3780		Rain fed	Annunni	
22		Sikkal	397.6	118	2	10.29	65.87	4.809	10.285	10.885	8	2	48.95	90.57	7900	10000	Panaivasal, Gundar river, Kalari	Tharavai	
23		Ramanathapuram	Kadaladi	Idampadal	122.3	36.2	2	6.743	45.55	3.352	8.560	9.100	4	1	98.30	72.03	4900	1952	Gundaru river, Kalari channel
24	Siraikulam			51.16	8.43	1	2.315	3.461	0.440	7.845	7.445	7	1	27.00	12.22	2444		Sikkal	Vizhiodai
25	Kaluneermangalam			56.90	18.80	1.00	1.51	1.505	0.712	8.400	8.6	3	1	29.00	5.31	1890		Pottapacheri channel, sikkal	Chinnaayakudi
26	Thathangudi			91.48	33.35	1.00	5.11	5.11	1.360	9.415	9.725	4	2	32.50	0.92	4267	3000	Rain fed, Kolikulam, Sikkal	Peria ayakudi
27	Thanichiyam			86.49	10.00	2.00	1.66	1.66	0.690	5.120	5.720	3	1	70.00	5.85	2850		Rain fed, Keelakidaram	Pappakulam
28	Thiruvarangai			69.30	9.39	2.00	2.21	6.389	0.924	3.570	4.000	6	1	48.75	22.53	2550	3000	Keelakidaram	...
29	Keelakidaram			83.21	21.89	2.00	4.99	28.593	1.162	7.115	7.665	3	1	68.60	51.50	4040		Melakidaram	Thiruvarangai
30	Kothankulam			57.60	6.60	2.00	1.73	2.209	0.400	6.600	6.900	5	1	21.81	8.09	3360		Rainfed, Kolikulam, Alagankulam	Odai
31	Kottaiyendal			112.4	51.31	4.00	3.02	1.559	1.702	9.935	10.535	6	1	29.30	35.18	4200	2450	Gundar river, Sithudaiyan	Melakidaram
32	Poolankulam			93.56	17.04	3.00	2.17	11.79	0.750	11.300	11.900	4	1	34.75	29.17	3030		Rain fed, Sakkiliankulam	Kottendal
33	Periyakulam			93.51	33.00	1.00	3.88	5.473	1.418	4.030	4.630	5	1	28.60	19.32	4000	3500	Kadukusandai	Mariyoor
34	Mariyoor			53.22	10.80	1.16	3.37	6.990	0.730	4.000	4.600	3	1	25.00	12.60	2590		Rain fed, Krishnapuram	Tharavai







## **1.4. Participatory Irrigation Management (PIM)**

**Salient Features of Implementation of PIM  
in Palar Sub-basin**

**1) The Sub-basin:** This is one of the nine sub-basins of the Gundar River Basin. Totally 34 irrigation tanks are under the control of Water Resources Department (WRD) of Public Works Department (PWD) in this sub-basin. The list of Tanks covered with more details are furnished in the **Annexure – 1**. These **34** tanks are located within the sub-basin's hydraulic boundary spread over 34 villages of Mudulathur and kadaladi of Ramanathapuram District. **The total Command area under these 34 tanks works out to 3051.05ha. (Annexure 1)**

**2) Command area:**

i. Under Non-system tanks (34 tanks)	<b>3051.05ha</b>
Total (34) Tanks	<b>3051.05ha</b>

**3) An assessment of number of WUAs.**

i) Associations <b>proposed to be formed</b> under IAMWARM Project covering 34 tanks and villages only	34 Nos (3051.05 ha)
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**4) An account of “Awareness creation”.**

Activities undertaken and “Walkthrough Surveys” carried out:

- i) There are 34 tanks in the sub-basin spread over 34 villages.
- ii) As detailed out in Annexure – 01. All these villages were visited by the WRD officials and awareness about various activities, contemplated under IAMWARM project has been created.
- iii) Details of villages covered, walkthrough surveys conducted, farmers attended, list of works suggested by the farmers, list of works analysed and finalized by WRD officials, are all furnished in the Annexure – 02.

- 5) Schedule for completion of delineation and preparation for WUA documents, comprising of:
  - i) Form – I : Details to be notified by District Collectors (End of March – 09)
  - ii) Form – II: WUA document to be notified by District Collectors (End of April – 09)
  - iii) Completion of preparatory works for the conduct of Elections for WUAs (End of May – 09)
- 6) Schedule for Conduct of Elections in the sub-basin for farming Management committees will be completed by end of July 2009.
- 7) Initiating and completing the process of publishing EOI to hire Support Organisation at sub-basin level (End of Feb 2009)
- 8) Providing Request for Proposals (RFPs) to all the short listed agencies, and obtaining Technical and Cost Proposals (Middle of April, 2009)
- 9) Selection and deployment of Support Organisation to the sub-basin (End of May, 2009)
- 10) Appointment and the Role of Competent Authorities:
  - i) Section 26 of the Tamil Nadu Farmers’ Management of Irrigation Systems (TNFMIS) Act provides for the appoint of “Competent Authorities” to assist the respective farmers organizations (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-option or assistance, as may be required by the Competent Authority, for carrying out all the tasks related to implementation of TNFMIS Act.
  - ii) It is proposed to form 34 WUAs only under IAMWARM Project to cover a command area of 3051.05 ha..
  - iii) 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 Division
Officers working in the

**Palar Sub-basin:**

a. Assistant Executive Engineer; W.R.O; P.W.D. Gundar Basin Sub Division  
Mudukulathur----WUA's-----PLR 1-15  
Kadaladi -----WUA's-----PLR 16-34

.List of Competent Authorities:

a. Section Officer, WRD, Irrigation Section, Gundar Basin, Mudukulathur (I&II).	WUA's PLR –1 to 15
b. Section Officer, WRD, Irrigation Section, Gundar Basin, Kadaladi(I&II).	WUA's PLR –16 to 34

11) Involvement of farmers in the preparation "Scheme Modernisation 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 No. of farmers from 34 villages and the tasks were also prepared and exhibited in the Notice Board of the Village Administrative Officers Office and Panchayat Office.
- 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 the work, as well as in the Panchayath Office, for information of the farmers. They have also been informed that they are free to supervise the work by the contractor and any lapse in the quality of work may be reported to the field officers of WRD, as well as the Executive Engineer of WRD, who has been designated as the Nodal Officer for the sub-basin concerned.
- iii) The field officers of WRD have all been informed about the problems in handing over the operation and maintenance responsibilities to the farmers concerned, if the tasks as desired by them are not included in the modernization of the system and also in case some of the tasks already planned are not implemented due to some reasons or other.

- iv) The WRD officers were also informed that they are personally responsible for handing over the irrigation systems after completing the tasks related to modernization of Irrigation systems.

12) Current status of Recovery of water charges:

- i) An enquiry conducted with the "Village Administrative Officers" (VAO's) of randomly selected villages (15 numbers out of 89 villages), the normal water charges recovery as informed by the VAO, works out to 50-60% only, about the expected percentage of 80-90%.
- ii) With the proposal to form new WUA's under IAMWARM in Palar 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.

13) "Capacity Building" of the WUA farmers:

- i) The "Support Organisation 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" programmes at **suitable locations** within the sub-basin command area, to benefit the farmers of the WUA's in the sub-basin.
- ii) The "Support Organisation" will also arrange for organizing 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 thereby the farmer's income.
- iii) The Support Organisation will also conduct necessary "awareness programme" and impart training to educate the farmers of the WUA's in all aspects of the TNFMIS Act, TNFMS Rules and Election procedures for constituting the "Managing Committees" of the WUA's.

- 14) The "Competent Authorities" appointed for the **sub-basin** will also be trained to effectively interact with WUA farmers and maintain good rapport and relationship with the farming community in the sub-basin.

<b>DETAILS OF WUA's PROPOSED / EXISTING IN PALAR SUB-BASIN</b>				
<b>Sl. No.</b>	<b>WUA No.</b>	<b>Tank &amp; villages it covers</b>	<b>Name of the WUA</b>	<b>Ayacut Area in Ha</b>
<b>Existing WUA's</b>				
			<b>NIL</b>	
<b>Proposed WUA's</b>				
1	PLR -1	Kumarakuruchi	Kumarakuruchi tank Water Users Association	122.69
2	PLR -2	Karumal	Karumal tank Water Users Association	86.65
3	PLR -3	Sadayaneri	Sadayaneri tank Water Users Association	72.44
4	PLR -4	Melapanaiyur	Melapanaiyur tank Water Users Association	69.01
5	PLR -5	Arapodu	Arapodu tank Water Users Association	43.42
6	PLR -6	Lagal	Lagal tank Water Users Association	45.47
7	PLR -7	Theriruvveli big	Theriruvveli big tank Water Users Association	138.92
8	PLR -8	Theriruvveli small	Theriruvveli small tank Water Users Association	56.89
9	PLR -9	Pooseri	Pooseri tank Water Users Association	63.11
10	PLR -10	Adankottankudi	Adankottankudi tank Water Users Association	140.29
11	PLR -11	Kolikulam	Kolikulam tank Water Users Association	53.21
12	PLR -12	Keelasirupodu	Keelasirupodu tank Water Users Association	157.27
13	PLR -13	Melasirupodu	Melasirupodu tank Water Users Association	136.26
14	PLR -14	C.Vagaikulam	C.Vagaikulam tank Water Users Association	44.4
15	PLR -15	Alangulam	Alangulam tank Water Users Association	50.72
16	PLR -16	P.Keeranthal	P.Keeranthal tank Water Users Association	43.90
17	PLR -17	Pannantai	Pannantai tank Water Users Association	44.50
18	PLR -18	Peykulam	Peykulam tank Water Users Association	94.10
19	PLR -19	Sokkanai	Sokkanai tank Water Users Association	50.35

20	PLR - 20	Maravaikudi	Maravaikudi tank Water Users Association	43.14
21	PLR - 21	Vallakulam	Vallakulam tank Water Users Association	125.53
22	PLR - 22	Sikkal	Sikkal tank Water Users Association	397.64
23	PLR - 23	Idampadal	Idampadal tank Water Users Association	122.34
24	PLR - 24	Siraikulam	Siraikulam tank Water Users Association	51.16
25	PLR - 25	Kaluneermangalam	Kaluneermangalam tank Water Users Association	56.90
26	PLR - 26	Thathangudi	Thathangudi tank Water Users Association	91.48
27	PLR - 27	Thanichiyam	Thanichiyam tank Water Users Association	86.49
28	PLR - 28	Thiruvarangai	Thiruvarangai tank Water Users Association	69.30
29	PLR - 29	Keelakidaram	Keelakidaram tank Water Users Association	83.21
30	PLR - 30	Kothankulam	Kothankulam tank Water Users Association	57.60
31	PLR - 31	Kottaiyendal	Kottaiyendal tank Water Users Association	112.37
32	PLR - 32	Poolankulam	Poolankulam tank Water Users Association	93.56
33	PLR - 33	Periyakulam	Periyakulam tank Water Users Association	93.51
34	PLR - 34	Mariyoor	Mariyoor tank Water Users Association	53.22

\*PLR – Palar sub basin Non system tank



**Annexure –1**

**An Assessment of Command Area and WUAs under the Control of WRO of PWD in “PALAR Sub – basin”.**

Sl No.	Name of Irrigation Systems and Tanks	Comm and area in (ha)	Location of the Command Area			Coverage of Command Area under Different project (ha)		Status of Formation of WUAs in the sub basin	
			Village	Taluk	District	WRCP and Others	IAM WARM	Formed under WRCP (Code)	To be formed under IAMWARM (Code)

<b>Non –system Tanks</b>				Mudukuliathur	Ramanathapuram				
1	Kumarakuruchi kanmoi	122.69	Kumarakuruchi					----	----
2	Karumal kanmoi	86.65	Karumal			----	----	----	--do--
3	Sadayaneri kanmoi	72.44	Keelasirupodu			----	----	----	--do--
4	Melapanaiyur kanmoi	69.01	Keelasirupodu			----	----	----	--do--
5	Arapodu kanmoi	43.42	Karumal			----	----	----	--do--
6	Lagal kanmoi	45.47	Theriruveli						--do--
7	Theriruveli big	138.92	Theriruveli						--do--
8	Theriruveli small kanmoi	56.89	Theriruveli			----	----	----	--do--
9	Pooseri kanmoi	63.11	Pooseri			----	----	----	--do--
10	Adankottankudi kanmoi	140.29	Adankottankudi			----	----	----	--do--
11	Kolikulam kanmoi	53.21	Adankottankudi			----	----	----	--do--
12	Keelasirupodu kanmoi	157.27	Keelasirupodu			----	----	----	--do--
13	Melasirupodu kanmoi	136.26	Melasirupodu			----	----	----	--do--
14	C.Vagaikulam kanmoi	44.4	Melasirupodu			----	----	----	--do--
15	Alangulam kanmoi	50.72	Adankottankudi			----	----	----	--do--
16	P.Keeranthal kanmoi	43.90	P.Keeranthal	dal		----	----	----	--do--

1 7	Pannantai kanmoi	44.50	P.Keeranthai	Kadaladi	----	----	----	--do--
1 8	Peykulam kanmoi	94.10	Peykulam		----	----	----	--do--
1 9	Sokkanai kanmoi	50.35	Panivasal		----	----	----	--do--
2 0	Maravaikudi kanmoi	43.14	Panivasal		----	----	----	--do--
2 1	Vallakulam kanmoi	125.5 3	Panivasal		----	----	----	--do--
2 2	Sikkal kanmoi	397.6 4	Sikkal		----	----	----	--do--
2 3	Idampadal kanmoi	122.3 4	Idampadal		----	----	----	--do--
2 4	Siraikulam kanmoi	51.16	Siraikulam		----	----	----	--do--
2 5	Kaluneermangal am kanmoi	56.90	Peyk.ulam		----	----	----	--do--
2 6	Thathangudi kanmoi	91.48	P.Keeranthai		----	----	----	--do--
2 7	Thanichiyam kanmoi	86.49	Thanichiyam		----	----	----	--do--
2 8	Thiruvarangai kanmoi	69.30	Keelakidaram		----	----	----	--do--
2 9	Keelakidaram kanmoi	83.21	Keelakidaram		----	----	----	--do--
3 0	Kothankulam kanmoi	57.60	Keelakidaram		----	----	----	--do--
3 1	Kottaiyendal kanmoi	112.3 7	Melakidaram		----	----	----	--do--
3 2	Poolankulam kanmoi	93.56	P.Keeranthai		----	----	----	--do--
3 3	Periyakulam kanmoi	93.51	Periyakulam		----	----	----	--do--
3 4	Mariyoor kanmoi	53.22	Mariyoor		----	----	----	--do--

## **ABSTRACT**

1. Command Area already covered under WRCP and other projects / schemes **Nil**
2. Command Area Proposed to be covered under IAMWARM Project **3051.05 ha.**
3. Total Command area controlled by WRO of PWD in the sub basin **3051.05ha.**
4. Total No.of WUA's already formed under WRCP **Nil**
5. Total No.of WUA's proposed to be formed under IAMWARM **34 Nos.**
6. Total No.of WUA's that will cover the entire sub –basin **34 Nos.**

## Annexure-2

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

Name of the Sub Basin: Palar

SI. NO	Date of Visit	Names if the Villages Visited	Awareness Programme(No.of Farmers attended) (Prepare the list of farmers with ackonolwdgement sperately and attach)	Walk Through Survey(No.of Farmers Participated) (Prepare the list of farmers with ackonolwdgement sperately and attach)	Remarks
1	2	3	4	5	6
1	7.10.2008	Pooseri Tank	7Nos	7Nos	
2	7.10.2008	Adankothankudi tank	10 Nos	10Nos	
3	14.10.2008	Periyakulam Tank	6 Nos	6Nos	
4	14.10.2008	Sikkal Tank	181Nos (26.01.2009)	6Nos	
5	13.11.2008	Theriruvveli big tank	4 Nos	4Nos	
6	13.11.2008	Theriruvveli small tank	4 Nos	4Nos	
7	13.11.2008	Arapodu Tank	4 Nos	4Nos	
8	18.11.2008	Peykulam Tank	5 Nos	5Nos	
9	18.11.2008	Pannantai Tank	6 Nos	6Nos	
10	18.11.2008	Thathangudi	10 Nos	10Nos	
11	18.11.2008	P.Keerantai Tank	4 Nos	4Nos	
12	20.11.2008	Sadayaneri Tank	7 N0s	7Nos	
13	20.11.2008	Melasirupodu Tank	11Nos	11Nos	
14	20.11.2008	Keelasirupodu Tank	8 Nos	8Nos	
15	20.11.2008	C.Vagaikulam	5Nos	5Nos	
16	20.11.2008	Thiruvarangai	4 Nos	4Nos	
17	28.11.2008	Melapanaiyur Tank	5Nos	5Nos	
18	28.11.2008	Kolikulam	8 Nos	8Nos	
19	28.11.2008	Alangulam	8 Nos	8Nos	
20	3.12.2008	Kottaiyendal Tank	6 Nos	6Nos	
21	3.12.2008	Keelakidaram	5 Nos	5Nos	
22	3.12.2008	Mariyoor Tank	8 Nos	8Nos	

23	3.12.2008	Siraikulam	8 Nos	8Nos	
24	10.12.2008	Kothankulam Tank	7 Nos	7Nos	
25	10.12.2008	Kaluneer mangalam	6Nos	6Nos	
26	10.12.2008	Maravaikudi Tank	5Nos	5Nos	
27	10.12.2008	Idampadal	8 Nos	8Nos	
28	26.01.2009	Vallakulam	122Nos (26.01.2009)	15Nos	
29	26.01.2009	Thanichiyam	8Nos	8Nos	
30	26.01.2009	Poolangulam	14 Nos	14Nos	
31	26.01.2009	Sokkanai	122Nos (26.01.2009)	10Nos	
32	26.01.2009	Kumarakurichi	102Nos	11Nos	
33	27.01.2009	Karumal	6 Nos	6Nos	
34	27.01.2009	Lagal	8 Nos	8Nos	

### Annexure-3

#### Details of Modernisation works as suggested by the Farmers and as finalised by the Officials of WRO

Name of the Sub Basin:Palar

S. No	Date of Visit	Names if the Villages Visited	Outcome of wald through survey and discussions with farmers	
			Works suggested by Farmers	Works finalized by WRO Officials
1	2	3	4	5
1	7.10.2008	Pooseri Tank	Farmers requested to reconstruct one sluice, repair to two slucies, repair to weir and to desilt the tank and supply channel so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
2	7.10.2008	Athankothankudi tank	Farmers requested to reconstruct of two sluice, repairs to five sluice , repairs to weir and to desilt the tank so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
3	14.10.2008	Periyakulam Tank	Farmers requested to reconstruct of five number of sluice, repair to one weir and to desilt the tank and supply channel so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
4	14.10.2008	Sikkal Tank	Farmers requested to reconstruct eight number of sluices, repairs to two weir, construction of retaining wall and to desilt the tank and supply channel so that they can use water at the end of crop period withoutany deficit.	All Works are fulfilled
5	13.11.2008	Theriruvveli big tank	Farmers requested to Repair Sluice number one.	All Works are fulfilled
6	13.11.2008	Theriruvveli small tank	Farmers requested to desilt the tank and shutter arrangement for four sluices so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
7	13.11.2008	Arapodu Tank	Farmers requested to reconstruct of front cistern for sluice number four with shutter arrangement and shutter arrangement for sluice number two so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
8	18.11.2008	Peykulam Tank	Farmers requested to reconstruct rear cistern for sluice number five and pipe barrel to be replaced so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
9	18.11.2008	Pannantai Tank	Farmers requested to reconstruct one sluice, and to desilt the tank and supply channel so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
10	18.11.2008	Thathangudi	Farmers requested to repair three number of sluice, reconstructed three weir and to desilt and strengthen the tank .	All Works are fulfilled

11	18.11.2008	P.Keerantai Tank	Farmers requested to repair one sluice, repair to weir and to desilt the supply channel so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
12	20.11.2008	Sadayaneri Tank	Farmers requested to desilt the tank and supply channel and reconstruct of head sluice to supply channel so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
13	20.11.2008	Melasirupodu Tank	Farmers requested to repair one weir and to desilt the tank so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
14	20.11.2008	Keelasirupodu Tank	Farmers requested to repair one weir and to desilt the tank so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
15	20.11.2008	C.Vagaikulam	Farmers requested to construct a bathing ghats, fix boundary stones for the tank.	All Works are fulfilled
16	20.11.2008	Thiruvarangai	Farmers requested to repair three number of sluice, reconstruct to one sluice, repair to weir and to desilt the tank and supply channel so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
17	28.11.2008	Melapanaiyur Tank	Farmers requested to reconstruct two number of sluice, repair to one weir and to desilt the supply channel so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
18	28.11.2008	Kolikulam	Farmers requested to repair one number of sluice and to desilt and strengthen the Supply Channel.	All Works are fulfilled
19	28.11.2008	Alangulam	Farmers requested to reconstruct three numbers of sluice, repair to one weir, Construction of Retaining Wall and to desilt and strengthen the tank.	All Works are fulfilled
20	3.12.2008	Kottaiyendal Tank	Farmers requested to reconstruct two number of sluice, repair to three number sluice, construction of retaining wall and to desilt the tank and supply so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
21	3.12.2008	Keelakidaram	Farmers requested to desilt and strengthen the tank.	All Works are fulfilled
22	3.12.2008	Mariyoor Tank	Farmers requested to reconstruct two number of sluice, repair to one weir and to desilt the tank so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
23	3.12.2008	Siraikulam	Farmers requested to reconstruct two numbers of sluice, repair to one weir and construction of Retaining Wall.	All Works are fulfilled

24	10.12.2008	Kothankulam Tank	Farmers requested to reconstruct one sluice and repair one sluice, repair to weir and so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
25	10.12.2008	Kaluneer mangalam	Farmers requested to reconstruct one number of sluice ,construction of Retaining Wall and to desilt the tank.	All Works are fulfilled
26	10.12.2008	Maravaikudi Tank	Farmers requested to reconstruct two sluice and repair three sluice, repair to weir and desilting the tank bund so that they can use water at the end of crop period without any deficit.	All Works are fulfilled
27	10.12.2008	Idampadal	Farmers requested to repair to one weir and construction Retaining Wall.	All Works are fulfilled
28	26.01.2009	Vallakulam	Farmers requested to reconstruct two sluice and repair to weir and construction of Retaining Wall and to desilt and strengthen the tank.	All Works are fulfilled
29	26.01.2009	Thanichiyam	Farmers requested to repair four sluice .	All Works are fulfilled
30	26.01.2009	Poolangulam	Farmers requested to reconstruct two sluice and repair to two sluices, and construction of Retaining Wall and to desilt and strengthen the tank.	All Works are fulfilled
31	26.01.2009	Sokkanai	Farmers requested to reconstruct one sluice and repair to one sluice, and construction of Retaining Wall .	All Works are fulfilled
32	26.01.2009	Kumarakurichi	Farmers requested to reconstruct of two number of sluices, repair to one sluice,repair to one weir and to construction of Retaining Wall.	All Works are fulfilled
33	27.01.2009	Karumal	Farmers requested to reconstruct of two number of sluices and to construction of Retaining Wall.	All Works are fulfilled
34	27.01.2009	Lagal	Farmers requested to reconstruct of one number of sluices,repair to one weir and construct of head sluice.	All Works are fulfilled

**Annexure I**  
**1.4.1.WALK THROUGH SURVEY**

**NAME OF THE SUB BASIN: PALAR**

Sl. NO	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								Remarks					
	Date	Location		WRO	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRO	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
1	7.10.2008	Pooseri Tank	Farmers requested to reconstruct one sluice, repair to two sluices, repair to weir and desilt and strengthen the tank and supply channel.	As per the farmers request proposal made for strengthening the tank bund, supply channel, reconstruction of sluices and repair work carried out to weir and sluices.			Formation and Lining of Channel requested to be taken up			Latest Technology Department and fodder cholam supply		Bund:4600m Supply Channel:2440m Sluice:3Nos Weir:1No Head Sluice Repair			C.A.D.P work Proposed			Supply of fodder cholam							
2	7.10.2008	Athankothan-kudi tank	Farmers requested to reconstruct of two sluices, repairs to five sluices , repairs to weir and desilt and strengthen the tank and supply channel.													Bund:3210m Sluice:7Nos Weir:1No									
3	14.10.2008	Periyakulam Tank	Farmers requested to reconstruct of five number of sluices, repair to one weir and to desilt and strengthen the tank and supply channel.													Bund:4000m Supply Channel:3500m Sluice:5Nos Weir:1No									
4	14.10.2008	Sikkal Tank	Farmers requested to reconstruct eight number of sluices, repairs to two weir, construction of retaining wall and desilt and strengthen the tank and supply channel.													Bund:7900m Sluice:8Nos Weir:1Nos supply chaannel:10000m									
5	13.11.2008	Theriruvveli big tank	Farmers requested to Repair Sluice number one.		Supply Channe to be Provided.				and Lining of Channel work to be taken				Department and fodder			Bund:3015m Sluice:4Nos Weir:1 supply chaannel:1870m				C.A.D.P work Proposed			Supply of fodder cholam		













## 1.5 IRRIGATION INFRASTRUCTURE

### 1.5.1.List of Anicuts

**NAME OF THE SUB BASIN: PALAR**

Sl. No	Anicuts	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity
1	2	3	4	5	6	7	8
_____			<b>NIL</b>	_____			

**1.5.2. LIST OF SYSTEM TANKS - NIL**

**1.5.3. LIST OF NON SYSTEM TANKS**

**NAME OF THE SUB BASIN:PALAR**

Sl. No	Tank	Village	Block	Taluk	District	Ayacut Area in Ha	Capacity
1	2	3	4	5	6	7	8
1	Kumarakuruchi	Kumarakuruchi	Mudukulathur	Mudukulathur	Ramanathapuram	122.69	24.05
2	Karumal	Karumal				86.65	14.5
3	Sadayaneri	Keelasirupodu				72.44	11.28
4	Melapanaiyur	Keelasirupodu				69.01	21.00
5	Arapodu	Karumal				43.42	9.57
6	Lagal	Theriruvveli				45.47	0.46
7	Theriruvveli big	Theriruvveli				138.92	1.38
8	Theriruvveli small	Theriruvveli				56.89	20.98
9	Pooseri	Pooseri				63.11	28.78
10	Adankottankudi	Adankottankudi				140.29	31.46
11	Kolikulam	Adankottankudi				53.21	16.00
12	Keelasirupodu	Keelasirupodu				157.27	31.50
13	Melasirupodu	Melasirupodu				136.26	24.36
14	C.Vagaikulam	Melasirupodu				44.4	8.27
15	Alangulam	Adankottankudi				50.72	10.09
16	P.Keeranthai	P.Keeranthai	Kadaladi	Kadaladi	Ramanathapuram	43.90	18.05
17	Pannantai	P.Keeranthai				44.50	8.75
18	Peykulam	Peykulam				94.10	11.46
19	Sokkanai	Panivasal				50.35	8.75
20	Maravaikudi	Panivasal				43.14	13.32
21	Vallakulam	Panivasal				125.53	29.40
22	Sikkal	Sikkal				397.64	117.82
23	Idampadal	Idampadal				122.34	36.17
24	Siraikulam	Siraikulam				51.16	8.43

25	Kaluneermangalam	Peykulam			56.90	18.80
26	Thathangudi	P.Keeranthai			91.48	33.35
27	Thanichiyam	Thanichiyam			86.49	10.00
28	Thiruvarangai	Keelakidaram			69.30	9.39
29	Keelakidaram	Keelakidaram			83.21	21.89
30	Kothankulam	Keelakidaram			57.60	6.60
31	Kottaiyendal	Melakidaram			112.37	51.31
32	Poolankulam	P.Keeranthai			93.56	17.04
33	Periyakulam	Periyakulam			93.51	33.00
34	Mariyoor	Mariyoor			53.22	10.80



### 1.5.3.List of Supply Channel

**NAME OF THE SUB  
BASIN: PALAR**

Sl. No	Name of Supply Channel	Off take point	Length in Km	Village	Block	Taluk	District
1	Kumarakuruchi	Ragunatha Cauvery	1.739	Kumarakuruchi	Mudukulathur	Mudukulathur	Ramanathapuram
2	Karumal	--do--	0.976	Karumal			
3	Sadayaneri	--do--	1.700	Keelasirupodu			
4	Melapanaiyur	--do--	0.915	Keelasirupodu			
5	Arapodu	--do--	0.366	Karumal			
6	Lagal	--do--	1.098	Theriruveli			
7	Theriruveli big	--do--	1.870	Theriruveli			
8	Theriruveli small	--do--	2.417	Theriruveli			
9	Pooseri	--do--	2.440	Pooseri			
10	Adankottankudi	--do--	1.037	Adankottankudi			
11	Kolikulam	--do--	1.000	Adankottankudi			
12	Keelasirupodu	--do--	6.700	Keelasirupodu			
13	Melasirupodu	--do--	1.409	Melasirupodu			
14	C.Vagaikulam	--do--	0.990	Melasirupodu			
15	Alangulam	--	--	Adankottankudi			
16	P.Keeranthai	--	--	P.Keeranthai	Kadaladi	Kadaladi	Ramanathapuram
17	Pannantai	--	--	P.Keeranthai			
18	Peykulam	Ragunatha Cauvery	2.135	Peykulam			
19	Sokkanai	--do--	1.506	Panivasal			
20	Maravaikudi	--	--	Panivasal			
21	Vallakulam	--	--	Panivasal			
22	Sikkal	Ragunatha Cauvery	10.00	Sikkal			
23	Idampadal	--do--	1.952	Idampadal			
24	Siraikulam	--	--	Siraikulam			

25	Kaluneermangalam	--	--	Peykulam
26	Thathangudi	Ragunatha Cauvery	3.000	P.Keeranthai
27	Thanichiyam	--	--	Thanichiyam
28	Thiruvarangai	Ragunatha Cauvery	3.000	Keelakidaram
29	Keelakidaram	--	--	Keelakidaram
30	Kothankulam	--	--	Keelakidaram
31	Kottaiyendal	Ragunatha Cauvery	2.450	Melakidaram
32	Poolankulam	--	--	P.Keeranthai
33	Periyakulam	Ragunatha Cauvery	3.500	Periyakulam
34	Mariyoor	--	--	Mariyoor

**1.5.4.List of tanks/Anicuts executed under various schemes (Viz, Part II Scheme, NABARD, WRCP I etc.,) since 2000.**

**NAME OF THE SUB BASIN: PALAR**

Sl. No.	Name of Anicut / Tank	Ayacut	Scheme in which executed	Amount (lakhs)	Details of components executed	Details of Components Proposed IAMWARM
1	2	3	4	5	6	7
1	Kumarakuruchi	122.69	NABARD(Special Project)	--	Earth Work Only.	Constn. Of RW,RE of Sluicell and Weir,RC of Sluice I &III ,Providing S.G Shutter and Boundary Stone.
2	Karumal	86.65	NABARD(Special Project)	17.00	Earth Work Only,Weir Repair..	Constn. Of Ret.Wall,Recontn.,of Sluice, Boundary Stone.
3	Sadayaneri	72.44	TMS	--	Reconstruction of Sluices three Numbers.	St.TB,Constn Retaining Wall,Repairs to Sluice,DS chl ,Model Section and Boundary Stone.
4	Melapanaiyur	69.01	IWRM PHASE I	13.60	Earth Work, Reconstruction of Sluice one Number,Field channel for four sluice(each 65m length).	Constn. Of RW,RC of Sluice No II,Re of Weir and Boundary Stone.
5	Arapodu	43.42	IWRM PHASE I	15.15	Earth Work, Reconstruction of Sluice two Numbers,Field channel for five sluice(each 118m length).	RE of Sluice,Providing S.G Shutter and Boundary Stone.
6	Lagal	45.47	MLA	10.00	Earth Work ,Supply Channel,Reconstruction of Sluice one Number,Field Channel.	Constn. Of,Ret.Wall,Reconstn., of Sluice,Repair of weir.
7	Theriruvveli big	138.9	IWRM PHASE II	21.92	Earth Work ,Reconstruction of Sluice three Numbers,Field Channel for Seven Sluices.	Repair of Sluice.
8	Kolikulam	53.21	IWRM PHASE I	13.96	Earth Work ,Reconstruction of Sluice two Numbers,Field Channel for three Sluices.	Constn. Of RW,RE of Sluice,Boundary Stone,Steps.
9	Keelasirupodu	157.27	IWRM PHASE II	30.12	Reconstruction of Sluice three Number,Field Channel for three Sluices.	Repair of Weir,Steps.
10	Melasirupodu	136.26	IWRM PHASE II	28.17	Reconstruction of Sluice five Numbers,Field Channel for three Sluices.	Repair of Weir,Steps.

11	C.Vagaikulam	44.4	IWRM PHASE II	8.00	Construsion of Retaining Wall for length 100m.	Boundary Stone.
12	P.Keeranthai	43.90	NABARD	--	Earth Work ,Reconstruction of Sluice I ,Field Channel	RC of Sluice II,RE of Weir,Boundary Stone.
13	Peykulam	94.10	IWRM PHASE II	16.70	Earth Work ,Reconstruction of Sluice two Numbers,Field Channel for Six Sluices.	Repair of Sluice and Weir.
14	Sokkanai	50.35	IWRM PHASE I	10.44	Earth Work ,Reconstruction of Sluice two Numbers,Field Channel for three Sluices.	Constn. Of RW,RC.of Sluice,RE of Sluice,Boundary Stone.
15	Idampadal	122.34	IWRM PHASE II	22.50	Earth Work ,Reconstruction of Sluice two Numbers,Field Channel for four Sluices.	Constn. Of RW,RE of Weir.
16	Siraikulam	51.16	PART-II	56.33	Earth Work ,Reconstruction of Sluicell &IV,Field Channel ,Thrashing	Constn. Of RW,RC of Sluice I,Boundary Stone.
17	Kaluneermangalam	56.90	IWRM PHASE I	8.85	Earth Work ,Reconstruction of Sluice one Number,Field Channel for three Sluices.	St.TB AT Damaged portion,Constn. Of RW,RC of Sluice II,Boundary Stone,Model Section.
18	Thathangudi	91.48	IWRM PHASE II	20.20	Earth Work ,Reconstruction of Sluice one Numbers,Field Channel for four Sluices.	Constn. Of RW,RE of Sluice,Providing S.G.Shutter,DS chl.
19	Thanichiyam	86.49	NABARD	--	Earth Work ,Reconstruction of Sluice one Number,Field Channel	Constn. Of RW,RE of Sluice,Boundary Stone.
20	Keelakidaram	83.21	NABARD	--	Earth Work to the bund,Reconstruction of Sluice one Number,Repair to Sluice one Number.	St.TB,Constn. Of RW,RE of Sluice,Boundary Stone,Model Section.
21	Kothankulam	57.60	IWRM PHASE I	12.79	Earth Work ,Reconstruction of Sluice( one Number) III,Field Channel for four Sluices.	Constn. Of RW,RC of Sluice I,RE of Weir,Providing S.G.Shutter,Boundary Stone.
22	Mariyoor	53.22	IWRM PHASE I	9.81	Earth Work ,Reconstruction of Sluice No.I,Field Channel for three Sluices.	Constn. Of RW,RC SluicenO.II,RE Weir,Boundary Stone.

**1.5.5.ABSTRACT ON THE DETAILS OF IRRIGATION INFRASTRUCTURE AVAILABLE AND WORKS  
TAKEUP UNDER IAMWARM PROJECT**

**Name of Sub Basin: Palar**

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 Infrastructure in sub basin	--	--	--	--	--	--	34	52.20	3051.05	--	--	
2	Infrastructure excluded in iamwarm project since works carried out under various schemes from 2000	--	--	--	--	--	--	22	--	1760.49	--	--	
3	Infrastructures that does not require any rehabilitation works	--	--	--	--	--	--	--	--	--	--	--	
4	Works taken up in iamwarm project i)Works taken up under WRCP but also in IAMWARM	--	--	--	--	--	--	22	--	1760.49	--	--	The components that are not executed in other schemes only proposed in this scheme.
	ii)Work proposed in IAMWARM	--	--	--	--	--	--	12	21.337	1290.56	--	--	

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



**1.6 REHABILITATION OF IRRIGATION  
INFRASTRUCTURE**

## **1.6. REHABILITATION OF IRRIGATION INFRASTRUCTURE OF**

### **THE PALAR SUB-BASIN**

#### **1.6.1 STRUCTURAL STATUS & DEFICIENCIES IN THE SYSTEM**

The following are the present structural condition of the Palar sub basin system.

1. This system is a old system existing for more than 100 Years, as such requires Rehabilitation of tanks and its supply channels.
2. The tanks and its supply channels are heavily silted up which require Strengthening of tank bund and Improvements to Supply Channels.
3. The damaged (or) dilapidated condition of the Sluices, Weirs of tanks and Head Sluices of Supply Channels need Repairs.

In order to improve the conveyance and Operational Efficiency in Irrigation, it is now proposed to improve and modernize the Irrigation Infrastructures in Palar Sub basin.

1. Strengthening of tank bund by earthwork excavation using machineries.
2. Desilting the supply channels by earthwork excavation using machineries
3. Providing Bed bars to maintain the bed level and inner slopes of the supply channels
4. Repairing, Restoring the traditional water bodies (i.e. tanks)
  - a. Restoring the capacity of the tanks, supply channels by desilting
  - b. Strengthening the tank bund with Free board of 1.50m with consolidation by power roller for effective storing the water and conveying it to the entire command area and also for conveying agriculture inputs to the field.
  - c. Reconstruction of Collapsed weirs
  - d. Repairs to the damaged weirs
  - e. Reconstruction of Collapsed Sluices
  - f. Repairs to the damaged Sluices
  - g. Providing Model Sections and Retaining walls in selective area of the tanks
  - h. Providing S.G. Shutter / Plug arrangements to Sluices, Head sluices, Scour vents etc.,
  - i. Fixing Boundary Stones in the tanks to prevent encroachment
  - j. Removing, Repairing and refixing in position of the existing S.G. shuttering arrangements and providing locking arrangements etc.,
  - k. Provisions for Turfing the rear side slopes of the tank bund near Sluices and Weir

### **Desilting the Supply channel:**

There are 34 tanks situated within Palar Sub Basin catchment area. Apart from the sources from its own water spread area, the Palar Sub Basin gets water from Sikkal Nadukal which takes off from Rangunatha Cavery. The Sikkal Channel runs for a length of 10km upto Sikkal tank, which feed 8Nos of tanks. The channel is heavily silted up, which results adequate quantum of water is not carried out through these channels to these tanks; and finds its way though adjacent cultivated fields. Lesser quantum of water flows to the tanks and balance water is over flanked and flows into agricultural lands.

By restoring these supply channel to the original section to carry adequate discharge to the tanks without over flanking, the desilting of supply channel is proposed in this project, with necessary Bed bars.

### **1.6.2 Outcome of the Project**

1. Increase in conveyance efficiency from 53% to 60%
2. The present Gap area of 367.87 ha. is to be reduced as 106.00 ha and 261.87 ha converted as fully irrigated area.
3. The following irrigation infrastructure development works are proposed in the sub basin  
Rehabilitation works for 34 tanks (22Nos of Tanks were taken up during the year 2002-2007 in Nabard and Part II scheme, for which balance components of work only proposed, which were not done in those Schemes.  
Rehabilitation of supply channel for 21.337KM.



### 1.6.1.Details of proposals in each Infrastructure of the sub basin

**NAME OF THE SUB BASIN: PALAR**

Sl.No	Name of tank/ Anicut/ Reservoir	Bund		Sluice				Weir				Anicut		Supply Channel		Amount in Lakhs
		Length(m)	Amt	Reconstruction		Repair		Reconstruction		Repair		Nos	Amt	Length(m)	Amt	
				Nos	Amt	Nos	Amt	Nos	Amt	Nos	Amt					
1	2	3	4	5		6		7		8		9	10	11	12	13
1	Kumarakuruchi		0.50	2	7.57	1	0.61					Nil	Nil			8.68
2	Karumal		0.50									-- do--	-- do--			0.50
3	Sadayaneri	3650	21.71			3	0.90					-- do--	-- do--	1700	2.19	24.80
4	Melapanaiyur		0.50	2	7.22					1	2.62	-- do--	-- do--			10.34
5	Arapodu		0.50			2	2.29					-- do--	-- do--			2.79
6	Lagal			1	3.57					1	0.82	-- do--	-- do--			4.39
7	Theriruvveli big											-- do--	-- do--			
8	Theriruvveli small	2713	15.88			4	1.20					-- do--	-- do--	2417	3.05	20.13
9	Pooseri	4600	27.60	3	11.50					1	3.42	-- do--	-- do--	2440	3.78	46.30
10	Adankottankudi	3210	21.38	5	18.08	2	4.50					-- do--	-- do--			43.96
11	Kolikulam		1.89			1	0.61					-- do--	-- do--			2.50
12	Keelasirupodu		1.38							1	5.20	-- do--	-- do--			6.58
13	Melasirupodu		1.38							1	3.35	-- do--	-- do--			4.73

14	C.Vagaikulam		0.51									--	--			0.51
15	Alangulam	2340	14.00	3	10.27				1	3.46		--	--			27.73
	TOTAL	16513	<b>107.73</b>		<b>58.21</b>		<b>10.11</b>			<b>18.87</b>					<b>9.02</b>	<b>203.94</b>
<b>Measuring in 61 Sluices @ 20200/No</b>															<b>12.32</b>	
<b>Total value</b>															<b>216.26</b>	
1	P.Keeranthai		0.51	1	3.51				1	1.03		--	--			5.05
2	Pannantai	2790	16.59	1	3.48	1	0.75					--	--			20.82
3	Peykulam					1	0.59		1	2.53		--	--			3.12
4	Sokkanai		0.78	1	3.28							--	--			4.06
5	Maravaikudi	2797	18.85	2	6.59							--	--			25.44
6	Vallakulam	3780	27.21	2	6.64							--	--			33.85
7	Sikkal	7900	48.71	8	28.7				2	7.41		--	--	10000	20.0	104.76
8	Idampadal								1	2.62		--	--			2.62
9	Siraikulam		3.20	2	6.14							--	--			9.34
10	Kaluneermangalam		0.78	1	3.02							--	--			3.80
11	Thathangudi											--	--	1280	1.88	1.88
12	Thanichiyam		1.02									--	--			1.02
13	Thiruvarangai	2550	27.16	1	3.05							--	--			30.21
14	Keelakidaram	4040	26.12									--	--			26.12
15	Kothankulam		0.78	2	6.72				1	4.02		--	--			11.52
16	Kottaiyendal	4200	26.54	2	7.00							--	--			33.54

17	Poolankulam		0.77	2	6.72						-- do--	-- do--			7.49	
18	Periyakulam	4000	28.57	5	14.26				1	1.34	-- do--	-- do--	3500	4.91	49.08	
19	Mariyoor		0.51	2	6.33				1	0.90	-- do--	-- do--			7.74	
	<b>TOTAL</b>	<b>32057</b>	<b>198.25</b>	<b>32</b>	<b>78.08</b>	<b>2</b>	<b>1.34</b>		<b>8</b>	<b>17.61</b>			<b>11280</b>	<b>21.87</b>	<b>381.46</b>	
	<b>Measuring in 86 Sluices @ 20400/No</b>														<b>17.63</b>	
															<b>Total value</b>	<b>399.09</b>



### 1.6.3.TANK DETAILS WITH FREE BOARD PROVIDED

NAME OF THE SUB BASIN: PALAR

SI. NO	Name of the Tank	Maximum Height of Bund	Free Board		Length of Bund(M)
			Provided previously	Proposed now	
1	2	3	4	5	6
1	Sadayaneri	3.270	1.00	1.50	3650
2	Theriruvveli small	3.110	1.00	1.50	2713
3	Pooseri	3.300	1.00	1.50	4600
4	Adankottankudi	3.660	1.00	1.50	3210
5	Alangulam	2.550	1.00	1.25	2340
6	Pannantai	2.940	1.00	1.25	2790
7	Maravaikudi	3.200	0.915	1.50	2797
8	Vallakulam	3.280	1.00	1.50	3780
9	Sikkal	4.490	1.00	1.50	7900
10	Kaluneermangalam	3.360	1.00	1.50	1890
11	Thiruvarangai	2.640	1.00	1.25	2550
12	Keelakidaram	3.200	1.00	1.50	4040
13	Kottaiyendal	4.160	1.00	1.50	4200
14	Periyakulam	2.805	1.00	1.25	4000



### 1.6.3.WRO COST TABLE

**NAME OF THE SUB BASIN: PALAR**

<b>Sl. No</b>	<b>Description of work</b>	<b>Quantity</b>	<b>Amount in Lakhs</b>	<b>Remarks</b>
<b>I. Tank Component</b>				
1	Improvements to Bund	48570M	335.84	
2	Improvements to Supply Channel	21337M	35.79	
	Reconstruction of Sluice	48	163.68	
3	Repairs to Sluice	15	11.45	
4	Repairs to Weir	14	38.72	
	Measuring device in 147 sluices	147	29.87	
	<b>SubTotal</b>		<b>615.35</b>	
	Environment cell		6.00	
	Ground water		<b>NIL</b>	
	<b>Total</b>		<b>621.35</b>	

### 1.6.4. PHYSICAL AND FINANCIAL PROGRAM

NAME OF THE SUB BASIN: PALAR

Sl. No	Description	I Year(2009-2010)		II Year(2010-2011)		Total	
		Quantity	Amount in Lakhs	Quantity	Amount in Lakhs	Quantity (Component Wise)	Amount in Lakhs
1	2	3	4	5	6	7	8
1	Improvements to Bund	29140m	201.50	19430m	134.34	48570m	335.84
2	Improvements to Supply Channel	12800m	21.47	8537m	14.32	21337m	35.79
	Reconstruction of Sluice	29	98.21	19	65.47	48	163.68
3	Repairs to Sluice	9	6.87	6	4.58	15	11.45
4	Improvements to Weir	8	23.23	6	15.49	14	38.72
6	Measuring devices in 147 sluices	88	17.92	59	11.95	147	29.87
	<b>SUB TOTAL</b>		<b>369.20</b>		<b>246.15</b>		<b>615.35</b>
7	Environmental		3.00		3.00		6.00
	<b>TOTAL</b>		<b>372.20</b>		<b>249.15</b>		<b>621.35</b>



**1.6.5.Package Details**  
**Package - 1**

**NAME OF THE SUB BASIN: PALAR**

<b>Sl. No.</b>	<b>Name of Tank / Anicut</b>	<b>Amount in Lakhs</b>
1	Rehabilitation of Non-System tank and its Supply Channel under Palar Sub Basin in Mudukulathur Taluk	216.26
	<b>Total</b>	<b>216.26</b>

**1.6.5.Package Details**  
**Package - 2**

**NAME OF THE SUB BASIN: PALAR**

<b>SI. No.</b>	<b>Name of Tank / Anicut</b>	<b>Amount in Lakhs</b>
1	Rehabilitation of Non-System tank and its Supply Channel under Palar Sub Basin in Kadaladi Taluk	399.09
	<b>Total</b>	<b>399.09</b>

## 1.6.7.PACKAGE 1 Calculation of machineries Requirement

**NAME OF THE SUB BASIN: PALAR**

<b>Hydraulic excavator &amp; 4 Tippers/Lorries</b>		6 Hours / Day		
( 4 No x 2 loads/ hour x 6 Hr x 4 m <sup>3</sup> / trip)				192 m <sup>3</sup> /Day
For 1 month ( 20 Working days )		20 x 192 m <sup>3</sup>		3840 m <sup>3</sup> / month
Total quantity of earth work		205000 m <sup>3</sup>		
Working period for earth work		6 months + 3 Months rainy season		
<b>Machineries required for earth work:</b>				
1. Hydraulic excavator - 6 nos				
2. Tippers / Lorries - 24nos				
3. Power roller - 6 nos				
4. Vibrated compactor - 6 nos				
5. Water lorries - 6 nos				
<b>Mixer machine</b>	2 m <sup>3</sup> / hour	For 6 hours / day		12 m <sup>3</sup> / day
Total quantity of concrete		2000m <sup>3</sup>		
<b>Mixer machine required</b>		<b>2 Nos</b> for 10 days / month -- 8 months		
<b>Material conveyence</b>		<b>Tippers / Lorries</b>		
Cement	10 mt / Trip	1 trip / day		10 mt / day
Sand	5.66 m <sup>3</sup> / Trip	2 trips / day		11.32m <sup>3</sup> /day
Metal / stone	5.60 m <sup>3</sup> / Trip	3 trips / day		16.80 m <sup>3</sup> /day
Total quantity of cement		375MT		
Lorry required for conveyence		375/10		38 Lorries
Total quantity of sand		1000 m <sup>3</sup>		
Lorry required for conveyence		1000/11.20		90 Lorries
Total quantity of metal		1800 m <sup>3</sup>		
Lorry required for conveyence		1800/16.8		108 Lorries
Total quantity of stone				
Lorry required for conveyence				
<b>Tipper / Lorries for conveyence of materials</b>		<b>5 Nos</b> for 20 days for 10 months		

**1.6.8. PACKAGE 2**  
**Calculation of machineries Requirement**

<b>Hydraulic excavator &amp; 4 Tippers/Lorries</b>		6 Hours / Day		
( 4 No x 2 loads/ hour x 6 Hr x 4 m <sup>3</sup> / trip)			192 m <sup>3</sup> /Day	
For 1 month ( 20 Working days )		20 x 192 m <sup>3</sup>	3840 m <sup>3</sup> / month	
Total quantity of earth work		429000 m <sup>3</sup>		
Working period for earth work		6 months + 3 Months rainy season		
<b>Machineries required for earth work:</b>				
1. Hydraulic excavator - 8 nos				
2. Tippers / Lorries - 32nos				
3. Power roller - 8 nos				
4. Vibrated compactor - 8 nos				
5. Water lorries - 8 nos				
<b>Mixer machine</b>	2 m <sup>3</sup> / hour	For 6 hours / day		12 m <sup>3</sup> / day
Total quantity of concrete		3400m <sup>3</sup>		
<b>Mixer machine required</b>		<b>3 Nos for 10 days / month -- 10 months</b>		
<b>Material conveyence</b>		<b>Tippers / Lorries</b>		
Cement	10 mt / Trip	1 trip / day		10 mt / day
Sand	5.66 m <sup>3</sup> / Trip	2 trips / day		11.32m <sup>3</sup> /day
Metal / stone	5.60 m <sup>3</sup> / Trip	3 trips / day		16.80 m <sup>3</sup> /day
Total quantity of cement		650MT		
Lorry required for conveyence		650/10		65 Lorries
Total quantity of sand		2000 m <sup>3</sup>		
Lorry required for conveyence		2000/11.20		180 Lorries
Total quantity of metal		3000 m <sup>3</sup>		
Lorry required for conveyence		3000/16.8		180 Lorries
Total quantity of stone				
Lorry required for conveyence				
<b>Tipper / Lorries for conveyance of materials</b>		<b>5 Nos for 20 days for 10 months</b>		

**PACKAGE NO 1**  
**1.6.8.REQUIREMENT OF EQUIPMENTS AND MATERIALS**

**NAME OF THE SUB BASIN: PALAR**

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
Package I	6	6	6	24	6	2	2	375	1000	3.5	950	850	-	-

**PACKAGE NO 2**  
**1.6.8.REQUIREMENT OF EQUIPMENTS AND MATERIALS**

**NAME OF THE SUB BASIN: PALAR**

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
Package II	8	8	8	32	8	3	3	650	2000	6.0	1800	1200	-	-

**PACKAGE I**  
**1.6.9.Construction Methodology**

**NAME OF THE SUB BASIN: PALAR**

**Name of Work:Rehabilitation of non system tanks under Palar sub basin in Mudukulathur Taluk of Ramanatahpuram District**

SI No	Description of Item	Working Months												Total
		1	2	3	4	5	6	7	8	9	10	11	12	
	<b>Earth work excavation</b>						<b>Rainy season</b>							
1	Bund	22000	22000	22000	22000	22000				21950	21950	21950	21950	197800 m <sup>3</sup>
2	Channel	1250	1250	1250	1250	1250				1250				7500 m <sup>3</sup>
3	Foundation				200	225				175	200			800 m <sup>3</sup>
	<b>Concrete</b>													
4	M 7.5 grade					115	95	135	115	115				575 m <sup>3</sup>
5	M 10 grade					90	95	105	90	95	90	95	90	750 m <sup>3</sup>
6	M 15 grade						15	20	15	10				60 m <sup>3</sup>
7	M 20 grade													
8	Random rubble masonry													
9	Plastering								20	50	50	50	30	200 m <sup>2</sup>

**PACKAGE II**

**1.6.10.Construction Methodology**

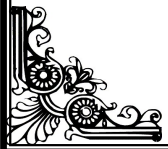
Name of Work:Rehabilitation of non system tanks under Palar sub basin in Kadaladi Taluk of Ramanathapuram District.

SI No	Description of Item	Working Months																		Total	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
	<b>Earth work excavation</b>						Rainy season														
1	Bund	24500	24500	24500	24500	25000				24500	24500	24500	24500	24500	24500	24500	24500	24500	24500	24500	368000 m <sup>3</sup>
2	Channel			6100	6100	6100				6100	6100	6100	6100	6100	6100	6100					61000 m <sup>3</sup>
3	Foundation				200	200				200	200	200									1000 m <sup>3</sup>
	<b>Concrete</b>																				
4	M 7.5 grade				140	200				200	180	180									900 m <sup>3</sup>
5	M 10 grade				85	190				175	160	175	160	180	200	75					1400 m <sup>3</sup>
6	M 15 grade									20	20	20	20	20							100 m <sup>3</sup>
7	M 20 grade																				
8	Random rubble masonry																				
9	Plastering									50	100	75	100	75							400 m <sup>2</sup>





## 1.7 ENVIRONMENTAL CELL



# INDEX

Environmental Monitoring on water and soil quality and creating awareness & updating of “Environmental and Social Assessment report” for PALAR SUB BASIN.

<b>SI No</b>	<b>DETAILS</b>	<b>SHEET NO</b>
1	Environmental Details Proforma	
2	List Of Water User Association	
3	Tanks Severely Affected by Weeds	(Annexure-I)
4	Sewage discharged into water bodies(Domestic sewage)	(Annexure-II)
5	Solid Waste into Water bodies	(Annexure- III)
6	List of Industries in the Sub basin	(Annexure –IV)
7	List of Ground water sampling point	(Annexure –V)
8	Result of Ground water quality	(Annexure - VI)
9	Estimate Report	
10	Detailed Estimate	
11	Abstract Estimate	
12	Baseline Data collection proforma	
13	Sub Basin Map	

IAMWARM PROJECT  
**(ENVIRONMENT COMPONENT IN SUB BASINS)**

Name of River Basin: GUNDAR BASIN

Name of Sub Basin: **PALAR**

Name of WUA: **To be form**

Name of Division: **Gundar Basin Division,  
Madurai**

Name of Sub Division: **Gundar Basin Sub Division ,  
Mudukalathur**

District: **Ramanathapuram**

Taluk: **Mudukulathur ,Kadaladi.**

Block: **Mudukulathur , Kadaladi.**

I. Name of the Tank Severly affected by Aquatic weeds Annexure- I

II. Domestic Sewage: Annexure -II

III. Municipal Solid Waste: Annexure -III

III. Industreies: Annexure -IV

IV. Water Quality Status:

i. Surface water: So for No water sampling points

II. Ground water: Annexure -V , VI .

**ANNEXURE -- I**

**PALAR SUB-BASIN --WEED DETAILS**

SI.No	District	Taluk	Block	Name of Village	System Tank		Type of Water Weeds
					Name of Tank	Ayacut(ha)	
1	Ramanathapuram	Mudhukulathur	Mudhukulathur	C.Vagaikulam tank	Mela sirupothu	68.70	ProsopisJuliflora
2				Mela sirupothu tank	Mela sirupothu	136.26	ProsopisJuliflora
3				Keela sirupothu tank	Keela sirupothu	69.01	ProsopisJuliflora
4				Kolikulam tank	Athankottankudi	53.21	ProsopisJuliflora
5				Sadayaneri tank	Keela sirupothu	72.44	ProsopisJuliflora
6				Melapannaiyur tank	Keela sirupothu	69.01	ProsopisJuliflora
7				Alakulam tank	Athankottankudi	50.32	ProsopisJuliflora
8				Arapothu tank	Karumal	43.42	ProsopisJuliflora
9				Theriruvveli big tank	Theriruvveli	138.92	ProsopisJuliflora
10				Theriruvveli small tank	Theriruvveli	56.89	ProsopisJuliflora
11				Lagal tank	Theriruvveli	45.47	ProsopisJuliflora
12				Pooseri tank	Pooseri	63.11	ProsopisJuliflora
13				Athankottankudi tank	Athankottankudi	140.29	ProsopisJuliflora
14				Kumarakurichi tank	Kumarakurichi	122.09	ProsopisJuliflora
15				Karumal tank	Karumal tank	86.65	ProsopisJuliflora
16				Sokkanai tank	Sokkanai	50.35	ProsopisJuliflora
17				Idampadal tank	Idampadal	122.55	ProsopisJuliflora
18				Sikkal tank	Sikkal	397.67	ProsopisJuliflora
19				Vallakulam tank	Panivasal	125.53	ProsopisJuliflora
20				Peykulam tank	Peykulam	94.10	ProsopisJuliflora
21				Siraikulam tank	Siraikulam	51.16	ProsopisJuliflora
22				KaluneerMangalam	Peykulam	56.90	ProsopisJuliflora
23	Ramanathapuram	Kadaladi	Kadaladi	Periyakulam tank	Periyakulam	93.51	ProsopisJuliflora
24				Mariyur tank	Mariyur	53.21	ProsopisJuliflora
25				P.Keerandai tank	P.Keerandai	43.90	ProsopisJuliflora

26		Pannandai tank	P.Keerandai	44.50	ProsopisJuliflora
27		Maravaikudi tank	Panivasal	43.14	ProsopisJuliflora
28		Thiruvarangai tank	Kilakidaram	69.30	ProsopisJuliflora
29		Poolankulam tank	P.Keerandai	93.56	ProsopisJuliflora
30		Kottayendal tank	Kottayendal	112.37	ProsopisJuliflora
31		Kothankulam tank	Kilakidaram	57.80	ProsopisJuliflora
32		Kilakidaram tank	Kilakidaram	83.21	ProsopisJuliflora
33		Thanichiyam tank	Thanichiyam tank	86.49	ProsopisJuliflora
34		Thathangudi tank	P.Keerandai	91.48	ProsopisJuliflora

## ANNEXURE - II

### PALAR SUB BASIN

### DOMESTIC SEWAGE

Sl. No.	Name of Town	Water body into which Sewage is discharged
1	Mudukulathur	Mudukulathur Big Tank ,and oorani
2	Kadaladi	Open channel & land
3	Sikkal	Open channel & land

ANNEXURE- III

PALAR SUB BASIN

MUNICIPAL SOLID WASTE

Sl No.	Location of Solid waste disposal	Disposal of solid waste in Land	Qty.in M.T.	Disposal of solid waste into water body		
				River	Tank	Odai
3	Mudukulathur	Compost yard	1.5	—	—	—
4	Kadaladi	Compost yard	0.5	—	—	—

**ANNEXURE - I V****LIST OF INDUSTRIES IN PALAR SUB BASIN**

<b>Sl. No</b>	<b>Name of Industry &amp; Address</b>	<b>Taluk</b>	<b>Category</b>	<b>Type</b>	
<b>INDUSTRIES IN RAMANAD DISTRICT</b>					
<b>MUDUKULATHUR TALUK</b>					
1	Sivakumar bricks,venneervaikkal	Mudukulathur	Bricks	OS	
2	Sri palaniandaver chamber Works.Vilangulathur.	Mudukulathur	Bricks	OS	
3	TNSTC Ltd Branch, Mudukulathur Branch.	Mudukulathur	Automobiles	OS	
<b>KADALADI TALUK.</b>					
1	Muthusamy Engg Works,V.V.R Nagar, K.K.Nagar, Sayalkudi	Kadaladi	Engg Works	OS	
2	Indian Rice & Flower Mill, maniarajapuram, Sayalkudi	Kadaladi	Flour Mill	OS	
3	Sri Gridhar Foods Ltd, MelaMuthal,Valinokam	Kadaladi	Foods	OS	
4	Seyhupathi Modern Rice Mill Mudukualathur Road	Kadaladi	Hulting	OS	
5	Tamilnadu Salt Corporation,Mariyr Valinkam,Sikkal(via)	Kadaladi	Salt	OS	
6	Paravathi Salt Induatries, Thanichiam Village, Valinokam	Kadaladi	Salt Pan	OS	
7	Tamilnadu Magnesium& Marine Chemicals Ltd, Valinokam	Kadaladi	Chemicals	RS	

## ANNEXURE- V

### GROUND WATER SAMPLING STATION LOCATIONS

<b>Sl.No</b>	<b>Station code No.</b>	<b>Location</b>
1	831208	Sikkal
2	83290A	Errvadi
3	26010	Mudhukulathur
4	26012	Sayalkudi
5	26020	Edambadal



**ANNEXURE- VI**  
**GROUND WATER TEST RESULTS IN PALAR SUB BASIN**

Station code	General			Nutrients No3+No2 as N,mg/L	Alkalinity		Hardness		Major Ions								Other In-Organics			Biol SAR
	PH	EC, Umho/cm	TDS ,MG/L		Phen, mg CaCo3	Total mg CaCo3	Total,mg CaCo3 mg/L	Ca++mg CaCo3	Ca++mg/L	Mg++ mg/L	Na++mg/L	K++ mg/L	CLmg/L	SO4 mg/L	CO3 MG/l	HCO3 mg/L	Sl.mg/L	F.mg/L	B.mg/L	
83290A	8.2	8400	5072	61	0	355	1300	350	140	230	1403	29	2304	480	0	433		1.3		23.9
831208	8.2	1040	586	1	0	230	170	100	40	17	166	7	149	60	0	281		0.31		7.8
26010	8.5	3900	3504	4	10	620	180	120	48	15	828	6	553	557	12	732		0.9		37.9
26012	8	31500	18108	3	0	120	8500	2500	1000	1456	3450	20	9217	2880	0	146.0		0.33		23
26020	8.2	3100	18432	18	0	250	8000	2000	800	1456	3680.0	39	8863	3360	0	305		0.41		25.3

**Environmental Monitoring on water and soil quality and creating awareness & updating of “Environmental and Social Assessment report” for PALAR sub basin.**

**Estimate: Rs 6.00 Lakhs**

**INTRODUCTION**

Under TNWRCP, with World Bank assistance, special emphasis was given to WRO, to assess the environmental status and degradation caused for all River basins in Tamilnadu.

The Environmental cell of WRO assessed Soil and Water samples in this River basin. The assessment includes environmental impact on the quality of surface water, ground water and soil by collecting water & soil samples and testing them. Moreover, “preparation of Micro Level Environmental Status Reports” all the River Basins has also prepared. These works have been carried out with the World Bank Assistance upto March 2012.

Also few Awareness programs & Workshops were conducted to create awareness on the Environmental issues & remedies among the public, farmers, Govt. officials and NGOs. 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 environment issues pertaining to that area and remedial action to overcome the problems is must.

**ENVIRONMENTAL PROBLEMS IN THIS SUB BASIN**

**INDUSTRIAL POLLUTION**

There are no major industries situated in this sub basin. Only small-scale industries are there in this sub Basin. The effluent discharge is minimum and meager. The details of Industries and their effluent discharge are given in Annexure-III.

However, the effluents discharged from the industries are closely monitored by TNPCB. Any further activity to minimize the effect of pollution on water bodies will be dealt by the TNPCB.

**CATCHMENT DEGRADATION**

In this sub basin there is No reservoirs and Anicuts. Soil erosion is there in the riverbeds of this sub basin. In respect of prevention of soil erosion, the Agricultural Engineering Department took up effective measures. However Agricultural Engineering Department will give proposals to prevent further soil erosion.

Other major environmental issues polluting Water resources pertaining this sub basin are listed below

### **SOLID WASTE DISPOSAL**

Dumping of solid wastes by the villagers is very limited. Usually they are being dumped near the toe of the tank bunds. Only in urban areas solid wastes are dumped near the roadside drains, nearby irrigation channels and low – lying areas. Even the civic bodies are recklessly dumping the solid waste into water bodies.

There is no organized scientific method of disposal in all the Municipalities, town and Village Panchayats. The garbage is dumped in the basin area and hence the harmful chemical substances of the landfill seep through and reach the ground water reservoirs and contaminate these sources.

Scheme for Solid waste Management plans is under implementation by Rural Development Department. Under this scheme, collection tanks for disposable and indisputable garbage have been constructed. In most of the Panchayats, recycling the waste and converting the solid waste into manure and production of energy is yet to come up. Hence motivating the local bodies for proper implementation of solid waste management project is must.

Sold waste if allowed to accumulate is health hazard and there is a correlation between improper disposal of solid waste and incidence of vector- borne diseases. Hence motivating the local bodies for proper implementation of solid waste management in IAMWARM project is must, to protect the water bodies from the accumulation of wastes.

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

Treatment of sewage and arrangements for safe disposal arrangements has not been provided in most of the Villages. Underground drainage arrangements have not been provided even in municipalities and town panchayats. This sewage is washed away and got pounded in the backwaters and unhealthy conditions exit.

The locations of disposal of sewage directly let into water bodies in this sub basin are furnished in Annexure II.

So, creating awareness among the presidents of the local bodies is must and to motivate them to adapt Solid waste management and Sewage management, wherever required, workshop including field visits, exclusively for them is to be conducted under the IAMWARM project.

### **WATER WEEDS**

In the recent decades, on account of the rapid industrial development, numerous obnoxious and deleterious chemical compounds are released into the water bodies. Agricultural drainage, discharge of domestic sewage and industrial effluents trigger the growth of waterweeds.

Indiscriminate uses of fertilizers have led to the increase in nutrients into natural water system causing nitrification and eutrophication. Aquatic weeds may be emergent, submerged or free floating. Submerged weeds can survive only if there is optimum sunlight. Floating debris favours the development of aquatic weeds.

*“Prosopis Juliflora”* plants are multi-stemmed shrubby bushes growing from 3m to 15m tall. Juliflora has been known to send its roots 10, 20 or even 30m to catch water. The roots lift water much higher than it can be lifted by capillary action of the soil. The draft on water supply is greatest during a long, hot growing season, with scanty precipitation and low humidity.

*Prosopis Juliflora* and *Ipomea* have invaded the cultivable lands in lower reaches and water bodies' ie.tanks, channels and rivers. In most of the palar sub basin tanks are severely affected by Juliflora and *Ipomea*, in some places water Hyacinth, *Eichornia*.

Hence these plants need to be eliminated totally for the conserving precious water resources. But on the contrary, in some villages' local people desire to grow this plant in the water-spread area of the tanks. Once in 4 or 5 years they get cutting order from the revenue authorities, sale the Juliflora or coal produced from it and keep the money for the common expenses like court case for the litigation with the nearby villages, temple repair and Local festivals etc. This is on account of lack of guidance and ignorance of its ill effects. Hence, this problem has to be addressed in all forms, wherever possible Bio gas plant has to be promoted.

*Prosopis Juliflora* has invaded in the water bodies' ie.river, tanks, and channels. The area of coverage in the water bodies is about 40% of cultivable area in the Palar river basin. Most of the tank bed in the basin is heavily choked with silt and infested with *Prosopis Juliflora* and *Ipomea* growth. Mudukulathur tank water spread area covered by *Prosopis Juliflora* is 338 Ha..

Ipomea cornea is the major bank and shore weed. Severe blockage of water by Ipomea cornea has to the formation of mini silt islands (Isles) in the rivers, which now grow several weedy bushes and cause floods. Water hyacinth also disseminates in some places and causes severe disturbance in the River. Ipomea cornea present in majority of tanks in, Edambadal tank, Ervadi tank, Sikkal tank are some of the tank for example. Hence all these plants need to be eliminating totally for the conserving precious water resources.

### **GROUND WATER QUALITY**

From the chemical composition data for the observation wells, the ground water in the lower reaches of sedimentary formation is of moderate quality. Net annual ground water availability in Mudukulathur taluk is 40.7082 Mm<sup>3</sup>, and Kadaladi taluk is 31.4321 Mm<sup>3</sup>. Irrigation portion of Ramanathapuram, Kadaladi, Mudukulathur, Kamuthi and Paramakudi taluks, the quality of ground water is poor with total dissolved solids above 2000 mg/l.

The recharge of ground water has become very poor added to this misery the wide spread growth of prosopis Juliflora has also consumed much of the recharge if any.

### **ACTIVITIES PROPOSED**

To monitor the quality of water and soil and create database regarding the Environmental Status for each sub basin, this proposal has now been included with the following activities at sub basin level.

#### **I. WATER AND SOIL QUALITY MONITORING AND PROJECT WORKS MONITORING**

Water samples were collected and testing of water samples is essential, as good and long - range data will enable to understand the problems more precisely. So far, No Water samples were collected and tested in this sub basin. Now it is proposed to collect and test water samples at Two points for a period of three years to assess the environmental impact on the quality of surface water of this sub basin. Water samples at the following location will be collected once in 3 months.

#### **PROPOSED WATER SAMPLING POINTS**

- 1) PL-1 - Sikkal to Kilaselvanur Road bridge near Kothankulam village.
- 2) PL-2 - Kilakidaram to Ervadi. Road causeway near Thanichiyam.

In addition to the above, identified locations, water samples will also be collected twice in a year for the period of 3 years, near by wells, tanks channels where sewage is directly let into it, to assess the quality.

Soil samples are to be collected –from selected locations to assess the impact of the quality of soil due to various environmental problems like use of chemical, fertilizers and using the polluted water. From these locations soil samples at regular one-year interval have be collected and tested to determine preciously the impact on the degration of the quality of the soil. Therefore testing soil samples are essential. Soil samples will be collected and tested once in a year.

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

Micro Level Environmental Status Report has been prepared for the entire sub basin. To prepare an Environmental Action Plan of a River basin data regarding environmental issues in sub basin wise is necessary. Hence, provision for collecting the environmental and social issues in village wise and analysing them and preparing development report has also made in this proposal.

## **III. TRANSFER OF TECHNICAL KNOWS HOW FOR SOLID WASTE MANAGEMENT SYSTEM (INCLUDING SOURCE)**

### **SEGREGATION RECYCLES OF DRY WASTE AND LINKAGE WITH USER AGENCIES:**

Now, a new scheme for Solid Waste Management plan is under implementation in all Municipalities and major panchayats. Under this scheme, collection tank for disposable and non-disposable garbage have been constructed in most of the Panchayats. But, recycling the waste and converting the solid waste into manure and production of energy from them are yet to come up.

Hence Demonstration and action programs are planned with user agencies and necessary field visits exclusively for officials of local body and Panchayat presidents & members are programmed to transfer of Technical Know How for Solid Waste Management.

## **III. CONDUCTING AWARENESS PROGRAMS**

Awareness Programs are necessary to create awareness among the public about Environmental aspects and the action to be taken by them to remove or reduce the impacts due to the Environmental problems. So far No awareness Programs were conducted in this basin.

Hence, to create and motivate the people, Awareness programmes are to be conducted in the villages. It is proposed to conduct Awareness Meeting in School/ Institutions and Awareness programs in villages during the study period of three years covering the following subjects. In addition to this, Formation Herbal garden in schools/Institution or suitable places, and Placing Stickers, Bit notice, Tin sheets, Pamphlets and Placing banner containing messages about, the following Environmental problems.

- **Sanitation**
- **Solid waste treatment.**
- **Sewage treatment and converting the same into gas**
- **Organic farming.**
- **Conversion of aquatic weeds into 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 three 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 Institute.

**TOTAL COST.**

**The total cost works out to Rs: 6.00 Lakhs (Rupees SIX Lakhs only)**

**Environmental Monitoring on Water and Soil quality and Creating Awareness ,  
updating of " Environmental & Social assessment report" for PALAR SUB  
BASIN**

**DETAILED ESTIMATE**

SI no	Description of work	No	Measurement			Contents
			L	B	D	
<b>I. Water &amp; Soil Quality Monitoring by fixing nodal Agency (any educational Institution)</b>						
a)	Water samples from rivers in 2 locations collected once in four months in a year for the period of three years 2x3x3 =18					18 Nos
b)	Water samples from rivers in 3 locations collected once in a year for the period of three years 3x3 =9 Nos					9 Nos
c)	Testing charges for soil samples collected from polluted site 2 places/year/3years		2 X 3			6 Nos
d)	Hiring Jeep driver	1No	LS			4 Man months
e)	Conveyance, Purchases of Cans, Bottles, Chemicals hire Purchase of Still camera etc and Documentation of Water quality data	3 years	-	-	-	3 years
f)	Provisions for field visit for environmental monitoring of project activities with respect to environmental safeguards	3 years				3 years
<b>II Environmental, Social Knowledge base , Analysis and Development base</b>						
a)	Village Level Data collection on Environmental And social state regarding other impacts		LS			20 Man months
b)	Expert analysis and development reporting on other impacts	LS				LS



c)	Impact studies due to project investments	10 Man months	10 Man months
d)	Expert Analysis and Development Reporting due to project investments	LS	LS
<b>III. Environmental Social Awareness Creation by fixing nodal Agency</b>			
a)	Propagation through Stickers, Tin Sheets, pamphlets, Banners	3 years	3 years
b)	Awareness Programs for Public	2 Nos / in 3 Years	2 Nos.
c)	Formation of Herbal Garden in Institutions	1 Nos / in 3 Years	1 Nos
d)	Preparing and Publishing Environmental Atlas for the Sub Basin for the use of Line departments /Institutions for better Management of Sub basin	LS	LS
e)	Documentation of the entire activities, and HirePurchase of LCD , Up gradation of Computer and Accessories, Video films and Web site development	LS	LS
<b>IV.</b>	<b>Variation in Rates and unforeseen items</b>	<b>LS</b>	<b>LS</b>

**Environmental Monitoring on Water and Soil quality and Creating awareness, updating of " Environmental and Social Assessment report" for PALAR SUB-BASIN.**

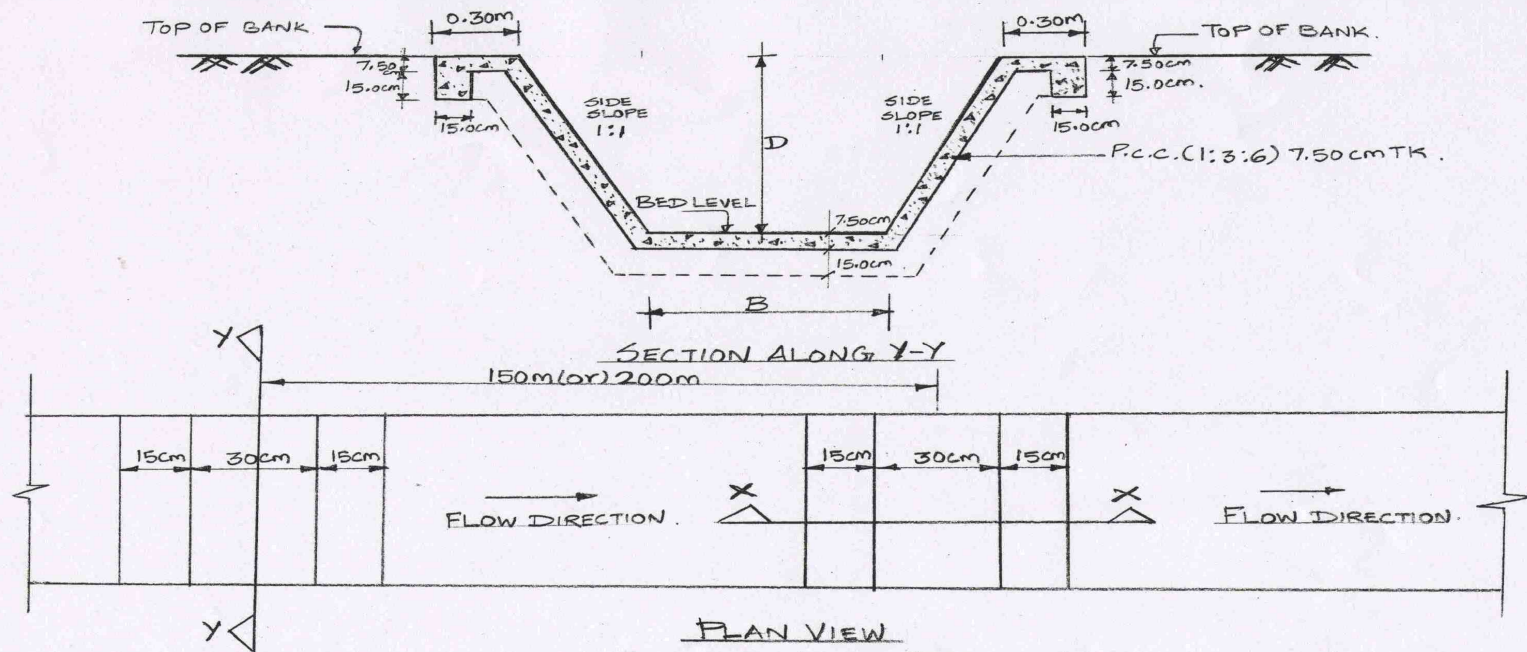
**ABSTRACT ESTIMATE**

Sl.No.	Qty.	Description of Work	Rate	Per	Amount
<b>I. Water &amp; Soil Quality Monitoring by fixing nodal Agency</b>					
a)	18 Nos.	Water Sample Testing	1400	each	25200
b)	9 Nos	Water sample testing (Pesticides)	12000	each	108000
c)	6 Nos	Soil Sample Testing	7350	L.S	22,050
d)	4 Man months	Hiring Jeep Driver	3500	1 Man month	14,000
e)	3 years	Conveyance, Purchases like Cans, Bottles, Chemicals hire Purchase of camera etc and Documentation of Water and Soil quality data including labour charges.	6000	Per year	18,000
f)	3 years	Provisions for field visit for environmental monitoring of project activities with respect to environmental safeguards	10000	Per year	30000
<b>II. Environmental, Social Knowledge Base, Analysis and Development base</b>					
a)	20 Man months	Village Level Data collection on Environmental And social state regarding other impacts	6000	month	120,000
b)	LS	Expert analysis and development reporting on other impacts	LS		20000
c)	10 Man months	Impact studies due to project investments	6000	month	60,000
d)	LS	Expert Analysis and Development Reporting due to project investments	LS		20000
<b>III. Environmental Social Awareness Creation</b>					
a)	3 years	Propagation through stickers, Tin Sheets, pamphlets, banners.	5000	Per year	15000

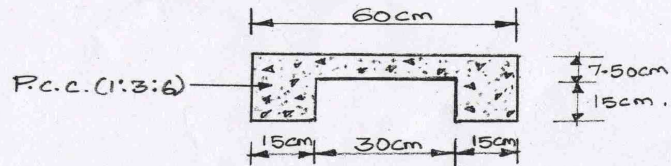
b)	2 Nos.	Awareness Program for Public	25000	each	50000
c)	1 Nos	Providing Herbal Gardens in School/Institutions	25000	each	25000
d)	LS	Preparing and Publishing Environmental Atlas for the Sub Basin for the use of Line departments /Institutions for better Management of Sub basin		LS	50,000
e)	LS	Documentation of the entire activities, hire purchase of LCD and Up gradation of Computer and Accessories, Video films and Web site development and engaging computer operator		L.S	19,800
<b>IV.Variation in rates and unforeseen items.</b>					<b>2,950</b>
			<b>Total</b>		<b>600,000</b>
<b>Rupees SIX Lakhs only</b>					



**DESIGN AND DRAWING**



PLAN VIEW



TYPICAL SECTION OF BEDBAR/MODEL SECTION FOR SUPPLY CHANNEL.

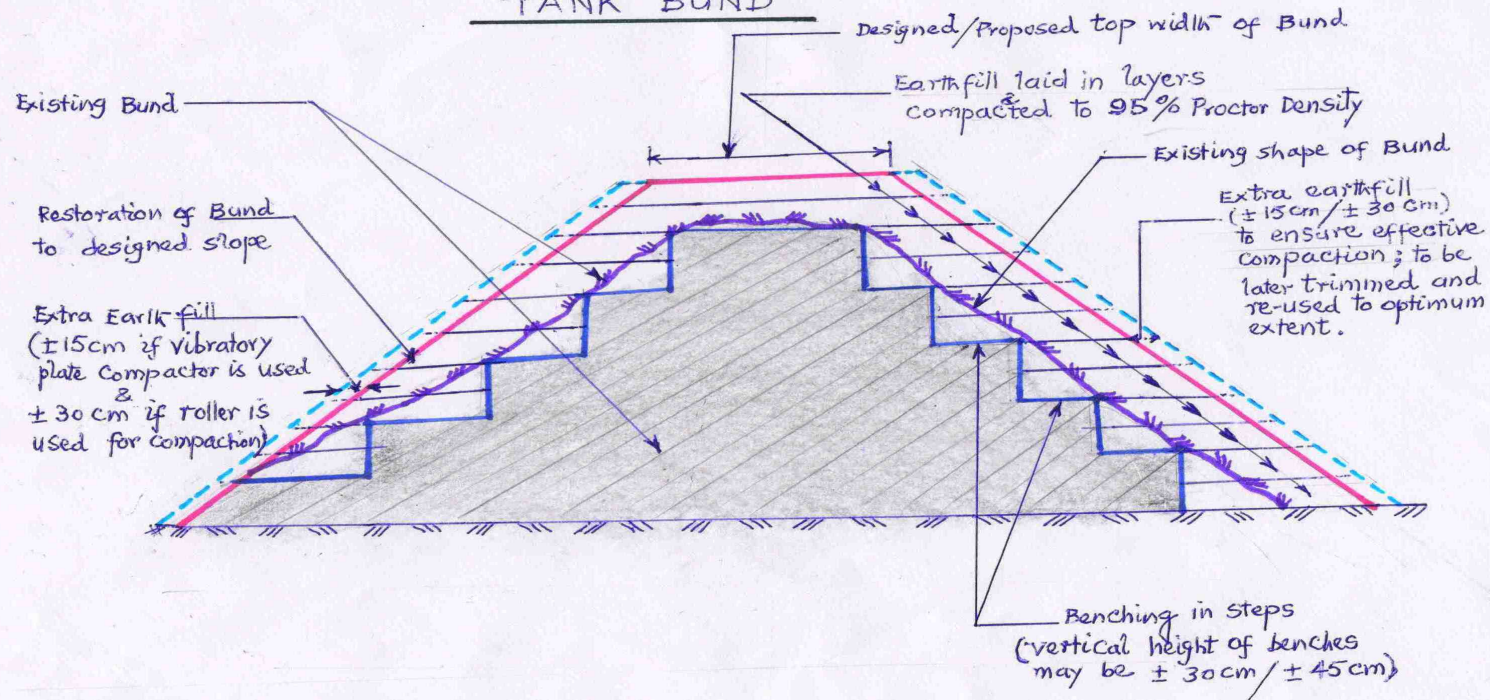
SECTION ALONG X-X

DIMENSIONS TO SUIT SITE CONDITION.

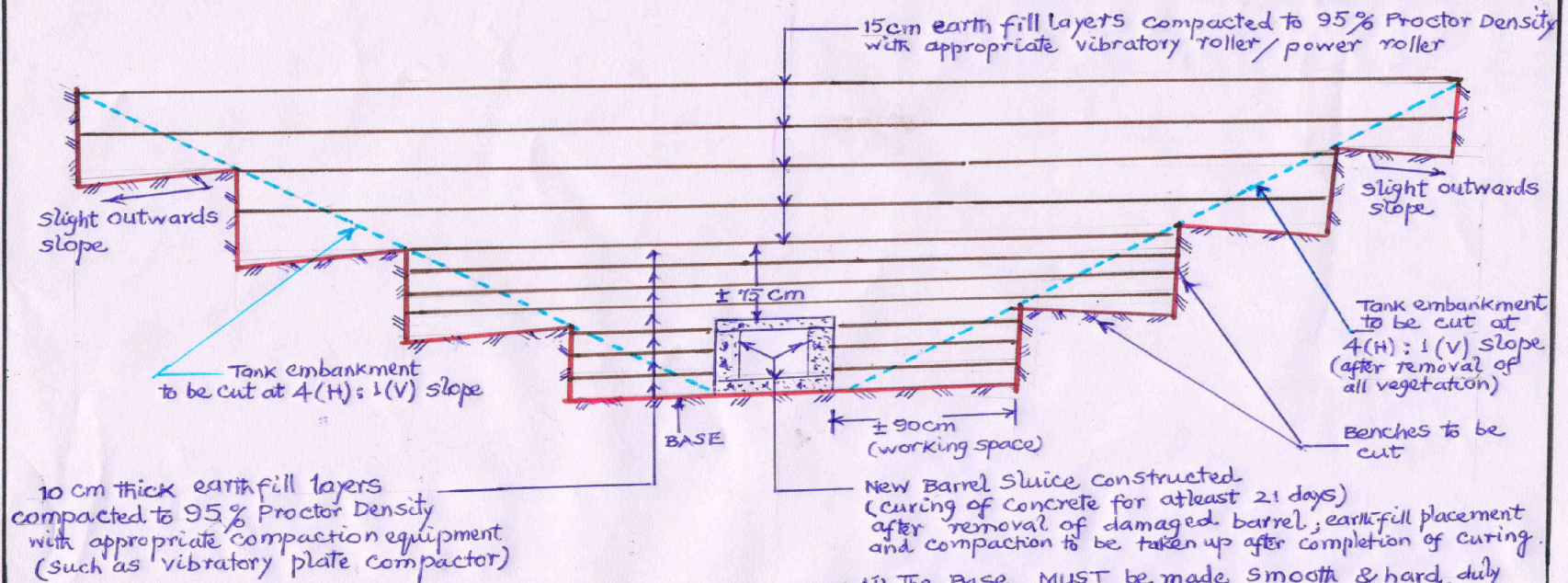
DRAWING NOT TO SCALE

# TYPICAL SKETCH

## RAISING & STRENGTHENING OF TANK BUND



## TYPICAL SKETCH

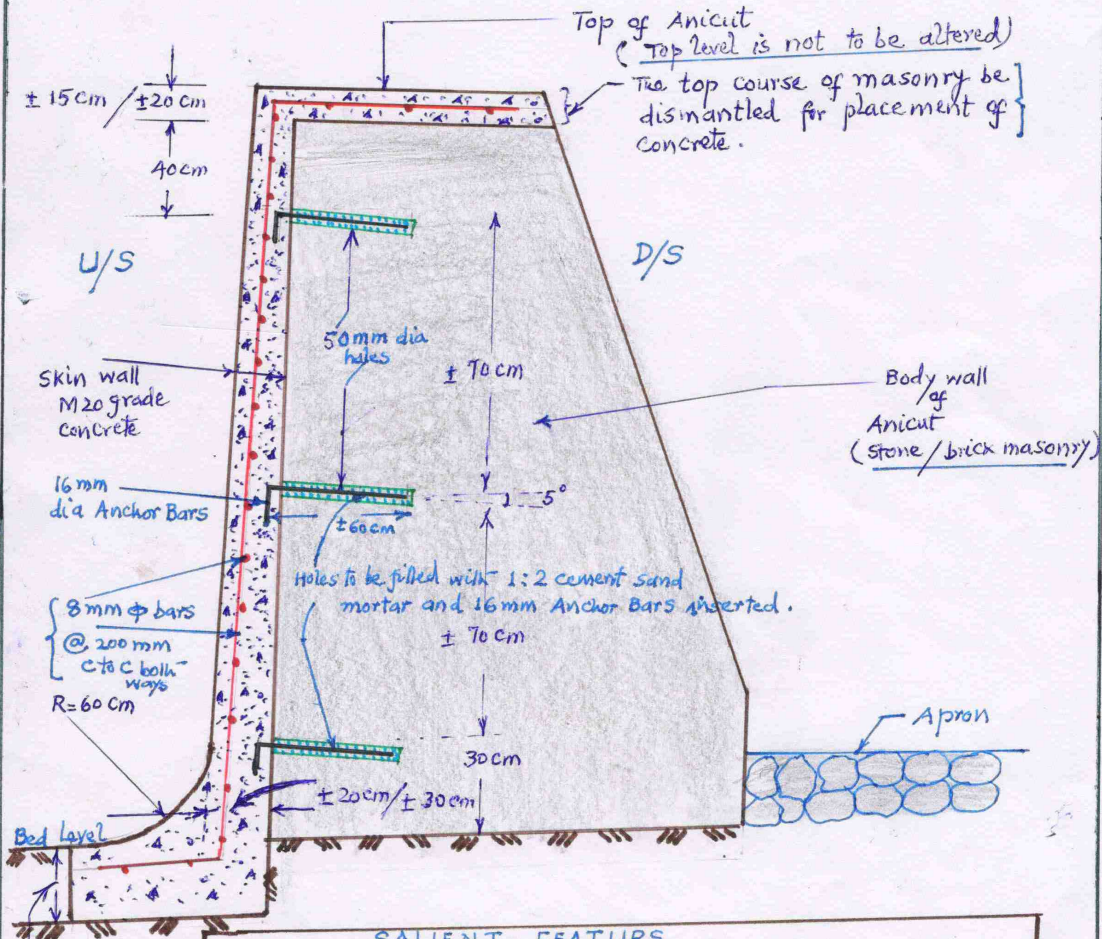


### RECONSTRUCTION OF SLUICES

- NOTES**
- (i) The Base MUST be made smooth & hard, duly compacted with compactors/pneumatic tampers.
  - (ii) Earth fill compaction adjoining the Barrel and Benches should be compacted by mechanical/pneumatic tampers to ensure effective compaction.
  - (iii) Earth obtained from "benching" be reused (after removal of clods (bigger than 7.5 cm), vegetation etc) in earth fill layers.

## TYPICAL SKETCH

### Rehabilitation of Anicut through SKIN WALL concrete



#### SALIENT FEATURES

- Joints on U/S surface to be raked 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 21 days.
  - Thickness of skin concrete: 15 cm at top & 20 cm at bottom for Anicuts of height upto ± 1.50 m and 20 cm at top & 30 cm at bottom for Anicuts of height more than ± 1.50 m