

PUBLIC WORKS DEPARTMENT

WATER RESOURCES DEPARTMENT

MADURAI REGION

TAMILNADU IRRIGATED AGRICULTURE MODERNIZATION PROJECT (TNIAMP)

PHASE– III

NAMBIYAR SUB BASIN

DETAILED PROJECT REPORT

ESTIMATE AMOUNT Rs.607.90 LAKH.
AYACUT 1312.83 Ha.

MADURAI REGION, MADURAI,
TAMIRABARANI BASIN CIRCLE, TIRUNELVELI,
CHITTAR BASIN DIVISION, TENKASI@KUDIYIRUPPU.

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1.INTRODUCTION

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 mainly on the efficient and economical use of water 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.

The Government of Tamil Nadu have taken a number of progressive actions on water resources and irrigation management, for the modernization of the Traditional Irrigation systems in TamilNadu under the World Bank funded project of Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP).This multifaceted approach will not only increase the agricultural productivity, it will also yield wholistic benefits to the farming community.

1.2 Description of the Nambiyar Basin

The Nambiyar river basin is one of the Major river basins in Tamil Nadu. It is bounded by Tamirabarani basin on the northern side, Kodaiyar basin on the southern side, Gulf of Mannar on the eastern side and Western Ghats on the western side. The total area of the basin is 2084 sq.km and it covers part of Tirunelveli and Thoothukudi Disticts.This river basin is constituted by rivers like Nambiyar, Karumeniyar and Hanumanadhi.

This basin has been divided into 3 Sub basins namely as follows:

1. Nambiyar Sub basin
2. Karumeniyar Sub basin
3. Hanumanadhi Sub basin

1.3 Description of the Nambiyar Sub-Basin

The Nambiyar river originates from the eastern slope of the Western Ghats at an altitude of +1650m above MSL in the Kalakkad reserve forest area. This

river is constituted by three branches of seasonal streams like Tamaraiar, Kombaiar and Kodumudiar.

The Kombaiyar and Kodumudiyar originate at the eastern slope of western ghats at an altitude of about +1600m above MSL near Mahendragiri hills. The Kombaiyar confluences with Koumudiyar.After confluencing the river take the name of Thamaraiyar. The Thamaraiyar river confluence with the Nambiyar river just 2 km above Dhalavaipuram Anicut.Finally the Nambiyar river flows in to the Gulf of Mannar after traversing a total distance of 48 km from the origin of Nambiyar river.

The total extent of this sub basin area is 1046 sq.km covering Nanguneri, Radhapuram, Thisaiyanvilai Taluks and Kalakkadu, Nanguneri, Valliyoor, Radhapuram Blocks in Tirunelveli district.

Command area

There are 85 tanks, 9 anicuts, 58.165 km length of anicut supply channel, 186.5 km length of system tank supply channel and 21.00 km length of non-system tank supply channel under the control of WRD of PWD in Nambiyar Sub basin.

These Infrastructures are located within the Sub basin's hydraulic boundary spread over 16 villages of 3 Taluks in Tirunelveli District. The Total Command area under these Infrastructures works out to 3526.21 Ha.

Among that 1 anicut, 22.95 km of Anicut Supply channel, 45 Tanks, 122.85 km length of system tank supply channel and 4.20 km length of non-system tank supply channel were already executed under other schemes and its break up details are furnished in Chapter 5.

8 anicuts, 31.215 km of Anicut supply channel, 63.65 km length of system tank supply channel and 16.80 km length of non-system tank supply channel does not require any rehabilitation works.

40 tanks and 4.00 km length of anicut supply channel in Nambiyar Sub basin with an ayacut of 1312.83 Ha. are proposed for rehabilitation in this Phase III of TNIAMP.

For Total Sub basin area		
Tank Ayacut– 85 Tanks	:	3159.66 Ha
Anicut Direct Ayacut – 9 Anicuts	:	-
Anicut Supply Channel –Direct ayacut (58.165 km)	:	366.55 Ha
Supply channel- for tanks (186.5 km system tanks and 21 km non-system tanks)	:	-
Total	**:**	**3526.21 Ha**
For Present Project area	:	
Tank Ayacut - 40 Tanks	:	1228.16 Ha
Anicut Supply Channel – 4.00 km	:	84.67 Ha
Total	**:**	**1312.83 Ha**

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1.4 List of Blocks, Taluks and Districts covered in Nambiyar Sub Basin:

District	Taluk	Block
Tirunelveli	Nanguneri	Kalakkad
		Nanguneri
		Vallioor
	Radhapuram	Vallioor
		Radhapuram
	Thisaiyanvilai	Radhapuram
		Vallioor

1.4.1 a) List of Districts, Blocks and Taluks and Ayacut details of the Tanks proposed in this project:

Sl.No	District	Block	Taluk	No.of Tanks	Ayacut ha
1	Tirunelveli	Kalakkad	Nanguneri	4	410.17
2	Tirunelveli	Nanguneri	Nanguneri	2	29.92
3	Tirunelveli	Vallioor	Radhapuram	12	433.80
4	Tirunelveli	Radhapuram	Radhapuram	6	120.60
5	Tirunelveli	Radhapuram	Thisaiyanvilai	9	92.56
6	Tirunelveli	Vallioor	Thisaiyanvilai	6	98.65
7	Tirunelveli	Vallioor	Nanguneri	1	42.46
			Total	**40**	**1228.160**

1.4.1 b) List of Districts, Blocks, Taluks and Ayacut details of the Supply channel proposed in this project:

Sl.No	District	Block	Taluk	Length of channel in km	Ayacut ha
1	Tirunelveli	Kalakkad	Nanguneri	4.00	84.67

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1.5 Population Details

1.5.1 Population Size: Urban and Rural

Sl. No.	Sub Basin	Urban Population in million	Rural Population in million	Total Population in million
1	Nambiyar Sub basin full area	0.185	0.345	0.530
2	Nambiyar Sub basin project area	0.104	0.129	0.233

1.5.2 Population Density

Sl No	Sub Basin	Area Sq.km	Total Population	Density in Person / sq.km
1	Nambiyar	1046	530234	506.92

1.5.3 Population Sex

Sl. No	Name of the Sub Basin	Population			Male %	Female %	Sex Ratio
		Male	Female	Total			
1	Nambiyar Sub basin Complete area	238606	291628	530234	45%	55%	1222 females per 1000 males
2	Nambiyar Sub basin Project area	105063	128411	233474	45%	55%	1222 females per 1000 males

In Tirunelveli District 1214 Female per 1000 male.

1.5.4 Literacy Level

Sl. No.	Name of the Sub Basin	Literacy Population in Million			Total Population in Million			% Literacy of Population		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Nambiyar Sub basin full area	0.174	0.175	0.349	0.239	0.292	0.531	73%	60%	65%
2	Nambiyar Sub basin project area	0.0767	0.077	0.154	0.105	0.128	0.233	73%	60%	66%

1.6 Convergent Table

1.6.1 Cluster Classification for Multi department convergence

Six cluster villages are identified and listed below

Sl. No.	No. of Cluster	Name of Cluster	Block	Taluk	District
1	CLUSTER I	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli
2	CLUSTER II	Therkku Valliyoor	Vallioor	Radhapuram	Tirunelveli
3	CLUSTER III	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli
4	CLUSTER IV	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli
5	CLUSTER V	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli
6	CLUSTER VI	Kannanallur	Vallioor	Thisaiyanvilai	Tirunelveli

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1.6.2 Cluster Wise / Infrastructure Wise / Village Wise- WRD Table

Sl. No	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities
		FI	PI	Gap	Wop	WP	Gap	
1	2	3	4	5	6	7	8	9
	Cluster I							Bund Strengthening, Repair of sluice & Weir / Reconstruction of Sluice
1	Nadukkamparaikulam	6.453	6.453	1.434	12.906	14.340	-	
2	Kesavaneri Kulam	79.609	21.690	7.191	101.299	108.490	-	
3	Padalayar Tank	101.92	40.77	61.15	142.69	203.840	-	
4	Padalayarkal (Supply channel)	67.73	8.47	8.47	76.20	84.67	-	
5	Karisalkulam	50.100	16.700	16.700	66.800	83.500	-	
	Total	**305.812**	**94.083**	**94.945**	**399.895**	**494.84**	**-**	

Sl. No	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities
		FI	PI	Gap	Wop	WP	Gap	
1	2	3	4	5	6	7	8	9
	Cluster II							
6	Vallioor Puthukulam	131.15	52.46	78.69	183.610	262.300	-	Bund Strengthening, Reconstruction of Sluice
7	Devarkulam	4.514	4.513	1.003	9.027	10.030	-	
8	Ganapathiyarkulam	2.230	0.890	1.330	3.120	4.450	-	
9	Alankulam	7.212	3.606	1.202	10.818	12.020	-	
10	Vattakulam	8.805	3.522	5.283	12.327	17.610	-	
	Total	**153.911**	**64.991**	**87.508**	**218.902**	**306.410**	**-**	
	Cluster III							
11	Kattayanerikulam	13.510	5.404	8.106	18.914	27.020	-	Bund Strengthening
12	Eluvarkulam	11.172	5.586	1.862	16.758	18.620	-	
13	Valatharvalavaithankulam	21.305	8.522	12.783	29.827	42.610	-	
14	Mannarkulam	6.365	2.546	3.819	8.911	12.730	-	
15	Kurunchikulam	5.256	2.628	0.876	7.884	8.760	-	
	Total	**57.608**	**24.686**	**27.446**	**82.294**	**109.740**	**-**	

Sl. No	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities
		FI	PI	Gap	Wop	WP	Gap	
1	2	3	4	5	6	7	8	9
	Cluster IV							Bund Strengthening, Repair of sluice & Weir / Reconstruction of Sluice
16	Nambikurichi kulam	8.570	3.420	5.130	11.990	17.120	-	
17	Kannankulam	3.652	5.022	0.456	8.674	9.130	-	
18	Vilimankulam	5.512	7.579	0.689	13.091	13.780	-	
19	Aimudi kulam	2.915	4.010	0.365	6.925	7.290	-	
20	Palathikulam	2.264	3.113	0.283	5.377	5.660	-	
21	Pappankulam	3.376	4.642	0.422	8.018	8.440	-	
22	Periyalankulam	0.748	1.029	0.093	1.777	1.870	-	
23	Kailasaperikulam	1.796	2.470	0.224	4.266	4.490	-	
24	Ponathikulam	9.912	13.629	1.239	23.541	24.780	-	
	Total	**38.745**	**44.914**	**8.901**	**83.659**	**92.560**	**-**	

Sl. No	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities
		FI	PI	Gap	Wop	WP	Gap	
1	2	3	4	5	6	7	8	9
	Cluster V							Bund Strengthening, Repair of Weir / Reconstruction of Sluice
25	Karuthanerikulam	10.656	5.328	1.776	15.984	17.760	-	
26	Sinammalpuram and pudukulam	31.205	12.482	18.723	43.687	62.410	-	
27	Nallapethankulam	7.30	2.83	2.03	10.13	12.160	-	
28	Kandiaperikulam	25.476	12.738	4.246	38.214	42.460	-	
29	Kovanerikulam	15.918	7.959	2.653	23.877	26.530	-	
	Total	**90.555**	**41.337**	**29.428**	**131.892**	**161.320**	**-**	

Sl. No	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities
		FI	PI	Gap	Wop	WP	Gap	
1	2	3	4	5	6	7	8	9
	Cluster VI							Bund Strengthening, Repair of sluice & Weir / Reconstruction of Sluice
30	Kallikulam	6.516	3.258	1.086	9.774	10.860	-	
31	Karuppukalkulam	1.796	2.470	0.384	4.266	4.650	-	
32	Veetrithankulam	2.180	0.872	1.308	3.052	4.360	-	
33	Thankaiyankulam	1.496	2.440	0.224	3.936	4.160	-	
34	Vilvarayankulam	13.760	8.256	5.504	22.016	27.520	-	
35	Achampadukulam	13.344	6.672	2.224	20.016	22.240	-	
36	Thanuvankulam	1.630	0.652	0.978	2.282	3.260	-	
37	Poopillaikulam	1.970	0.788	1.182	2.758	3.940	-	
38	Panisakulam	16.525	9.915	6.610	26.440	33.050	-	
39	Thambakulam	3.185	1.274	1.911	4.459	6.370	-	
40	Sittur Keelkulam	14.03	8.68	0.68	22.71	23.390	-	
41	Iyyapanerikulam	2.080	0.832	1.248	2.912	4.160	-	
	Sub Total	**78.512**	**46.109**	**23.339**	**124.621**	**147.960**	**-**	
	Total	**725.143**	**316.12**	**271.567**	**1041.263**	**1312.83**	**-**	

Note: For other line department activities separate DPR prepared by concerned Department.

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1.6.3 Cluster Wise / Infrastructure Wise / Village Wise - WRD Table Abstract

S.No	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities
		FI	PI	Gap	Wop	WP	Gap	
1	2	3	4	5	6	7	8	9
1	CLUSTER I	305.812	94.083	94.945	399.895	494.84	-	Bund Strengthening, Repair of sluice & Weir / Reconstruction of Sluice
2	CLUSTER II	153.911	64.991	87.508	218.902	306.410	-	
3	CLUSTER III	57.608	24.686	27.446	82.294	109.740	-	
4	CLUSTER IV	38.745	44.914	8.901	83.659	92.560	-	
5	CLUSTER V	90.555	41.337	29.428	131.892	161.320	-	
6	CLUSTER VI	78.512	46.109	23.339	124.621	147.960	-	
	Total	**725.143**	**316.12**	**271.567**	**1041.263**	**1312.83**	**-**	

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1.6.4 Details of WRD Infrastructure with unicode Nos

Sl No	Name of Tank	Unicode	Village	Block	Taluk	District	Ayacut in Ha.			
							FI	PI	Gap	Total
	Cluster I									
1	Nadukkamparaikulam	TNNM-02-T0137	Mahiladi	Kalakkad	Nanguneri	Tirunelveli	6.453	6.453	1.434	14.340
2	Kesavaneri Kulam	TNNM-02-T0148	Nambithalaivanpattayam	Kalakkad	Nanguneri	Tirunelveli	79.609	21.690	7.191	108.490
3	Padalayar Tank	TNNM-02-T0138	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	101.92	40.77	61.15	203.840
4	Padalayarkal (supply channel)	--	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	67.73	8.47	8.47	84.67
5	Karisalkulam	TNNM-02-T0139	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	50.100	16.700	16.700	83.500
	Cluster II									
6	Vallioor Puthukulam	TNNM-02-T0186	Therkku Vallioor	Vallioor	Radhapuram	Tirunelveli	131.15	52.46	78.69	262.300
7	Devarkulam	TNNM-02-T0188	Therkku Valliyoor	Vallioor	Radhapuram	Tirunelveli	4.514	4.513	1.003	10.030
8	Ganapathiyarkulam	TNNM-02-T0187	Therkku Valliyoor	Vallioor	Radhapuram	Tirunelveli	2.230	0.890	1.330	4.450
9	Alankulam	TNNM-02-T0183	A.Thirumalapuram	Vallioor	Radhapuram	Tirunelveli	7.212	3.606	1.202	12.020
10	Vattakulam	TNNM-02-T0178	Vadakku Valliyoor	Vallioor	Radhapuram	Tirunelveli	8.805	3.522	5.283	17.610
	Cluster III									
11	Kattayanerikulam	TNNM-02-T0196	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	13.510	5.404	8.106	27.020

Sl No	Name of Tank	Unicode	Village	Block	Taluk	District	Ayacut in Ha.			
							FI	PI	Gap	Total
12	Eluvarkulam	TNNM-02-T0197	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	11.172	5.586	1.862	18.620
13	Valatharvalavaithankulam	TNNM-02-T0213	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	21.305	8.522	12.783	42.610
14	Mannarkulam	TNNM-02-T0228	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	6.365	2.546	3.819	12.730
15	Kurunchikulam	TNNM-02-T0214	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	5.256	2.628	0.876	8.760
	Cluster IV									
16	Nambikurichi kulam	TNNM-02-T0104	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	8.570	3.420	5.130	17.120
17	Kannankulam	TNNM-02-T0203	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	3.652	5.022	0.456	9.130
18	Vilimankulam	TNNM-02-T0257	Urmankulam	Radhapuram	Thisayanvilai	Tirunelveli	5.512	7.579	0.689	13.780
19	Aimudi kulam	TNNM-02-T0210	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	2.915	4.010	0.365	7.290
20	Palathikulam	TNNM-02-T0248	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	2.264	3.113	0.283	5.660
21	Pappankulam	TNNM-02-T0249	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	3.376	4.642	0.422	8.440
22	Periyalankulam	TNNM-02-T0256	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	0.748	1.029	0.093	1.870
23	Kailasaperikulam	TNNM-02-T0263	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	1.796	2.470	0.224	4.490
24	Ponathikulam	TNNM-02-T0244	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	9.912	13.629	1.239	24.780

Sl No	Name of Tank	Unicode	Village	Block	Taluk	District	Ayacut in Ha.			
							FI	PI	Gap	Total
	Cluster V									
25	Karuthanerikulam	TNNM-02-T0145	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	10.656	5.328	1.776	17.760
26	Sinammalpuram and pudukulam	TNNM-02-T0134	Anaikulam	Vallioor	Radhapuram	Tirunelveli	31.205	12.482	18.723	62.410
27	Nallapethankulam	TNNM-02-T0152	Dhalapathysamudram	Nanguneri	Nanguneri	Tirunelveli	7.30	2.83	2.03	12.160
28	Kandiaperikulam	TNNM-02-T0161	Dhalabathysamuthiram	Vallioor	Nanguneri	Tirunelveli	25.476	12.738	4.246	42.460
29	Kovanerikulam	TNNM-02-T0130	Vadakku vallioor	Vallioor	Radhapuram	Tirunelveli	15.918	7.959	2.653	26.530
	Cluster VI									
30	Kallikulam	TNNM-02-T0180	T.Kallikulam	Radhapuram	Radhapuram	Tirunelveli	6.516	3.258	1.086	10.860
31	Karuppukalkulam	TNNM-02-T0156	Anaikulam	Vallioor	Radhapuram	Tirunelveli	1.796	2.470	0.384	4.650
32	Veetrithankulam	TNNM-02-T0160	Anaikulam	Vallioor	Radhapuram	Tirunelveli	2.180	0.872	1.308	4.360
33	Thankaiyankulam	TNNM-02-T0162	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	1.496	2.440	0.224	4.160
34	Vilvarayankulam	TNNM-02-T0169	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	13.760	8.256	5.504	27.520
35	Achampadukulam	TNNM-02-T0164	Achampadu	Vallioor	Radhapuram	Tirunelveli	13.344	6.672	2.224	22.240
36	Thanuvankulam	TNNM-02-T0174	Achampadu	Vallioor	Radhapuram	Tirunelveli	1.630	0.652	0.978	3.260
37	Poopillaikulam	TNNM-02-T0171	Achampadu	Vallioor	Radhapuram	Tirunelveli	1.970	0.788	1.182	3.940
38	Panisakulam	TNNM-01-T0250	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	16.525	9.915	6.610	33.050

Sl No	Name of Tank	Unicode	Village	Block	Taluk	District	Ayacut in Ha.			
							FI	PI	Gap	Total
39	Thambakulam	TNNM-02-T0175	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	3.185	1.274	1.911	6.370
40	Sittur Keelkulam	TNNM-02-T0154	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	14.03	8.68	0.68	23.390
41	Iyyapanerikulam	TNNM-02-T0167	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	2.080	0.832	1.248	4.160
	Total Ayacut area of Tank						**657.413**	**307.65**	**263.097**	**1228.16**
	Total Ayacut area of Anicut supply channel						**67.73**	**8.47**	**8.47**	**84.67**
	Total Ayacut area						**725.143**	**316.12**	**271.567**	**1312.83**

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1.7. Conclusion

There are 74 system tanks, 11 non system tanks, 9 anicuts, 58.165 km length of anicut supply channel, 186.5 km length of system tank supply channel and 21.00 km length of non-system tank supply channel in Nambiyar Sub basin.

In this, 32 system tanks, 8 non system tanks and 4.00 km length of anicut supply channel have been proposed for rehabilitation and modernisation under Phase-III of TNIAMP Project, in one Package, for an ayacut of 1312.83 Ha.

Based on the norms and guidelines as specified by Mr.R.K.Malhotra, World Bank Consultant, the Detailed Project Report has been prepared including provisions for WRD cost, On Farm Development works, Labour Welfare fund @ 1%, GST @ 12%, Petty Supervision charges, charges for Contingencies & unforeseen items, advertisement charges, Photographic charges and documentation charges @ 2.5% and Environmental component. The Detailed Project report has been prepared based on current schedule of rates for the year 2020-21 pertaining to Tirunelveli District and works out to Rs.607.90 lakh.

The proposed tanks for rehabilitation in one Package in Phase-III of TNIAMP, will surely help to bridge the gap between the future projected water demand of Irrigation and the water potential available in the Sub basin. The rehabilitated Irrigation tanks will certainly increase the agriculture productivity and also ayacut areas will be stabilised and irrigated by conjunctive use of both Surface and Ground water.

The expenditure of the above work is chargeable to the head of Account “4701 – Major works – TNIAMP PHASE III Project”.

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2. HYDROLOGY OF THE SUB BASIN

2.1 Location

The Nambiyar sub basin is bounded by Tamirabarani basin on the northern side, Kodaiyar basin on the southern side, Gulf of Mannar on the eastern side and Western Ghats on the western side.

The total area of the Nambiyar basin is 2084.00 sq.km. The Nambiyar Basin is divided into Hanumanadhi Sub basin (378 sq.km), Nambiyar sub basin (1046.00 sq.km) and Karumeniar Sub basin (660 sq.km).

2.2 Geomorphology

The Nambiyar Subbasin area is 1046.00 Sq.Km which is around 50.19% of total basin area.

2.3 Demography

Sl No	Sub Basin	Area Sq.km	Total Population	Density Person / Sq.km
1	Nambiyar	1046.00	530234	506.92

2.4 Geology

In Nambiyar sub basin, crystalline rocks of archean age, post-Mio Pliocene rock, Quaternary rocks and alluvium dominate the geological structure of the Nambiyar Basin.

2.5 Land use Classification

Agricultural lands are primarily lands put into use for production of food and fiber. Most of the lands falling under this category are found in Nambiyar river valley along the drainages and streams. Most of the area is falling under river channel and tank command. The main Nambiyar river course is supporting cropland, which are mainly paddy, banana and coconut.

S.No	Landuse Category		Area in Square km	Percentage %
	I[st] Level	II[nd] Level		
1	Crop Area	Cropping area	1.122	0.107
		Double Crop area	11.97	1.145
		Net Area Sown	98.19	9.389
		Grass Area Sown	110.16	10.533
		Current Fallow	20.97	2.005
		Other Fallow	272.55	26.061
		Trees and groves	40.95	3.916
2	Waste Land	Barren un cultivable waste	80.98	7.743
			131.29	12.554
		Land put to non Agricultural use	125.76	12.025
		Cultivable waste	27.26	2.607
		Permanent Pastures and gracing lands		
3	Forest Land	Forest	124.62	11.916
Total Geographical Area			1045.822	100

Source : Microlevel Environmental Status Report for Nambiyar River Basin including Hanumanathi and Karumeniar River Basins.

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2.6 Ground water potential

In general ground water potiential is good.

Ground water potential

Sl. No.	Name of Block	Block Area falling in the project area of the sub basin Sq.Km	% block area falling in the project area of the sub basin	Total Potential in project area of sub basin (MCM)	Net Potential in project area of sub basin (MCM)	Categorisation of Block (2009)	Categorisation of Block as per G.O (M.s) No.161, P.W (R2) Dept, dt 23.10.2019
1	Kalakkad	185.68	16.24	38.88	6.31	Safe	Safe
2	Nanguneri	363.32	16.94	74.82	12.67	Safe	Safe
3	Vallioor	433.42	36.68	54.47	19.98	Semi Critical	Safe
4	Radhapuram	458.57	30.19	37.24	11.24	Critical	Safe
	Total				**50.21**		

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2.7 Gauging stations in CWC & PWD

There is one number of PWD gauging station at Thoppuvillai in Nambiyar subbasin. There are 40 System and Non system tanks proposed in this Nambiyar subbasin and the storage capacity of 40 tanks is around 10.233 Mcum. The basin as a whole is not in surplus. Puliman Anicut is the last anicut across Nambiyar River.

2.8 Surface water potential

The sub basin having 75% dependable surface water potential in Mcum

	SW monsoon	NE monsoon	Non monsoon Period	Total
Nambiyar Sub basin	5.49	40.63	27.43	73.55

Source : http://nwm.gov.in/sites/default/files/Nambiyar_Report.pdf

2.9 Level of ground water analysis through observation wells

The classification of blocks in Nambiyar sub basin based on the level of Ground Water Development from 2009 to 2019 is given below.

Sl. No.	**Block**	**District**	**Categorisation of Block (2009)**	**Categorisation of Block as per G.O (M.s) No.161, P.W (R2) Dept, dt 23.10.2019**
1	Kalakkad	Tirunelveli	Safe	Safe
2	Nanguneri		Safe	Safe
3	Vallioor		Semi Critical	Safe
4	Radhapuram		Critical	Safe

2.10 Industrial water demand (past and future) of Nambiyar sub basin

The annual water demand for the industries during planning periods for sub basin is given below.

Year	Annual water demand in Mcum
2019	5.499
2020	5.57
2025	6.41
2030	7.069
2044	9.15

Source : Microlevel Environmental Status Report for Nambiyar River Basin including Hanumanathi and Karumeniar River Basins.

2.11.Domestic water demand (Past & future) details

Nambiyar Sub Basin	2011	2020	2030	2040	2050
Population in million	0.792	0.901	1.039	1.201	1.388
Total water demand in mcum	13.22	15.13	17.59	20.47	23.85

Source : http://nwm.gov.in/sites/default/files/Nambiyar_Report.pdf

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2.12 Live stock population and annual water demand

Nambiyar Sub basin

Live stock Name	Nos.	Annual water demand Mcum
Cattle	28247	1.130
Buffallo	4248	0.232
Sheep	43014	0.314
Goat	34329	0.250
Pigs	2908	0.042
Poultry	59860	0.006
	172606	**1.974**

Source : Microlevel Environmental Status Report for Nambiyar River Basin including Hanumanathi and Karumeniar River Basins.

2.13. Rainfall & Rain gauge stations in the sub basin

Name of Rain Gauge Station	Taluk	District	Latitude	Longitude	RG station area sq.km	Sub basin area sq.km	Annual average rainfall in mm	Annual average weighted rain fall for the sub basin in mm	NE Monsoon	SW Monsoon	Winter	Summer	Annual
Nanguneri	Nanguneri	Tirunelveli	08° 29' 46"	77° 38' 47"	363.32	1046	669.0	682.4	443.0	63.0	48.0	115.0	669.0
Kalakkad	Nanguneri	Tirunelveli	08° 30' 54"	77° 33' 02"	185.68		669.0		443.0	63.0	48.0	115.0	669.0
Radhapuram	Radhapuram	Tirunelveli	08° 15' 59"	77° 41' 07"	55.32		744.2		443.8	136.2	48.3	115.9	744.2

2.14 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.

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

2.15 Land holdings

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

Category	Size of holdings	Numbers	Percentage
Marginal	Below 1.00 Ha	19690	62.98
Small	1.00 – 2.00 Ha	5062	16.19
Medium	2.00 – 5.00 Ha	4787	15.31
Big	5.0 ha & above	1725	5.52
	Total	31264	100.00

Above table revealed that the marginal farmers alone accounted for 62.98 percent in the sub basin followed by small farmers. Developmental initiatives will need to take the fact into account.

2.16 Cropping Pattern

CROPPING PATTERN

Name of the sub Basin : Nambiyar Sub-Basin

Registered Ayacut Area : 1312.830 Ha

Fully Irrigated : 724.88 Ha

Partially Irrigated : 316.12 Ha

Gap area : 271.83 Ha

S.No.	Crop	Without Project				With Project				Increasing
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
I	**Perennial crop**									
1	Coconut	35.00	159.00	0	194.00	35.00	159.00	0	194.00	0.00
2	Mango	0	24.00	0	24.00	0	24.00	0	24.00	0.00
3	Sapota	0	2.00	0	2.00	0	2.00	0	2.00	0.00
4	Guava	0	0.00	0	0.00	0	0.00	0	0.00	0.00
5	Cashew	0	0.00	0	0.00	0	0.00	0	0.00	0.00
6	Casurina	0	2.10	0	2.10	0	2.10	0	2.10	0.00
7	Teak	0	0.50	0	0.50	0	0.50	0	0.50	0.00
8	Tamarind	0	1.13	0	1.13	0	1.13	0	1.13	0.00
9	Acid Lime	0	0.00	0	0.00	0	0.00	0	0.00	0.00
10	Amla	0	1.05	0	1.05	0	1.05	0	1.05	0.00
11	Jack	0	0.00	0	0.00	0	0.00	0	0.00	0.00
12	Other tree crops	0	12.00	0	12.00	0	12.00	0	12.00	0.00
13	Flowers\ Tube Rose	0	0.50	0	0.50	0	0.50	0	0.50	0.00
14	Fodder	0	0.00	0	0.00	0	0.00	0	0.00	0.00
	Total	**35**	**202.28**	**0**	**237.28**	**35**	**202.28**	**0**	**237.28**	**0**
II	**Annual Crop**									
1	Sugarcane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Banana	82.00	0.00	0.00	82.00	82.00	0.00	0.00	82.00	0.00
3	T.C. Banana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Tapiaco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**82.00**	**0.00**	**0.00**	**82.00**	**82.00**	**0.00**	**0.00**	**82.00**	**0.00**
III	**1st crop**									
1. a	Paddy	596.18	0.00	0.00	596.18	0.00	0.00	0.00	0.00	-596.18
b	Paddy - SRI	0.00	0.00	0.00	0.00	596.18	0.00	0.00	596.18	596.18
2	Maize	3.07	0.00	0.00	3.07	3.07	0.00	0.00	3.07	0.00
3	Pulses	4.03	45.00	0.00	49.03	70.00	0.00	0.00	70.00	20.97
4	Groundnut	0.00	10.20	0.00	10.20	50.00	0.00	0.00	50.00	39.80
5	Gingelly	0.00	2.60	0.00	2.60	35.00	0.00	0.00	35.00	32.40
6	Cumbu	0.00	2.50	0.00	2.50	2.50	0.00	0.00	2.50	0.00
7	Tomato	0.70	20.50	0.00	21.20	21.20	0.00	0.00	21.20	0.00
8	Bhendi	0.00	9.20	0.00	9.20	20.00	0.00	0.00	20.00	10.80
9	Brinjal	2.86	5.63	0.00	8.49	20.00	0.00	0.00	20.00	11.51
10	Onion	0.00	5.63	0.00	5.63	16.00	0.00	0.00	16.00	10.37
11	Cucumber	0.00	2.00	0.00	2.00	25.00	0.00	0.00	25.00	23.00
12	Gourds	0.17	1.00	0.00	1.17	25.00	0.00	0.00	25.00	23.83
13	Radish	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
14	Curry leaf	0.00	0.23	0.00	0.23	0.23	0.00	0.00	0.23	0.00
15	Cluster Beans	0.00	0.15	0.00	0.15	0.15	0.00	0.00	0.15	0.00
16	Greens	0.00	1.00	0.00	1.00	1.65	0.00	0.00	1.65	0.65
17	Watermelon	0.00	1.00	0.00	1.00	1.23	0.00	0.00	1.23	0.23
18	Chillies	0.87	3.00	0.00	3.87	35.87	0.00	0.00	35.87	32.00
19	Beans	0.00	0.25	0.00	0.25	0.25	0.00	0.00	0.25	0.00

S.No.	Crop	Without Project				With Project				Increasing
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
20	Veg Cowpea	0.00	0.45	0.00	0.45	0.45	0.00	0.00	0.45	0.00
21	Corinader	0.00	0.85	0.00	0.85	0.85	0.00	0.00	0.85	0.00
22	Colacassia	0.00	1.00	0.00	1.00	13.00	0.00	0.00	13.00	12.00
23	Marigold	0.00	0.65	0.00	0.65	16.00	0.00	0.00	16.00	15.35
24	Fodder cholam	0.00	0.00	0.00	0.00	0.00	38.92	0.00	38.92	38.92
25	Fallow	0.00	0.00	271.83	271.83					
	Total	**607.88**	**113.84**	**271.83**	**993.55**	**954.63**	**38.92**	**0.00**	**993.55**	**271.83**
	Grand total (I+II+III)	**724.88**	**316.12**	**271.83**	**1312.83**	**1071.63**	**241.20**	**0.00**	**1312.83**	**271.83**
IV	2 nd crop									
1. a	Paddy	357.00	0.00	0.00	357.00	0.00	0.00	0.00	0.00	-357.00
b	Paddy - SRI	0.00	0.00	0.00	0.00	357.00	0.00	0.00	357.00	357.00
2	Maize	0.00	0.00	0.00	0.00	10.00	0.00	0.00	10.00	10.00
3	Cholam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Blackgram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Redgram	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
6	Groundnut	25.00	0.00	0.00	25.00	55.00	0.00	0.00	55.00	30.00
7	Fodder cholam	0.00	12.05	0.00	12.05	25.00	0.00	0.00	25.00	12.95
8	Rice fallow pulses						0.00	300.00	300.00	300.00
9	Fallow	0.00	0.00	271.83	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**382.00**	**12.05**	**271.83**	**394.05**	**449.00**	**0.00**	**300.00**	**749.00**	**354.95**
	Great Grand Total	**1106.88**	**328.17**	**543.66**	**1706.88**	**1520.63**	**241.20**	**300.00**	**2061.83**	**626.78**
	Cropping Intensity				**130.01**				**157.05**	

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Tirunelveli

2.16.1 Crop water requirement without Project

Sl. No	Name of Crop	Area in Ha	Crop water requirement in mm	Total Crop water requirement in Mcm	Irrigation water requirement at source Eff=51%	Total Irrigation requirement in Mcm
I	**Perennial Crops**					
1	Coconut	194	1376	2.67	5.23	5.23
2	Mango	24	402	0.10	0.19	0.19
3	Sapota	2	402	0.01	0.02	0.02
4	Guava	0	350	0.00	0.00	0.00
5	Cashew	0	315	0.00	0.00	0.00
6	Casurina	2.1	290	0.01	0.01	0.01
7	Teak	0.5	386	0.00	0.00	0.00
8	Tamarind	1.13	315	0.00	0.01	0.01
9	Acid Lime	0	310	0.00	0.00	0.00
10	Amla	1.05	526	0.01	0.01	0.01
11	Jack	0	315	0.00	0.00	0.00
12	Other tree crops	12	386	0.05	0.09	0.09
13	Flowers\ Tube Rose	0.5	595	0.00	0.01	0.01
14	Fodder	0	438	0.00	0.00	0.00
	Total	**237.28**		**2.84**	**5.57**	**5.57**
II	Annual Crop					
1	Sugarcane	0	1350	0.00	0.00	0.00
2	Banana	82	1278	1.05	2.05	2.05
3	T.C. Banana	0		0.00	0.00	0.00
4	Tapiaco	0	538	0.00	0.00	0.00
	Total	**82**		**1.048**	**2.055**	**2.055**
III	1st crop					
1a	Paddy	596.18	1235	7.36	14.44	14.44

b	Paddy - SRI	0	865	0.00	0.00	0.00
2	Maize	3.07	386	0.01	0.02	0.02
3	Pulses	49.03	352	0.17	0.34	0.34
4	Groundnut	10.2	453	0.05	0.09	0.09
5	Gingelly	2.6		0.00	0.00	0.00
6	Cumbu	2.5		0.00	0.00	0.00
7	Tomato	21.2	462	0.10	0.19	0.19
8	Bhendi	9.2		0.00	0.00	0.00
9	Brinjal	8.49	462	0.04	0.08	0.08
10	Onion	5.63	610	0.03	0.07	0.07
11	Cucumber	2		0.00	0.00	0.00
12	Gourds	1.17	250	0.00	0.01	0.01
13	Radish	1		0.00	0.00	0.00
14	Curry leaf	0.23		0.00	0.00	0.00
15	Cluster Beans	0.15		0.00	0.00	0.00
16	Greens	1		0.00	0.00	0.00
17	Watermelon	1		0.00	0.00	0.00
18	Chillies	3.87	833	0.03	0.06	0.06
19	Beans	0.25		0.00	0.00	0.00
20	Veg Cowpea	0.45		0.00	0.00	0.00
21	Corinader	0.85		0.00	0.00	0.00
22	Colacassia	1	120	0.00	0.00	0.00
23	Marigold	0.65		0.00	0.00	0.00
24	Fodder cholam	0		0.00	0.00	0.00
25	Fallow	271.83		0.00	0.00	0.00
	Total	**993.55**		**7.80**	**15.30**	**15.30**
	Grand total (I+II+III)	**1312.83**		**11.69**	**22.92**	**22.92**
IV	2 nd crop					
1.a	Paddy	357	1235	4.41	8.65	8.65
b	Paddy - SRI	0	865	0.00	0.00	0.00
2	Maize	0	386	0.00	0.00	0.00

3	Cholam	0	386	0.00	0.00	0.00
4	Blackgram	0	352	0.00	0.00	0.00
5	Redgram	0	352	0.00	0.00	0.00
6	Groundnut	25	453	0.11	0.22	0.22
7	Fodder cholam	12.05	386	0.05	0.09	0.09
8	Rice Fallow Pulse			0.00	0.00	0.00
9	Fallow	0		0.00	0.00	0.00
	Total	**394.05**		**4.57**	**8.96**	**8.96**
Great Grand Total		**1706.88**		**16.26**	**31.88**	**31.88**

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2.16.2. Crop water requirement with Project

Sl. No	Name of Crop	Area in Ha	Crop water requirement in mm	Total Crop water requirement in Mcm	Irrigation water requirement at source Eff=53%	Total Irrigation requirement in Mcm
I	**Perennial Crops**					
1	Coconut	194	1376	2.67	5.04	5.04
2	Mango	24	402	0.10	0.18	0.18
3	Sapota	2	402	0.01	0.02	0.02
4	Guava	0	350	0.00	0.00	0.00
5	Cashew	0	315	0.00	0.00	0.00
6	Casurina	2.1	290	0.01	0.01	0.01
7	Teak	0.5	386	0.00	0.00	0.00
8	Tamarind	1.13	315	0.00	0.01	0.01
9	Acid Lime	0	310	0.00	0.00	0.00
10	Amla	1.05	526	0.01	0.01	0.01
11	Jack	0	315	0.00	0.00	0.00
12	Other tree crops	12	386	0.05	0.09	0.09
13	Flowers\ Tube Rose	0.5	595	0.00	0.01	0.01
14	Fodder	0	438	0.00	0.00	0.00
	Total	**237.28**		**2.84**	**5.36**	**5.36**
II	Annual Crop					
1	Sugarcane	0	1350	0.00	0.00	0.00
2	Banana	82	1278	1.05	1.98	1.98
3	T.C. Banana	0		0.00	0.00	0.00
4	Tapiaco	0	538	0.00	0.00	0.00
	Total	**82**		**1.048**	**1.977**	**1.977**
III	1st crop					
1a	Paddy	0	1235	0.00	0.00	0.00
b	Paddy - SRI	596.18	865	5.16	9.73	9.73
2	Maize	3.07	386	0.01	0.02	0.02

3	Pulses	70	352	0.25	0.46	0.46
4	Groundnut	50	453	0.23	0.43	0.43
5	Gingelly	35		0.00	0.00	0.00
6	Cumbu	2.5		0.00	0.00	0.00
7	Tomato	21.2	462	0.10	0.18	0.18
8	Bhendi	20		0.00	0.00	0.00
9	Brinjal	20	462	0.09	0.17	0.17
10	Onion	16	610	0.10	0.18	0.18
11	Cucumber	25		0.00	0.00	0.00
12	Gourds	25	250	0.06	0.12	0.12
13	Radish	1		0.00	0.00	0.00
14	Curry leaf	0.23		0.00	0.00	0.00
15	Cluster Beans	0.15		0.00	0.00	0.00
16	Greens	1.65		0.00	0.00	0.00
17	Watermelon	1.23		0.00	0.00	0.00
18	Chillies	35.87	833	0.30	0.56	0.56
19	Beans	0.25		0.00	0.00	0.00
20	Veg Cowpea	0.45		0.00	0.00	0.00
21	Corinader	0.85		0.00	0.00	0.00
22	Colacassia	13	120	0.02	0.03	0.03
23	Marigold	16		0.00	0.00	0.00
24	Fodder cholam	38.92		0.00	0.00	0.00
25	Fallow			0.00	0.00	0.00
	Total	**993.55**		**6.31**	**11.90**	**11.90**
	Grand total (I+II+III)	**1312.83**		**10.19**	**19.24**	**19.24**
IV	2 nd crop					
1. a	Paddy	0	1235	0.00	0.00	0.00
b	Paddy - SRI	357	865	3.09	5.83	5.83
2	Maize	10	386	0.04	0.07	0.07
3	Cholam	0	386	0.00	0.00	0.00
4	Blackgram	0	352	0.00	0.00	0.00

5	Redgram	2	352	0.01	0.01	0.01
6	Groundnut	55	453	0.25	0.47	0.47
7	Fodder cholam	25	386	0.10	0.18	0.18
8	Rice Fallow Pulse	300		0.00	0.00	0.00
9	Fallow	0		0.00	0.00	0.00
	Total	**749**		**3.48**	**6.56**	**6.56**
	Great Grand Total	**2061.83**		**13.67**	**25.80**	**25.80**

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2.17 Water Balance Statement

Details	Without Project In Mcm	With Project In Mcm
Water Potential		
Surface Water Potential	73.55	73.55
Ground Water Potential	50.21	50.21
Total Potential	123.76	123.76
Water Demand		
Domestic	15.13	15.13
Livestock	1.974	1.974
Industrial	5.57	5.57
Irrigation : WRO	31.88	25.80
: PU & GW	5.5	5.5
Total Water Demand	60.054	53.974
Water Balance	63.706	69.786

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3. HYDRAULIC PARTICULARS OF THE COMPONENTS

3.1 Hydraulic Particulars Of Tanks (System & Non System) Including Supply Channels

Sl.No.	District	Taluk	Block	Name of Tank	System Tank / Non System Tank	Tank Unicode	Ayacut (ha)	Capacity (Mcft)	Number of Fillings	Free Catchment (sqkm)	Combined Catchment (sqkm)	Water Spread Area (sqkm)	No.of Sluices	Deepest Sluice Sill level (m)	FTL (m)	MWL (m)	TBL (m)	Storage Depth (m)	Free Board	Nos and Length of Weir		Dischage (Cusecs)	Length of Bund (m)	Height of Bund (m)	Length of Supply Channel (m)	Bed Width (m)	Upper Tank	Lower Tank	Remarks
																				Nos	Length (m)								
1	2	3	4	5	6	6A	7	8	9	10	11	12	13	13A	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Cluster I																													
1	Tirunelveli	Nanguneri	Kalakkad	Nadukkamparaikulam	System Tank	TNNM-02-T0137	14.340	2.110	2	0.268	1.338	0.00058	2	118.705	121.790	122.390	123.390	3.085	1.00	1	3.1	4.717	663	4.685	300	4.00	Channel	River	
2	Tirunelveli	Nanguneri	Kalakkad	Kesavaneri Kulam	System Tank	TNNM-02-T0148	108.490	5.950	1	0.172	0.686	0.00078	1	113.500	119.960	120.560	121.560	6.46	1.00	1	39	30.1197	650	8.06	1000	6.00	Padalayar kulam	ponnakurichi kulam	
3	Tirunelveli	Nanguneri	Kalakkad	Padalayar Tank	System Tank	TNNM-02-T0138	203.840	27.130	1.5	1.833	6.546	0.00449	2	115.900	121.055	121.655	122.655	5.155	1.00	1	34.4	23.09	2650	6.755	5000	3.00	Karisal kulam	Kesavaneri kulam	
4	Tirunelveli	Nanguneri	Kalakkad	Karisalkulam	System Tank	TNNM-02-T0139	83.500	13.730	2.5	1.308	4.671	0.00035	2	113.715	119.745	120.745	121.745	6.03	1.00	1	3.6	5.579	1310	8.03	400	2.00	Channel	River	
Cluster II																													
5	Tirunelveli	Radhapuram	Vallioor	Vallioor Puthukulam	System Tank	TNNM-02-T0186	262.300	11.660	2	0.700	0.700	0.00274	1	100.965	103.440	104.140	105.140	2.475	1.00	1	3.3	3.21	1710	4.175	500	6.00	Vallioor Big tank	Ganapathiyar kulam	
6	Tirunelveli	Radhapuram	Vallioor	Devarkulam	System Tank	TNNM-02-T0188	10.030	0.640	3	0.299	0.533	0.00017	1	89.160	89.850	90.150	91.150	0.69	1.00	1	4	1.883	500	1.99	2000	2.00	Vallioor puthukulam	Ganapathiyar kulam	
7	Tirunelveli	Radhapuram	Vallioor	Ganapathiyarkulam	System Tank	TNNM-02-T0187	4.450	0.250	3	0.393	0.626	8.4E-05	1	87.930	89.770	90.370	91.370	1.84	1.00	1	3.2	2.609	380	3.44	1000	2.00	Dever kulam	pothayadi kulam	

Sl.No.	District	Taluk	Block	Name of Tank	System Tank / Non System Tank	Tank Unicode	Ayacut (ha)	Capacity (Mcft)	Number of Fillings	Free Catchment (sqkm)	Combined Catchment (sqkm)	Water Spread Area (sqkm)	No.of Sluices	Deepest Sluice Sill level (m)	FTL (m)	MWL (m)	TBL (m)	Storage Depth (m)	Free Board	Nos and Length of Weir		Dischage (Cusecs)	Length of Bund (m)	Height of Bund (m)	Length of Supply Channel (m)	Bed Width (m)	Upper Tank	Lower Tank	Remarks
																				Nos	Length (m)								
1	2	3	4	5	6	6A	7	8	9	10	11	12	13	13A	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
8	Tirunelveli	Radhapuram	Vallioor	Alankulam	System Tank	TNNM-02-T0183	12.020	5.750	1	2.864	11.215	0.00138	1	66.650	69.795	70.395	71.395	3.145	1.00	1	5.85	16.1	1560	4.745	3500	9.00	Vattakulam	Nedunkulam	
9	Tirunelveli	Radhapuram	Vallioor	Vattakulam	System Tank	TNNM-02-T0178	17.610	5.130	1.5	0.119	0.119	0.00141	1	81.435	84.525	84.825	85.825	3.09	1.00	1	4.55	1.1695	1100	4.39	500	4.00	Pandrakulam	Alankulam	
Cluster III																													
10	Tirunelveli	Radhapuram	Radhapuram	Kattayanerikulam	System Tank	TNNM-02-T0196	27.020	12.910	1	0.375	5.640	0.00474	1	53.225	54.950	55.550	56.550	1.725	1.00	1	27.3	20.9072	1500	3.325	5000	5.00	Kallikulam	Eluvar kulam	
11	Tirunelveli	Radhapuram	Radhapuram	Eluvarkulam	System Tank	TNNM-02-T0197	18.620	8.400	1	2.426	8.532	0.00263	1	47.665	50.165	50.765	51.765	2.50	1.00	1	22.6	15.6105	1010	4.10	4000	5.00	Kattayaneri kulam	Kuravar kulam	
12	Tirunelveli	Radhapuram	Radhapuram	Valatharvalavaithankulam	System Tank	TNNM-02-T0213	42.610	13.200	2	4.000	18.326	0.00339	2	49.105	52.095	52.995	53.995	2.99	1.00	1	20	86.6555	1750	4.89	3500	7.00	Kallikulam	Kurinchi kulam	
13	Tirunelveli	Radhapuram	Radhapuram	Mannarkulam	System Tank	TNNM-02-T0228	12.730	13.020	1.5	2.785	4.004	0.00339	1	48.985	52.045	52.545	53.545	3.06	1.00	1	35.4	14.2642	1500	4.56	2000	7.00	Valathurvalavaithan kulam	Seelathi kulam	
14	Tirunelveli	Radhapuram	Radhapuram	Kurunchikulam	System Tank	TNNM-02-T0214	8.760	5.380	1	0.205	17.270	0.0018	1	48.510	51.050	51.650	52.650	2.54	1.00	1	17	80.4152	1160	4.14	500	10.00	Valathurvalavaithan kulam	Lingam klam	
Cluster IV																													
15	Tirunelveli	Thisayanvilai	Radhapuram	Nambikurichi kulam	System Tank	TNNM-02-T0104	17.120	11.660	1.2	0.000	0.700	0.00274	1	40.965	43.440	44.140	45.735	2.475	1.595	1	3.3	82.33	1710	4.77	3000	3.00	Channel	Peeli kulam	
16	Tirunelveli	Thisayanvilai	Radhapuram	Kannankulam	System Tank	TNNM-02-T0203	9.130	5.920	1	0.175	0.500	0.0019	1	27.600	30.650	30.850	31.850	3.05	1.00	1	8.2	72.3024	1200	4.25	2000	6.00	Thuthi kulam	River	

Sl.No.	District	Taluk	Block	Name of Tank	System Tank / Non System Tank	Tank Unicode	Ayacut (ha)	Capacity (Mcft)	Number of Fillings	Free Catchment (sqkm)	Combined Catchment (sqkm)	Water Spread Area (sqkm)	No.of Sluices	Deepest Sluice Sill level (m)	FTL (m)	MWL (m)	TBL (m)	Storage Depth (m)	Free Board	Nos and Length of Weir		Dischage (Cusecs)	Length of Bund (m)	Height of Bund (m)	Length of Supply Channel (m)	Bed Width (m)	Upper Tank	Lower Tank	Remarks
																				Nos	Length (m)								
1	2	3	4	5	6	6A	7	8	9	10	11	12	13	13A	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
17	Tirunelveli	Thisayanvilai	Radhapuram	Vilimankulam	System Tank	TNNM-02-T0257	13.780	8.260	1.2	1.312	1.566	0.00188	1	10.975	14.500	15.000	15.500	3.525	0.5	1	16.8	8.4	1470	4.525	700	7.00	Uruman kulam	Puliman kulam	
18	Tirunelveli	Thisayanvilai	Radhapuram	Aimudi kulam	System Tank	TNNM-02-T0210	7.290	4.530	1	1.884	1.884	0.00253	1	27.810	28.620	29.220	30.220	0.81	1.00	1	5.6	7.457	1540	2.41	3500	2.00	Channel	Kannan kulam	
19	Tirunelveli	Thisayanvilai	Radhapuram	Palathikulam	System Tank	TNNM-02-T0248	5.660	13.140	1	0.486	1.214	0.00401	1	21.055	23.525	23.825	24.825	2.47	1.00	1	17.8	8.2271	1200	3.77	1000	2.00	Channel	Kailasaperi kulam	
20	Tirunelveli	Thisayanvilai	Radhapuram	Pappankulam	System Tank	TNNM-02-T0249	8.440	10.200	1	0.612	1.359	0.00488	1	20.165	21.695	22.695	23.695	1.53	1.00	1	2	115.33	1705	3.53	1500	3.00	Channel	Sithalan kulam	
21	Tirunelveli	Thisayanvilai	Radhapuram	Periyalankulam	System Tank	TNNM-02-T0256	1.870	2.580	1	0.761	0.761	0.00073	1	23.865	26.095	26.545	27.545	2.23	1.00	1	10.2	8.39	849	3.68	2250	3.00	Sithalan kulam	River	
22	Tirunelveli	Thisayanvilai	Radhapuram	Kailasaperikulam	System Tank	TNNM-02-T0263	4.490	7.560	1	1.102	2.899	0.00199	1	18.230	20.685	20.985	21.985	2.455	1.00	1	15.7	21.3896	1025	3.755	4000	3.00	Palathi kulam	River	
23	Tirunelveli	Thisayanvilai	Radhapuram	Ponathikulam	System Tank	TNNM-02-T0244	24.780	2.970	1.5	0.484	1.242	0.00135	1	28.945	30.675	31.125	32.125	1.73	1.00	1	6.2	2.432	1740	3.18	800	3.00	Pudhukurichi kulam	Palathi kulam	
Cluster V																													
24	Tirunelveli	Nanguneri	Nanguneri	Karuthanerikulam	System Tank	TNNM-02-T0145	17.760	4.370	1.5	0.421	0.689	0.00129	1	83.200	86.000	86.300	87.300	2.80	1.00	1	11.1	2.432	1400	4.10	300	4.00	Channel	Illayanainar kulam	
25	Tirunelveli	Radhapuram	Vallioor	Sinammalpuram and pudukulam	System Tank	TNNM-02-T0134	62.410	15.240	1	1.471	1.471	0.00385	3	73.405	75.930	76.430	77.430	2.525	1.00	1	9.3	5.1882	1650	4.025	5000	5.00	Thiruvenkadanathapuram periya kulam	Chinnamal puram puthu kulam	

Sl.No.	District	Taluk	Block	Name of Tank	System Tank / Non System Tank	Tank Unicode	Ayacut (ha)	Capacity (Mcft)	Number of Fillings	Free Catchment (sqkm)	Combined Catchment (sqkm)	Water Spread Area (sqkm)	No.of Sluices	Deepest Sluice Sill level (m)	FTL (m)	MWL (m)	TBL (m)	Storage Depth (m)	Free Board	Nos and Length of Weir		Dischage (Cusecs)	Length of Bund (m)	Height of Bund (m)	Length of Supply Channel (m)	Bed Width (m)	Upper Tank	Lower Tank	Remarks
																				Nos	Length (m)								
1	2	3	4	5	6	6A	7	8	9	10	11	12	13	13A	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
26	Tirunelveli	Nanguneri	Nanguneri	Nallapethankulam	System Tank	TNNM-02-T0152	12.160	2.810	1	1.700	25.408	0.00082	1	83.855	86.035	87.285	88.285	2.18	1.00	1	25.2	104.872	626	4.430	1000	5.00	Kanchirankondan kulam	Kandiyaperi kulam	
27	Tirunelveli	Nanguneri	Vallioor	Kandiaperikulam	System Tank	TNNM-02-T0161	42.460	11.300	1.5	1.697	1.697	0.00325	1	81.830	84.780	85.180	86.180	2.95	1.00	1	2.6	5.985	1450	4.350	800	5.00	Channel	Achampadu kulam	
28	Tirunelveli	Radhapuram	Vallioor	Kovanerikulam	System Tank	TNNM-02-T0130	26.530	3.610	1.5	0.268	0.268	0.00168	1	83.975	85.800	86.400	87.400	1.825	1.00	1	0.9	0.9462	1380	3.425	200	3.00	Channel	Soochikulam	
Cluster VI																													
29	Tirunelveli	Radhapuram	Radhapuram	Kallikulam	System Tank	TNNM-02-T0180	10.860	2.480	1	0.176	0.176	0.0009	1	67.020	68.610	69.060	70.060	1.59	1.00	1	1.91	3.357	1574	3.040	3400	6.00	Pandrakulam	Pettai kulam	
30	Tirunelveli	Radhapuram	Vallioor	Karuppukalkulam	Non system Tank	TNNM-02-T0156	4.650	4.950	1	2.875	5.776	0.00132	1	64.150	67.355	67.655	68.655	3.205	1.00	1	6.5	20.372	1120	4.505	500	9.00	Anaikulam	Thankaiyan kulam	
31	Tirunelveli	Radhapuram	Vallioor	Veetrithankulam	Non system Tank	TNNM-02-T0160	4.360	0.410	1	0.174	2.834	0.00015	1	62.750	65.200	65.800	66.800	2.45	1.00	1	7	6.84	1400	4.050	1500	6.00	Karrupukal kulam	Sithoor keel kulam	
32	Tirunelveli	Thisayanvilai	Vallioor	Thankaiyankulam	Non system Tank	TNNM-02-T0162	4.160	0.920	1	0.701	5.184	0.0014	1	65.050	67.355	67.665	68.655	2.305	0.99	1	9.3	5.1882	663	3.605	800	6.00	Karupukal kulam	Iyappaneri kulam	
33	Tirunelveli	Thisayanvilai	Vallioor	Vilvarayankulam	Non System Tank	TNNM-02-T0169	27.520	23.200	1	2.720	6.801	0.00657	1	78.915	79.720	80.320	81.320	0.805	1.00	1	7.9	10.202	1715	2.405	500	6.00	Iyappaneri kulam	Thamba kulam	
34	Tirunelveli	Radhapuram	Vallioor	Achampadukulam	System Tank	TNNM-02-T0164	22.240	12.300	1	1.204	2.901	0.00384	1	80.945	83.605	83.905	84.905	2.66	1.00	1	19.3	10.232	2010	3.960	3000	4.00	Kandiyaperi kulam	Thanuvan kulam	

Sl.No.	District	Taluk	Block	Name of Tank	System Tank / Non System Tank	Tank Unicode	Ayacut (ha)	Capacity (Mcft)	Number of Fillings	Free Catchment (sqkm)	Combined Catchment (sqkm)	Water Spread Area (sqkm)	No.of Sluices	Deepest Sluice Sill level (m)	FTL (m)	MWL (m)	TBL (m)	Storage Depth (m)	Free Board	Nos and Length of Weir		Dischage (Cusecs)	Length of Bund (m)	Height of Bund (m)	Length of Supply Channel (m)	Bed Width (m)	Upper Tank	Lower Tank	Remarks
																				Nos	Length (m)								
1	2	3	4	5	6	6A	7	8	9	10	11	12	13	13A	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
35	Tirunelveli	Radhapuram	Vallioor	Thanuvankulam	System Tank	TNNM-02-T0174	3.260	29.280	1	0.453	2.338	0.00384	1	80.945	83.605	83.905	84.905	2.66	1.00	1	19.3	19.924	754	3.960	200	4.00	Achampadu kulam	Poopillai kulam	
36	Tirunelveli	Radhapuram	Vallioor	Poopillaikulam	System Tank	TNNM-02-T0171	3.940	29.280	1	0.822	3.160	0.00384	1	80.945	83.605	83.905	84.905	2.66	1.00	1	19.3	19.924	987	3.960	2000	4.00	Thanuvan kulam	Kannavaraya n kulam	
37	Tirunelveli	Thisayanvilai	Vallioor	Panisakulam	Non system Tank	TNNM-01-T0250	33.050	4.930	1.5	0.000	0.000	0.00737	2	65.550	67.400	67.795	68.795	1.85	1.00	1	8	5.985	1800	3.245	6000	6.00	Channel	Vijayanaraya nam kulam	
38	Tirunelveli	Thisayanvilai	Vallioor	Thambakulam	Non system Tank	TNNM-02-T0175	6.370	10.340	2	0.000	0.000	0.00241	1	80.240	82.865	83.465	84.465	2.625	1.00	1	10	8.56	1345	4.225	2000	5.00	Vilvarayan kulam	River	
39	Tirunelveli	Thisayanvilai	Vallioor	Sittur Keelkulam	Non system Tank	TNNM-02-T0154	23.390	10.160	1	1.063	5.779	0.00372	1	55.360	57.360	57.710	58.710	2	1.00	1	5.6	5.3991	2160	3.350	3500	6.00	Sithoor kulam	River	
40	Tirunelveli	Thisayanvilai	Vallioor	Iyyapanerikulam	Non system Tank	TNNM-02-T0167	4.160	3.740	1.5	0.937	6.121	0.00119	2	59.940	62.050	62.500	63.500	2.11	1.00	1	8.5	21.6929	1185	3.560	2000	4.00	Thangiyan kulam	Vilvarayan kulam	
Total Ayacut							1228.16 ha																						

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TNIAMP PHASE III NAMBIYAR SUB BASIN

S.No	Name of Village	Name of Tank	Tank Unicode	Ayacut (Ha)
1	Anaikulam	Karuppukalkulam	TNNM-02-T0156	4.650
2	Anaikulam	Veetrithankulam	TNNM-02-T0160	4.360
3	Kannanallur	Thankaiyankulam	TNNM-02-T0162	4.160
4	Kannanallur	Vilvarayankulam	TNNM-02-T0169	27.520
5	Kannanallur	Panisakulam	TNNM-01-T0250	33.050
6	Kannanallur	Thambakulam	TNNM-02-T0175	6.370
7	Kannanallur	SitturKeelkulam	TNNM-02-T0154	23.390
8	Kannanallur	Iyyapanerikulam	TNNM-02-T0167	4.160

Nambiyar Sub basin

It is certified that,

a) The above tanks having ayacut less than 40 Ha are controlled and maintained by PWD/WRD, since these tanks receive water from the Anicuts through supply channel and treated as System tanks. Necessary correction will be made in the Tank type in the IWS Unicode database accordingly.

b) The Ayacut for the list of tanks mentioned in Nambiyar Sub basin DPR is correct as per Memoir and necessary measures will be taken to modify the Ayacut mentioned in IWS Unicode database.

c) The tanks in S.No 5 and 7 in the above table receives water from the channel from Kanannalur Anicut and the tanks in S.No 1,2,3,4,6 and 8 receives water from the channel from Mylapudur Anicut . Hence these tanks are considered as System tank and inclusion of these in IWS Unicode database as System tank is correct.

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3.2 Hydraulic Particulars of Supply Channels

Sl. No	Name of Supply Channel	Start Point		Length in km	Bed Width in m	Bed slope	Side slope	MFD cusecs	Depth of flow in m	Remarks
		Location	Sill level in m							
1	2	3	4	5	6	7	8	9	10	11
	Anicut Supply Channel									
1	Padalayar Channel	Kodumudiyar @ LS 0.50 KM	143.00 0	4.00	2.00	1 in 1000	1:1	165	1.20	
			Supply Channel Total Length	**4.00**						

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4. PARTICIPATORY IRRIGATION MANAGEMENT (PIM)

4.1 Salient Features of Implementation of PIM in Nambiyar Sub basin

This is one of the 3 Sub basins of the Nambiyar River Basin. There are 85 tanks and 9 anicuts under the control of WRD of PWD in this sub basin. Among that 40 tanks with an ayacut of 1228.16 Ha and supply channel of 84.67 Ha (Total 1312.83) are proposed in this (TNIAMP PHASE III) Project. These Infrastructures are located within the Sub basin's hydraulic boundary spread over 16 villages of 3 Taluks in Tirunelveli District. The Total Command area under these Infrastructures to be proposed in TNIAMP PHASE -III are 1312.83 Ha.

4.2 Command area :

Tanks (40 Nos.)	: 1228.16 Ha
Supply Channel (Direct Ayacut) (1 No.)	: 84.67 Ha
Total	: 1312.83 Ha

4.3 An Assessment of number of WUAs.

i)	WUA's are formed already in WRCP	12 Nos.
ii)	The Total command area covered by the above WUAs works out to	3526.21 Ha

In the work to be carried out under TNIAMP phase III, among the 40 tanks and 1 anicut supply channel 10 Nos of WUA's will cover the proposed area of 1312.83 Ha. The above said 10 Nos of WUA's are already formed under WRCP.

4.4 Assessment of Awareness creation among the farming community

i) There are 40 Tanks in the Sub-Basin spread over 16 villages as detailed out in Annexure – 01. All these Villages were visited by the WRD officials and awareness about various activities, contemplated under TNIAMP PHASE III 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 WRD officials, are all furnished in the Annexure -02 and Annexure -03:

4.5 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 Organiztion (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 TN - IAMP PHASE III project is based on the "WRD section Officer wise" distribution as indicated below.

Name of the WRD Sub Divisional Officers working in the Nambiyar Sub-Basin:

1	Assistant Executive Engineer,WRD Nambiyar Basin Sub Division Nanguneri.	TNV 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144

1	Assistant Engineer,WRD Irrigation Section Vallioor	TNV 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144

4.6 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 TNIAMP PHASE III Project was discussed with 188 No. of farmers from 16 Villages.

ii) The 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 WRD, who has been designated as the Nodal Officer for the Sub-Basin concerned.

iii) The field Officers of WRD are all aware of the problems in handing over the operation and maintenance responsibilities to the farmers concerned, if thetasks 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 WRD officers were also informed that they are personally responsible for handing over the irrigation systems, under TNIAMP PHASE III Project.

4.7 "Capacity Building" of the WUA farmers:

i) "Training Modules" required for building the capacity of the WUA farmers will be prepared based on a "Training Needs" Analysis. Various "Capacity Building" programs willalso be organised at suitable locations within the Sub-Basin command area, to benefit the farmers of the WUAs in the Sub-Basin.

ii) "Study Tours" both within and outside the statewill be arranged to enhance their knowledge and experiences which will help them to improve the crop productivity and there by the farmer's income.

iii) "Awareness programme" will be conducted 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.

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Tenkasi.

Annexure: 01

4.8 An Assessment Of Command Area and WUAs under the Control of WRO of PWD in Nambiyar 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	IAM-WARM	Formed under WRCP	To be formed under IAMWARM
1	2	3	4	5	6	7	8	9	10
Cluster I									
TNV 138	Nadukkamparaikulam	14.340	Mahiladi	Nanguneri	Tirunelveli	14.340	--	Yes	--
TNV 138	Kesavaneri Kulam	108.490	Nambithalaivanpattayam	Nanguneri	Tirunelveli	108.490	--	Yes	--
TNV 138	Padalayar Tank	203.840	Thirukkurangudy	Nanguneri	Tirunelveli	203.840	--	Yes	--
TNV 138	Padalayarkal (Anicut Supply Channel)	84.67	Thirukkurangudy	Nanguneri	Tirunelveli	84.67	--	Yes	--
TNV 138	Karisalkulam	83.500	Thirukkurangudy	Nanguneri	Tirunelveli	83.500	--	Yes	--
Cluster II									
TNV 137	Vallioor Puthukulam	262.300	Therkku Vallioor	Radhapuram	Tirunelveli	262.300	--	Yes	--
TNV 137	Devarkulam	10.030	Therkku Valliyoor	Radhapuram	Tirunelveli	10.030	--	Yes	--
TNV 137	Ganapathiyarkulam	4.450	Therkku Valliyoor	Radhapuram	Tirunelveli	4.450	--	Yes	--
TNV 144	Alankulam	12.020	A.Thirumalapuram	Radhapuram	Tirunelveli	12.020	--	Yes	--

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	IAM-WARM	Formed under WRCP	To be formed under IAMWARM
TNV 143	Vattakulam	17.610	Vadakku Valliyoor	Radhapuram	Tirunelveli	17.610	--	Yes	--
Cluster III									
TNV 143	Kattayanerikulam	27.020	Samuharengapuram	Radhapuram	Tirunelveli	27.020	--	Yes	--
TNV 143	Eluvarkulam	18.620	Kumbikulam	Radhapuram	Tirunelveli	18.620	--	Yes	--
TNV 144	Valatharvalavaithankulam	42.610	Samuharengapuram	Radhapuram	Tirunelveli	42.610	--	Yes	--
TNV 144	Mannarkulam	12.730	Samuharengapuram	Radhapuram	Tirunelveli	12.730	--	Yes	--
TNV 144	Kurunchikulam	8.760	Samuharengapuram	Radhapuram	Tirunelveli	8.760	--	Yes	--
Cluster IV									
TNV 135	Nambikurichi kulam	17.120	Kottaikarunkulam	Thisayanvilai	Tirunelveli	17.120	--	Yes	--
TNV 133	Kannankulam	9.130	Kottaikarunkulam	Thisayanvilai	Tirunelveli	9.130	--	Yes	--
TNV 135	Vilimankulam	13.780	Urmankulam	Thisayanvilai	Tirunelveli	13.780	--	Yes	--
TNV 134	Aimudi kulam	7.290	Kasthurirengapuram	Thisayanvilai	Tirunelveli	7.290	--	Yes	--
TNV 134	Palathikulam	5.660	Kasthurirengapuram	Thisayanvilai	Tirunelveli	5.660	--	Yes	--
TNV 134	Pappankulam	8.440	Kasthurirengapuram	Thisayanvilai	Tirunelveli	8.440	--	Yes	--
TNV 134	Periyalankulam	1.870	Kasthurirengapuram	Thisayanvilai	Tirunelveli	1.870	--	Yes	--

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	IAM-WARM	Formed under WRCP	To be formed under IAMWARM
TNV 134	Kailasaperikulam	4.490	Kasthurirengapuram	Thisayanvilai	Tirunelveli	4.490	--	Yes	--
TNV 134	Ponathikulam	24.780	Kasthurirengapuram	Thisayanvilai	Tirunelveli	24.780	--	Yes	--
Cluster V									
TNV 141	Karuthanerikulam	17.760	Dhalabathysamuthiram	Nanguneri	Tirunelveli	17.760	--	Yes	--
TNV 140	Sinammalpuram and pudukulam	62.410	Anaikulam	Radhapuram	Tirunelveli	62.410	--	Yes	--
TNV 141	Nallapethankulam	12.160	Dhalapathysamudram	Nanguneri	Tirunelveli	12.160	--	Yes	--
TNV 142	Kandiaperikulam	42.460	Dhalabathysamuthiram	Nanguneri	Tirunelveli	42.460	--	Yes	--
TNV 141	Kovanerikulam	26.530	Vadakku vallioor	Radhapuram	Tirunelveli	26.530	--	Yes	--
Cluster VI									
TNV 142	Kallikulam	10.860	T.Kallikulam	Radhapuram	Tirunelveli	10.860	--	Yes	--
TNV 141	Karuppukalkulam	4.650	Anaikulam	Radhapuram	Tirunelveli	4.650	--	Yes	--
TNV 141	Veetrithankulam	4.360	Anaikulam	Radhapuram	Tirunelveli	4.360	--	Yes	--
TNV 141	Thankaiyankulam	4.160	Kannanallur	Thisayanvilai	Tirunelveli	4.160	--	Yes	--
TNV 141	Vilvarayankulam	27.520	Kannanallur	Thisayanvilai	Tirunelveli	27.520	--	Yes	--
TNV 142	Achampadukulam	22.240	Achampadu	Radhapuram	Tirunelveli	22.240	--	Yes	--

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	IAM-WARM	Formed under WRCP	To be formed under IAMWARM
TNV 142	Thanuvankulam	3.260	Achampadu	Radhapuram	Tirunelveli	3.260	--	Yes	--
TNV 142	Poopillaikulam	3.940	Achampadu	Radhapuram	Tirunelveli	3.940	--	Yes	--
TNV 140	Panisakulam	33.050	Kannanallur	Thisayanvilai	Tirunelveli	33.050	--	Yes	--
TNV 140	Thambakulam	6.370	Kannanallur	Thisayanvilai	Tirunelveli	6.370	--	Yes	--
TNV 140	Sittur Keelkulam	23.390	Kannanallur	Thisayanvilai	Tirunelveli	23.390	--	Yes	--
TNV 140	Iyyapanerikulam	4.160	Kannanallur	Thisayanvilai	Tirunelveli	4.160	--	Yes	--

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Annexure: 02

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

Sl. No	Date of Visit	Name of the Tanks Visited	Name of the Villages Visited	Awareness Programme (No.of farmers attended)	Walk - Through Survey (No.of farmers Participated)	Remarks
1	2	4	3	5	6	7
		Cluster I				
1	3.2.2020	Nadukkamparaikulam	Mahiladi	10	4	WUA formed
2	3.2.2020	Kesavaneri Kulam	Nambithalaivanpattayam	9	5	WUA formed
3	3.2.2020	Padalayar Tank	Thirukkurangudy	4	3	WUA formed
4	3.2.2020	Padalayarkal (Anicut Supply channel)	Thirukkurangudy	4	2	WUA formed
5	3.2.2020	Karisalkulam	Thirukkurangudy	11	6	WUA formed
		Cluster II				
6	4.2.2020	Vallioor Puthukulam	Therkku Vallioor	8	4	WUA formed
7	4.2.2020	Devarkulam	Therkku Valliyoor	7	5	WUA formed
8	4.2.2020	Ganapathiyarkulam	Therkku Valliyoor	10	6	WUA formed
9	4.2.2020	Alankulam	A.Thirumalapuram	11	7	WUA formed
10	4.2.2020	Vattakulam	Vadakku Valliyoor	15	7	WUA formed
		Cluster III				
11	12.2.2020	Kattayanerikulam	Samuharengapuram	13	4	WUA formed
12	12.2.2020	Eluvarkulam	Kumbikulam	16	5	WUA formed
13	12.2.2020	Valatharvalavaithankulam	Samuharengapuram	9	4	WUA formed
14	12.2.2020	Mannarkulam	Samuharengapuram	10	4	WUA formed
15	12.2.2020	Kurunchikulam	Samuharengapuram	8	4	WUA formed
		Cluster IV				
16	14.2.2020	Nambikurichi kulam	Kottaikarunkulam	12	6	WUA formed
17	14.2.2020	Kannankulam	Kottaikarunkulam	9	6	WUA formed
18	14.2.2020	Vilimankulam	Urumankulam	9	5	WUA formed
19	14.2.2020	Aimudi kulam	Kasthurirengapuram	8	4	WUA formed

Sl. No	Date of Visit	Name of the Tanks Visited	Name of the Villages Visited	Awareness Programme (No.of farmers attended)	Walk - Through Survey (No.of farmers Participated)	Remarks
20	14.2.2020	Palathikulam	Kasthurirengapuram	11	5	WUA formed
21	14.2.2020	Pappankulam	Kasthurirengapuram	10	4	WUA formed
22	14.2.2020	Periyalankulam	Kasthurirengapuram	5	3	WUA formed
23	14.2.2020	Kailasaperikulam	Kasthurirengapuram	9	5	WUA formed
24	14.2.2020	Ponathikulam	Kasthurirengapuram	8	4	WUA formed
		Cluster V				
25	15.2.2020	Karuthanerikulam	Dhalabathysamuthiram	11	4	WUA formed
26	15.2.2020	Sinammalpuram Bigtank	Dhalapathisamudram	9	4	WUA formed
27	15.2.2020	Nallapethankulam	Dhalapathysamudram	9	4	WUA formed
28	15.2.2020	Kandiaperikulam	Dhalabathysamuthiram	6	5	WUA formed
29	15.2.2020	Kovanerikulam	Vadakku vallioor	7	4	WUA formed
		Cluster VI				
30	17.2.2020	Kallikulam	T.Kallikulam	7	5	WUA formed
31	17.2.2020	Karuppukalkulam	Anaikulam	5	4	WUA formed
32	17.2.2020	Veetrithankulam	Anaikulam	9	5	WUA formed
33	17.2.2020	Thankaiyankulam	Anaikulam	6	4	WUA formed
34	17.2.2020	Vilvarayankulam	Kannanallur	15	5	WUA formed
35	17.2.2020	Achampadukulam	Achampadu	15	4	WUA formed
36	17.2.2020	Thanuvankulam	Achampadu	15	4	WUA formed
37	17.2.2020	Poopillaikulam	Achampadu	15	6	WUA formed
38	19.2.2020	Panisakulam	Kannanallur	15	4	WUA formed
39	19.2.2020	Thambakulam	Kannanallur	7	4	WUA formed
40	19.2.2020	Sittur Keelkulam	Kannanallur	10	5	WUA formed
41	19.2.2020	Iyyapanerikulam	Kannanallur	15	5	WUA formed

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Annexure: 03

4.10 Details of Modernisation works as suggested by the Farmers and as finalized by the officials of WRD

Sl. No	Date of Visit	Name of the Tanks visited	Name of the villages visited	Outcome of walk through survey and discussions with farmers	
				Works Suggested by Farmers	Works finalyzed by WRD Officials
		Cluster I			
1	3.2.2020	Nadukkamparaikulam	Mahiladi	Bund Strengthening, Weir Repair, Sluice Reconstruction, Desilting supply channel	Bund Strengthening, Repairs to Weir
2	3.2.2020	Kesavaneri Kulam	Nambithalaivanpattayam	Tank Desilting, Bund Strengthening, Sluice Reconstruction, channel desilting, Weir Repairs	Bund Strengthening.
3	3.2.2020	Padalayar Tank	Thirukkurangudy	Tank Desilting, Bund Strengthening, Sluice Reconstruction, , channel desilting, Weir Repairs	Sluice Reconstruction, Bund Strengthening,
4	3.2.2020	Padalayarkal (Anicut Supply channel)	Thirukkurangudy	Channel Desilting, Sluice Repair	Sluice Repair
5	3.2.2020	Karisalkulam	Thirukkurangudy	Sluice Reconstruction, Tank Desilting, Bund Strengthening,channel desilting, Weir Repairs	Bund Strengthening,
		Cluster II			
6	4.2.2020	Vallioor Puthukulam	Therkku Vallioor	Sluice Reconstruction, Tank Desilting, Bund Strengthening,channel desilting, Weir Repairs	Sluice Reconstruction, Bund Strengthening
7	4.2.2020	Devarkulam	Therkku Valliyoor	Tank Desilting, Bund Strengthening, Sluice Reconstruction, channel desilting, Weir Repairs	Bund Strengthening, Sluice Repair
8	4.2.2020	Ganapathiyarkulam	Therkku Valliyoor	Tank Desilting, Bund Strengthening, Sluice Reconstruction, channel desilting, Weir Repairs	Bund Strengthening, Sluice Repair
9	4.2.2020	Alankulam	A.Thirumalapuram	Bund Strengthening, Weir Repair, Desilting supply channel, Sluice Reconstruction,	Bund Strengthening,

Sl. No	Date of Visit	Name of the Tanks visited	Name of the villages visited	Outcome of walk through survey and discussions with farmers	
				Works Suggested by Farmers	Works finalyzed by WRD Officials
10	4.2.2020	Vattakulam	Vadakku Valliyoor	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Repair,
		Cluster III			
11	12.2.2020	Kattayanerikulam	Samuharengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,
12	12.2.2020	Eluvarkulam	Kumbikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening
13	12.2.2020	Valatharvalavaithankulam	Samuharengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,
14	12.2.2020	Mannarkulam	Samuharengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening
15	12.2.2020	Kurunchikulam	Samuharengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening
		Cluster IV			
16	14.2.2020	Nambikurichi kulam	Kottaikarunkulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir
17	14.2.2020	Kannankulam	Kottaikarunkulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening, Repairs to Weir
18	14.2.2020	Vilimankulam	Urumankulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening.

Sl. No	Date of Visit	Name of the Tanks visited	Name of the villages visited	Outcome of walk through survey and discussions with farmers	
				Works Suggested by Farmers	Works finalyzed by WRD Officials
19	14.2.2020	Aimudi kulam	Kasthurirengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening
20	14.2.2020	Palathikulam	Kasthurirengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Repairs to Weir
21	14.2.2020	Pappankulam	Kasthurirengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening
22	14.2.2020	Periyalankulam	Kasthurirengapuram	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening
23	14.2.2020	Kailasaperikulam	Kasthurirengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Repair
24	14.2.2020	Ponathikulam	Kasthurirengapuram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening
		Cluster V			
25	15.2.2020	Karuthanerikulam	Dhalabathysamuthiram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,
26	15.2.2020	Sinammalpuram and pudukulam	Dhalapathisamudram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir,
27	15.2.2020	Nallapethankulam	Dhalapathysamudram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening,

Sl. No	Date of Visit	Name of the Tanks visited	Name of the villages visited	Outcome of walk through survey and discussions with farmers	
				Works Suggested by Farmers	Works finalyzed by WRD Officials
28	15.2.2020	Kandiaperikulam	Dhalabathysamuthiram	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening
29	15.2.2020	Kovanerikulam	Vadakku vallioor	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening,
		Cluster VI			
30	17.2.2020	Kallikulam	T.Kallikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,
31	17.2.2020	Karuppukalkulam	Anaikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,
32	17.2.2020	Veetrithankulam	Anaikulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening, Repairs to Weir,.
33	17.2.2020	Thankaiyankulam	Anaikulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction
34	17.2.2020	Vilvarayankulam	Kannanallur	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,
35	17.2.2020	Achampadukulam	Achampadu	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Repairs to Weir
36	17.2.2020	Thanuvankulam	Achampadu	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,

Sl. No	Date of Visit	Name of the Tanks visited	Name of the villages visited	Outcome of walk through survey and discussions with farmers	
				Works Suggested by Farmers	Works finalyzed by WRD Officials
37	17.2.2020	Poopillaikulam	Achampadu	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Repair, Bund Strengthening,
38	19.2.2020	Panisakulam	Kannanallur	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir
39	19.2.2020	Thambakulam	Kannanallur	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,
40	19.2.2020	Sittur Keelkulam	Kannanallur	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening,
41	19.2.2020	Iyyapanerikulam	Kannanallur	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening,

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4.11 Details of WUAs proposed in Nambiyar Sub basin under TNIAMP Phas III

WUA No	Tank and Villages it covers		Name of WUA	Ayacut in Ha
	Tanks	Villages		
1	2	3	4	5
- - NIL - -				

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Abstract

1.	Total Command Area controlled by WRD of PWD in the Sub Basin Project Area	:	3526.21 Ha
2.	Command Area already covered under WRCP	:	2213.38 Ha
3.	Command Area already covered under other Project/ Schemes	:	--
4.	Command area now proposed to be covered under TNIAMP PHASE III Project	:	1312.83 Ha
5.	Total No. of WUAs already formed under WRCP	:	12 Nos
6.	Total No. of WUAs already formed under other Project / Schemes	:	--
7	**Total No. of WUAs proposed to be formed under TNIAMP PHASE-III**	:	--

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4.12 Walk Through Survey

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								
	Date	Location		WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Cluster I																		
1	3.2.2020	Nadukkamparaikulam	Bund Strengthening, Weir Repair, Sluice Reconstruction, Desilting supply channel	Bund Strengthening, Sluice Reconstruction, Repairs to Weir								Bund Strengthening, Repairs to Weir								
2	3.2.2020	Kesavaneri Kulam	Tank Desilting, Bund Strengthening, Sluice Reconstruction, channel desilting, Weir Repairs	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening.								
3	3.2.2020	Padalayar Tank	Tank Desilting, Bund Strengthening, Sluice Reconstruction, , channel desilting, Weir Repairs	Sluice Reconstruction, Bund Strengthening, Supply Channel Desilting.								Sluice Reconstruction, Bund Strengthening,								
4	3.2.2020	Padalayarkal (Anicut supply channel)	Channel Desilting, Sluice Repair	Sluice Repair								Sluice Repair								
5	3.2.2020	Karisalkulam	Sluice Reconstruction, Tank Desilting, Bund Strengthening,channel desilting, Weir Repairs.	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening,								
		Cluster II																		
6	4.2.2020	Vallioor Puthukulam	Sluice Reconstruction, Tank Desilting, Bund Strengthening,channel desilting, Weir Repairs	Sluice Reconstruction, Bund Strengthening								Sluice Reconstruction, Bund Strengthening								
7	4.2.2020	Devarkulam	Tank Desilting, Bund Strengthening, Sluice	Bund Strengthening,								Bund Strengthening,								

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								
	Date	Location		WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	Remarks
			Reconstruction, channel desilting, Weir Repairs	Sluice Reconstruction,								Sluice Repair								
8	4.2.2020	Ganapathiyarkulam	Tank Desilting, Bund Strengthening, Sluice Reconstruction, channel desilting, Weir Repairs	Bund Strengthening, Sluice Reconstruction								Bund Strengthening, Sluice Repair								
9	4.2.2020	Alankulam	Bund Strengthening, Weir Repair, Desilting supply channel, Sluice Reconstruction,	Sluice Reconstruction, Bund Strengthening, Repairs to Weir								Bund Strengthening,								
10	4.2.2020	Vattakulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction, Repairs to Weir								Bund Strengthening, Sluice Repair,								
		Cluster III																		
11	12.2.2020	Kattayanerikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction, Repairs to Weir								Bund Strengthening,								
12	12.2.2020	Eluvarkulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening Sluice Reconstruction,								Bund Strengthening								
13	12.2.2020	Valatharvalavaithankulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction, Repairs to Weir								Bund Strengthening,								
14	12.2.2020	Mannarkulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening Sluice Reconstruction,								Bund Strengthening								
15	12.2.2020	Kurunchikulam	Bund Strengthening, Sluice Reconstruction,	Bund Strengthening								Bund Strengthening								

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								
	Date	Location		WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	Remarks
			Weir Repair, Desilting supply channel	Sluice Reconstruction,																
		Cluster IV																		
16	14.2.2020	Nambikurichi kulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir								Sluice Reconstruction, Bund Strengthening, Repairs to Weir								
17	14.2.2020	Kannankulam	Bund Strengthening, Weir Repair, Desilting supply channel	Repairs to Weir								Bund Strengthening, Repairs to Weir								
18	14.2.2020	Vilimankulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening. Repairs to Weir								Bund Strengthening.								
19	14.2.2020	Aimudi kulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening Sluice Reconstruction,								Bund Strengthening								
20	14.2.2020	Palathikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction, Repairs to Weir								Bund Strengthening, Repairs to Weir								
21	14.2.2020	Pappankulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening Sluice Reconstruction,								Bund Strengthening								
22	14.2.2020	Periyalankulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening								Bund Strengthening								
23	14.2.2020	Kailasaperikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction, Repairs to Weir								Bund Strengthening, Sluice Repair								
24	14.2.2020	Ponathikulam	Bund Strengthening,	Sluice								Sluice								

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								
	Date	Location		WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	Remarks
			Sluice Reconstruction, Weir Repair, Desilting supply channel	Reconstruction, Bund Strengthening								Reconstruction, Bund Strengthening								
		Cluster V																		
25	15.2.2020	Karuthanerikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening,								
26	15.2.2020	Sinammalpuram and pudukulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir,								Sluice Reconstruction, Bund Strengthening, Repairs to Weir,								
27	15.2.2020	Nallapethankulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening,								Sluice Reconstruction, Bund Strengthening,								
28	15.2.2020	Kandiaperikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening Sluice Reconstruction,								Bund Strengthening								
29	15.2.2020	Kovanerikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening,								Sluice Reconstruction, Bund Strengthening,								
		Cluster VI																		
30	17.2.2020	Kallikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening,								
31	17.2.2020	Karuppukalkulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening,								
32	17.2.2020	Veetrithankulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening, Repairs to Weir,.								Bund Strengthening, Repairs to Weir,.								

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								
	Date	Location		WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	Remarks
33	17.2.2020	Thankaiyankulam	Bund Strengthening, Weir Repair, Desilting supply channel	Bund Strengthening								Bund Strengthening, Sluice Reconstruction								
34	17.2.2020	Vilvarayankulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening,								
35	17.2.2020	Achampadukulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction, Repairs to Weir								Bund Strengthening, Repairs to Weir								
36	17.2.2020	Thanuvankulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening,								
37	17.2.2020	Poopillaikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening,								Sluice Repair, Bund Strengthening,								
38	19.2.2020	Panisakulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir								Sluice Reconstruction, Bund Strengthening, Repairs to Weir								
39	19.2.2020	Thambakulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Bund Strengthening, Sluice Reconstruction,								Bund Strengthening,								
40	19.2.2020	Sittur Keelkulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir								Sluice Reconstruction, Bund Strengthening,								

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								
	Date	Location		WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRD	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	Remarks
41	19.2.2020	Iyyapanerikulam	Bund Strengthening, Sluice Reconstruction, Weir Repair, Desilting supply channel	Sluice Reconstruction, Bund Strengthening, Repairs to Weir								Bund Strengthening,								

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5. IRRIGATION INFRASTRUCTURE

5.1 List of Tanks (System Tanks)

Sl. No	Tank Name	Village	Block	Taluk	District	Ayacut Ha	Capacity M Cum
1	Pandarakulam	Achampadu	vallioor	Radhapuram	Tirunelveli	78.000	0.746
2	Kilavanerikulam	Achampadu	vallioor	Radhapuram	Tirunelveli	9.580	0.293
3	Kannavarayankulam	Achampadu	vallioor	Radhapuram	Tirunelveli	5.670	0.133
4	Anaikulam	Anaikulam	vallioor	Radhapuram	Tirunelveli	39.000	0.339
5	Chinnamal puthukulam	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	20.230	0.432
6	Soochikulam	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	37.640	0.065
7	Ilayanainarkulam	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	30.550	0.075
8	Vallakulam	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	40.200	0.156
9	Veppankulam	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	31.030	0.118
10	Mylopudukulam	Anaikulam	vallioor	Radhapuram	Tirunelveli	32.510	0.472
11	Dhalapathisamudram	Dhalapathisamudram	Nanguneri	Nanguneri	Tirunelveli	225.070	0.734
12	Pulimankulam	K.Pudur	Radhapuram	Thisaiyanvilai	Tirunelveli	26.460	0.657
13	Thathuvanerikulam	K.Pudur	Radhapuram	Thisaiyanvilai	Tirunelveli	26.750	0.328
14	Srikrishnaperikulam	K.Pudur	Radhapuram	Thisaiyanvilai	Tirunelveli	8.270	0.088
15	Kuttynagan kulam	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	22.000	0.428
16	Kolveikulam	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	26.690	0.342
17	Perunkannankulam	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	17.160	0.661
18	Sithalankulam	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	10.080	0.196
19	Senthilanpannaikulam	Kumarapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	6.650	0.058
20	Kottaikarunkulam	Kottaikarunkulam	Radhapuram	Thisaiyanvilai	Tirunelveli	28.890	0.704
21	Tuthikulam	Kottaikarunkulam	Radhapuram	Thisaiyanvilai	Tirunelveli	7.090	0.153
22	Kuravarkulam	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	54.100	0.307
23	Kumbikulam	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	13.190	0.397
24	Seelathikulam	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	10.350	0.247
25	Avakkaikulam	Muthumothanmozhi	Radhapuram	Thisaiyanvilai	Tirunelveli	4.430	0.048
26	Pandaraperunkulam	Radhapuram	Radhapuram	Radhapuram	Tirunelveli	167.850	0.746
27	Sirukulam	Rajakkalmangalam	Nanguneri	Nanguneri	Tirunelveli	30.350	0.085
28	Thiruvenkadanathapuram tank	Rajakkalmangalam	Nanguneri	Nanguneri	Tirunelveli	40.860	0.235
29	Lingankulam	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	9.270	0.083
30	Nedunkulam	Soundrapandiya puram	Radhapuram	Radhapuram	Tirunelveli	34.270	0.455
31	Peelikulam	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	17.470	0.251
32	Pulikulam	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	26.870	0.346
33	Perunkulam	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	13.950	0.162
34	Sirukulam	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	30.040	0.450
35	Urumankulam	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	41.520	0.459
36	Pettaikulam	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	8.300	0.117
37	Pettaikulam	Kalli kulam	Vallioor	Radhapuram	Tirunelveli	6.210	0.133
38	Islapurakulam	Urumankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	20.330	0.331
39	Ramathapuramkulam	Urumankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	8.730	0.328
40	Pudukurichikulam	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	12.130	0.135
41	Dinakarankulam	Urumankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	11.330	0.022
42	Valliyoor Periyakulam	Vadakku Valliyoor	vallioor	Radhapuram	Tirunelveli	530.740	3.650
43	Nambikurichi kulam	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	17.120	0.3302
44	Nadukkamparaikulam	Mahiladi	Kalakkad	Nanguneri	Tirunelveli	14.340	0.0597

Sl. No	Tank Name	Village	Block	Taluk	District	Ayacut Ha	Capacity M Cum
45	Kesavaneri Kulam	Nambithalaivanpattayam	Kalakkad	Nanguneri	Tirunelveli	108.490	0.1684
46	Devarkulam	Therkku Valliyoor	Vallioor	Radhapuram	Tirunelveli	10.030	0.01803
47	Ganapathiyarkulam	Therkku Valliyoor	Vallioor	Radhapuram	Tirunelveli	4.450	0.0071
48	Kovanerikulam	Vadakku vallioor	Vallioor	Radhapuram	Tirunelveli	26.530	0.1023
49	Karuthanerikulam	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	17.760	0.1238
50	Karisalkulam	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	83.500	0.3887
51	Kandiaperikulam	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	42.460	0.3199
52	Achampadukulam	Achampadu	Vallioor	Radhapuram	Tirunelveli	22.240	0.3482
53	Thanuvankulam	Achampadu	Vallioor	Radhapuram	Tirunelveli	3.260	0.829
54	Poopillaikulam	Achampadu	Vallioor	Radhapuram	Tirunelveli	3.940	0.829
55	Sinammalpuram Bigtank	Anaikulam	Vallioor	Radhapuram	Tirunelveli	62.410	0.4315
56	Kallikulam	T.Kallikulam	Radhapuram	Radhapuram	Tirunelveli	10.860	0.0702
57	Alankulam	A.Thirumalapuram	Radhapuram	Radhapuram	Tirunelveli	12.020	0.1627
58	Kattayanerikulam	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	27.020	0.3656
59	Kurunchikulam	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	8.760	0.1524
60	Valatharvalavaithankulam	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	42.610	0.3739
61	Mannarkulam	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	12.730	0.3687
62	Eluvarkulam	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	18.620	0.2378
63	Vattakulam	Vadakku Valliyoor	Vallioor	Radhapuram	Tirunelveli	17.610	0.1454
64	Kannankulam	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	9.130	0.1675
65	Vilimankulam	Urmankulam	Radhapuram	Thisayanvilai	Tirunelveli	13.780	0.234
66	Aimudi kulam	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	7.290	0.1284
67	Palathikulam	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	5.660	0.3722
68	Pappankulam	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	8.440	0.2889
69	Periyalankulam	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	1.870	0.073
70	Kailasaperikulam	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	4.490	0.214
71	Ponathikulam	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	24.780	0.084
72	Vallioor Puthukulam	Therkku Vallioor	Vallioor	Radhapuram	Tirunelveli	262.300	0.3302
73	Padalayar Tank	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	203.840	0.7681
74	Nallapethankulam	Dhalapathysamudram	Nanguneri	Nanguneri	Tirunelveli	12.160	0.0795
					Total	**2942.310**	**24.736**

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5.2 List of Tanks (Non System Tanks)

Sl. No	Tank_Name	Village	Block	Taluk	District	Ayacut Ha	Capacity MCum
1	Sithoorkulam	Kannanallur	vallioor	Thisaiyanvilai	Tirunelveli	37.700	0.5816
2	Kannanallurkulam	Kannanallur	vallioor	Thisaiyanvilai	Tirunelveli	36.110	0.1395
3	Nedumpoorkulam	Kannanallur	vallioor	Thisaiyanvilai	Tirunelveli	35.880	0.2082
4	Karuppukalkulam	Anaikulam	Vallioor	Radhapuram	Tirunelveli	4.650	0.1401
5	Veetrithankulam	Anaikulam	Vallioor	Radhapuram	Tirunelveli	4.360	0.0115
6	Thankaiyankulam	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	4.160	0.026
7	Thambakulam	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	6.370	0.2928
8	Sittur Keelkulam	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	23.390	0.2878
9	Panisakulam	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	33.050	0.1395
10	Vilvarayankulam	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	27.520	0.657
11	Iyyapanerikulam	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	4.160	0.106
					Total	**217.350**	**2.5900**

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5.3 List of Anicuts

Sl. No	Anicuts	Village	Block	Taluk	District	Ayacut Ha	Discharging Capacity in cumecs
1	Tamaraiyar	Thirukurankudy	Kalakkad	Nanguneri	Tirunelveli	--	483.76
2	Thalavaipuram	Nambithalaivan patayam	Kalakkad	Nanguneri	Tirunelveli	--	264.6849
3	Rajakkal mangalam	Rajakkalmangalam	Nanguneri	Nanguneri	Tirunelveli	--	531.5336
4	Mylapudhur	Anaikulam	Vallioor	Radhapuram	Tirunelveli	--	1167.83
5	Kannanallur	Kannanallur	Vallioor	Radhapuram	Tirunelveli	--	212.6135
6	Vijayan	Kannanallur	Vallioor	Radhapuram	Tirunelveli	--	208.5897
7	Kovankulam	Kannanallur	Vallioor	Radhapuram	Tirunelveli	--	426.2187
8	Thuthikulam	Urumanulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--	98.8138
9	Puliman	K.Pudhur	Radhapuram	Thisaiyanvilai	Tirunelveli	--	148.2207
					Total	--	

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5.4.a Anicuts Supply Channels

Sl. No	Name of Supply Channel	Length in Km	Village	Block	Taluk	District	Ayacut Ha
1	Valliioorankal	10.35	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	--
2	Padalayar kal	4.00	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	84.67
3	Vadamalayan kal	22.95	Eruvadi	Kalakkad	Nanguneri	Tirunelveli	281.88
4	Right side Main Canal	10.22	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	--
5	Left Side Main Canal	10.645	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	--
	Total	**58.165**					**366.55**

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5.4.b.System Tanks supply channel

Sl. No	Name of Supply Channel	Length in KM	Village	Block	Taluk	District	Ayacut Ha
1	Nadukkamparaikulam	0.30	Mahiladi	Kalakkad	Nanguneri	Tirunelveli	--
2	Kesavaneri Kulam	1.00	Nambithalaivan pattayam	Kalakkad	Nanguneri	Tirunelveli	--
3	Padalayar Tank	5.00	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	--
4	Karisalkulam	0.40	Thirukkurangudy	Kalakkad	Nanguneri	Tirunelveli	--
5	Vallioor Puthukulam	0.50	Therkku Vallioor	Vallioor	Radhapuram	Tirunelveli	--
6	Devarkulam	2.00	Therkku Valliyoor	Vallioor	Radhapuram	Tirunelveli	--
7	Ganapathiyarkulam	1.00	Therkku Valliyoor	Vallioor	Radhapuram	Tirunelveli	--
8	Alankulam	3.50	A.Thirumalapuram	Radhapuram	Radhapuram	Tirunelveli	--
9	Vattakulam	0.50	Vadakku Valliyoor	Vallioor	Radhapuram	Tirunelveli	--
10	Kattayanerikulam	5.00	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	--
11	Eluvarkulam	4.00	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	--
12	Valatharvalavaithankulam	3.50	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	--
13	Mannarkulam	2.00	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	--
14	Kurunchikulam	0.50	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	--
15	Nambikurichi kulam	3.00	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	--
16	Kannankulam	2.00	Kottaikarunkulam	Radhapuram	Thisayanvilai	Tirunelveli	--
17	Vilimankulam	0.70	Urmankulam	Radhapuram	Thisayanvilai	Tirunelveli	--
18	Aimudi kulam	3.50	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	--
19	Palathikulam	1.00	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	--
20	Pappankulam	1.50	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	--
21	Periyalankulam	2.25	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	--
22	Kailasaperikulam	4.00	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	--
23	Ponathikulam	0.80	Kasthurirengapuram	Radhapuram	Thisayanvilai	Tirunelveli	--
24	Karuthanerikulam	0.30	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	--
25	Sinammalpuram Bigtank	5.00	Dhalapathisamudram	Nanguneri	Nanguneri	Tirunelveli	--
26	Nallapethankulam	1.00	Dhalapathysamudram	Nanguneri	Nanguneri	Tirunelveli	--
27	Kandiaperikulam	0.80	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	--
28	Kovanerikulam	0.20	Vadakku vallioor	Vallioor	Radhapuram	Tirunelveli	--
29	Kallikulam	3.40	T.Kallikulam	Radhapuram	Radhapuram	Tirunelveli	--

Sl. No	Name of Supply Channel	Length in KM	Village	Block	Taluk	District	Ayacut Ha
30	Achampadukulam	3.00	Achampadu	Vallioor	Radhapuram	Tirunelveli	--
31	Thanuvankulam	0.20	Achampadu	Vallioor	Radhapuram	Tirunelveli	--
32	Poopillaikulam	2.00	Achampadu	Vallioor	Radhapuram	Tirunelveli	--
33	Pandarakulam	0.80	Achampadu	vallioor	Radhapuram	Tirunelveli	--
34	Kilavanerikulam	1.50	Achampadu	vallioor	Radhapuram	Tirunelveli	--
35	Kannavarayankulam	3.00	Achampadu	vallioor	Radhapuram	Tirunelveli	--
36	Anaikulam	5.00	Anaikulam	vallioor	Radhapuram	Tirunelveli	--
37	Chinnamal puthukulam	6.00	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	--
38	Soochikulam	3.00	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	--
39	Ilayanainarkulam	2.00	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	--
40	Vallakulam	3.50	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	--
41	Veppankulam	2.50	Dhalabathysamuthiram	Nanguneri	Nanguneri	Tirunelveli	--
42	Mylopudukulam	4.00	Anaikulam	vallioor	Radhapuram	Tirunelveli	--
43	Dhalapathisamudram	0.50	Dhalapathisamudram	Nanguneri	Nanguneri	Tirunelveli	--
44	Pulimankulam	5.00	K.Pudur	Radhapuram	Thisaiyanvilai	Tirunelveli	--
45	Thathuvanerikulam	2.00	K.Pudur	Radhapuram	Thisaiyanvilai	Tirunelveli	--
46	Srikrishnaperikulam	3.00	K.Pudur	Radhapuram	Thisaiyanvilai	Tirunelveli	--
47	Kuttynagan kulam	0.50	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	--
48	Kolveikulam	0.80	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	--
49	Perunkannankulam	4.20	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	--
50	Sithalankulam	3.05	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	--
51	Senthilanpannaikulam	2.50	Kumarapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	--
52	Kottaikarunkulam	3.00	Kottaikarunkulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
53	Tuthikulam	2.00	Kottaikarunkulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
54	Kuravarkulam	2.30	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	--
55	Kumbikulam	3.00	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	--
56	Seelathikulam	6.00	Kumbikulam	Radhapuram	Radhapuram	Tirunelveli	--
57	Avakkaikulam	0.50	Muthumothanmozhi	Radhapuram	Thisaiyanvilai	Tirunelveli	--
58	Pandaraperunkulam	1.00	Radhapuram	Radhapuram	Radhapuram	Tirunelveli	--
59	Sirukulam	0.30	Rajakkalmangalam	Nanguneri	Nanguneri	Tirunelveli	--
60	Thiruvenkadanathapuram tank	4.00	Rajakkalmangalam	Nanguneri	Nanguneri	Tirunelveli	--

Sl. No	Name of Supply Channel	Length in KM	Village	Block	Taluk	District	Ayacut Ha
61	Lingankulam	1.30	Samuharengapuram	Radhapuram	Radhapuram	Tirunelveli	--
62	Nedunkulam	3.50	Soundrapandiya puram	Radhapuram	Radhapuram	Tirunelveli	--
63	Peelikulam	6.00	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
64	Pulikulam	0.80	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
65	Perunkulam	3.80	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
66	Sirukulam	0.80	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
67	Urumankulam	3.00	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
68	Pettaikulam	2.00	Urmankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
69	Pettaikulam	4.00	Kalli kulam	Vallioor	Radhapuram	Tirunelveli	--
70	Islapurakulam	5.00	Urumankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
71	Ramathapuramkulam	4.00	Urumankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
72	Pudukurichikulam	1.30	Kasthurirengapuram	Radhapuram	Thisaiyanvilai	Tirunelveli	--
73	Dinakarankulam	2.20	Urumankulam	Radhapuram	Thisaiyanvilai	Tirunelveli	--
74	Valliyoor Periyakulam	10.00	Vadakku Valliyoor	vallioor	Radhapuram	Tirunelveli	--
	Total Length = 186.50 km						

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5.4.c.Non System Tanks Supply Channel

Sl. No	Name of Supply Channel	Length in KM	Village	Block	Taluk	District	Ayacut Ha
1	Sithoorkulam	2.30	Kannanallur	vallioor	Thisaiyanvilai	Tirunelveli	--
2	Kannanallurkulam	0.80	Kannanallur	vallioor	Thisaiyanvilai	Tirunelveli	--
3	Nedumpoorkulam	1.10	Kannanallur	vallioor	Thisaiyanvilai	Tirunelveli	--
4	Karuppukalkulam	0.50	Anaikulam	Vallioor	Radhapuram	Tirunelveli	--
5	Veetrithankulam	1.50	Anaikulam	Vallioor	Radhapuram	Tirunelveli	--
6	Thankaiyankulam	0.80	Anaikulam	Vallioor	Radhapuram	Tirunelveli	--
7	Thambakulam	2.00	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	--
8	Sittur Keelkulam	3.50	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	--
9	Panisakulam	6.00	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	--
10	Vilvarayankulam	0.50	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	--
11	Iyyapanerikulam	2.00	Kannanallur	Vallioor	Thisayanvilai	Tirunelveli	--
Total length = 21.00 km							

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5.5 List of tanks/Anicuts executed under various schemes (Viz, Part II Scheme, NABARD, Kudimaramath etc.,) for the past Five years

Sl.No.	Name of Anicut / Tank	Ayacut Ha	Scheme in which executed	Amount In Lakhs	Details of components executed	Remarks
I	**System Tanks**					
1	Pandarakulam	78.00	NABARD	-	Bund Strenthening. Sluice Reconstruction	--
2	Kilavanerikulam	9.58	NABARD	-	Bund Strenthening. Sluice Reconstruction	--
3	Kannavarayankulam	5.67	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction	--
4	Anaikulam	39.00	Kudimaramath 2017-18	38.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	--
5	Chinnamal puthukulam	20.23	NABARD	-	Bund Strenthening. Sluice Reconstruction	--
6	Soochikulam	37.64	Kudimaramath 2017-18	20.00	Bund Strenthening. Sluice Repair, Protection Wall	--
7	Ilayanainarkulam	30.55	NABARD		Bund Strenthening. Sluice Reconstruction	
8	Vallakulam	40.20	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
9	Veppankulam	31.03	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
10	Mylopudukulam	32.51	NABARD	-	Bund Strenthening. Sluice Reconstruction	
11	Dhalapathisamudram	225.07	NABARD	-	Bund Strenthening. Sluice Reconstruction	
12	Pulimankulam	26.46	Kudimaramath 2019-20	23.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
13	Thathuvanerikulam	26.75	Kudimaramath 2017-18	30.00	Bund Strenthening. Sluice Repair, Repairs to Weir	
14	Srikrishnaperikulam	8.27	Kudimaramath 2016-17	6.00	Bund Strenthening, Sluice Repair	
15	Kuttynagan kulam	22.00	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
16	Kolveikulam	26.69	Kudimaramath 2017-18	30.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
17	Perunkannankulam	17.16	Kudimaramath 2017-18	32.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
18	Sithalankulam	10.08	Kudimaramath 2017-18	31.50	Bund Strenthening. Sluice Reconstruction,	

Sl.No.	Name of Anicut / Tank	Ayacut Ha	Scheme in which executed	Amount In Lakhs	Details of components executed	Remarks
					Repairs to Weir	
19	Senthilanpannaikulam	6.65	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
20	Kottaikarunkulam	28.89	Kudimaramath 2017-18	40.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
21	Tuthikulam	7.09	Kudimaramath 2019-20	25.75	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
22	Kuravarkulam	54.10	Kudimaramath 2017-18	37.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
23	Kumbikulam	13.19	Kudimaramath 2017-18	28.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
24	Seelathikulam	10.35	Kudimaramath 2016-17	6.00	Bund Strenthening. Sluice Repair	
25	Avakkaikulam	4.43	Kudimaramath 2019-20	25.50	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
26	Pandaraperunkulam	167.85	NABARD	-	Bund Strenthening. Sluice Reconstruction	
27	Sirukulam	30.35	NABARD		Bund Strenthening.	
28	Thiruvenkadanathapuram tank	40.86	NABARD	-	Bund Strenthening. Sluice Reconstruction	
29	Lingankulam	9.27	Kudimaramath 2016-17	7.00	Bund Strenthening. Sluice Repair	
30	Nedunkulam	34.27	NABARD	-	Bund Strenthening. Sluice Reconstruction	
31	Peelikulam	17.47	Kudimaramath 2016-17	6.00	Bund Strenthening. Sluice Repair	
32	Pulikulam	26.87	Kudimaramath 2016-17	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
33	Perunkulam	13.95	Kudimaramath 2016-17	6.00	Bund Strenthening. Sluice Repair	
34	Sirukulam	30.04	Kudimaramath 2016-17	7.00	Bund Strenthening. Sluice Repair	
35	Urumankulam	41.52	Kudimaramath 2017-18	19.00	Bund Strenthening. Sluice Repair, Repairs to Weir	
36	Pettaikulam	8.30	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
37	Pettaikulam	6.21	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	

Sl.No.	Name of Anicut / Tank	Ayacut Ha	Scheme in which executed	Amount In Lakhs	Details of components executed	Remarks
38	Islapurakulam	20.33	Kudimaramath 2017-18	28.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
39	Ramathapuramkulam	8.73	Kudimaramath 2019-20	25.75	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
40	Pudukurichikulam	12.13	Kudimaramath 2017-18	20.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
41	Dinakarankulam	11.33	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
42	Valliyoor Periyakulam	530.74	Kudimaramath 2019-20	97.00	Bund Strenthening. Sluice Repair, Protection Wall, Repair to Weir	
	TOTAL	**1821.81**		**822.50**		
II	**NON SYSTEM TANKS**					
1	Sithoorkulam	37.700	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
2	Kannanallurkulam	36.110	Kudimaramath 2019-20	26.00	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
3	Nedumpoorkulam	35.880	Kudimaramath 2019-20	25.75	Bund Strenthening. Sluice Reconstruction, Repairs to Weir	
	TOTAL	**109.69**		**77.75**		
III	**ANICUT**					
1	Thalavaipuram	--	NABARD	610.00	Protection wall, Repairs to Weir	
	TOTAL	--		**610.00**		

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5.6 Abstract on the details of irrigation infrastructure available and works to be taken up under TNIAMP Phase – III

Sl. No	Details	Anicut			System Tank			Non- System Tank			Any Other Supply Channel		Remarks
		Nos	Supply Channel in KM	Direct Ayacut in Ha	Nos	Supply Channel in KM	Ayacut in Ha	Nos	Supply Channel in KM	Ayacut in Ha	Length in KM	Direct Ayacut in Ha	
1	Available Infrastructure in sub basin	9	58.165	366.55	74	186.50	2942.31	11	21.00	217.35	--	--	--
2	Infrastructure excluded in TNIAM project since works carried out under various schemes	1	22.95	281.88	42	122.85	1821.81	3	4.20	109.69	--	--	--
3	Infrastructures that does not require any rehabilitation works	8	31.215	--	--	63.65	--	--	16.80	--	--	--	--
4	Works to be taken up in TNIAMP Phase-III	--	4.00	84.67	32	--	1120.50	8	--	107.66	--	--	--

1. Certified that the Panchayat Union Tanks are not included in this project.
2. Certified that the component of works in tanks and anicuts executed under various schemes (NABARD, RRR, RTWB, Kudimaramath and any other deposit schemes) for the past 5 years are not proposed in this project.

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6. REHABILITATION OF IRRIGATION INFRASTRUCTURES

6.1 Structural Status & Deficiencies in the System

The following are the present structural condition of Nambiyar sub-basin.

1. This system is an old system existing for more than 100 Years as such requires Rehabilitation.
2. Heavy accumulation of silt formed during heavy floods.
3. Lack of adequate control of regulating structures like Anicuts, Head Sluices, Sand/ scour vents etc.,
4. The damaged (or) dilapidated condition of the existing anicuts, diversion head works etc. and supply channels causes to poor standard of the entire conveyance system.
5. The System and Non system tanks are to be rehabilitated.

6.2 Salient Features of Proposals:

In order to improve the conveyance and application efficiency in Irrigation, it is now proposed to improve and modernize the Irrigation Infrastructures in Nambiyar sub-basin.

1. Repair of the Sluice in the anicut supply channel.
2. Repairing, Restoring the traditional water bodies (i.e. tanks)
    a. Strengthening and raising the bunds of the tanks for the necessary free board as per TNIAMP and IS code guidelines for effectively storing the water and conveying it to the entire command area.
    b. Repairs to the damaged weirs by providing skinwall in RCC M25.
    c. Reconstruction of damaged Sluices
    d. Repairs to the damaged Sluices
    e. Providing model section in selective area of the tanks
    f. Removing, Repairing and re fixing in position of the existing damaged S.G. shuttering arrangements and providing locking arrangements etc.,
    g. Lining the field channels and fixing flow measuring devices for effective control and conveyance of water.

Expected Outcome

1. Increase in conveyance efficiency and application efficiency from 51% to 53%
2. The following irrigation infrastructure development works are proposed in the Sub basin.

Rehabilitation works for	–	40 tanks
Rehabilitation of anicut supply channel	–	4.00 km

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6.3 Soil test results

HAMILTON MATERIAL TESTINGS PVT. LTD.,

TESTING LAB FOR SOIL & BUILDING MATERIALS

ESTD 2011

REGD.GOVT. OF TAMILNADU/DEPT. OF INDUSTRIES AND COMMERCE, Regd. No. 2011/33/028/01317/DHDA/E

REGD.GOVT. OF INDIA NO. AACCH6278ESD001, TECHNICAL INSPECTION AND CERTIFICATION

No.93-I/8, Ashok Nagar, 3rd Street, Tuticorin – 628 008. Ph : 0461 - 2311367

TEST REPORT Date : 12.08.2020

Issued To:	TC.No.	HMTPL/2020/August/6363
The Assistant Engineer, PWD/WRD, Irrigation Section, Vallioor	Party's Ref	03.08.2020
	Nature of Test	Physical
	Page	1 of 1

Name of Tank : Padalayarkulam

I.	SOIL TYPE		
i.	% of Sand	:	31.55 %
ii.	% of Silt	:	11.45 %
iii.	% of Gravel	:	41.00%
iv.	% of Clay	:	16.00 %
II.	Shrinkage Limit	:	11.20 %
III.	PROCTOR DENSITY TEST		
I.	Maximum Dry Density	:	1.87 g/cc
II.	Optimum Moisture Content	:	9.00 %
IV.	ATTERBERG LIMIT		
i.	Liquid Limit	:	21.00 %
ii.	Plastic Limit	:	14.50 %
iii.	Plasticity Index	:	6.50 %
iv.	Classification of Soil	:	Clay Gravel

NOTE: Sample supply by the party.

End of Report

HAMILTON MATERIAL TESTINGS PVT. LTD. TUTICORIN 628 008

QUALITY MANAGEMENT SYSTEM ISO 9001:2015

CERTIFIED ISO/IEC 17025

For HAMILTON MATERIAL TESTINGS PVT. LTD.

MG. DIRECTOR

HAMILTON MATERIAL TESTINGS LABORATORY

HAMILTON MATERIAL TESTINGS PVT. LTD.,

TESTING LAB FOR SOIL & BUILDING MATERIALS

REGD.GOVT. OF TAMILNADU/DEPT. OF INDUSTRIES AND COMMERCE, Regd. No. 2011/33/028/01317/DHDA/E

REGD.GOVT. OF INDIA NO. AACCH6278ESD001, TECHNICAL INSPECTION AND CERTIFICATION

ESTD 2011

No.93-I/8, Ashok Nagar, 3rd Street, Tuticorin - 628 008. Ph : 0461 - 2311367

TEST REPORT Date : 12.08.2020

Issued To:	TC.No.	HMTPL/2020/August/2179
The Assistant Engineer, PWD/WRD, Irrigation Section, Vallioor	Party's Ref	03.08.2020
	Nature of Test	Physical
	Page	1 of 1

Name of Tank : Kesavanerikulam

I.	SOIL TYPE		
i.	% of Sand	:	27.35 %
ii.	% of Silt	:	15.10 %
iii.	% of Gravel	:	38.20 %
iv.	% of Clay	:	19.35 %
II.	Shrinkage Limit	:	12.17 %
III.	PROCTOR DENSITY TEST		
I.	Maximum Dry Density	:	1.88 g/cc
II.	Optimum Moisture Content	:	10.00 %
IV.	ATTERBERG LIMIT		
i.	Liquid Limit	:	24.55 %
ii.	Plastic Limit	:	18.43 %
iii.	Plasticity Index	:	6.12 %
iv.	Classification of Soil	:	Clayey Gravel

NOTE: Sample supply by the party.

End of Report

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QUALITY MANAGEMENT SYSTEM ISO 9001:2015

CERTIFIED ISO/IEC 17025

for HAMILTON MATERIAL TESTINGS PVT. LTD.

MG. DIRECTOR

HAMILTON MATERIAL TESTINGS LABORATORY

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REGD.GOVT. OF INDIA NO. AACCH6278ESD001, TECHNICAL INSPECTION AND CERTIFICATION
ESTD 2011
No.93-I/8, Ashok Nagar, 3rd Street, Tuticorin - 628 008. Ph : 0461 - 2311367

TEST REPORT Date : 12.08.2020

Issued To:	TC.No.	HMTPL/2020/August/6341
The Assistant Engineer, PWD/WRD, Irrigation Section, Vallioor	Party's Ref	03.08.2020
	Nature of Test	Physical
	Page	1 of 1

Name of Tank : Karisalkulam

I.	SOIL TYPE		
i.	% of Sand	:	21.25 %
ii.	% of Silt	:	15.70 %
iii.	% of Gravel	:	43.75%
iv.	% of Clay	:	19.30 %
II.	Shrinkage Limit	:	10.55 %
III.	PROCTOR DENSITY TEST		
I.	Maximum Dry Density	:	1.88 g/cc
II.	Optimum Moisture Content	:	8.00 %
IV.	ATTERBERG LIMIT		
i.	Liquid Limit	:	20.35 %
ii.	Plastic Limit	:	13.65 %
iii.	Plasticity Index	:	5.45 %
iv.	Classification of Soil	:	Clayey Gravel

NOTE: Sample supply by the party.

End of Report

HAMILTON MATERIAL TESTINGS PVT. LTD. TUTICORIN 628 008

QUALITY MANAGEMENT SYSTEM ISO 9001:2015

CERTIFIED ISO/IEC 17025

for HAMILTON MATERIAL TESTINGS PVT. LTD.

MG. DIRECTOR

HAMILTON MATERIAL TESTINGS LABORATORY

6.4 Tank Details with Free Board Provided

Sl .No	Name of the Tank	Maximum Height of Bund in m	Free Board		Length of Bund in m	Remarks
			Provided previously in m	Provided now in		
1	Nadukkamparaikulam	4.685	1.00	1.50	663	Proposed to raise the Bund as per standards
2	Kesavaneri Kulam	8.06	1.00	1.50	650	Proposed to raise the Bund as per standards
3	Padalayar Tank	6.755	1.00	1.50	2650	Proposed to raise the Bund as per standards
4	Karisalkulam	8.03	1.00	1.50	1310	Proposed to raise the Bund as per standards
5	Vallioor Puthukulam	4.175	1.00	1.50	1710	Proposed to raise the Bund as per standards
6	Devarkulam	1.99	1.00	1.25	500	Proposed to raise the Bund as per standards
7	Ganapathiyarkulam	3.44	1.00	1.50	380	Proposed to raise the Bund as per standards
8	Alankulam	4.745	1.00	1.50	1560	Proposed to raise the Bund as per standards
9	Vattakulam	4.39	1.00	1.50	1100	Proposed to raise the Bund as per standards
10	Kattayanerikulam	3.325	1.00	1.50	1500	Proposed to raise the Bund as per standards
11	Eluvarkulam	4.10	1.00	1.50	1010	Proposed to raise the Bund as per standards
12	Valatharvalavaithankulam	4.89	1.00	1.50	1750	Proposed to raise the Bund as per standards
13	Mannarkulam	4.56	1.00	1.50	1500	Proposed to raise the Bund as per standards
14	Kurunchikulam	4.14	1.00	1.50	1160	Proposed to raise the Bund as per standards
15	Nambikurichikulam	4.77	1.595	1.595	1710	Existing Free Board is maintained.
16	Kannankulam	4.25	1.00	1.50	1200	Proposed to raise the Bund as per standards
17	Vilimankulam	4.525	0.50	1.50	1470	Proposed to raise the Bund as per standards
18	Aimudi kulam	2.41	1.00	1.25	1540	Proposed to raise the Bund as per standards
19	Palathikulam	3.77	1.00	1.50	1200	Proposed to raise the Bund as per standards
20	Pappankulam	3.53	1.00	1.50	1705	Proposed to raise the Bund as per standards
21	Periyalankulam	3.68	1.00	1.50	849	Proposed to raise the Bund as per standards
22	Kailasaperikulam	3.755	1.00	1.50	1025	Proposed to raise the Bund as per standards

Sl .No	Name of the Tank	Maximum Height of Bund in m	Free Board		Length of Bund in m	Remarks
			Provided previously in m	Provided now in		
23	Ponathikulam	3.18	1.00	1.50	1740	Proposed to raise the Bund as per standards
24	Karuthanerikulam	4.10	1.00	1.50	1400	Proposed to raise the Bund as per standards
25	Sinammalpuram and pudukulam	4.025	1.00	1.50	1650	Proposed to raise the Bund as per standards
26	Nallapethankulam	4.430	1.00	1.50	626	Proposed to raise the Bund as per standards
27	Kandiaperikulam	4.350	1.00	1.50	1450	Proposed to raise the Bund as per standards
28	Kovanerikulam	3.425	1.00	1.50	1380	Proposed to raise the Bund as per standards
29	Kallikulam	3.040	1.00	1.50	1574	Proposed to raise the Bund as per standards
30	Karuppukalkulam	4.505	1.00	1.50	1120	Proposed to raise the Bund as per standards
31	Veetrithankulam	4.050	1.00	1.50	1400	Proposed to raise the Bund as per standards
32	Thankaiyankulam	3.605	0.99	1.50	663	Proposed to raise the Bund as per standards
33	Vilvarayankulam	2.405	1.00	1.25	1715	Proposed to raise the Bund as per standards
34	Achampadukulam	3.960	1.00	1.50	2010	Proposed to raise the Bund as per standards
35	Thanuvankulam	3.960	1.00	1.50	754	Proposed to raise the Bund as per standards
36	Poopillaikulam	3.960	1.00	1.50	987	Proposed to raise the Bund as per standards
37	Panisakulam	3.245	1.00	1.50	1800	Proposed to raise the Bund as per standards
38	Thambakulam	4.225	1.00	1.50	1345	Proposed to raise the Bund as per standards
39	Sittur Keelkulam	3.350	1.00	1.50	2160	Proposed to raise the Bund as per standards
40	Iyyapanerikulam	3.560	1.00	1.50	1185	Proposed to raise the Bund as per standards

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Tirunelveli

Chief Engineer, PWD/WRD
Madurai Region,
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CERTIFICATE FOR STANDARDISATION OF BUND

In Nambiyar Sub basin, out of 40 numbers of tanks proposed in TNIAMP PHASE III, 3 numbers of tanks have height more than 5 m. Certified that Soil Tests have been carried out in the above mentioned 3 numbers of tanks and the correct soil classifications have been obtained.The bund slopes suitable to the soil classification as per norms (IS:12169-1987) are adopted.

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6.5 Details of Proposal in each infrastructure of Sub basin – Tanks and Anicut Supply Channel

Sl. No	Name of tank/ Anicut/ Reservoir	Bund				Sluice					Weir					Total
		Rehabilitation to Bund		Model Section		Total No. sluices	Repairs to sluice		Reconstruction of sluice		Total No. weirs	Length of weir	Reconstruction to weir		Repairs to weir		
		Length (m)	Amt in Lakh	No	Amt in Lakh		No	Amt in Lakh	No	Amt in Lakh			No	Amt in Lakh	No	Amt in Lakh	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1	Nadukkamparaikulam	663	4.44	1	0.85	2					1	3.1			1	0.59	5.88
2	Kesavaneri Kulam	650	4.37	1	0.87	1					1	39					5.24
3	Padalayar Tank	2650	17.31	1	0.86	2			1	13.24	1	34.4					31.41
4	Padalayar Kal					4	1	3.23									3.23
5	Karisalkulam	1310	8.58	1	0.85	2					1	3.6					9.43
6	Vallioor Puthukulam	1710	12.78	1	0.86	1			1	10.36	1	3.3					24
7	Devarkulam	500	3.78	1	0.86	1					1	4					4.64
8	Ganapathiyarkulam	380	3.09	1	0.86	1					1	3.2					3.95
9	Alankulam	1560	9.68	1	0.87	1					1	5.85					10.55
10	Vattakulam	1100	7.36	1	0.86	1					1	4.55					8.22
11	Kattayanerikulam	1500	9.25	1	0.86	1					1	27.3					10.11
12	Eluvarkulam	1010	6.33	1	0.86	1					1	22.6					7.19
13	Valatharvalavaithankulam	1750	10.76	1	0.86	2					1	20.0					11.62
14	Mannarkulam	1500	9.74	1	0.86	1					1	35.4					10.6
15	Kurunchikulam	1160	7.76	1	0.86	1					1	17.0					8.62
16	Nambikurichikulam	1710	10.5	1	0.86	1			1	10.35	1	3.3			1	0.55	22.26

Sl. No	Name of tank/ Anicut/ Reservoir	Bund				Sluice					Weir						Total
		Rehabilitation to Bund		Model Section		Total No. sluices	Repairs to sluice		Reconstruction of sluice		Total No. weirs	Length of weir	Reconstruction to weir		Repairs to weir		
		Length (m)	Amt in Lakh	No	Amt in Lakh		No	Amt in Lakh	No	Amt in Lakh			No	Amt in Lakh	No	Amt in Lakh	
17	Kannankulam	1200	7.95	1	1.03	1					1	8.2			1	1.24	10.22
18	Vilimankulam	1470	9.56	1	1.02	1					1	16.8					10.58
19	Aimudi kulam	1540	9.47	1	0.86	1					1	5.6					10.33
20	Palathikulam	1200	7.4	1	0.86	1					1	17.8			1	2.98	11.24
21	Pappankulam	1705	10.43	1	0.86	1					1	2					11.29
22	Periyalankulam	849	5.93	1	0.86	1					1	10.2					6.79
23	Kailasaperikulam	1025	6.92	1	0.85	1	1	5.15			1	15.7					12.92
24	Ponathikulam	400	2.67	1	0.86	1			1	7.46	1	6.2					10.99
25	Karuthanerikulam	1400	8.63	1	0.86	1					1	11.1					9.49
26	Sinammalpuram and pudukulam	1650	10.14	1	0.86	3			1	10.01	1	9.3			1	1.39	22.4
27	Nallapethankulam	626	3.96	1	0.86	1			1	10.72	1	25.2					15.54
28	Kandiaperikulam	1450	9.23	1	0.87	1					1	2.6					10.1
29	Kovanerikulam	1380	9.04	1	0.86	1			1	8.05	1	0.9					17.95
30	Kallikulam	1574	10.02	1	0.87	1					1	1.91					10.89
31	Karuppukalkulam	1120	6.97	1	0.86	1					1	6.5					7.83
32	Veetrithankulam	1400	9.15	1	0.86	1					1	7			1	1.23	11.24
33	Thankaiyankulam	663	4.57	1	1.04	1			1	8.95	1	9.3					14.56
34	Vilvarayankulam	1715	10.59	1	0.86	1					1	7.9					11.45
35	Achampadukulam	2010	13.41	1	0.86	1					1	19.3			1	3.23	17.5

Sl. No	Name of tank/ Anicut/ Reservoir	Bund				Sluice					Weir						Total
		Rehabilitation to Bund		Model Section		Total No. sluices	Repairs to sluice		Reconstruction of sluice		Total No. weirs	Length of weir	Reconstruction to weir		Repairs to weir		
		Length (m)	Amt in Lakh	No	Amt in Lakh		No	Amt in Lakh	No	Amt in Lakh			No	Amt in Lakh	No	Amt in Lakh	
36	Thanuvankulam	754	4.03	1	0.84	1					1	19.3					4.87
37	Poopillaikulam	987	6.74	1	1.02	1	1	5.18			1	19.3					12.94
38	Panisakulam	1800	11.07	1	0.85	2			1	7.63	1	8			1	1.39	20.94
39	Thambakulam	1345	8.59	1	0.86	1					1	10					9.45
40	Sittur Keelkulam	2160	13.32	1	0.86	1			1	8	1	5.6					22.18
41	Iyyapanerikulam	1185	11.85	1	0.86	2					1	8.5					12.71
	Tanks Total	**51761**	**337.37**	**40**	**35.05**	**52**	**3**	**13.56**	**10**	**94.77**	**40**	**480.81**	**0**	**0**	**8**	**12.6**	**493.35**
		TOTAL(Tank & Anicut Supply channel total)															**493.35**
		TOTAL															493.35
		Provision for GST (12%)															59.20
		Provision for Unforeseen items, advertisement chareges, Photographic Charge, documentation (2.5%)															13.81
		Provision for Labour Welfare Fund (1%)															5.66
		Provision for OFD works including field channel lining,measuring devices (2200/Ha).															28.88
		WRD Component Total															**600.90**
		Environment Component Total															7
		Grand Total															**607.90**

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6.6 Details of Proposal In Each Infrastructure of Sub basin – Tanks and Anicut Abstract

Sl. No	For Rehabilitation Package No	Ayacut in Ha	No of tanks	Bund		Sluice Repair		Sluice Reconstruction		Weir		Rehabilitation of Anicut Supply channel (Repair to sluice)		Total in lakh
				Length (m)	Amt in Lakh	No	Amt in Lakh	No	Amt in Lakh	No	Amt in Lakh	Length (km)	Amt in Lakh	
1	Package No 01	1312.83	40	51761	372.42	3	10.33	10	94.77	8	12.60	4.00	3.23	493.35
2	Provision for GST @ 12%													59.20
3	Provision for Unforeseen items, advertisement chareges, Photographic Charge, documentation (2.5%)													13.81
4	Provision for Labour Welfare Fund (1%)													5.66
5	Provision for OFD works including field channel lining,measuring (Rs2200/Ha)													28.88
6	Provision for Environmental component													7.00
														607.90

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6.7 WRD– Cost Table

Ayacut : 1312.83 Ha

Sl.No	Description Of Work	Qty Proposed	Amount in Lakh
1	Bund Standardisation (m)	51761	372.42
2	Repairs to Sluice (Nos)	3	13.56
3	Reconstruction of Sluices (Nos)	10	94.77
4	Repairs to Weirs (Nos)	8	12.60
	Sub Total 1		**493.35**
5	**Add GST @ 12 %**		**59.20**
6	Provision for Unforeseen items, Advertisement Charges, Photographic Charges	2.50%	13.81
7	Provision for Labour Welfare Fund	1%	5.66
8	Provision for OFD works including field channel lining,measuring devices (Rs2200/Ha)		28.88
9	Provision for Environmental Component		7.00
10	Provision for Ground Water Component		--
	GRAND TOTAL		**607.90**

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6.8 Details of Packages

6.8.1 Package Details

Sl. No.	Name of Tank/Anicut	Amount in Lakh
	Package – I	
1.	Rehabilitation and Modernisation of 4 Tanks in Kalakad Block of Nanguneri Taluk, 2 Tanks in Nanguneri Block &Taluk, 12 Tanks in Vallioor Block of Radhapuram Taluk, 6 Tanks in Radhapuram Block & Taluk, 9 Tanks in Radhapuram Block of Thisaiyanvillai Taluk, 6 Tanks in Vallioor Block of Thisaiyanvillai Taluk and 1 Tank in Vallioor Block of Nanguneri Taluk and 1 Anicut supply channel in Kalakkad Block of Nanguneri Taluk in Tirunelveli District of Nambiyar Sub basin.	493.35
	ADD GST @ 12%	59.20
	Provision for P.S Charges, Contingencies& Unforeseen items, advertisement chareges, Photographic Charge, documentation (2.5%)	13.81
	Provision for Labour Welfare Fund (1%)	5.66
	Provision for OFD works including field channel lining,measuring devices (Rs2200/Ha)	28.88
	Total	**600.90**

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NAME OF WORK: - Rehabilitation and Modernisation of 4 Tanks in Kalakad Block of Nanguneri Taluk, 2 Tanks in Nanguneri Block &Taluk, 12 Tanks in Vallioor Block of Radhapuram Taluk, 6 Tanks in Radhapuram Block & Taluk, 9 Tanks in Radhapuram Block of Thisaiyanvillai Taluk, 6 Tanks in Vallioor Block of Thisaiyanvillai Taluk and 1 Tank in Vallioor Block of Nanguneri Taluk and 1 Anicut supply channel in Kalakkad Block of Nanguneri Taluk in Tirunelveli District of Nambiyar Sub basin.

6.8.2.Bill of Quantites

Sl. No	Description of work	Quantity	Unit	Rate in Figures and Words	Amount
1	Clearing light jungle and disposing of the same as directed by the Engineer in charge of the works and as per technical specification. (Specification No. 3.2.1 to 3.2.4)	**879524.00** (Eight Lakh Seventy Nine Thousand Five Hundred and Twenty Four Square Metre only)	1 M^2 (One Square Metre)	4.40 (Rupees Four and Paise Forty only)	**3869906**
2	Earthwork excavation for cut opening tank bund excavation with initial lead of 10m and lift of 2m in hard stiff clay , stiff black cotton soil, hard red earth, shale's, murams, stony earth and earth mixed with small size boulders and hard gravelly soil etc, complete as directed by the Engineer in charge of works and as per the technical specifications.	**4493.00** (Four Thousand Four Hundred and Ninety Three Cubic Metre only)	1 M^3 (One Cubic Metre)	83.80 (Rupees Eighty three and Paise Eighty only)	**376513**
3	Dismantling, clearing away and carefully stacking material and without disturbing nearby structure useful for reuse for any thickness of brick or stone masonry in Cement Mortar walls under 3 (Three) meters high etc, complete as directed by the Engineer in charge of works and as per the technical specifications [specification 5.4C)	**263.00** (Two Hundred and Sixty Three Cubic Metre only)	1 M^3 (One Cubic Metre)	193.00 (Rupees One Hundred Ninety Three only)	**50759**
4	Dismantling, clearing away and carefully stacking material and without damaging the near by structures if any ,clearing away plain cement concrete as directed by the Engineer in charge of the works as per technical Specification [specification 4.6.G] cement concrete	**143.00** (One Hundred Fourty Three Cubic Metre only)	1 M^3 (One Cubic Metre)	332.00 (Rupees Three Hundred Thirty Two only)	**47476**

Sl. No	Description of work	Quantity	Unit	Rate in Figures and Words	Amount
5	Earth work excavation for foundation in all kinds of soils and sub soils except hard rock requiring blasting full depth as may be directed and depositing the surplus earth in places shown by the Engineer in - charge of work and leveling the same with all leads and lifts including shoring, strutting, shuttering, baling out water wherever necessary and refilling the sides of foundation with excavated earth in layers of 15cm thick well rammed and consolidated etc. complete, complying with technical specifications and drawings as directed by the Engineer in - charge of work. (Specification No.4.2.2.)	**1690.99** (One thousand six hundred and ninety point nine nine Cubic Metre only)	1 M^3 (One Cubic Metre)	177.37 (Rupees One Hundred Seventy Seven and paise thirty seven only)	**299931**
6	Random Rubble masonry in Cement mortar 1:4 (One cement and four sand by volume mixed mechanically in approved mixer) using new hard granite stones and bond stones from approved sources including simultaneous pointing of the exposed surface with same mortar and all incidental charges such as bailing out water, watering, curing, finishing etc, complete as directed by the Engineer in charge of works and as per the technical specifications	**440.00** (four hundred and forty Cubic Metre only)	1 M^3 (One Cubic Metre)	4547.70 (Rupees four thousand five hundred and forty-seven and paise seventy only)	**2000988**
7	Providing and placing in Position of Plain cement concrete of grade M10 using hard broken stone aggregate of maximum nominal size of 40mm to IS specified grading mixing by mixer machine including dewatering the placement site,laying the concrete in layers and in bays ,compacting and finishing the surface with all leads and lifts watering curing to attain the profile and strength as specified for various depth and height and above ground level etc complete as directed by the Engineer in charge of work complying with the standard specification	**358.46** (Three hundred and fifty-eight point Four six Cubic Metre only)	1 M^3 (One Cubic Metre)	4577.70 (Rupees four thousand five hundred and seventy-seven and paise seventy only)	**1640922**
8	Providing and placing in Position of Plain cement concrete of grade M15 using hard broken stone aggregate of maximum nominal size of 20mm to IS specified grading mixing by mixer machine including dewatering the placement site, laying the concrete in layers and in bays vibrating, compacting and finishing the surface with all leads and lifts watering curing to attain the profile and strength as specified in the drawing for various depth and height below and above ground level etc complete as directed by the Engineer in charge of work complying with the standard specification	**18.27** (Eighteen point two seven Cubic Metre only)	1 M^3 (One Cubic Metre)	5402.10 (Rupees five thousand four hundred and two and paise ten only)	**98696**

Sl. No	Description of work	Quantity	Unit	Rate in Figures and Words	Amount
9	Providing and placing in position of plain Cement concrete of grade M15usinghard well graded aggregates with the nominal maximum size of coarse aggregate of 40mm (60%) and 20mm (40%); weigh batching the ingredients and mixing in approved mixers/batching plant (to produce concrete of the specified characteristic strength of 15 N/mm2 at 28days) including dewatering the placement site by bailing/pumping and by diverting wherever necessary; laying the concrete in layers of not exceeding 15 cm thick and in bays; vibrating, compacting and finishing the surface with all leads and lifts; watering curing complete so as to attain the profile and strength specified in the approved drawing & specifications and Including the cost component of providing rigid and smooth centering for soffits of concrete slab or plain surface wherever necessary for various depths below ground level and various heights above ground level etc., complete as directed by the Engineer in charge of works and as per the technical specifications.				
a	Centering with strutting	**676.74** (Six hundred and seventy six point seven four Cubic Metre only)	1 M^3 (One Cubic Metre)	7052.89 (Rupees Seven thousand and fifty two and paise eighty nine only)	**4772973**
b	Centering without strutting	**446.11** (Four hundred and forty six point one one Cubic Metre only)	1 M^3 (One Cubic Metre)	6057.10 (Rupees Six thousand and fifty seven and paise ten only)	**2702133**
c	Without centering	**50.05** (Fifty point zero five Cubic Metre only)	1 M^3 (One Cubic Metre)	5139.90 (Rupees Five thousand one hundred and thirty nine and paise ninety only)	**257252**
10	Providing and placing in Position of Plain cement concrete of grade M20 using hard broken stone aggregate of maximum nominal size of 20mm to IS specified grading mixing by mixer machine including dewatering the placement site, laying the concrete in layers and in bays vibrating, compacting and finishing the surface with all leads and lifts watering curing to attain the profile and	**32.77** (thirty-two point seven seven Cubic Metre only)	1 M^3 (One Cubic Metre)	5906.03 (Rupees five thousand nine hundred and six and paise three only)	**193541**

Sl. No	Description of work	Quantity	Unit	Rate in Figures and Words	Amount
	strength as specified in the drawing for various depth and height below and above ground level etc complete as directed by the Engineer in charge of work complying with the standard specification				
11	Providing and placing in position of Reinforced cement concrete of grade M 25 using hard well gradedaggregates with the nominal maximum size of coarse aggregate of 20mm weigh batching the ingredients and mixing in approved mixers/batching plant (to produce concrete of the specified characteristic strength of 25N/mm2 at 28 days) including dewatering the placement site by bailing/pumping and by diverting wherever necessary laying the concrete in layers of not exceeding 15cm thick and in bays vibrating, compacting and finishing the surface with all leads and lifts, watering curing complete so as to attain the profile and strength specified in the approved drawing & specifications and Including the cost component of providing rigid and smooth centering for soffits of reinforced cement concrete slab or plain surface wherever necessary for various depths below ground level and various heights above ground level etc., complete as directed by the Engineer in charge of works and as per the technical specifications.	**107.48** (one hundred and seven point four eight Cubic Metre only)	1 M^3 (One Cubic Metre)	7571.14 (Rupees seven thousand five hundred and seventy one and paise fourteen only)	**813746**
12	Plastering in Cement mortar 1:4 (One cement four sand by volume) 20 mm thick including finishing, curing using mixer machine for mixing mortar etc, complete as directed by the Engineer incharge of works and as per the technical specifications	**573.17** (five hundred and seventy-three point one seven Square Metre only)	1 M^2 (One Square Metre)	406.44 (Rupees four hundred and six and paise forty four only)	**232959**
13	Supplying, fabricating and placing in position of HSD (high Yield Strength) bars for all reinforced cement concrete works including cost of binding wire, steel rods, conveyance charges and labour charges etc., complete, complying with standard specifications and as directed by the Engineer in - charge of work.. (Specification No.9.1 to 9.12.1)	**60.08** (Sixty point zero eight Quintal only)	1 Qtl (One Quintal)	6937.40 (Rupees six thousand nine hundred and thirty-seven and Paise Forty only)	**416798**
14	Supplying and fixing new cut stone fully dressed to size all faces and set in cement mortar 1:3 (One cement and three sand by volume) mixed mechanically in approved mixer) including all incidental charges such as finishing, curing etc., complete as directed by the Engineer in charge of works and as per technical specifications.	**5.00** (Five Cubic Metre only)	1 M^3 (One Cubic Metre)	7514.36 (Rupees seven thousand five hundred and fourteen and Paise thirty six only)	**37572**

Sl. No	Description of work	Quantity	Unit	Rate in Figures and Words	Amount
15	Fabrication, Supply and erection of Screw Gearing Steel Shutter of size 0.50x0.50, made out of 8mm thick Mild Steel plates and 65 x 65 x 6mm Mild Steel Channels for outer frame with each 1 No of vertical and horizontal stiffeners at equal spacing made out of same section and 8mm Mild Steel plate for Gusset plate 2 Nos. of size 0.30 x 0.23m with required bolts and nuts and shutter Groove Angle made out of 100 x 100 x 10mm Mild Steel angle with required height including welding of Holdfast of size 40x40x6mm Mild Steel angle 3 Nos and Screw Rod 50mm dia Mild Steel Round Rod duly machined and fully threaded to suit the Capstan Head Assembly with required bolt and nut and Top beam made out of 150x75mm (ISMB 150) duly drilled to suit the Head Set Assembly with required bed bolt made out of 25mm Mild Steel Round Rod duly threaded with suitable anchorage arrangements to a height of 0.9m with necessary Fish Plate made out of 12mm Mild Steel plate of size 0.23 x 0.30m, 2 Nos and the Cast Iron Head Set Assembly medium duty with hexagonal nut (approximate 50Kg) duly machined with nut, threading to suit the Screw rod with including cost of ball bearings for smooth operation cost of grease, one coat of Anticorrosive black paint over the one coat Red Oxide primer etc., The cost shall include required handle for shutter operation and conveying loading and unloading charges including petty civil work and trail operation etc., complete.	**13.00** (Thirteen Numbers only)	1 Nos (One Number)	65000.00 (Rupees Sixty five thousand only)	**845000**
16	Refilling the excavatedearth in layers not exceeding 23cm thickness and watering to OMC (Optimum Moisture content) and compaction of each layer to 95% of proctor Density through deployment of appropriate compaction equipment (8-10T power roller) vibratory power roller of short width (0.90m width drum) power roller or vibratory power roller/fuel operated or electrically operated, vibratory plate compactors, ensuring compaction of designed bund section including side slopes etc., complete as directed by the Engineer in charge of works and as per the technical specifications.	**4189.90** (four thousand one hundred and eighty-nine point nine Cubic Metre only)	1 M^3 (One Cubic Metre)	58.60 (Rupees Fifty eight and Paise sixty only)	**245528**
17	Rough stone dry packing for revetment and apron using new hard granite stones obtained from approved sources including the cost of new wedges for filling the gaps etc, complete	**129.69** (one hundred and twenty-nine point six nine Cubic	1 M^3 (One Cubic Metre)	1626.69 (Rupees one thousand six hundred twenty-six	**210965**

Sl. No	Description of work	Quantity	Unit	Rate in Figures and Words	Amount
	as directed by the Engineer in charge of works and as per the technical specifications	Metre only)		and paise sixty nine only)	
18	Gravel packing 15cm thick for cement concrete block revetment or apron including stacking watering and consolidation etc, complete as directed by the Engineer in charge of works and as per the technical specifications.	**100.37** (one hundred point three seven Cubic Metre only)	1 M^3 (One Cubic Metre)	768.35 (Rupees seven hundred and sixty-eight and paise thirty five only)	**77119**
19	Drilling holes 50mm dia in existing body wall of weir for placing anchor rods etc.	**84.80** (eighty-four point eight zero Running Metre only)	1 RM (One Running Metre)	267.00 (Rupees two hundred and sixty-seven only)	**22642**
20	Grouting the holes of 50mm dia with w/c ratio of 0.33 in the existing weir body wall provided at a spacing of 80 cm c/c in a staggered manner in the vertical surface for fixing anchor rod of 16 mm dia RTS of 1m length in a such position that 60 cm length embeded into the masonry wall at a downward inclinations of 5 degree to horizontal and 40 cm length projected and bend out side the wall including cleaning the drilled hole fixing the rod and other incidential charges etc.	**144.00** (One hundred and forty four Running Metre only)	1 RM (One Running Metre)	100.00 (Rupees One hundred only)	**14400**
21	Earthwork in all soils except hard rock requiring blasting and conveying with a lead of 0 to 100M by deploying earth moving machineries and tippers for formation of bund in layers of suitable thickness, depending upon type of compaction equipment deployed and not exceeding 23cm thickness, benching of slopes prior to placement of earth fill, breaking clods, formation of bund, breaking clods, sectioning extra watering to OMC and compaction of each layers to 95% of proctor density through deployment of appropriate compaction equipment (8-10 ton vibratory power roller/short width (+0.90M width drum) power roller or vibratory power roller/fuel-operated or electrical operated vibratory plate compactors ensuring compaction of designed bund section including side slopes compactioncomplete as per specifications etc., complete as directed by the Engineer-in-charge (Specification No.4.2.1 to 4.2.4)	**351648.00** (Three Lakh Fifty One Thousand Six Hundred And Forty Eight Cubic Metre only)	1 M^3 (One Cubic Metre)	74.85 (Rupees seventy four and paise eighty five only)	**26320853**
22	Supplying demarcation R.C.C. pre cast posts in Cement concrete of grade M20 with well graded aggregates and the nominal maximum size of coarse aggregate of size 20 mm of size 0.20 x 0.20 x 1.45 M and fixing the post 40 Cm depth below ground level, the post	**695.00** (six hundred and ninety five Numbers only)	1 Nos (One Number)	876.70 (Rupees eight hundred and seventy-six and paise seventy only)	**609306**

Sl. No	Description of work	Quantity	Unit	Rate in Figures and Words	Amount
	includes using 4 numbers of 10 mm RTS main rod to a length of 1.325 M, using 8 mm MS 10 numbers as strips with steel centering and painting the post with enamel paint to a height of 0.80 M around the post etc. complete and conveying the post to the site of demarcation boundary such as tank bund and foreshore including earth work excavation for foundation in HSC having the base plain cement concrete of 10 cm of gradeM15 concrete using hard blue granite broken stone of graded metal 1/3 Part of 40mm & 2/3 Part of 20 mm size, and the post embedded by using Cement concrete of grade M25 with well graded aggregates and the nominal maximum size of coarse aggregate of 20 mm etc, complete as directed by the Engineer in charge of works and as per the technical specifications.				
23	Compaction of earth fill on the tank bund and side slopes to specified density through deployment of hydraulic excavators with steel plate fixtures attached to their booms / heavy power rollers or vibratory power roller / fuel operated or electrically operated, vibratory plate compactors, complete as directed by the Engineer in charge of works and as per the technical specifications	**485066.00** (Four Lakh Eighty Five Thousand and Sixty Six Square Metre only)	1 M^2 (One Square Metre)	5.00 (Rupees five only)	**2425330**
24	Turfing on downstream side(rear) slope of bund including watering and fixing with initial lead of up to 50 m including cost of turf and labour charges etc complete as directed by the Engineer in charge of works and as per the technical specifications(4.1.3)	**5797.60** (five thousand seven hundred and ninety-seven Square Metre only)	M^2 (One Square Metre)	39.70 (Rupees thirty nine and paise seventy only)	**230165**
25	Supplying, hoisting, laying and fixing in position of RCC Hume pipe NP3 class of 900mm dia with suitable collars for sluices including labour and jointing materials as directed by the departmental officers and complying with standard specification.	**147.50** (one hundred forty-seven point five zero Running Metre only)	RM (Running Metre)	3540.00 (Rupees three thousand five hundred and forty only)	**522150**
	Total				**49335623**

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NAME OF WORK: Rehabilitation and Modernisation of 4 Tanks in Kalakad Block of Nanguneri Taluk, 2 Tanks in Nanguneri Block &Taluk, 12 Tanks in Vallioor Block of Radhapuram Taluk, 6 Tanks in Radhapuram Block & Taluk, 9 Tanks in Radhapuram Block of Thisaiyanvillai Taluk, 6 Tanks in Vallioor Block of Thisaiyanvillai Taluk and 1 Tank in Vallioor Block of Nanguneri Taluk and 1 Anicut supply channel in Kalakkad Block of Nanguneri Taluk in Tirunelveli District of Nambiyar Sub basin.

GENERAL ABSTRACT

CLUSTER Nos	PACKAGE	CONTENT	AMOUNT (In Lakh)
Cluster :1 to 6	PACKAGE No. I	Rehabilitation and Modernisation of 4 Tanks in Kalakad Block of Nanguneri Taluk, 2 Tanks in Nanguneri Block &Taluk, 12 Tanks in Vallioor Block of Radhapuram Taluk, 6 Tanks in Radhapuram Block & Taluk, 9 Tanks in Radhapuram Block of Thisaiyanvillai Taluk, 6 Tanks in Vallioor Block of Thisaiyanvillai Taluk and 1 Tank in Vallioor Block of Nanguneri Taluk and 1 Anicut supply channel in Kalakkad Block of Nanguneri Taluk in Tirunelveli District of Nambiyar Sub basin.	**600.90**
		SUB TOTAL	**600.90**
		Environmental Division	7.00
		TOTAL	**607.90**

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6.8.3 Calculation of Machinery Requirement

Hydraulic excavators =	3	Nos
Tippers =	3	Nos
Working hour=	8	Hours / Day
	3	loads/ hour
1 trip of quantity=	5.66	m3/ trip
For 1 day=	1222.56	m3 /Day
For 1 month=	25	Working days
For 25 working days=	30564	m^3
Total quantity of earth work =	362528.26	m^3

No of Working months= $\frac{\text{Total Quantity of earth work}}{\text{Quantity of earthwork for one month}} = \frac{362528.26}{30564}$ =12 Months

Working period for earth work= 2 working months + 3 Months rainy season& irrigation+9 working months + 3 Months rainy season& irrigation + 1 working months

= 12 months working period & 6 months rainy season and irrigation period

Machineries required for earth work:

1	Hydraulic excavator	=	**3**	Nos
2	Tippers / Lorries	=	**3**	Nos
3	Power roller	=	**1**	Nos
4	Vibrated compactor	=	**1**	Nos
5	Water lorries	=	**1**	Nos

Mixer machine

working hour=	7	hours / Day
	4	m^3/ hour
For 1 day=	28	m3 /Day
For 1 month=	11	working days
For 11 days=	308	m3/ month
Total quantity of concrete=	3403.05	m^3

Qty of concrete/mixer machine/month $\frac{3403.05}{308} = 12$

Mixer machine required=	**2**	**Nos for 11 days / month**
Months required to complete Concrete works=	**12**	months
Mixer machine required=	**2**	
Concrete Vibrator required=	**4**	

RR masonry in CM 1:4	=	53.86 MT
Cement concrete M.10 using 40mm	=	74.20 MT
Cement concrete M.15 using 20 mm	=	5.26 MT
Cement concrete M.15 using 60% 40mm &40%20mm	=	324.07 MT
P.C.C M 20 using 20mm	=	11.99 MT
R.C.C M 25 using 20mm	=	37.62 MT
Plastering in CM 1:4 20mm thick	=	4.54 MT
Supplying and fixing boundary stone in RCC M20	=	6.57 MT
Cut stone roughly dressed	=	0.20 MT
Total quantity of Cement required	=	**518.30** MT
Total quantity of Steel required	=	**6.01** MT
Total quantity of Sand required	=	**1109.23** m^3
Total quantity of 40mm Metal required	=	**956.00** m^3
Total quantity of 20mm Metal required	=	**582.00** m^3
Total quantity of R.R Stone required	=	**492.80** m^3
Total quantity of cut stone required	=	**5.00** m^3
Total quantity of RCC Hume pipe required	=	**147.50** RM

Material conveyance Tippers / Lorries

Cement = 10 mt / Trip	1 trip / day	10 mt / day
Sand = 5.66 m^3 / Trip	3 trips / day	16.98 m^3 /day
Metal / stone = 5.66 m^3 / Trip	4 trips / day	22.64 m^3 /day

Lorry required for conveying cement = 52 lorries

Lorry required for conveying sand = $\frac{1109.23}{16.98}$ = 66 Lorries

Lorry required for conveying metal & stone = $\frac{2035.8}{22.64}$ = 90 Lorries

Total Lorries required for conveyance = 156 Lorries

Total Lorries required for conveyance assuming 15 days per month = $\frac{156}{15}$ = 11 Lorries/month

Lorries required per month = $\frac{11}{12}$ = 1 Lorries per 15 days for 12 months

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6.8.4 Requirement of Equipments and Materials- Abstract

PACKAGE NUMBER	EQUIPMENTS REQUIRED IN NUMBERS							MATERIAL REQUIRED							
	HYDRAULIC EXCAVATOR	TIPPER / LORRY	POWER ROLLER	VIBRATED COMPACTOR	WATER LORRIES	CONCRETE MIXER MACHINE	CONCRETE VIBRATOR	CEMENT IN M.T.	SAND IN m^3	STEEL IN M.T.	METAL 40MM IN m^3	METAL 20MM IN m^3	R.R.STONE IN m^3	CUT STONE IN m^3	RCC HUME PIPE IN RM
PACKAGE I	3	3	1	1	1	2	4	518	1109	6	956	582	493	5	147.5

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6.8.5 Physical and Financial Program

Description	I st Milestone-20		II nd Milestone-60		III rd Milestone-20		Total	
	Quantity	Amount in Lakh	Quantity	Amount in Lakh	Quantity	Amount in Lakh	Quantity	Amount in Lakh
Bund	71578.5	5398838.00	214735	16196514.00	71578.5	5398838.00	357892.00	26994190.00
Foundation	927	84797.80	2782	254393.40	927	84797.80	4636.00	423989.00
Clearing light jungle	175905	773981.20	527714	2321943.60	175905	773981.20	879524.00	3869906.00
Compacting the side slope	97013	485066.00	291040	1455198.00	97013	485066.00	485066.00	2425330.00
Turfing	1159	46033.00	3479	138099.00	1159	46033.00	5797.00	230165.00
Concrete								
Cement concrete M.10 using 40mm	72	328184.40	215	984553.20	72	328184.40	359	1640922.00
Cement concrete M.15 using 20 mm	3.65	19739.20	11	59217.60	3.65	19739.20	18.3	98696.00
Cement concrete M.15 using 60% 40mm &40%20mm	234	1546471.60	704	4639414.80	234	1546471.60	1172.0	7732358.00
P.C.C M 20 using 20mm	6.4	38708.20	20	116124.60	6.4	38708.20	32.8	193541.00
R.C.C M 25 using 20mm	21.75	162749.20	64	488247.60	21.75	162749.20	107.5	813746.00
Reinforcement	12	83359.60	36	250078.80	12	83359.60	60	416798.00
Cut stone roughly dressed	1	7514.40	3	22543.20	1	7514.40	5.00	37572.00
Supplying and fixing boundary stone in RCC M20	139	121861.20	417	365583.60	139	121861.20	695.00	609306.00
Plastering in CM 1:4 20mm thick	114.5	46591.80	344	139775.40	114.5	46591.80	573.2	232959.00

Description	I st Milestone-20		II nd Milestone-60		III rd Milestone-20		Total	
	Quantity	Amount in Lakh	Quantity	Amount in Lakh	Quantity	Amount in Lakh	Quantity	Amount in Lakh
RR masonry in CM 1:4	88	400197.60	264	1200592.80	88	400197.60	440.00	2000988.00
Drilling & Grouting	45.9	7408.40	137	22225.20	45.9	7408.40	228.80	37042.00
Rough stone dry backing for revetment	26	42193.00	78	126579.00	26	42193.00	130.00	210965.00
Supplying and fixing S.G. Shutter	3	169000.00	8	507000.00	3	169000.00	13.00	845000.00
RCC Hume pipe of NP3 class	30	104430.00	89	313290.00	30	104430.00	147.50	522150.00
Total		**9867124.60**		**29601373.80**		**9867124.60**		**49335623.00**

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6.8.6 Construction Methodology

Sl. No	Description	Working Motnhs		Rainy Season & Water Regulation			Working Months									Rainy Season & Water Regulation			Working Months	Total Quantity	Amount in Lakh
		9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2		
		Ist Milestone					II nd Milestone												IIIrd Milestone		
	Earth work																				
1	Bund	35789.2	35789.23				35789.23	17894.61	17894.61	17894.61	17894.61	17894.61	17894.61	35789.23	35789.23				71578	357892	26994190.0
2	Foundation	463.6	463.60				463.60	231.80	231.80	231.80	231.80	231.80	231.80	463.60	463.60				927	4636	423989.00
3	Clearing light jungle	87952.4	87952.4				87952.4	43976.2	43976.2	43976.2	43976.2	43976.2	43976.2	87952.4	87952.4				175905	879524	3869906.00
4	Compacting the side slope	48506.6	48506.6				48506.6	24253.3	24253.3	24253.3	24253.3	24253.3	24253.3	48506.6	48506.6				97013	485066	2425330.00
5	Turfing	579.76	579.76				579.76	289.88	289.88	289.88	289.88	289.88	289.88	579.76	579.76				1160	5798	230165.00
	Concrete																				
6	Cement concrete M.10 using 40mm	35.85	35.85				35.85	17.92	17.92	17.92	17.92	17.92	17.92	35.85	35.85				71.69	358.46	1640922.00
7	Cement concrete M.15 using 20 mm	1.83	1.83				1.83	0.91	0.91	0.91	0.91	0.91	0.91	1.83	1.83				3.65	18.27	98696.00
8	Cement concrete M.15 using 60% 40mm &40%20mm	117.29	117.29				117.29	58.65	58.65	58.65	58.65	58.65	58.65	117.29	117.29				234.58	1172.90	7732358.00
9	P.C.C M 20 using 20mm	3.28	3.28				3.28	1.64	1.64	1.64	1.64	1.64	1.64	3.28	3.28				6.55	32.77	193541.00
10	R.C.C M 25 using 20mm	10.75	10.75				10.75	5.37	5.37	5.37	5.37	5.37	5.37	10.75	10.75				21.50	107.48	813746.00

Sl. No	Description	Working Motnhs		Rainy Season & Water Regulation			Working Months									Rainy Season & Water Regulation			Working Months	Total Quantity	Amount in Lakh
		9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2		
		Ist Milestone					II nd Milestone												IIIrd Milestone		
11	Reinforcement	6.01	6.01				6.01	3.00	3.00	3.00	3.00	3.00	3.00	6.01	6.01				12.02	60.08	416798.00
13	Cut stone roughly dressed	0.5	0.50				0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.50	0.50				1	5.00	37572.00
14	Supplying and fixing boundary stone in RCC M20	69.5	69.50				69.50	34.75	34.75	34.75	34.75	34.75	34.75	69.50	69.50				139	695.00	609306.00
15	Plastering in CM 1:4 20mm thick	57.32	57.32				57.32	28.66	28.66	28.66	28.66	28.66	28.66	57.32	57.32				114.63	573.17	232959.00
16	RR masonry in CM 1:4	44	44.00				44.00	22.00	22.00	22.00	22.00	22.00	22.00	44.00	44.00				88	440.00	2000988.00
17	Drilling & Grouting	22.88	22.88				22.88	11.44	11.44	11.44	11.44	11.44	11.44	22.88	22.88				45.76	228.80	37042.00
18	Rough stone dry backing for revetment	12.969	12.969				12.969	6.485	6.485	6.485	6.485	6.485	6.485	12.969	12.969				25.938	129.69	210965.00
19	Supplying and fixing S.G. Shutter	1.3	1.30				1.30	0.65	0.65	0.65	0.65	0.65	0.65	1.30	1.30				3	13.00	845000.00
20	RCC Hume pipe of NP3 class	14.75	14.75				14.75	7.38	7.38	7.38	7.38	7.38	7.38	14.75	14.75				29.50	147.50	522150.00
																					49335623.0

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7. ENVIRONMENTAL COMPONENT

IMPLEMENTATION AND MONITORING OF ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR NAMBIYAR SUB BASIN OF NAMBIYAR BASIN IN TIRUNELVELI DISTRICT.

7.1 Socio Economic Profile of Nambiyar Sub basin

Nambiyar sub basin spreads over 16 villages of 3 taluks viz. Nanguneri, Radhapuram and Thisayanvilai in Tirunelveli district. The sub basin area falls into 4 blocks viz. Kalakad, Vallioor, Nanguneri and Radhapuram

7.1.1 Population

Nambiyar sub basin has a total population of about 0.530 million people. Among this, urban area contributes 0.185 million people and the remaining 0.345 million are from rural. The area considered under phase III project has a population of 0.233 million. Having an extent of 1046 sq.km area, Nambiyar sub basin has a population density of 506 persons / sq.km.

7.1.2 Rural poverty

Based on block level data (2013-14), 30.78% people in Nambiyar sub basin area are in BPL category. Whereas, district level poverty in Tirunelveli district was estimated as 33.18%. Generally, poverty is lower in urban areas than rural areas in the district. At block level, blocks with high irrigation facilities have low incidence of poverty.

7.1.3 Gender

Due to prevailing education and empowerment to women, sex ratio is better in this sub basin with a female - male sex ratio of 1222. Whereas, the Tirunelveli district's sex ratio is 1,214. Among the blocks, Radhapuram had 1,032 in 2011 which is 7.53% lesser than 2001 sex ratio. Vallioor and Kalakad blocks also had registered a greater fall in the sex ratio during the same period. Female work participation rate in this sub basin area is 29%.

Gender Inequality Index (the status of women empowerment and the gender inclusiveness in the development process and their level of participation in the decision-making bodies. Lower the value, the better) has been calculated as 0.003 for Vallioor block. Radhapuram block has sent more women members (41.83) to

local bodies and Vallioor has sent only 32.02% women members to represent in the local bodies.

7.1.4 Households

There are about 87600 households in this sub basin.

7.1.5 Literacy

In this sub basin, 73% men are literates and 60% women are literates against the female literacy rate in the district of 75.98%.

7.1.6 SC/ST population

There are about 51142 scheduled caste people in this sub basin. In this, 23,238 are from rural areas and 27,904 are urban dwellers. Similarly, there are about 2,200 scheduled tribe people. In this, 252 are rural based and 1948 are urban dwellers.

Comparing district wise landholding, the land holding having a size of less than 1 ha of dry and 0.5 ha of wet, Radhapuram (3.26%) and Vallioor (4.94%) have lesser number of SC population out of the total cultivators. Similarly, the land holding having a size of more than 1ha of dry and 0.5ha of wet, Vallioor (3.22%) have lesser number of SC population in the total cultivators.

7.1.7 Land holdings

Category wise operational land holdings prevalent in Nambiyar sub basin is tabulated below:

Category	Size of holdings	Numbers	Percentage
Marginal	Below 1.00 Ha	19690	62.98
Small	1.00 – 2.00 Ha	5062	16.19
Medium	2.00 – 5.00 Ha	4787	15.31
Big	5.0 ha & above	1725	5.52
	Total	31264	100.00

Above table reveals that the marginal farmers dominate by 62.98% in the sub basin land holders and followed by small farmers.

7.1.8 Irrigation access

Irrigation is carried out through 85 tanks and 9 anicuts and 58.165 km length of anicut supply channel, 186.5 km length of system tank supply channel and 21.00 km length of non-system tank supply channel

For Total sub basin area		
Tank Ayacut– 85 Tanks	:	3159.66 Ha
Anicut Direct Ayacut – 9 Anicuts	:	-
Anicut Supply Channel –Direct ayacut (58.165 km)	:	366.55 Ha
Supply channel- for tanks (186.5 km system tank and 21 km non-system tank)	:	-
Total	**:**	**3526.21 Ha**
For Present Project area	:	
Tank Ayacut - 40 Tanks	:	1228.16 Ha
Anicut Supply Channel – 4.00 km	:	84.67 Ha
Total	**:**	**1312.83 Ha**

7.1.9 Women land holders

There are about 1712 women land cultivators in this sub basin area. In this, 65 % women are from rural community.

7.1.10 Key social issue

As found in Tamil Nadu, in Tirunelveli also, the social group at the lower rung of the societysuffers from poverty. Incidence of poverty among landless agricultural labourers and marginal farmers is higher than the big farmers. Prevailing climate change has a negative impact on frequency of rainfall and led to non availability of reliable irrigation water. Hence the marginal farmers are forced to leave the agriculture and migrate to nearer towns.In Radhapuram, migrant workers, including migrants to foreign countries are greater in number leading to low worker participation locally.

The cropping intensity in Tirunelveli district varies from 1.68 to 1 and the gross cropped area varies from 54.92% to11.89% in 2011. Radhapuram block is at

the bottom in both the aspects (8.05% gross cropped area and cropping intensity of 1 in 2001and (12.43 % gross cropped area and cropping intensity of 1) in 2011. Lands that are kept fallow out of the net area sown during the previous year are classified as current fallow for the reporting year. Radhapuram taluk stands at Third under this category during 2010 – 2011 accounting for an extant of 3,644.78ha.

7.2. Stakeholder Consultations And Feedback

The feedback of walk through survey and consultations with stake holder and other representatives and the consultation plan are summarized below.

a. Walkthrough surveys

Walkthrough surveys were conducted through 16 villages situated in Nambiyar sub basin during the month of Feburary 2020 on the following days. 3-02-2020, 4.02.2020, 12.02.2020, 14.02.2020, 15.02.2020, 17.02.2020 and 19.02.2020. Officials from Water Resources Department (WRD), Agriculture Department, Horticulture Department, Tamil Nadu Agriculture University (TNAU), Agriculture Engineering Department (AED), Animal Husbandry and Fisheries Department jointly conducted the survey. Around 188 public from farming and allied sector participated and shared their views and requests.

b. Consultation / Awareness meetings

Following walkthroughs (W.T.S), Consultation cum Awareness Programme (A.P) were conducted by inviting the representatives from farming communities at local offices. The details were summarized as follows.

For cluster I - Meeting conducted on 3.2.2020 at WRD – Valliyoor Irrigation section office.(A.P participants –38 & W.T.S participants -20)

For cluster II – Meeting conducted on 4.2.2020 at WRD – Valliyoor Irrigation section office. (A.P participants –51 & W.T.S participants - 29)

For cluster III – Meeting conducted on 12.2.2020 at WRD – Valliyoor Irrigation section office. (A.P participants –56 & W.T.S participants -21)

For cluster IV – Meeting conducted on 14.2.2020 at WRD – Valliyoor Irrigation section office. (A.P participants –81 & W.T.S participants - 42)

For cluster V – Meeting conducted on 15.2.2020 at WRD – Valliyoor Irrigation section office. (A.P participants –42 & W.T.S participants -21)
For cluster VI – Meeting conducted on 17.2.2020 & 19.2.2020 at WRD – Valliyoor Irrigation section office. (A.P participants –134 & W.T.S participants - 55)
Total (A.P participants –402 & W.T.S participants - 188)
The attendance sheets of awareness meetings are here with attached.

c. Stakeholders Feedback

The feedback of walk through survey, consultation meetings and the planned activities/ interventions in this phase III of TNIAMP are summarized below

Water resources Department (WRD): Since Nambiyar basin irrigation structures are more than 100 years old and many cross-masonry structures were damaged during floods, the farmers demanded to rehabilitate and reconstruct the existing damaged irrigation structures for efficient water regulation and conveyance.

Agriculture related: It was inferred that the farmers are mostly relying on conventional farm methodologies and following same cropping pattern. During the consultation, farmers demanded Green Manure Crop - SRI - Rice Fallow Pulses (3 Crop Sequence) demo in their villages. The farmers also requested skill development training regarding SRI cultivation. They were also interested in setting up FFS in their area.Power conoweeder was demanded in many places.

Water conservation: It was reported by farmers that they are facing acute loss due to failure of crops due to want of water whenever there is shortage of rainfall. Hence they requested water harvesting structures in their fields.

Livestock related: Livelihood production in sub basin area is gender specific. This sector is dominated by women labourers. There is gap in demand to supply in fodder for livestock. Also, there prevails knowledge lacking in managing cross breed animals. Hence diseases like mastitis, worm infestations are major issues for cattle owners. Lack of animal identification system constrains the disease control and planned breeding interventions.

d. Summary of consultation plan during construction and post construction period:

For Water Resources Department: Works for strengthening of bunds, repair of weirs, sluices and other regulating arrangements are proposed wherever necessary. 40 tanks, and to rehabilitate anicut supply channels for a total length of 4.00 km were selected and proposed for rehabilitation under TNIAMP phase III.

Agricultural related: In order to adopt climate resilient and water conserving new methodologies, the following activities are proposed. Farmers will be educated through introduction of field demonstration of improved production technologies. Farmers field schools shall be operationalized at block levels, followed by capacity building through exposure field visits to educate farmers.

It is proposed to encourage the farmers for green manuring by adopting technologies like vermi composting, practicing rice fallow pulses cropping in order to enhance the soil fertility. It is proposed to switch from more water requiring conventional paddy cultivation method to System of Rice Intensification (SRI) method in order to save appreciable quantity of water, manure, labour and also seed. It was also proposed to divert cropping pattern from high water guzzling crops to less water consuming crops like maize, oil seeds and horticulture crops.

Water conservation: It is proposed to introduce farm ponds as a mechanism for harvesting and storing the rain water in the lands of selected farmer's, preferably marginal and small farmers in order to supplement their terminal irrigation needs.

Livestock related: Farmer extension and technology dissemination programs through farmers group approach. Dairy Interest Groups (DIG) will be promoted in the sub-basin villages. Infertility in cows is also a notable problem. Breeding program through strengthening the existing Artificial Insemination (AI) network and establishing new AI units by placing a locally trained youth will reduce this problem.

Fisheries: Regarding fisheries, aquaculture is proposed to be carried out by introducing improved production models using fast growing fish varieties and

updated technology and introducing low-cost and efficient species specific fish feed. The activities will be categorized into two viz. (i) Fish Culture in short seasonal irrigation tanks (@ 2000 Seed / ha) (ii) Aquaculture in Farm Ponds (0.1 ha.)

7.3.0 Screening For Construction And Civil Works (WRD, AED, OTHER IAs)

7.3.1 Summary of Construction / Civil works planned:

a. Water Resources Department:

S.No	Component	Numbers	Size/Length	Estimated cost (in Lakhs)
1.	Tanks	40	-	490.12
2.	Anicuts	--	-	--
3.	Supply channels	-	4.00 km	3.23

Total estimate amount for WRD works in six clusters including other provisions works out to Rs. 607.90 Lakhs.

b. Agriculture Engineering Department:

S. No	**Type of Structure**	**Number**	**Size/Length**	**Estimated cost(in Lakhs)**	**Villages covered**
1.	Farm ponds	12	26.50m x 26.50m x 1.5m	9.00	

7.3.2 Summary of contract packages

Works regarding WRD will be done as a single package

Sl. No	For Rehabilitation Package No	Ayacut in Ha	No of tanks	Bund		Sluice Repair		Sluice Reconstruction		Weir		Rehabilitation of Anicut Supply channel		Total in lakhs
				Length (m)	Amt in Lakhs	No	Amt in Lakhs	No	Amt in Lakhs	No	Amt in Lakhs	Length (km)	Amt in Lakhs	
1	Package No 01	1312.83	40	51761	372.42	3	10.33	10	94.77	8	12.60	4.00	3.23	493.35

c. Screening details

Safeguard management will be adopted based on individual tanks screening and subsequent focus on higher risk tanks/activities selected based on criteria suggested by world bank including: (i) tanks with depths of more than 7 meters; (ii) tanks under the oversight of the state dam safety panel; (iii) tanks with a history of flooding/breaches; (iv) activities in the proximity of industrial areas, shops/shelters/farmland, labour camps etc. Based on this, the list of priority tanks is summarized as below

WRD ESMF Monitoring (Environmental)

Total TNIAMP Packages	Total no of	Number of tanks above 7m height	Number of tanks with history of floods/breaches or in seismic zone for the past 10 years	Number of works near forest wild life areas	No of tanks in the proximity of industrial areas	Number of tanks under state dam safety committee inspection
1	Tanks: 40 Nos, Supply channels: 4.00 km	2 (List furnished below)	Nil	Nil	Nil	Nil

Sl.no	Name of High priority Tank/Anicut/Supply channel	Village
1	**Karisalkulam**	Thirukkurungudi
2	**Kesavanerikulam**	Nambithalivanpattayam

WRD ESMF Monitoring (Social)

Total TNIAMP Packages	Total no of	Number of TNIAMP tanks with encroachment	Number of TNIAMP tanks where shelters, shops and farmers have been physically relocated	Number of TNIAMP tanks where residents /farmers/ Utilities/ shops etc adversely affected	No of TNIAMP works (Tanks, Anicuts/Supply channels) with labour camps
1	Tanks : 40 Nos, Supply channels: 4.00 km	Nil	Nil	Nil	To be updated after start of project

7.4. Environment and Social Management Plan

a. As suggested in the aide memoire of the World Bank's 3rd implementation support mission, (i) Tanks with depth more than 7 meters; (ii) Tanks under the oversight of the state dam safety panel; (iii) Tanks with history of flooding/breaches; (iv) Activities in the proximity of industrial areas, shops/shelters/farmland, labour camps etc. were analysed and 2 priority tanks were identified in this sub basin to monitor under ESMP.

List of tanks and anicuts are given below.

Sl.no	Name of High priority Tank/Anicut/Supply channel	Village
1	**Karisalkulam**	Thirukkurungudi
2	**Kesavanerikulam**	Nambithalivanpattayam

b. Number of ESMP that are likely to be prepared

ESMP has to be prepared for the above said 2 tanks from a single package. These tanks will be monitored quarterly for compliance of mitigation measures recommended for the envisaged impacts.

Envisaged impacts and mitigation measures:

- **Disposal of excavated earth:** Since the excavated / desilted earth is proposed to be utilized for forming bunds in tanks and channels, no earth has to be disposed.
- **Disposal of debris from rehabilitation/restoration of hydraulic structures**: The quantity of concrete debris that would get generated works out to 406 cubic metre. The remains will be carried away by the contractor to nearby disposal site pointed out by the engineer in charge of work.
- **Air Pollution:** Heavy equipment including power rollers, tippers, lorries, water lorries, etc., are planned to be used. Pollution from exhausts of these vehicles and dusts from hauling of material will cause air pollution. Mitigation measures for keeping the pollution in control includes (1) Monitoring the proper functioning of construction equipment to minimize exhaust. (2) Educate the operators and drivers for optimal idling of machines and equipment. (3) Covering the stockpiled silt and trucks which are hauling silt, sand, and other loose materials will be insisted or at least two feet of freeboard will be maintained in trucks during hauling
- **Clearing jungle:** It is proposed to clear 879524 sq.m. of light jungle in the work area. Thus, removed vegetations can be will be disposed off by allowing the local people for carrying to their fields for converting into manure by ploughing into soil before preparing the paddy field.
- **Material sourcing:** Materials like sand, coarse aggregates, gravel, stones for pitching will be used in large quantities for these works. Sourcing from illegal sources needs to be checked during construction. Illegal mining is not followed by rehabilitation of sites from where material is being sourced, leading to loss of land

and biodiversity as well as environmental degradation. The materials will be sourced from authorized quarries prescribed by the Government.

In this sub basin, M. Sand is to be used and the source is government approved manufacturing units located at Kottaikarungulam situated within the project area. Stone aggregates and other stone materials will also be quarried from government approved quarries at Kottaikarungulam.

▪ **Health and safety needs of workforce employed:**

In addition to necessary monitoring, contractors and site incharge personal will be educated and insisted to

- Provide Safe access to the job sites
- Keeping Passage ways, walkways, and ramps free of materials, scraps or obstructions
- Keeping First Aid box readily available at construction sites
- To maintain contact with nearest nursing homes/clinics/primary health centre to deal with any emergency at site
- To ensure availability of vehicle at construction site to meet emergency situation
- To comply with all the precautions as required for the safety of the workmen as per labour laws as applicable to this project
- To strictly follow the statutory child labour act
- To provide necessary personal protective equipment such as helmets, hand gloves, safety shoes, nose masks, safety goggles to the workers as per act.

▪ **Public safety:** Warning sign boards will be provided along the construction sites in Tamil/ English

b. Plan of activities for Environmental Monitoring and Awareness

I. Environmental Monitoring: It is proposed to study the impacts due to interventions implemented in the sub basin by collecting field samples at key points both during pre-implementation and post project periods. Thus collected field samples will be analysed at laboratories for various influencing parameters

and results will be communicated to MDPU and line departments concerned for future reference.

▪ Water samples from selected points of river such as Source point of water to agriculture activities, points where runoff from agriculture field activities mix with river and tanks with fishing activities etc. will be collected. These collected water samples will be tested for key physical, chemical and biological characteristics along with pesticides and heavy metals.

II. Monitoring and reporting compliance of ESMP, ESMF and updating GRM: The work sites of 2 tanks which envisage considerable social and environmental focus will be inspected quarterly by the Environmental cell engineers. All the other tanksand supply channel sites will be inspected biannually for compliance of ESMF proposed mitigations. The reports regarding compliance of environmental safety procedures and recommended mitigation measures will be submitted to the MDPU and a copy will be marked to the nodal officer concerned for necessary corrective measures if any to be taken. The expenditures involve photography, documentation charges and conveyance arrangement to work sites.

III. Propagation of environment, health and safety awareness in sites through pamphlets and site display boards:

Usually contractors and site workers will focus on speedy achievement of work in volumetric basis and they rarely focus on safety, health and environmental aspects during the work. To make them aware about the norms and environmental codes of practises, it is proposed to issue pamphlets with pin pointed safety tips and environmentally safe practise to contractors, site-in-charges and labourers. It is also proposed to affix display boards containing site safety procedures at selected sites.

IV. Propagation of environmental awareness to public through stickers and pamphlets:

Awareness will be created among villagers for safe guarding tanks from disposal of village generated solid wastes, efficient use of water by creating awareness among the farmers about the innovative technologies available with minimal usage of water and impacts of other anthropogenic activities with the aid of stickers with environmental related slogans. It is also proposed to distribute

environmental awareness pamphlets to villagers and common public. It is also proposed to motivate the villagers & common public by adopting eco-friendly and environment thirst activities like paintings/posters, tree planting etc.

V. Capacity Building activities for WRD Engineers and contractors:

A capacity Building program will be organised for WRD Engineers, Contractors and Site Engineers in order to expose them to the environmental codes of practises, which will enable them to follow the EHS procedures during the execution of work at sites.

VI. Safeguard refresher training for nodal and field officials of implementing agencies

One training programme is proposed in Nambiyar sub basin

VII. Planting of tree saplings:

It is proposed to plant tree saplings in selected tanks, where there is possibility of maintenance of saplings by local villagers in order to prevent bund erosion.

7.5.0. ESMF Application in livelihood Support Interventions

The ESMF is a tool to check and ensure that the projects activities that are identified, planned and implemented are socially responsive and environmentally sound. This will support to prepare mitigation plans, and to ensure complete integration of social and environmental concerns and mitigation measures in the design of the project activities. The project interventions planned by implementing agencies in livelihood supporting and the applicable ESMF actions are as below

a. Details of interventions

Agricultural

Interventions proposed:

Growing green manure crops especially for their organic matter and ability to improve the soil fertility which boosts lands organic matter (O.M.) level. Rice Fallow Pulses are sown as fallow up crop after the harvest of Paddy.

▪ High water utility crops will be diverted to less water utility crops viz. Maize, Ragi, Pulses, Minor Millets, Oil seed crops, Fodder crops and Horticulture crops Minor Millets. The area of the maize has been increased from 2.00 ha to 174.49 ha in the proposed cropping pattern.

▪ Under the Pulses there is an increase of 140.78 ha. from the existing area of 59.22 ha. in garden land pulses.

• The Groundnut area has been increased from 1.5 ha. To 66 ha. in the proposed cropping pattern. Hence, there is an additional area of 64.50 ha under Groundnut crop.

▪ Introduction of Farmer's field schools at block levels to educate farmers followed by capacity building through exposure field visits.

• Organization of Farmers awareness campaign to promote wide use of organic inputs, like vermicompost, Bio pesticides, Bio fertilizers and Bio control agents to protect the environment and produce pesticide reduced agro products.

• It is proposed to encourage the farmers to produce the seeds required for their villages on their own especially for the crops viz., Pulses, Oilseeds and Green manure seeds by provision of assistance to the farmers.

▪ Distribution of power cono weeder with subsidy.

▪ It has been proposed to impart Trainings regarding SRI skills to 50 Agricultural labours for 2 days

▪ Training for 50 farmers has been proposed.

▪ Extensional personal training for 30 persons has been proposed.

Applicable ESMF actions

Sl. no	**Potential Risks & Impacts**	**Suggested Mitigation Measures**
1.	Lack of quality planting materials	Supply of certified seeds of agricultural crops
2.	Water shortages	Implementation of SRI in larger area in the sub-basin
3.	Pest problems	Use of biocontrol agents and integrated pest management

4.	Lack of Community approach in farming	Farmer's field school on seed to seed crop production technologies
5.	Market rejection of produces due to Pesticide residue problems	Adoption of eco-friendly practices
6.	Soil health deterioration	Soil test-based fertilizer application to crops

Agricultural Engineering

Interventions planned: Construction of 12 Farm Ponds as a supplementary source of water.

Beneficiary details: The farm ponds are proposed at an estimated cost of about Rs.75,000 per farm pond. The contribution at the rate of 10% of the total cost for general category and 5% of the total cost in case of SC/ST farmers shall be collected from the beneficiaries of the farm pond for works and the remaining 90% (95% in case of SC/ST) will be borne from the project.

Applicable ESMF actions

Sl. no	**Potential Risks & Impacts**	**Suggested Mitigation Measures**
1.	Silt /sand deposition on agricultural fields, low lying seasonal wetlands, choking of natural draining/water courses to excess rain etc.	As far as possible, use silt (if suitable) in strengthening the tank bunds Check quality of removed silt and tank bed material before allowing farmers to use it
2.	Soil compaction on fields/farms due to movement of heavy machinery	Plan heavy vehicle and machine movement route that avoid productive fields; and if soil compaction on farmer's field is unavoidable, plough field after construction phase is over.
3.	Incidence of local water logging and stagnation of water leading	Ensure that approved anti-mosquito methods are used in case of

	to increased mosquito breeding and spread of vector borne disease	observance of breeding mosquito population near construction and rehabilitation sites
4.	Possibility of high tension poles located near the site	Ensure that significant clearance is available between site and poles. Caution signages to be provided to caution heavy machine operators. Arrange all precautionary measures related to electrical safety
5.	Ponds located near or adjacent to roads and cart tracks	Fencing to be provided (preferably live fence) surrounding the pond. The bunds of the farm ponds should be sufficiently stabilized to withstand any accidental impacts from vehicles

Horticulture

Interventions planned and beneficiaries' details:

a) Crop Demonstration: Demonstrations in Tomato, Brinjal, chillies and bhendi with Micro irrigation & Fertigation

b) Crop diversification: In order to switch over from high water consuming agriculture crops like Paddy to horticulture crops like vegetables, turmeric and mango, it is proposed to conduct awareness meetings, campaigns and other IEC/CB activities and thus farmers will be convinced.

- Encouraging application of latest production technologies to increase the productivity through demonstrations.
- It has been proposed to provide training to farmers, labourers and field staffs.
- Strengthening information and publicity activities.
- Exposure visits to farmers.

Applicable ESMF actions

Sl. no	Potential Risks & Impacts	Suggested Mitigation Measures
1.	Inferior quality seeds and planting material are generally used by the farmers	Quality planting materials supplied through department of horticulture. The HB seeds are available from private sources and it will be procured and supplied to the farmers by following the WB procurement norms.
2.	Limited planting materials available from Govt sources	Seeds are supplied to the farmers by the department after procuring the HB seeds through tender system.
3.	Adverse climatic condition	Drought resistant and high yielding crops like chillies and other vegetable crops are to be suggested.
4	Low price for produce especially for vegetables.	Staggered planting methods recommended to the farmers so as to maintain the price fall in vegetables especially during peak period of harvest. It is recommended to choose varieties suited for early and late sowings.
5	Improper irrigation practices like furrow and basin irrigation.	Drip irrigation with fertigation is to be introduced in this project.

Tamil Nadu Agricultural University (TNAU)

Interventions planned and beneficiaries' details:

1. Introduction of Green manure rice pulses

2. Adoption of Alternate wetting and drying irrigation (AWDI) water-saving technology to reduce irrigation water consumption in rice fields without decreasing its yield.

3. Promotion of grafted brinjal to enhance the yield of brinjal.

4. Capacity building programme for stake holders and exposure visits have been proposed.

5. Awareness has been proposed regarding the organization objectives, activities, project contribution and farmers participation

Applicable ESMF actions

Sl. no	Potential Risks & Impacts	Suggested Mitigation Measures
1.	Inferior quality of seeds, Planting materials and high cost of hybrid seeds.	Supply of seeds through National Seeds Corporation and other private organizations will be arranged as per procurement norms of the World Bank.
2.	Non Availability of labour.	Suitable advice on farm mechanization will be given.
3.	Adverse climatic condition and erratic distribution of rainfall	The temperature is generally high and drought occurs once in five years. Suitable technology may be recommended to overcome drought. Water management practices maybe introduced to increase the productivity.
4.	Improper irrigation practices (Flood irrigation).	Cultivation of paddy crop by following water management technique will be popularized among the farmers to save water and cost of cultivation and increase the productivity of crop.
5.	Inadequate extension Service.	The services of TNAU will be utilized for disseminating innovative technologies for various crops in the sub basin in addition to the state extension services based on necessity.

Agricultural Marketing

Interventions planned and beneficiaries' details:

- Improving farmers access to markets by Promoting Alternative Markets and Modernizing Existing Markets
- Support to existing FPC to promote the collectivization of producers, specifically marginal and small farm holders
- Conducting facilitation workshop to promote agricultural entrepreneurship.
- Conducting Interface workshop to promote market linkages with stake holders and banks
- Business Plan development for trained agri entrepreneur for facilitating credit support
- Credit facilitation and business execution support
- Providing Matching grant for enterpreneur
- Imparting Training for enterpruneurship

Applicable ESMF actions

Sl. no	Potential Risks & Impacts	Suggested Mitigation Measures
1.	Lack of civic amenities in new markets developed for sellers and customers	Market design shall have adequate public conveniences (toilets with septic tanks or connected with sewage system)
2.	Lack of transparency in weighing and paying systems	Plan exposure visits to Maharashtra where operations of private and APMC markets have been reformed to introduce transparency in transactions
3.	Intensive use of energy/electricity due to poor market design, poorly planned loading/unloading decks etc.	As far as possible, develop design for markets with adequate introduction of green building norms – natural light, cross ventilation, use of solar power of lighting etc. Sites for establishing any new markets are free from natural features

4.	Generation of waste material – organic waste due to grading and sorting and plastic and other waste due to packaging and marketing	Organic waste should be collected and subject to composting (vermi-compost pits) Plastic and other packaging wastes should be disposed as per existing state rules with proper tie up for disposal
5.	Farmer Producer Organizations with little or no representation of poor and marginal farmers and risk of exclusion / Poor gender representation in decision making in farmer groups	Follow the project's gender strategy for ensuring proper representation of women across all levels of decision making
6.	Risk of issuing non-permitted pesticides to farmers	No non-permissible pesticides will be procured as part of input supply by FPO's under TNIAMP. If possible, FPO's can supply Personal Protective Equipment (PPE).

Fisheries

Interventions planned and beneficiaries' details:

- Fish Culture in short Seasonal Irrigation Tanks (@ 2000 Carp seeds / ha) in 200 ha. of EWSA of Short Seasonal Irrigation Tanks
- Aquaculture in Farm Ponds (0.1 ha.) - in 10 farm ponds

The beneficiaries are women Inland fisherman cooperative societies, Water users association members, fish farmers, women self help groups and private entrepreneurs

Applicable ESMF actions

Sl. no	Potential Risks & Impacts	Suggested Mitigation Measures
1.	Cages used in aquaculture can reduce the Dissolved oxygen in the water.	Proper Monitoring and testing of physio chemical parameters of water.
2.	Threat to native fish species	Fish species that would pose threat should be avoided for interventions
3.	Stocking of seeds in irrigation tanks may increase competition for leasing rights	Preference of Leasing Rights shall be given to Local Fishermen Cooperative Societies and Water user Associations
4.	Stocking of GIFT seeds may at times enter into the wild	Strict adherence of bio security measures will be monitored and also proper training will be imparted to the beneficiaries
5.	Improper handling of fish wastes from Fish Kiosks may pose health hazards in the vicinity	Proper disposal of wastes will be ensured with proper tie up with local bodies for safe disposal of wastes and convert them into fertilizers

Livestock

Interventions planned and beneficiaries' details

- Farmer extension and technology dissemination programs through farmers' group approach

- Promotion of Dairy Interest Groups (DIG) sub-basin villages to address infertility issues in productive cows and buffaloes

- Fodder development promotion and preservation, strengthening breeding program through strengthening the existing artificial insemination (AI) network and establishing new AI units by placing a locally trained youth, Infrastructure strengthening for veterinary and disease surveillance units,

• Linking Government of India Animal identification system program to enable ICT based MIS.

In this sub basin, 1 dairy interest group, 75 Calf Management demos, 90 Mastitis Management Demonstrations, 12 infertility management campaign, Estrous synchronization for 120 animals, 10 ha of Fodder development demonstrations, 9 Mobile Artificial Insemination centers have been planned to target 2500 AI's.

Applicable ESMF actions

Sl. no	Potential Risks & Impacts	Suggested Mitigation Measures
1.	Increased possibility of greenhouse gases from livestock & odour from dairy sites. Spreading of contactable diseases. Lowering of water quality due to disposal of solid and liquid wastes from dairy activities	Involve TN Veterinary University for various technical inputs. Disposal of dungs through non offensive methods like composting and energy recovery methods such as bio gas plant installation. Co-composting of digestant from bio gas plants with other organic restudies available in the farm. In large farms having potential to generate huge quantity of bio gas, bio gas based electrical generators may be installed to generate electrical power for in-farm consumption
2.	Poor and marginal farmers left out of project benefits	Provide livestock management training to a wide range of livestock owners, particularly women who tend to animals – make training available at doorstep as women are often not able to leave homes for offsite training for long duration.
3.	Inability of wage workers to undergo offsite training on livestock management	Provide livestock management training to a wide range of livestock owners, particularly women who tend to animals – make training available at doorstep as women are often not able to leave homes for offsite training for long duration

4.	Depletion of vegetation and forage resources on common property lands resulting in increased soil erosion	Work with communities for revival of common pastures and prevent encroaching of common lands – introduce, wherever required, rotational grazing and provision of water at grazing lands to avoid wider degradation of natural vegetation
5.	Disposal of waste generated through Infertility Management Programs	The needles and plastic syringes used in the Camps will be destroyed using Needle Destroyer. The glass syringes used in the Camps will be decontaminated using Sterilizer. The empty Frozen semen straws, Sheaths and Gloves after AI work will be disinfected with disinfectants like Sodium hypochlorite solution at the Camp site and will be handed over to the Local Bodies (Panchayats /Municipalities/ Corporations) as suggested by TNPCB to handle biomedical wastes which comes under Solid Waste Management Rules , 2016, MoEFCC, GoI.
6.	Disposal of waste generated through Strengthening Artificial Insemination (AI)	The used Frozen semen straws, Sheaths and Gloves after AI work will be disinfected with disinfectants like Sodium hypochlorite solution at the door steps of farmers and will be handed over to the Local Bodies (Panchayats/Municipalities/Corporations) as suggested by TNPCB to handle biomedical wastes which comes under Solid Waste Management Rules, 2016 , MoEFCC, GoI.

7.	Management of dung from diary animals	Co composting of cow dung along with other house hold organic wastes, which can be used as manure after decomposition. Making of Dung cakes for house hold purposes. Disposal of dungs through energy recovery methods such as bio gas plant installation. In large farms having potential to generate huge quantity of bio gas, bio gas based electrical generators may be installed to generate electrical power for in-farm consumption

7.6 Beneficiary Targeting and Inclusion:

In Nambiyar sub basin about 62.98 % farmers are under marginal category and about 16.19% are under small farmer category. This project's primary focus is to aid and stabilize these farmers through livelihood support interventions proposed by various implementing departments.

Agriculture department: Most of the beneficiaries of the project areas are small and marginal farmers. About 50% representation would be given to small and marginal farmers while selecting the beneficiary. In this project, from proposed SRI interventions and other crop diversification programmes the small and marginal farmers will be benefited due to more yields and it leads to obtain the more income. Increasing the net income of the farmer is possible through agricultural mechanization by way of reducing cost through precise application of Seeds, Manures, Fertilizers, Bio pesticides etc., through machines besides eliminating the drudgery of farming operations. Small and Marginal farmers are not in a position to purchase and maintain Hi-tech and costly farm machinery, on their own.

During walkthrough and other meetings, it was understood that the marginal farmers and small farmers are having heavy blow during crop due to starvation of water. Also, they have rare possibility for alternate source other than surface irrigation source. As a remedy, Improved Production Technology demos will

expose these farmers to water efficient cultivation methodology. Reduction in weeding frequency and complexity will improve their revenue.

Also, cultivation of high water utility crops will be diverted to less water utility crops viz. Maize, Ragi, Pulses, Minor millets, oil seed crops, fodder crops and horticulture crops. Through farm schools operationalized at block level in this sub basin, marginal farmers will have access to updates in agriculture. Seed Village Programme for Pulses, Groundnut & Green manure seeds is carried out as groups in the native village itself. Hence, marginal farmers can actively involve in this programme and can produce the seeds and own them for a reduced rate.

Tamil Nadu Agriculture University: Promotion and introduction of Alternate Wetting and Drying (AWD) will reduce the number of irrigation events required; AWD can reduce water use by up to 30%. It can help farmers cope with water scarcity and increased reliability of downstream irrigation water supply.

Horticulture: Since preference is given to under privileged section farmers and women cultivators in subsidy to horticulture crops, the under privileged will get more out of this project

Agri marketing: Farmer Producer Organizations (FPOs) is a collectivization of producers, specifically marginal and small farm holders into producers' organizations to address improved access to investments, technologies, knowledge support, inputs and markets.

- Small producers generally do not have the volume individually (both inputs and produce) to get the benefit of economies of scale. Since aggregation is possible via FPO's, the small producers can also avail the benefit of economies of scale.
- When small farmers sell their commodities through FPO, the chain of intermediaries who very often work non-transparently breaks and the producer receives his significant part of the value that the ultimate consumer pays.
- They will also have better bargaining power vis-à-vis the bulk buyers of produce and bulk suppliers of inputs. Eventually, it works for the sole benefit of the member producers.

Agricultural Engineering Department: Farm ponds will be constructed in willing farmer's land as a water harvesting measure. In Nambiyar sub basin, 12 nos. of

such farm ponds are proposed under this project. The beneficiary for formation of farm pond is selected based on the willingness of the land-owning farmers. The contribution at the rate of 10% of the total cost for general category and 5% of the total cost in case of SC/ST farmers shall be collected from the beneficiaries of the farm pond for works and the remaining 90% (95% in case of SC/ST) will be borne from the project.

Fisheries Department: The members of Inland Fishermen Cooperative Society are engaged for fishing in tanks and other leased out inland water bodies. Landless women will get employment as labourers for feeding and maintaining the fish in proposed aqua culture in 10 farm ponds. This inland fish culture will provide nutritious fish food in affordable price to poor people in this sub basin area.

Live stock: Livestock production, in particular dairy sector contributes significantly to the livelihoods and income generation for thousands of small and marginal farming communities in the sub basin by way of producing high value products. Dairy sector provides employment opportunity throughout its value chain starting from inputs, service delivery, aggregation, processing and marketing. Dairy production is highly gender and nutrition sensitive as two-thirds of dairy production depends on women labour and the nutritional benefits of milk is a well-known fact. Therefore, additional investments in this sector will provide an opportunity to increase milk production, leading to positive impacts in the overall socio-economic-nutritional status of smallholder farmers in the project sub-basin.

Fodder development promotion planned in this project will reduce the Fodder demand and supply gap prevailing in this sub basin area and will decrease the cost for maintaining the cattle.

7.7 Key Gender Actions

Women participation is poor or nil in WUA and in sharing and management of water for irrigation. Awareness will be created among women about the scope of water user associations during other agri related trainings planned in this project to encourage them to take part in WUA as members and even to take leadership.

Specific capacity building programs like exposure visits would be organized for WUA representatives, women in Farmer Producer Organizations (FPO),

Farmer Producer Companies (FPC), Dairy Interest Groups (DIG) etc. Team involvement of women in organized groups such as Self Helping Groups will be encouraged. In anticipation, the percentage of women expected to involve in agricultural related activities is 50%.

Dairy Interest Groups (DIG) will be formed with majority women members. Doorstep livestock management training will be arranged for women who are reluctant to leave homes for offsite training for long duration.

To ensure women participation in the project, women farmers will be informed and made aware of their role in decision making in fish culture labour opportunities in fish culture involvement in livelihood activities etc. Specific capacity building programs like exposure visits will be organized for women beneficiaries, Women self help group and members of women Inland fisheries co – operative society.

Percentage of Women expected to involve in

a) WRD Activities - 30%
b) Agri. related Activities - 50%
c) Livelihood related - 75%

Since the women beneficiaries can be identified during the start of project, the exact percentage of women participation cannot be reported here.

7.8 Labour Management

In Nambiyar sub basin, WRD is having significant civil works in the planned interventions.

a. Labour requirements

The labour team required for civil works includes, mason, mazdoor, fitter, carpenter, wodder, heavy machineries operator and tipper drivers. Based on data, the quantum of labourers required for the entire project is quantified as 9600 nos. i.e. for a total working period of 18 months.

Labours in mazdoor category are required in large numbers for civil works. Since this mazdoor grade-II labourers fall into unskilled category, local landless

labourers, women labourers including labours from SC/ST community will get ample job opportunities during construction period.

- If required, living units with adequate space and proper ventilation as per Labour and Environment Acts shall be provided to the labours engaged.
- Accordingly labour dwelling places shall have access to drinking water, sanitation, first aid and waste disposal facilities.

b. Usage of labour welfare fund

One percentage provision has been provided in the total estimate for labour welfare fund. The amount will be remitted to the secretary, Tamil Nadu construction works welfare board, Chennai. Any claims related to labour will be addressed through this fund.

c. Plan for orientation of contractors and labours

Contractors and site engineers will be trained towards safety procedures and environmental code of practices by conducting Capacity building programme. One such programme is proposed for this package.

d. Reporting on labour management

Issues and crisis related to labour will be dealt by the nodal officer concerned.

7.9 Grievance Redressal Mechanism

The officers responsible at departmental level for GRM in sub basin are listed below

Sl. No	Department	Designation	Contact information
1	**Water Resources Department**	Executive Engineer, WRD Chittar basin division, Tenkasi @ Kudiyiruppu	Ph. No : 04633 – 283233 Email ID : eechittar@gmail.com

2.	**Agricultural Engineering Department**	Executive Engineer, Agriculture Engineering Department, Tirunelveli Division	Ph. No : 0462 – 1551312 Email ID- aedeetnv@gmail.com
4.	**Agriculture Department**	Joint Director of Agriculture Department, Tirunelveli	Ph. No : 0462 – 2572514 Email ID : jda_tirunelveli@yahoo.in
5.	**Horticulture**	Deputy Director, Horticulture, Tirunelveli	Ph. No : 0462 – 2552632 Email ID : ddhtirunelveli@yahoo.com
6.	**Animal Husbandry**	Regional Joint Director, Tirunelveli	Ph. No : 0462- 2500489 Email ID : rjdahtny@yahoo.com
7.	**Fisheries**	Assistant Director of Fisheries, Tirunelveli	Ph. No : 0462- 2581488 Email ID : adfishtirunelveli@gmail.com
8.	**Tamilnadu Agricultural University(TNAU)**	The Director, Water Technology Centre, TNAU, Coimbatore - 003	Ph. No : 0422-6611278, 6611378

a. Display of GRM details in project areas: At project sites, a board containing information related to projects will be installed for display to public. In that board, the contact address along with official email and contact numbers of the officer to whom the Grievances has to be addressed will also be displayed.

b. Maintenance of updated GRM register: A register for GRM and a box for receiving the Complaints and Grievances shall be maintained in the O/o the Executive Engineer, Chittar basin division, Tenkasi for WRD and at O/o of Joint Directors for line departments. The grievances received should be entered in the GRM Register comprising of (a) Serial Number; (b) Case Number; (c) Name of the

Grieved/Complainant; (d) Name of Father/Husband; (e) Gender (f) Age; (g) Full Address; (h) Brief details of grievance/complaint; (i) List of documents, if any, attached; (j) Details of previous grievance/complaint, if any; (k) Date of receipt of grievance/complaint and (l) Date of acknowledgement of grievance/complaint

c. Submission of regular report: A monthly report on the grievances received and the action taken shall be sent to the Environmental Cell Division, Madurai for review and submission to the MDPU. Periodical Monitoring of the Implementation of the GRM will be carried out by the Environmental Cell Division Engineers.

The GRC will acknowledge receipt of all grievances/complaints, by registered post, within 7 days of receipt and will communicate its decisions/redress in writing to the complainants within 4 weeks depending on the nature of complaints and when closing the complaint, agreement should be made with the complainant on remedy, and both parties sign to their approval of the case being closed and outcome accepted. Copies are kept in both hard copy and electronic by both parties.

7. 10. COST OF WORK

The estimate cost works out to Rs. 7.00 Lakhs based on standard schedule of rate for the year 2020-21.

30/07/2020

Assistant Engineer, PWD / WRD
Environmental Cell Section – IV,
Tirunelveli

30/7/20

Assistant Executive Engineer, PWD / WRD
Environmental Cell Subdivision,
Tirunelveli

30/7/2020

Executive Engineer, PWD / WRD
Environmental Cell Division,
Madurai

N.W : IMPLEMENTATION AND MONITORING OF ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR NAMBIYAR SUB BASIN OF NAMBIYAR BASIN IN TIRUNELVELI DISTRICT.

DETAILED ESTIMATE

Sl.No	Description	No		L		B		D	QTY	
I	**Water quality Monitoring**									
1	Collection and testing charges of water samples from surface sources and fisheries activity tanks	LS							LS	
II	**Monitoring and reporting compliance of ESMP, ESMF and updating GRM**									
2	Charges towards conveyance arrangement for site inspection, Sample collection, Charges for Photography, documentation and preparation of reports for ESMP, ESMF and updating GRM status	LS							LS	
III	**Propagation of environment, health and safety awareness in work sites**									
3	Printing of Pamphlets	1	x	150	-	-	-		150	Nos
4	Printing and fixing Site display boards of size 2' x 2'	1	x	10	-	-	-		10	Nos
IV	**Propagation of environmental awareness to public**									
5	Printing sticker of size- 18" x 12" (including DTP charges)	1	x	110	-	-	-		110	Nos
6	Printing of Pamphlets	1	x	400	-	-	-		400	Nos
7	Provision for nudging through stickers and wall paintings	LS							LS	
8	Planting of tree saplings along with live fencing	LS							LS	
9	Transportation charges	LS							LS	
V	**Training / Capacity building programmes**									
10	Safeguard refresher training for nodal and field officials of implementing agencies (50 participants per programme)	1	x	1	-	-	-		1	No
11	Capacity building for contractor, WRD officials and labourers related to environmental ethics and code of practises. (50 participants per programme)	1	x	1	-	-	-		1	No
IV	**Environmental Monitoring**									
12	Engaging Technical Assistant grade II for assisting dept. officers in field works, preparation of reports regarding environmental activities.	1	x	25	-	-	-		25	Days

13	Engaging jeep driver for driving departmental vehicle during site inspection	1	x	210	-	-	-	210	Days
14	Engaging computer operator Grade-II for documentation works	1	x	145	-	-	-	145	Days
15	Engaging Mazdoor Gr I for collection of water samples and data, assisting in field and office works and carrying other preparatory works for capacity building programmes etc.	1	x	30	-	-	-	30	Days
16	Purchase of sampling consumables for collecting water samples	LS						LS	
17	Documentation and preparation of Consolidated Reports.	LS						LS	
18	Up gradation of computer, Maintenance, purchase of consumables for Computer etc.	LS						LS	
VII	**Provision for GST @12%**								
VIII	**Provision for Labour Welfare fund @ 1%**	**LS**						LS	
IX	**Unforeseen and petty supervision charges**	**LS**						LS	

30/07/2020

Assistant Engineer, PWD / WRD
Environmental Cell Section – IV,
Tirunelveli

30/7/20

Assistant Executive Engineer, PWD / WRD
Environmental Cell Subdivision,
Tirunelveli

30/7/2020

Executive Engineer, PWD / WRD
Environmental Cell Division,
Madurai

N.W : IMPLEMENTATION AND MONITORING OF ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR NAMBIYAR SUB BASIN OF NAMBIYAR BASIN IN TIRUNELVELI DISTRICT.

ABSTRACT

Sl.No	Qty		Description	Rate	Per	Amount
I	**Water quality Monitoring**					
1	LS		Collection and testing charges of water samples from surface sources and fisheries activity tanks	LS		1,00,000.00
II	**Monitoring and reporting compliance of ESMP, ESMF and updating GRM**					
2	LS		Charges towards conveyance arrangement for site inspection, Sample collection, Charges for Photography, documentation and preparation of reports for ESMP, ESMF and updating GRM status	LS		95,000.00
III	**Propagation of environment, health and safety awareness in work sites**					
3	150	Nos	Printing of Pamphlets	20.00	No	3,000.00
4	10	Nos	Printing and fixing Site display boards of size 2' x 2'	400.00	No	4,000.00
IV	**Propagation of environmental awareness to public**					
5	110	Nos	Printing sticker of size- 18" x 12" (including DTP charges)	50.00	No	5,500.00
6	400	Nos	Printing of Pamphlets	20.00	No	8,000.00
7	LS		Provision for nudging through stickers and wall paintings	LS		10,000.00
9	LS		Planting of tree saplings along with live fencing	LS		10,000.00
9	LS		Transportation charges	LS		5,000.00
V	**Training / Capacity building programmes**					
10	1	No	Safeguard refresher training for nodal and field officials of implementing agencies (50 participants per programme)	LS		40,000.00
11	1	No	Capacity building for contractor, WRD officials and labourers related to environmental ethics and code of practises. (50 participants per programme)	LS		40,000.00
IV	**Environmental Monitoring**					
12	25	Days	Engaging Technical Assistant grade II for assisting dept. officers in field works, preparation of reports regarding environmental activities.	844.00	Day	21,100.00

13	210	Days	Engaging jeep driver for driving departmental vehicle during site inspection	592.00	Day	1,24,320.00
14	145	Days	Engaging computer operator Grade-II for documentation works	844.00	Day	1,22,380.00
15	30	Days	Engaging Mazdoor Gr I for collection of water samples and data, assisting in field and office works and carrying other preparatory works for capacity building programmes etc.	502.00	Day	15,060.00
16	LS		Purchase of sampling consumables for collecting water samples	LS		1,000.00
17	LS		Documentation and preparation of Consolidated Reports.	LS		5,000.00
18	LS		Up gradation of computer, Maintenance, purchase of consumables for Computer etc.	LS		7,000.00
			Sub Total			**6,16,360.00**
VII			**Provision for GST @12%**			73,963.00
VIII	LS		Provision for Labour Welfare fund @ 1%	LS		7,000.00
IX	LS		Unforeseen and petty supervision charges	LS		2,677.00
			TOTAL	**700000.00**		

Rupees Seven Lakhs only

30/07/2020

Assistant Engineer, PWD / WRD
Environmental Cell Section – IV,
Tirunelveli

30/7/20

Assistant Executive Engineer, PWD / WRD
Environmental Cell Subdivision,
Tirunelveli

30/7/2020

Executive Engineer, PWD / WRD
Environmental Cell Division,
Madurai

Annexure – I

Detailed Project Report (DPR) Preparation

Chapter on “Environmental and Social Management”

1.	Title “Environmental and Social Management”
2.	Summary of Walk-Through Survey
3.	Summary of Feed Back along with planned activities
4.	Special features of the Sub Basin
5.	Overview of Gender Strategy
6.	GRM-Mechanism & Schedule for establishment
7.	ESMP & Screening Checklist
8.	Plan of activities for Environmental Monitoring and Awareness

Annexure – II

WALK THROUGH SURVEY (WTS)

1. Walk through survey in the project area of Nambiyar sub basin were conducted during the month of Feburary 2020 on the following days. 3-02-2020, 4.02.2020, 12.02.2020, 14.02.2020, 15.02.2020, 17.02.2020 and 19.02.2020.
2. No. of Villages covered : 16 villages
3. Category of Villagers participated :
   i. No. of farmers/ WUA Members participated : 402
   ii. No. of Women Self Help Group Members participated : 5
   iii. No. of representatives from NGO's : ---
   iv. No. of Landless farmers : Nil
   v. Panchayat Representatives Participation:
      a) President - ~~Yes~~ /No
      b) Secretary - Yes/~~No~~
      c) Members - ~~Yes~~ /No
      d)
4. Feed Back (Mention the chapter in DPR where the WTS feedback is recorded): 4

i. WRD Works:

Tanks (No's)	Anicuts (No's)	Supply Channel/Canal (km)
40	-	4 km

ii. Agri. Related (Agriculture/Horticulture/TNAU/AED):

Soil Type	Existing Cropping Pattern	Major Crops	Major Issues	Farm Ponds	Others
Inceptisol, Alfisol, Vertisol	1. Paddy – Vegetables (tomato, chillies, onion, bhendi, brinjal) 2. Paddy – pulses 3. Banana – Paddy (two year crop rotation)	. Paddy, Pulses, vegetables, banana	1.Lack of quality planting materials 2. Water shortages 3. Pest problems 4. Lack of Community approach in farming 5. Market rejection of produces due to Pesticide residue problems	To sustain water for crops by introducing farm ponds were requested by farmers and 12 locations were identified for Farm ponds	

5. Livelihood related (Animal Husbandry/Fisheries):

Veterinary Services (Artificial Insemination, Deworming, Infertility, Disease Surveylence& Prevention, Fodder Development)	**Fisheries Activity(Aquaculture in Farm Ponds and Irrigation Tanks)**	**Others**
1. There is gap in demand to supply of fodder for farm animals. 2. Lack of knowledge in managing Cross breed animals. Hence diseases like mastitis, worm infestations are major issues for cattle owners. 3. Infertility of cattles. Many breedable population has not yet been covered under Artificial insemination. 4. Lack of animal identification system which constraints the disease control and planned breeding interventions. 5. Insufficiency of disease diagnostic facilities	It is proposed to carry out aquaculture in irrigation tanks where water is available for prolonged duration. It is also proposed to carry out aquaculture in selected farm ponds.	

6. Special Features of the sub basin:
   i. Ecologically sensitive area if any - Nil
   ii. Sensitive Crops :
      a) Water guzzling: Paddy, Banana
      b) Less Water : Maize, Minor Millets, Pulses
      c) Others:

7. Gender Strategy:
   i. Percentage of Women expected to involve in
      a) WRD Activities - 30%
      b) Agri. related Activities - 50%
      c) Livelihood related - 75%

8. Environmental Interventions proposed based on Observations:
   - For WRD works, the following Environmental interventions are proposed.
     - Monitoring of ESMP, GRM, Monitoring of water quality for pre and post project period by collection and testing of water samples.
     - Implementation of environmental Code of Practices
     - Creating Capacity Building programmes regarding environmental awareness to WRD Engineers, Contractors.
   - Regarding Animal Husbandry activity, safety measures should be implemented while disposing the generated wastes such as Syringes, Gloves, Glass wares during artificial insemination, deworming programmes.
   - It is proposed to collect water samples in tanks where fisheries activities are proposed to be carried out in order to assess the water quality.

Checklist

1. Walk through survey form attached :**Yes**
2. Environmental and Social Management Plan (ESMP) and Screening Checklist

Total TNIAMP Packages	**Total no of**	**Number of tanks above 7m height**	**Number of tanks with history of floods/breaches or in seismic zone for the past 10 years**	**Number of works near forest wild life areas**	**No of tanks in the proximity of industrial areas**	**Number of tanks under state dam safety committee inspection**
1	Tanks : 40 Nos, Supply channels: 4.00 km	2	Nil	Nil	Nil	Nil

3. Summary of Walk- Through survey Included :**Yes**
4. Summary of Feed Back along with planned activities Included: **Yes**
5. Special features of the Sub Basin Included: **No**
6. Overview of Gender Strategy Included: **Yes**
7. Mechanism & Schedule for establishment of GRM Included: **Yes**
8. Plan of activities for Environmental Monitoring and Awareness Included: **Yes**

Submitted by

30/07/2020

Assistant Engineer, PWD / WRD
Environmental Cell Section – IV,
Tirunelveli

Approved by

30/7/2020.

Executive Engineer, PWD / WRD
Environmental Cell Division,
Madurai

Reviewed by

Social Development Specalist&
Environmental Specialist, MDPU

Environmental and Social Screening Tool

Component A1: Irrigation systems modernization

<table>
<tr><td colspan="5">1. GENERAL</td></tr>
<tr><td colspan="5">1.1. Sub-Basin: Nambiyar Sub basin</td></tr>
<tr><td colspan="5">1.2. Package no.: 1</td></tr>
<tr><td colspan="5">1.3. No. of Canals/Channels: 58.165 km length</td></tr>
<tr><td colspan="5">1.4. Length (m) (min to max): 4000m to 22950m</td></tr>
<tr><td colspan="5">1.5. No. of Tanks: 40</td></tr>
<tr><td colspan="5">1.6. Area of tanks (hectares) (min to max): 1.87 ha to 203.84 ha</td></tr>
<tr><td colspan="5">1.7. Height of tank embankment (m) (min to max): 1.605 m to 8.06 m</td></tr>
<tr><td>1.8. Average annual rainfall in command area (mm)</td><td colspan="4">682.4 mm</td></tr>
<tr><td>1.9. Soil type in command area</td><td colspan="4">Inceptisol, Alfisol and Vertisol. More prominent type is Inceptisol.</td></tr>
<tr><td></td><td>Category 1</td><td colspan="2">Category 2</td><td>Category 3</td></tr>
<tr><td>1.10. Command area (Ha)</td><td>More than 10,000 Ha
--</td><td colspan="2">100 – 10,000 Ha
3 Tanks</td><td>Less than 100 Ha
37 Tanks & 1 Anicut supply channel</td></tr>
<tr><td>1.11. Command area under cultivation (Ha / %)</td><td>Nil</td><td colspan="2">87%</td><td>89 %</td></tr>
<tr><td>1.12. Depth of ground water table in command area (m)</td><td>☐Very Deep aquifer (below 20m)</td><td>☐Deep aquifer (10 - 20m)</td><td>☐ Moderate (5 - 10m)</td><td>✓☐Shallow (0-5m)</td></tr>
<tr><td>1.13. Ground water zone classification as per CGWB</td><td>☐Over-exploited</td><td>☐Semi-critical</td><td>☐Critical</td><td>✓☐Safe</td></tr>
<tr><td>1.14. Command area of Canals/Tanks/Anicuts (list name of villages)</td><td colspan="4"><table><tr><td>Sl No</td><td>Name of Canals /Tanks /Anicut</td><td>Name of village</td><td>Ayacut (Ha)</td></tr><tr><td></td><td>List enclosed</td><td></td><td></td></tr></table></td></tr>
<tr><td>1.15. Status of Water User Associations (No’s)</td><td colspan="2">☐WRCP: ✓
10 Nos of WUA in 40 Tanks & 1 Anicut supply channel</td><td colspan="2">☐IAMWARM: ☐To be Formed:</td></tr>
</table>

1.16. Structures damaged during 2015 floods	☐Tank ☐ Canal ☐None Nil
1.17. Is the proposed project likely to contaminate water due to use of heavy machinery, human waste discharge, solid waste dumping, use of agro chemicals (Fertilizers, pesticides etc?) 1.18. If yes, whether appropriate safeguards are proposed? (write a note)	~~☐ Yes~~ ☐No NA
1.19. Works to be undertaken	☐Desilting of supply channel ✓ ☐Tank Bund Strengthening ✓ ☐Repair to Anicut Supply channel sluice ✓ ☐Repair and Reconstruction of Tank sluice ✓ ☐Repair to Weir ✓ ☐Model sections for tank bund ✓ ☐Removal of Vegetation
1.20. Is the proposed project likely to affect any natural habitats/conversion of natural habitats/ cultural properties/ wetlands/ wildlife/ migratory routes? 1.21. If yes, whether appropriate safeguards are proposed? (Write note)	~~☐ Yes~~ ☐No
2. Rehabilitation of canal/channels:	
2.1. Desilting of canal/channels (i) Volume of silt to be dredged (cum) (ii) Volume of dredged silt to be used in	Not necessary

embankment strengthening (cum) (iii) Volume of dredged silt to be disposed (cum)	
2.2. Identified burrow pits site(s) along with distance from the work site	Not necessary
2.3. Identified silt testing laboratory along with distance from the work site	Not necessary
2.4. Identified silt disposal site(s) along with distance from the work site	Not necessary
3. Tank – Revival and bund strengthening	
3.1. Is tank in an eco-sensitive area?	☐ ~~Yes~~ ☐ No
3.2. Identified disposal site for waste from tanks	Not necessary
3.3. Earthwork: (i) Volume of silt to be dredged (cum) (ii) Volume of dredged silt to be used in embankment strengthening (cum) (iii) Volume of dredged silt to be disposed (cum)	3,57,892.26 cu.m 3,57,892.26 cu.m Nil
3.4. Identified burrow pits site(s) along with distance from the work site	Not necessary
3.5. Identified silt testing laboratory along with distance from the work site	Not necessary
3.6. Identified silt disposal site(s) along with distance from the work site	Not necessary
4. Rehabilitation of Anicuts	

4.1. Replacement of anicut proposed?	☐Yes ☐No✓
4.2. Identified site(s) for disposal of debris along with distance from work site 4.3. Identified site(s) for disposal of iron waste/scrap100m	
5. Equipment/machinery to be deployed	
5.1. Hydraulic Excavator:	✓ ☐Yes (3 No's) ☐ None ☐ NA
5.2. Power roller	✓ ☐Yes (1 No's)1 ☐ None ☐ NA
5.3. Vibrated Compactor	✓ ☐Yes (1 No's) ☐ None ☐ NA
5.4. Tipper/lorry	✓ ☐Yes (3 No's) ☐ None ☐ NA
5.5. Water lorry	✓ ☐Yes (1 No's) ☐ None ☐ NA
5.6. Concrete mixer machine	✓☐Yes (2 No's) ☐ None ☐ NA
5.7. Concrete vibrator	✓☐Yes (4 No's) ☐ None ☐ NA
5.8. Any other machinery/ equipment (list with nos.)	----
6. **Social Screening**	
6.1. Will the proposed project result in physical displacement of any person/ family/ household in selecting the site for implementing the project? 6.2. Will the proposed project result in loss of land cultivated by encroachers and others 6.3. If Yes, RAP prepared?	~~☐Yes~~ ☐No ~~☐NA~~ ~~☐Yes~~ ☐No ~~☐NA~~ ~~☐Yes~~ ☐No ☐NA

6.4. Have the beneficiaries been identified?	☐ Yes ✓ ☐ No ☐ NA
6.5. Are WUAs willing to take up activities under the project?	☐ Yes ✓ ☐ No ☐ NA
6.6. Gender Action Plan required?	☐ Yes ☐ No ☐ NA
6.7. If Yes, is the Plan prepared?	☐ Yes ☐ No ☐ NA
6.8. Vulnerable group development plan required?	☐ Yes ☐ No ☐ NA
6.9. If Yes, is the Plan prepared?	☐ Yes ☐ No ☐ NA
6.10. Are the documents, books and accounts being maintained by WUA?	☐ Yes ✓ ☐ No ☐ NA
6.11. OFD works in each WUA including link drain construction reviewed?	☐ Yes ☐ No✓ ☐ NA

Prepared by:

22/2/2020

Assistant Engineer,PWD/WRD.,
Irrigation section
Valliyoor

Assistant Executive Engineer,PWD/WRD(i/c)
Nambiyar Basin Sub division
Nanguneri

Approved by:

22/2/2020

Executive Engineer,PWD/WRD.,
Chittar Basin Division
Tenkasi@Kudiyiruppu

Reviewed by: _____

Executive Engineer, Env. Cell Division

8. GROUND WATER

8.1 Ground Water Component

The tanks in Nambiyar Sub basin which are proposed to be rehabilitated under Phase III of TNIAMP comes under Eruvadi, Nanguneri, Vallioor, Panagudi, Samugarengapuram, Thisayanvillai and Vijayanarayanam firkas of Kalakkad, Nanguneri, Vallioor and Radhapuram blocks in Tirunelveli District. These firkas have been classified as Safe and semi critical zones in Ground Water Categorisation.

It is not required to provide Artificial Recharge Well structures in these zones. Therefore the proposal for Construction of Artificial Recharge Well Structures inside the tanks under Ground Water Component in Nambiyar Sub basin has not been included in this DPR. Hence the Ground Water Component in respect of Nambiyar Sub basin is NIL.

28/8/2020

Assistant Engineer,
Ground Water Section I,
Nagercoil

28/8/2020

Assistant Executive Engineer,
Ground Water SubDivision,
Nagercoil

29/8/2020

Executive Engineer, PWD/WRD,
Ground Water Division,
Tirunelveli

PUBLIC WORKS DEPARTMENT

From
Thiru N.Gopalakrishnan, M.E.,MBA
Executive Engineer, PWD,
Ground Water Division
Nagercoil.

To
The Executive Engineer, PWD,
Chittar Basin Division
Tenkasi @ Kudiyiruppu.

Lr.No. 37 M1 DB/ JDO-2 / F IAMWARM / 2020 Dt 24.07.2020

Sir,

Sub:- TNIAMP (TN IAMWARM - III) Works - 10 Sub basins - DPR - Recharge well in the Ground Water Components – Not included in DPR – Reasons Submitted - Reg

Ref:- 1.The Engineer in Chief, WRD and Chief Engineer (General), PWD, Chepauk, Chennai-5 Lr No: TNIAMP /F142 /Phase III /2019dt 29.01.2020
2.G.O (Ms) No.161 Public Works (R2) Department dt 23.10.2019

As per the G.O cited 2 above, the tanks of Nambiyar Sub Basin for which DPR has heen prepared for TNIAMP (TN IAMWARM - III) works comes under Eruvadi, Nanguneri, Vallioor, Panagudi, Samugarengapuram, Thisayanvilai and Vijayanarayanam firkas of Kalakad, Nanguneri, Vallioor and Radhapuram blocks in Tirunelveli district. The mentioned firkas have been classified as safe and semicritical zones in Ground Water Categorization.

It is not required to provide Artificial Recharge Well Structures in the safe and semicritical zones. Therefore the proposals for Recharge well under Ground Water Component in Nambiyar Sub basin has not been included in DPR.

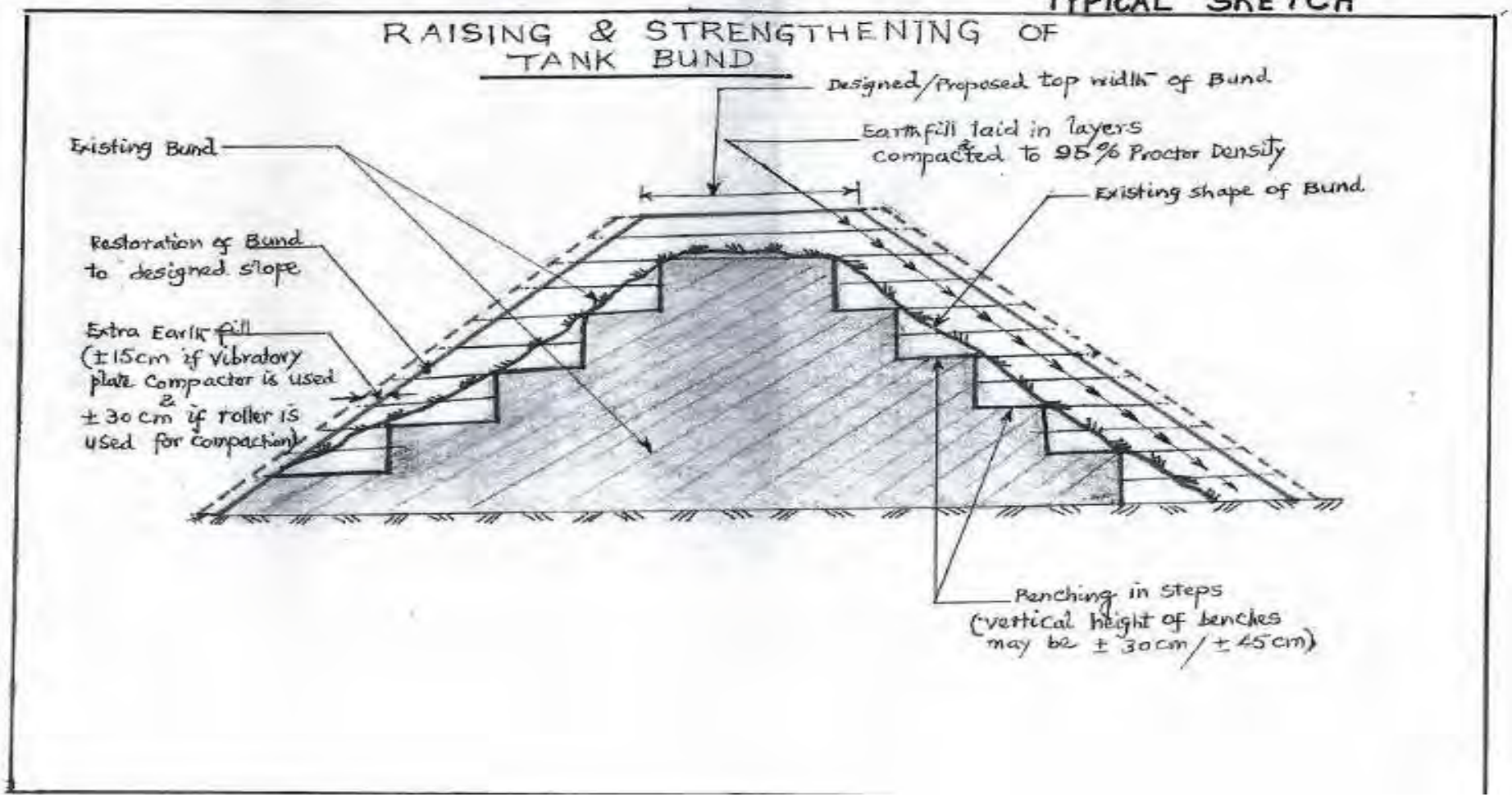
Hence the Ground Water Component in respect of Nambiyar Subbasin (TN IAMWARM III) may be treated as 'NIL'.

This is for favour of information please

Executive Engineer, PWD/WRO,
Ground Water Division,
Tirunelveli.

9. DRAWINGS

TYPICAL SKETCH

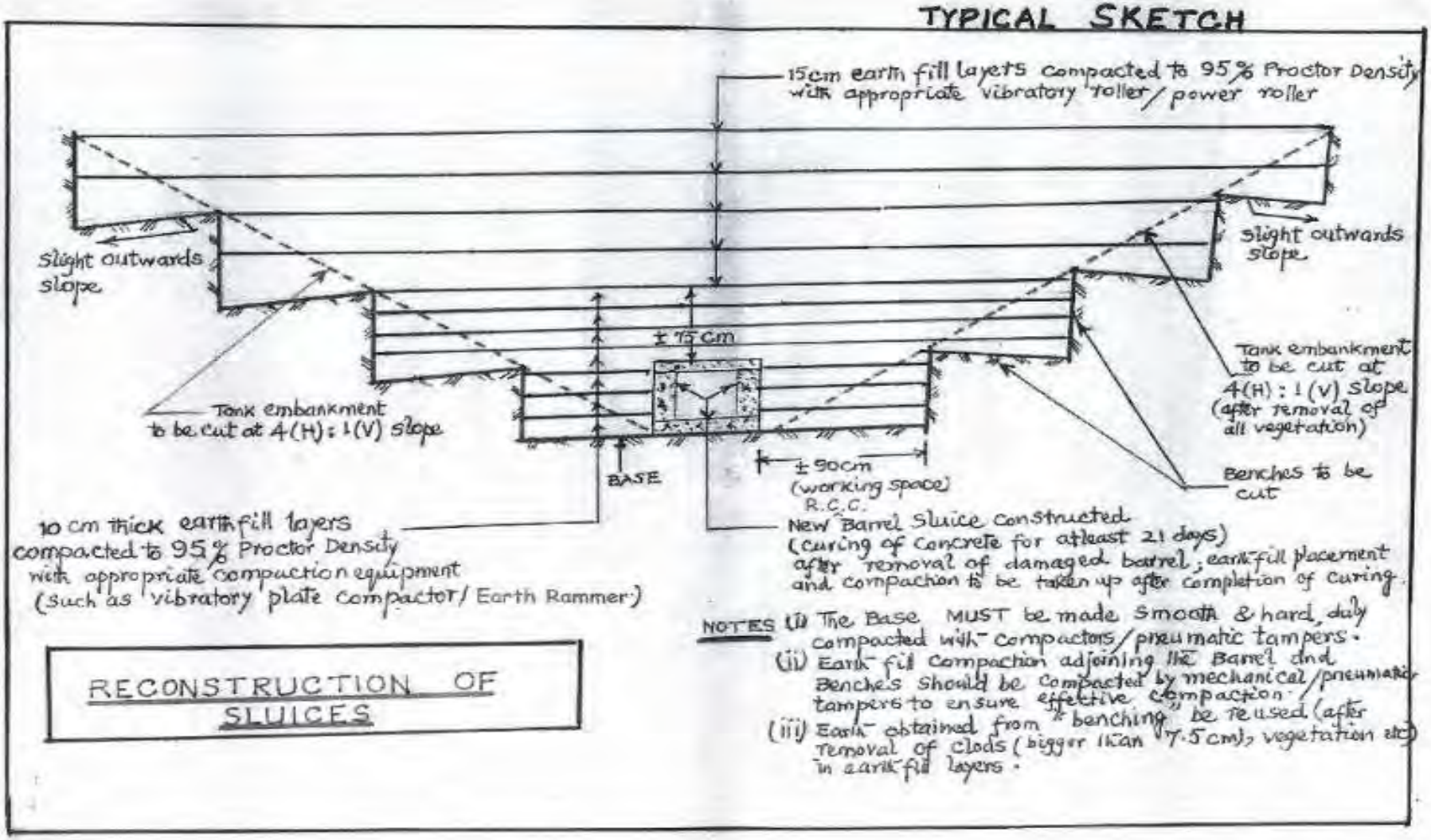


31/8/2020
Assistant Engineer, PWD/WRD.,
Irrigation Section,
Vallioor

Assistant Executive Engineer, PWD/WRD.,
Nambiyar Basin Sub Division,
Nanguneri

1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

TYPICAL SKETCH



RECONSTRUCTION OF SLUICES

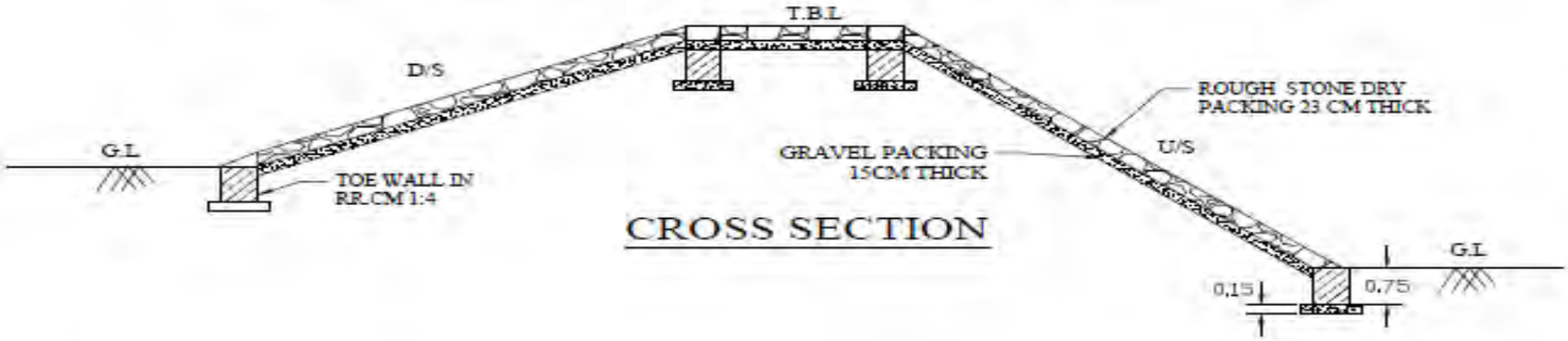
NOTES (i) The Base MUST be made smooth & hard, duly compacted with compactors/pneumatic tampers.
(ii) Earth fill compaction adjoining the Barrel and Benches should be compacted by mechanical/pneumatic tampers to ensure effective compaction.
(iii) Earth obtained from benching be reused (after removal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

31/8/2020
Assistant Engineer, PWD/WRD.,
Irrigation Section,
Vallioor

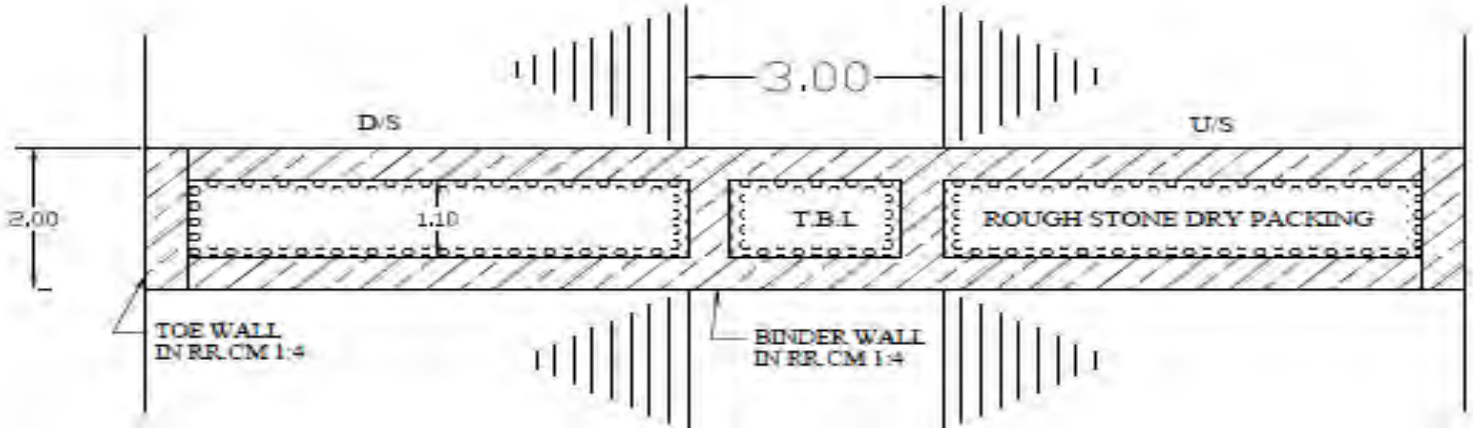
Assistant Executive Engineer, PWD/WRD.,
Nambiyar Basin Sub Division,
Nanguneri

1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

TYPICAL SECTION FOR MODEL SECTION



CROSS SECTION



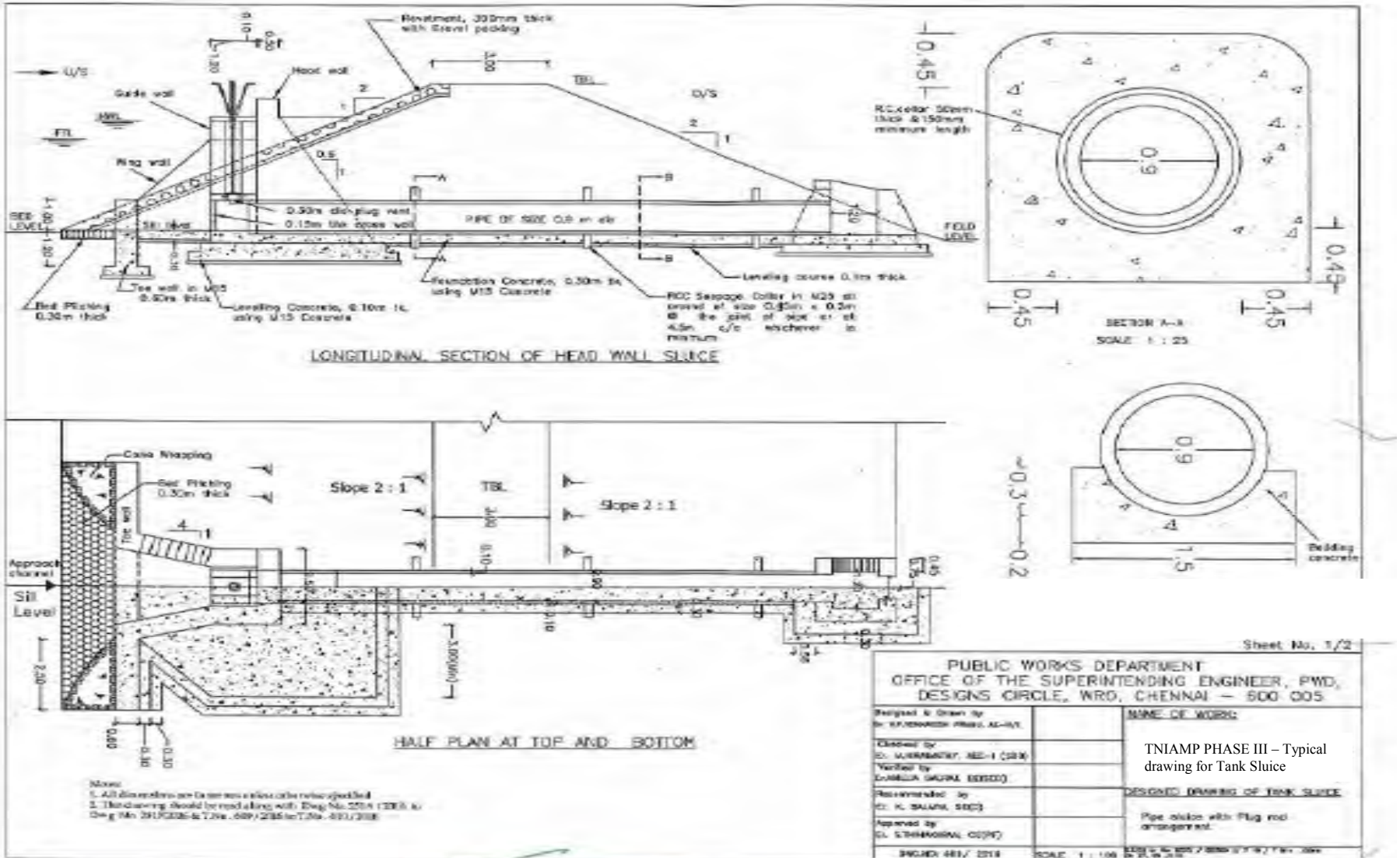
31/8/2020
Assistant Engineer, PWD/WRD.,
Irrigation Section,
Vallioor

Assistant Executive Engineer, PWD/WRD.,
Nambiyar Basin Sub Division,
Nanguneri

1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

Proposed Reconstruction of sluice in Tanks

Sl. No	Name of tank	Sluice No.
1.	Padalayar Tank	1
2.	Vallioor Puthukulam	1
3.	Nambikurichikulam	1
4.	Ponathikulam	1
5.	Sinammalpuram Bigtank	1
6.	Nallapethankulam	1
7.	Kovanerikulam	1
8.	Thankaiyankulam	1
9.	Panisakulam	1
10.	Sittur Keelkulam	1
	Total	**10 Nos**



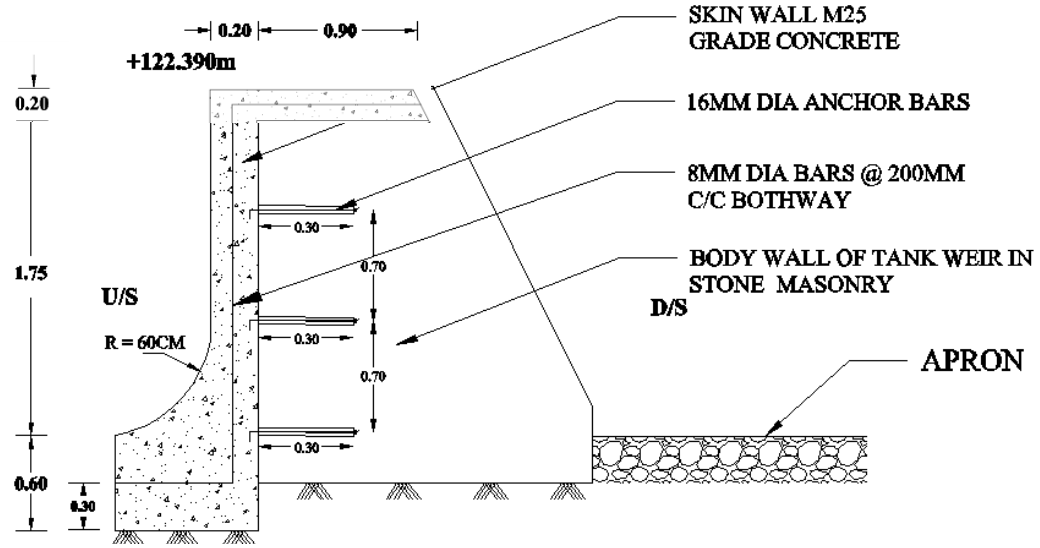
31/8/2020
Assistant Engineer, PWD/WRD.,
Irrigation Section,
Vallioor

Assistant Executive Engineer, PWD/WRD.,
Nambiyar Basin Sub Division,
Nanguneri

1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

Proposed Repair to weir in Tanks		
Sl. No	Name of tank	Weir No
1.	Nadukkamparaikulam	1
2.	Nambikurichikulam	1
3.	Kannankulam	1
4.	Palathikulam	1
5.	Sinammalpuram Bigtank	1
6.	Veetrithankulam	1
7.	Achampadukulam	1
8.	Panisakulam	1
	Total	**8 Nos**

TYPICAL CROSS SECTION OF SKIN WALL (Weir Repair)



1) Joints on u/s surface to be raked to 25mm depth & surface roughened by chipping.
2) Drill- holes of 50mm to be filled with 1:2 mortar and 16mm Anchor bars to be pushed in. The roughened surface to be kept wet for 72 hours & cement slurry (1:2:5) of 0.70 water - cement ratio be applied over the surface prior to placement of skin concrete.
3) Cement concrete of M25 Grade concrete is to be used with 20mm maximum aggregate size.
4) Curing is to be done for 21.days

* Thickness of skin concrete : 15cm @ top & 20cm at bottom for weir of height upto 1.50m and 20cm at top & 30cm at bottom for weir of height more than 1.50m

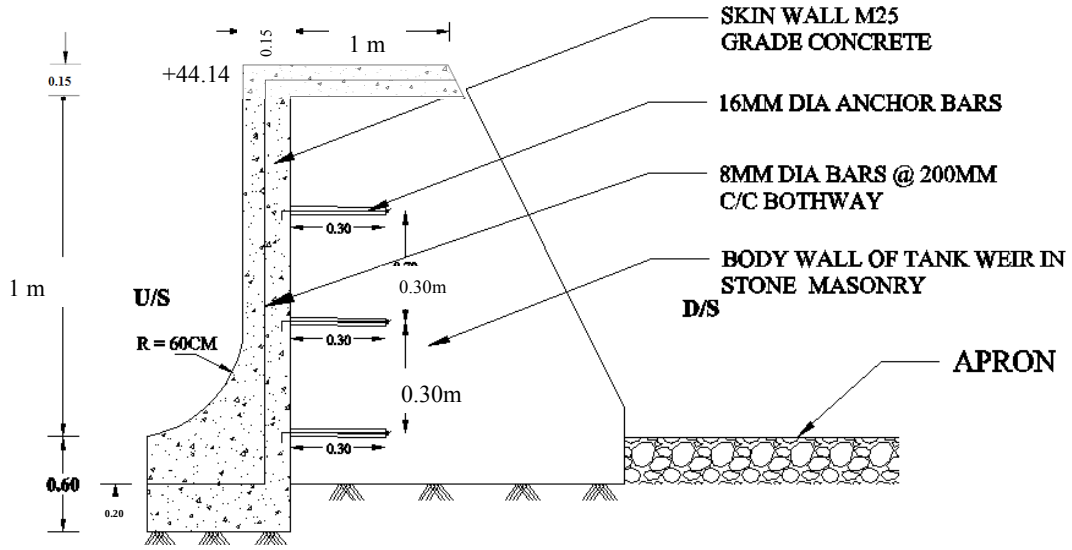
ALL DIMENSIONS ARE IN METRE NOT TO SCALE	**NADUKKAMPARAIKULAM**

31/8/2020
Assistant Engineer, PWD/WRD.,
Irrigation Section,
Vallioor

Assistant Executive Engineer, PWD/WRD.,
Nambiyar Basin Sub Division,
Nanguneri

1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

TYPICAL CROSS SECTION OF SKIN WALL (Weir Repair)



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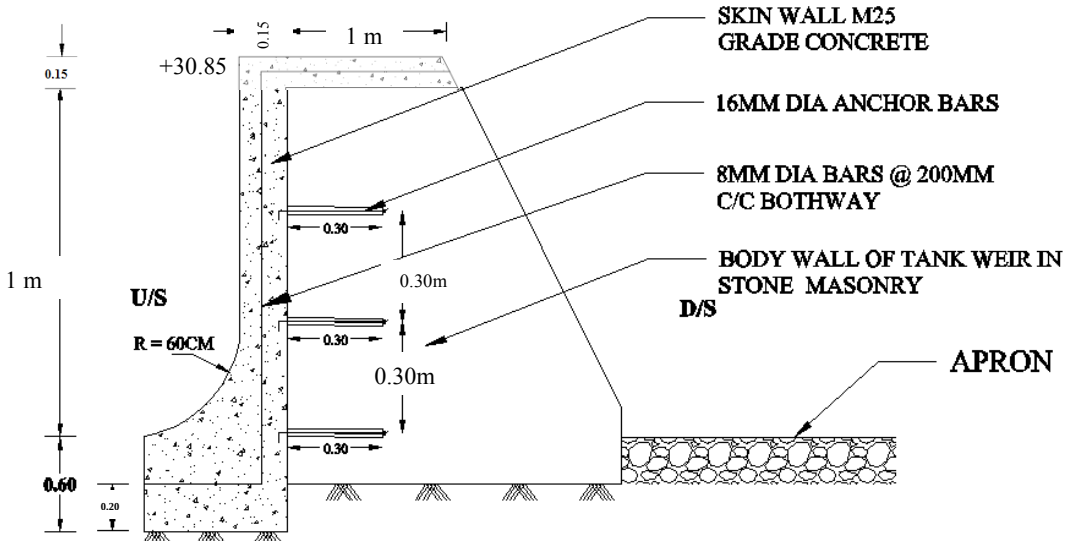
ALL DIMENSIONS ARE IN METRE NOT TO SCALE	**NAMBIKURICHIKULAM**

31/8/2020
Assistant Engineer, PWD/WRD.,
Irrigation Section,
Vallioor

Assistant Executive Engineer, PWD/WRD.,
Nambiyar Basin Sub Division,
Nanguneri

1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

TYPICAL CROSS SECTION OF SKIN WALL (Weir Repair)



1) Joints on u/s surface to be raked to 25mm depth & surface roughened by chipping.
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3) Cement concrete of M25 Grade concrete is to be used with 20mm maximum aggregate size.
4) Curing is to be done for 21.days

* Thickness of skin concrete : 15cm @ top & 20cm at bottom for weir of height upto 1.50m and 20cm at top & 30cm at bottom for weir of height more than 1.50m

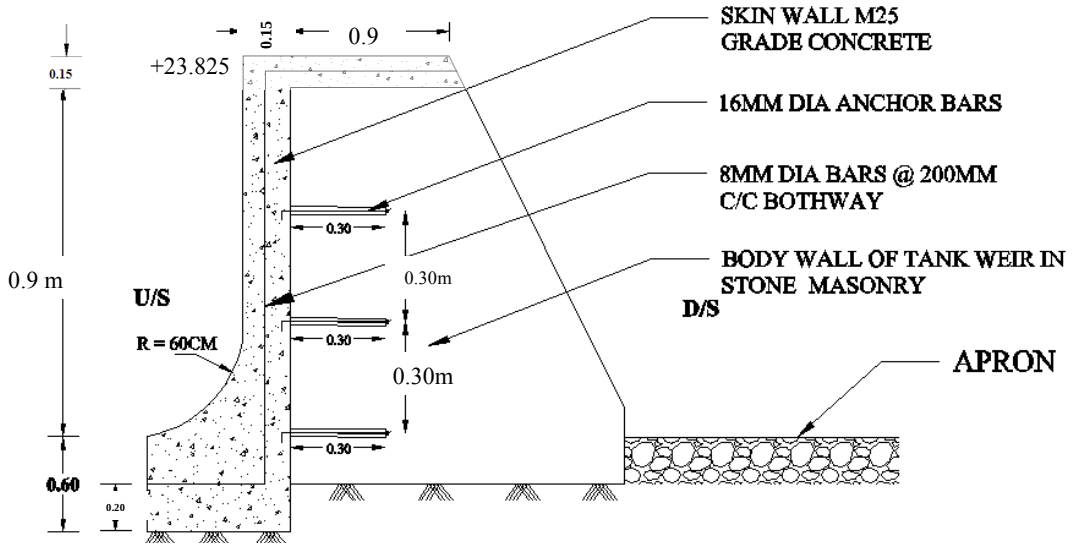
ALL DIMENSIONS ARE IN METRE NOT TO SCALE	KANNANKULAM

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Assistant Engineer, PWD/WRD.,
Irrigation Section,
Vallioor

Assistant Executive Engineer, PWD/WRD.,
Nambiyar Basin Sub Division,
Nanguneri

1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

TYPICAL CROSS SECTION OF SKIN WALL (Weir Repair)



1) Joints on u/s surface to be raked to 25mm depth & surface roughened by chipping.
2) Drill- holes of 50mm to be filled with 1:2 mortar and 16mm Anchor bars to be pushed in. The roughened surface to be kept wet for 72 hours & cement slurry (1:2:5) of 0.70 water - cement ratio be applied over the surface prior to placement of skin concrete.
3) Cement concrete of M25 Grade concrete is to be used with 20mm maximum aggregate size.
4) Curing is to be done for 21.days

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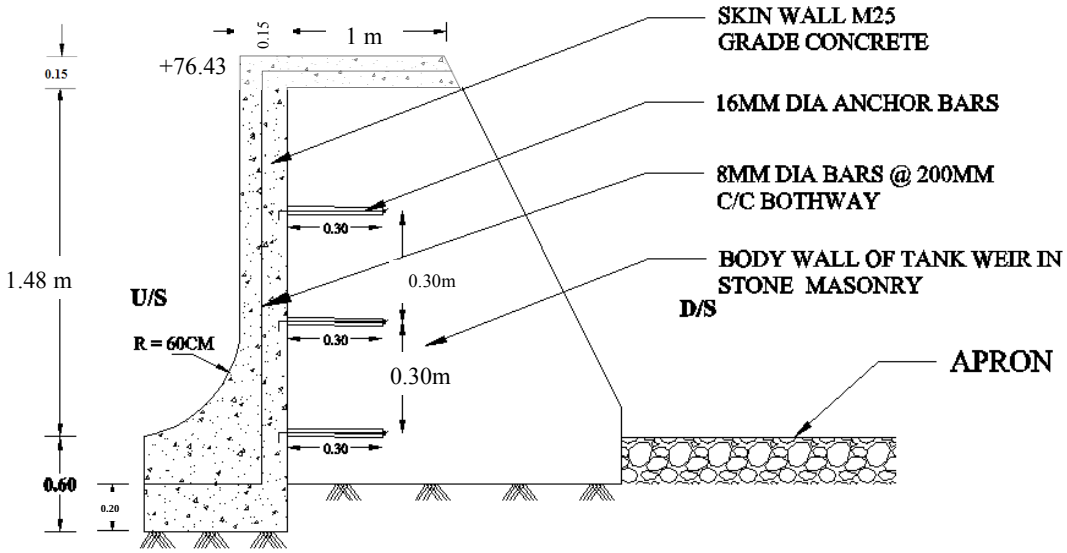
ALL DIMENSIONS ARE IN METRE NOT TO SCALE	**PALATHIKULAM**

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Nanguneri

1/9/2020
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Tenkasi.

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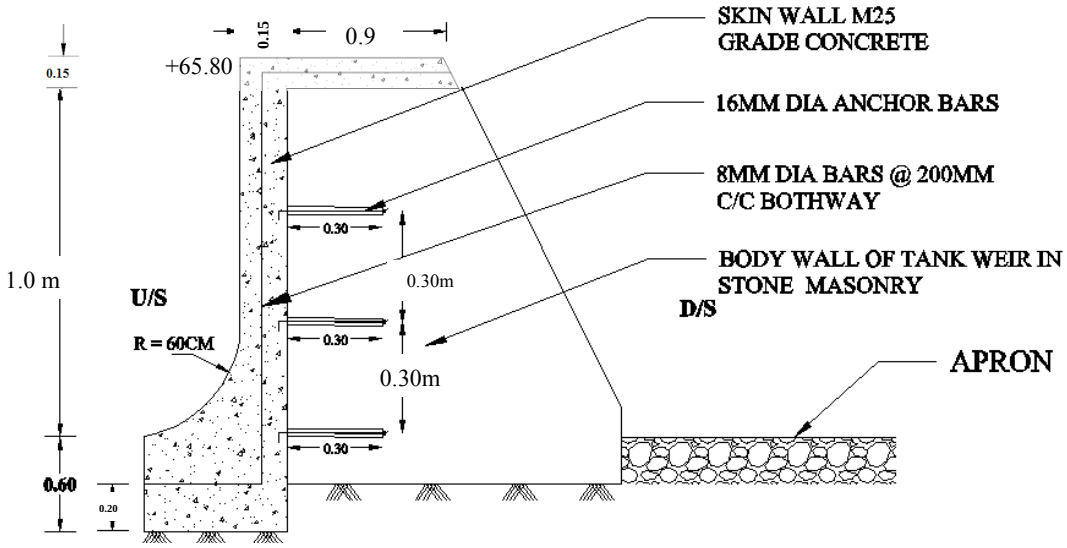
ALL DIMENSIONS ARE IN METRE NOT TO SCALE	**Sinammalpuram and Pudukulam**

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1/9/2020
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Chittar Basin Division,
Tenkasi.

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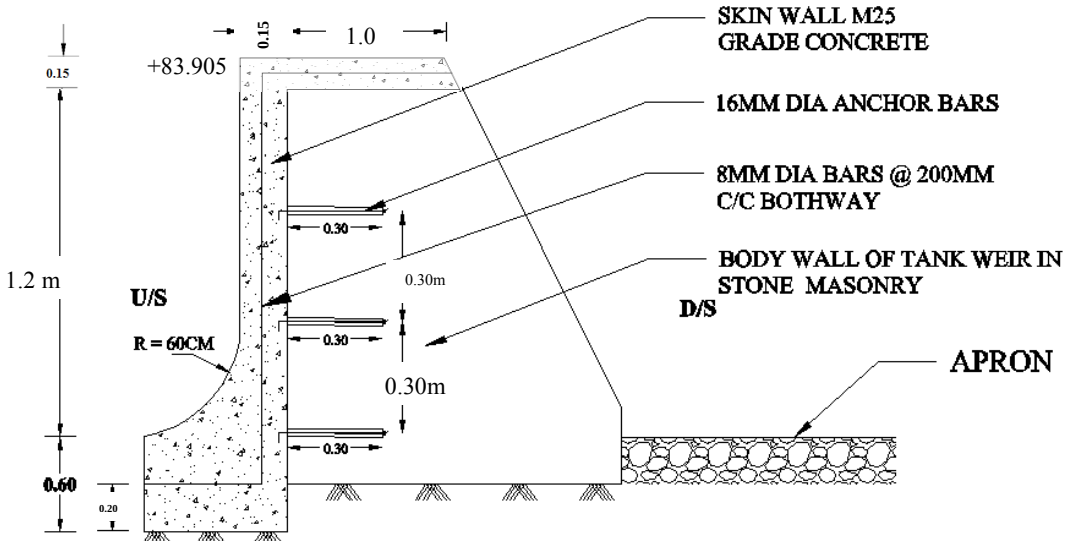
ALL DIMENSIONS ARE IN METRE NOT TO SCALE	VEETRITHANKULAM

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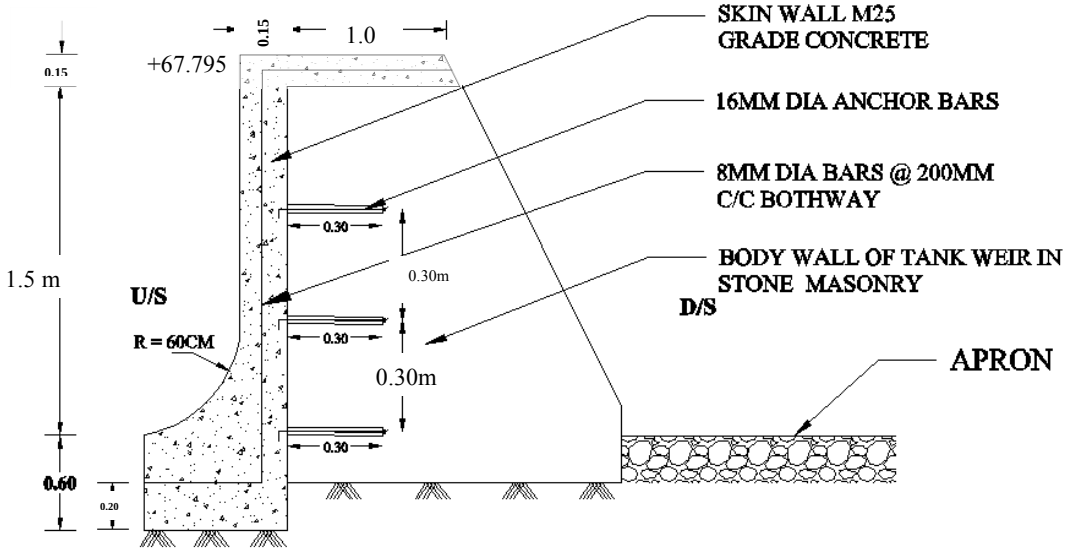
ALL DIMENSIONS ARE IN METRE **NOT TO SCALE**	**ACHAMPADUKULAM**

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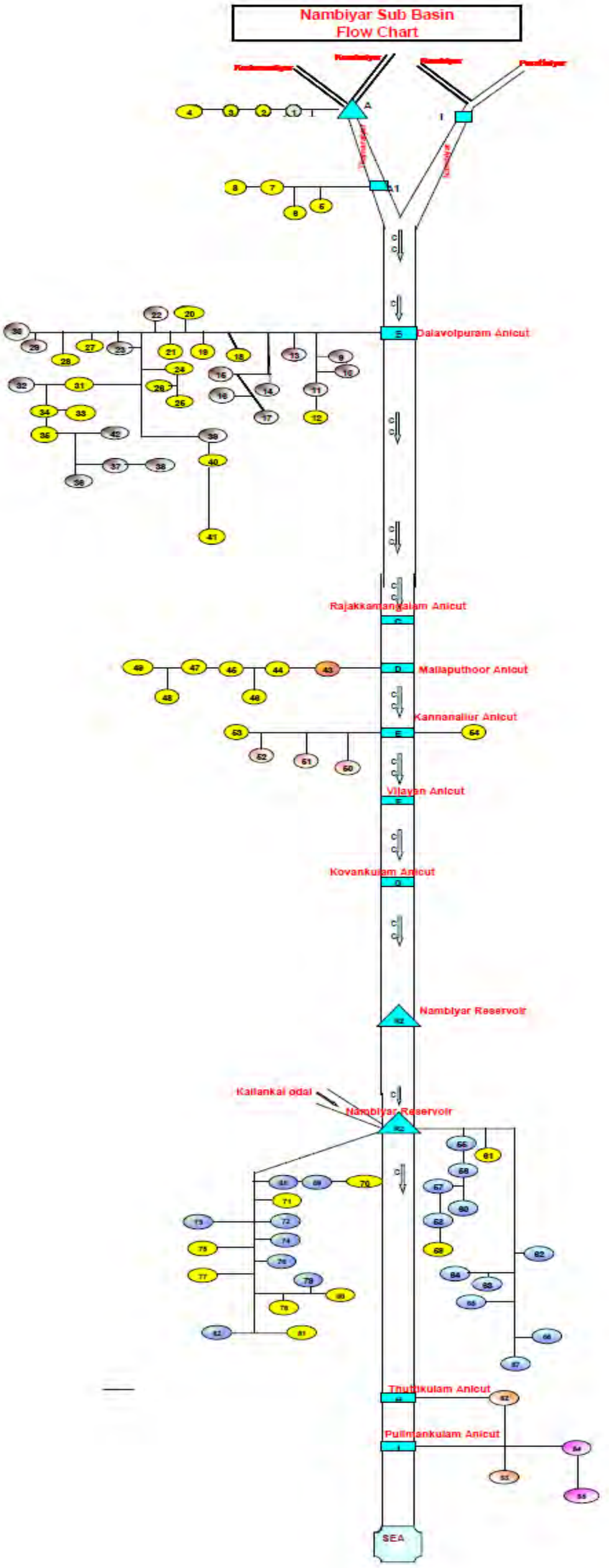
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ALL DIMENSIONS ARE IN METRE NOT TO SCALE	**PANISAKULAM**

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Vallioor

Assistant Executive Engineer, PWD/WRD.,
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Nanguneri

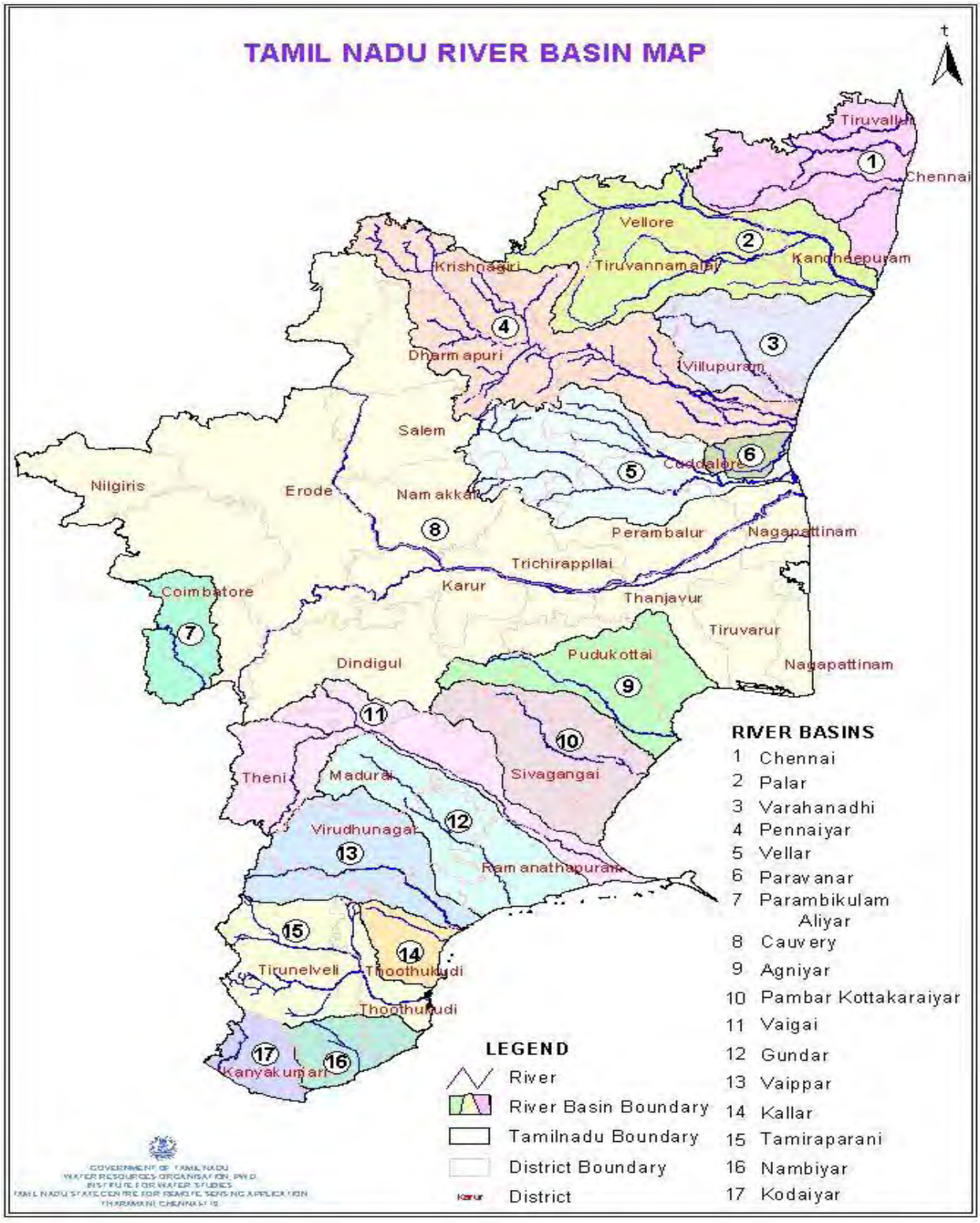
1/9/2020
Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.



Sl. No.	Name of Tank
(A)	**KODUMUDIYAR RESERVOIR**
1	Valliyoor Big Tank
2	Valliyoor Pudukulam
3	Thevarkulam
4	Ganapathiyar Kulam
(A1)	**THAMARAIYAR ANICUT**
5	Nadukkanaprai Kulam
6	Karisalkulam
7	Padalayar kulam
8	Kesavanerikulam
(II)	**DHALAVAIPURAM ANICUT**
9	Thiruvenkatanathapuram
10	Mylapudukulam
11	Chinnammalpuram Periyakulam
12	Chinnammalpuram Pudukulam
13	Dhalapathisamudram
14	Soochikulam
15	Jayanarrarkulam
16	Veppankulam
17	Valliakulam
18	Kovanerikulam
19	Karuthanerikulam
20	Nallapithankulam
21	Kandiyaperikulam
22	Pandarakulam
23	Kizhavanerikulam
24	Achampadukulam
25	Poopillaikulam
26	Thanuvankulam
27	Vattakulam
28	Alankulam
29	Nedunkulam
30	Pandaraperunkulam
31	Kallikulam
32	Pettaikulam
33	Kurunchikulam
34	Valathugazhavalthankulam
35	Mannarkulam
36	Seelathikulam
37	Kumbikulam
38	Kuravankulam
39	Kannavarayankulam
40	Kattayanerikulam
41	Eluvarkulam
42	Lingankulam
(III)	**RAJAKKAMANGALAM ANICUT**
(IV)	**MYLAPUDUR ANICUT**
43	Anaikulam
44	Karuppukal kulam
45	Thangaiyankulam
46	Veettirunthankulam
47	Iyyappanerikulam
48	Thambakulam
49	Villavarayankulam
(V)	**KANNANALLUR ANICUT**
50	Kannanallur Kulam
51	Neduppoorkulam
52	Sithoorkulam
53	Sithoor Keezkulam
54	Panisalkulam
(VI)	**VIJAYAN ANICUT**
(VII)	**KOVANKULAM ANICUT**
(B)	**NAMBIYAR RESERVOIR**
55	Peelikulam
56	Pulikulam
57	Perunkulam
58	Urumankulam
59	Vilimankulam
60	Sirukulam
61	Nambikurichikulam
62	Thaluvaikulam
63	Senthilanpannaikulam
64	Dinakarankulam
65	Pettaikulam
66	Avakaikulam
67	Srikrishnaperikulam
68	Kottaikarungulam
69	Thuthikulam
70	Kannankulam
71	Almudikulam
72	Koivaikulam
73	Pudukurichikulam
74	Perunkannankulam
75	Ponnathikulam
76	Kuttinagankulam
77	Palathikulam
78	Pappankulam
79	Sittalankulam
80	Periyalankulam
81	Kailasaperikulam
(VIII)	**THUTTIKULAM ANICUT**
82	Islapuramkulam
83	Ramathapuram kulam
(IX)	**PULIMANKULAM ANICUT**
84	Pulimankulam
85	Thathuvaperikulam

Tanks taken for TNIAMP
Other Tanks

10. MAPS



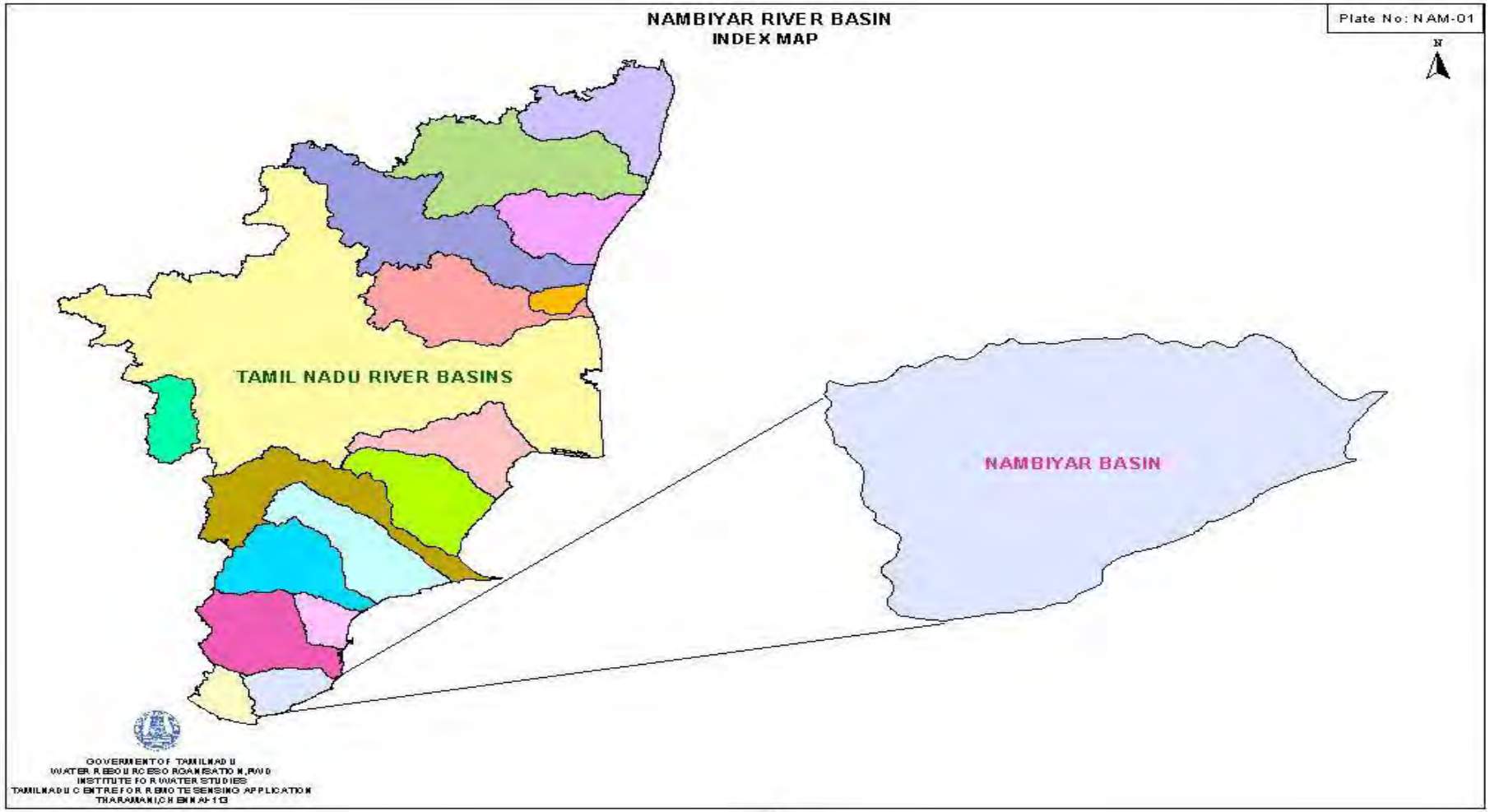
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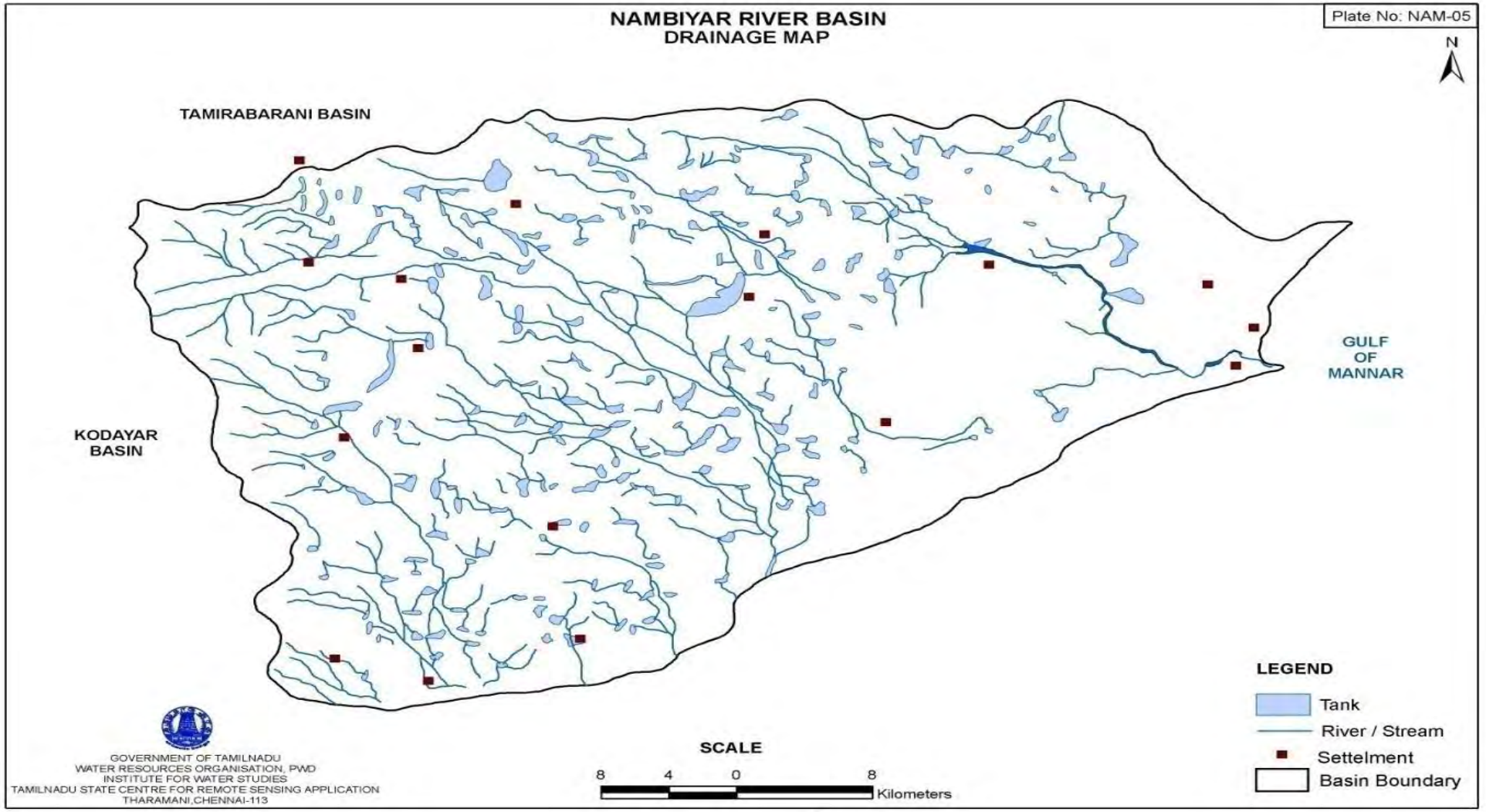


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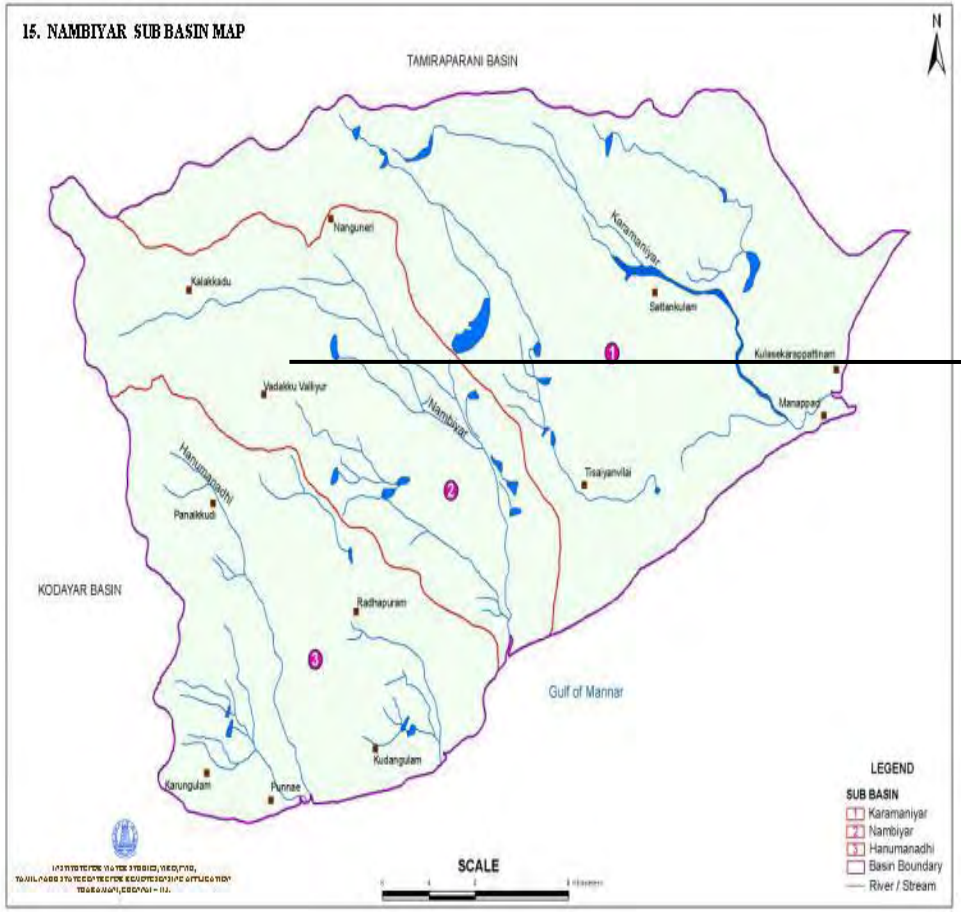
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Executive Engineer, PWD/WRD.,
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Tenkasi.

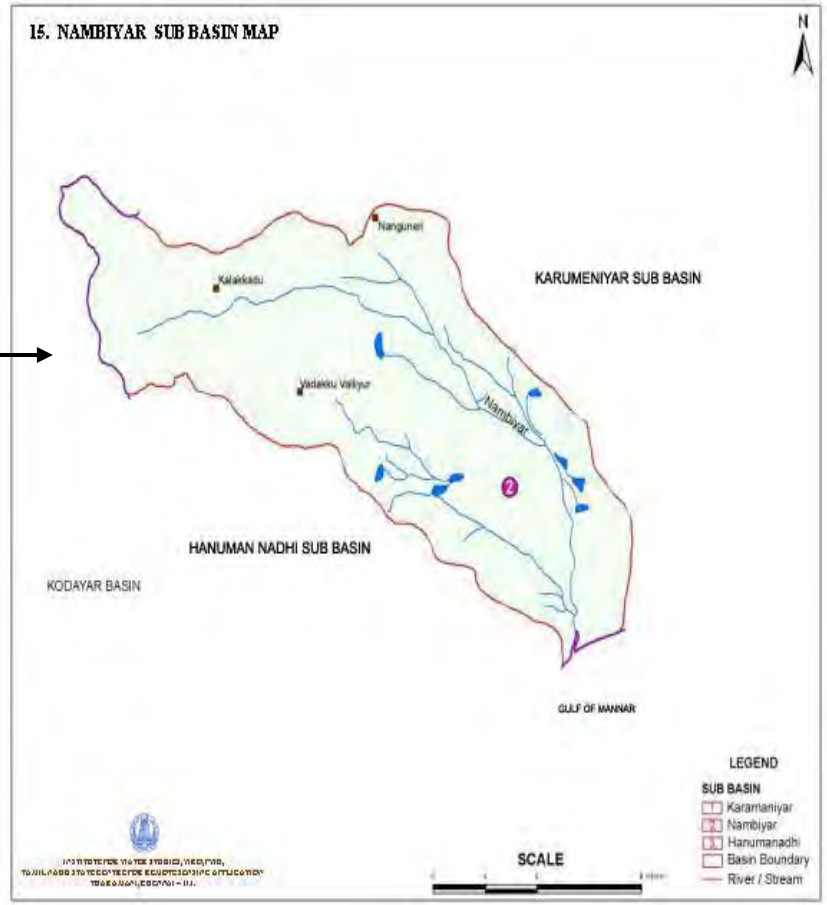


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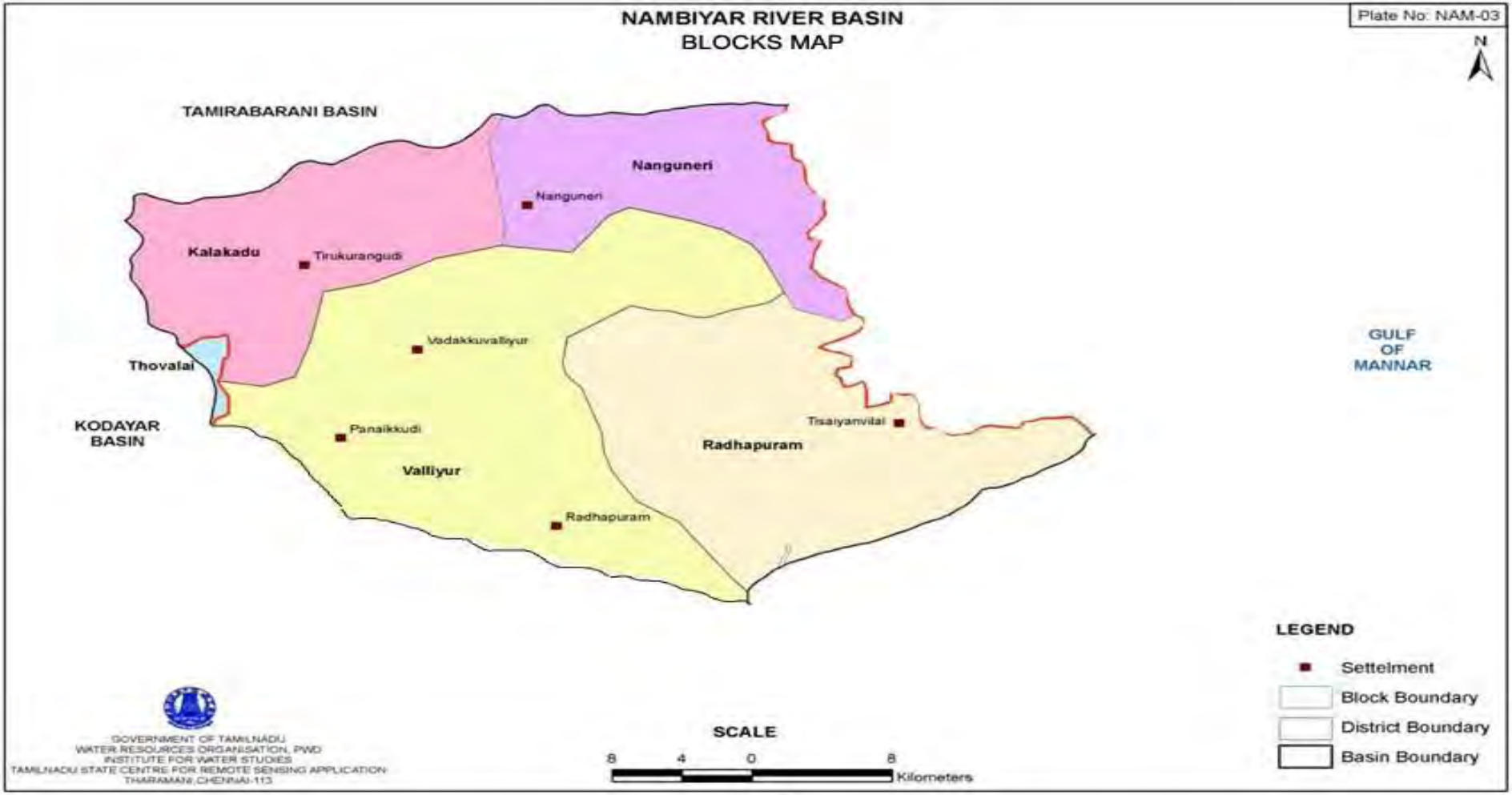




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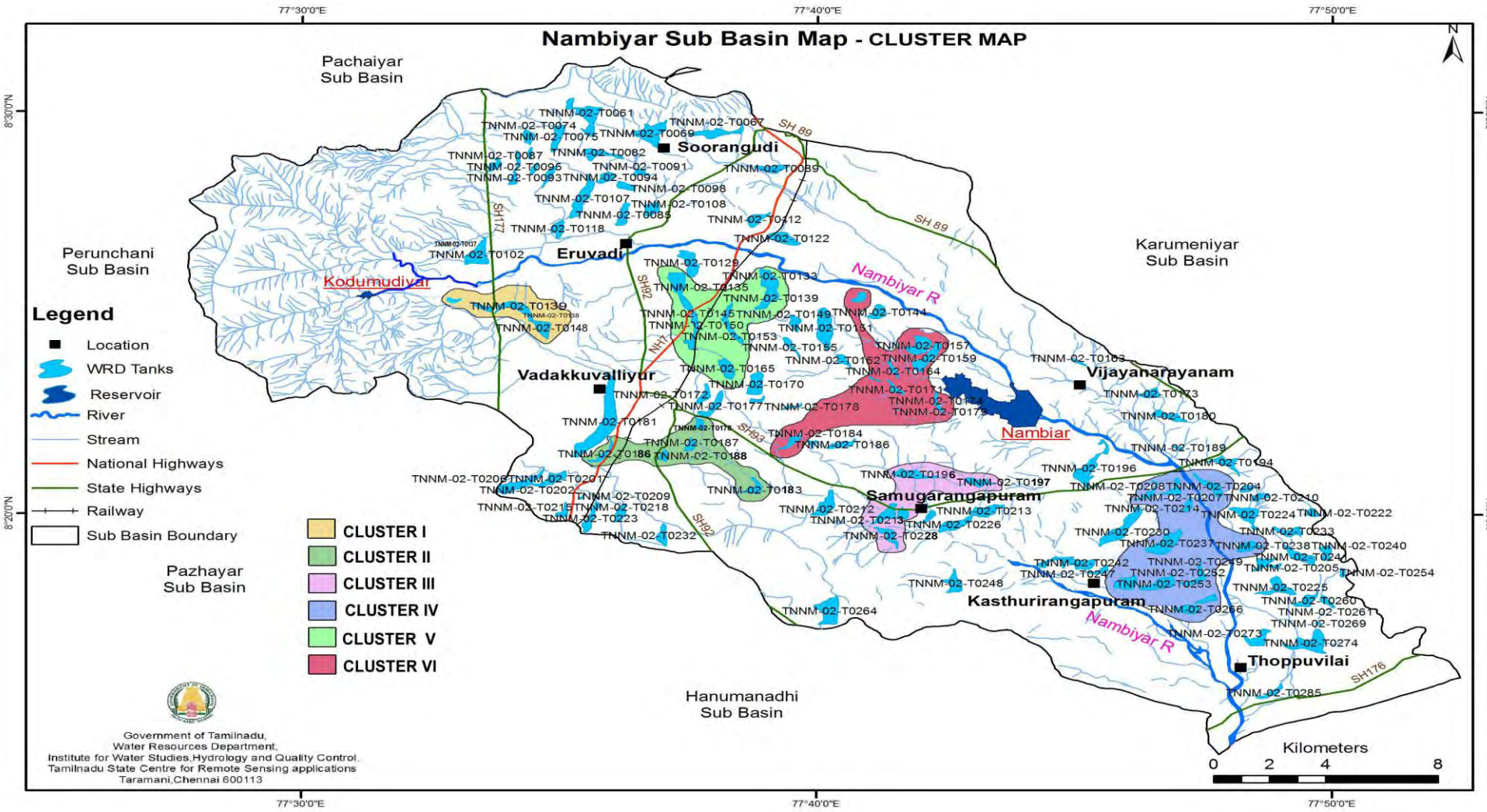


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Assistant Engineer, PWD/WRD.,
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Assistant Executive Engineer, PWD/WRD.,
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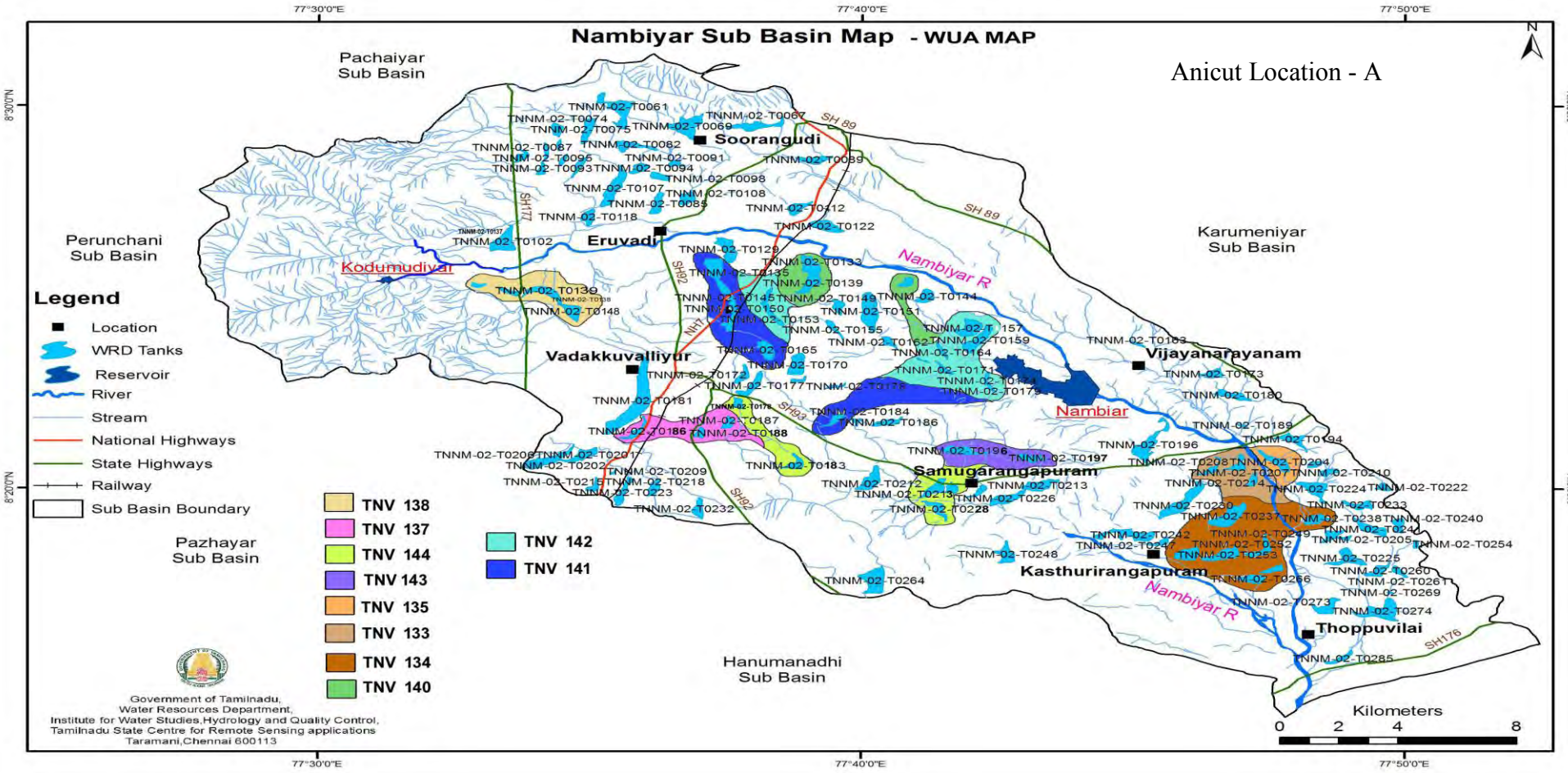
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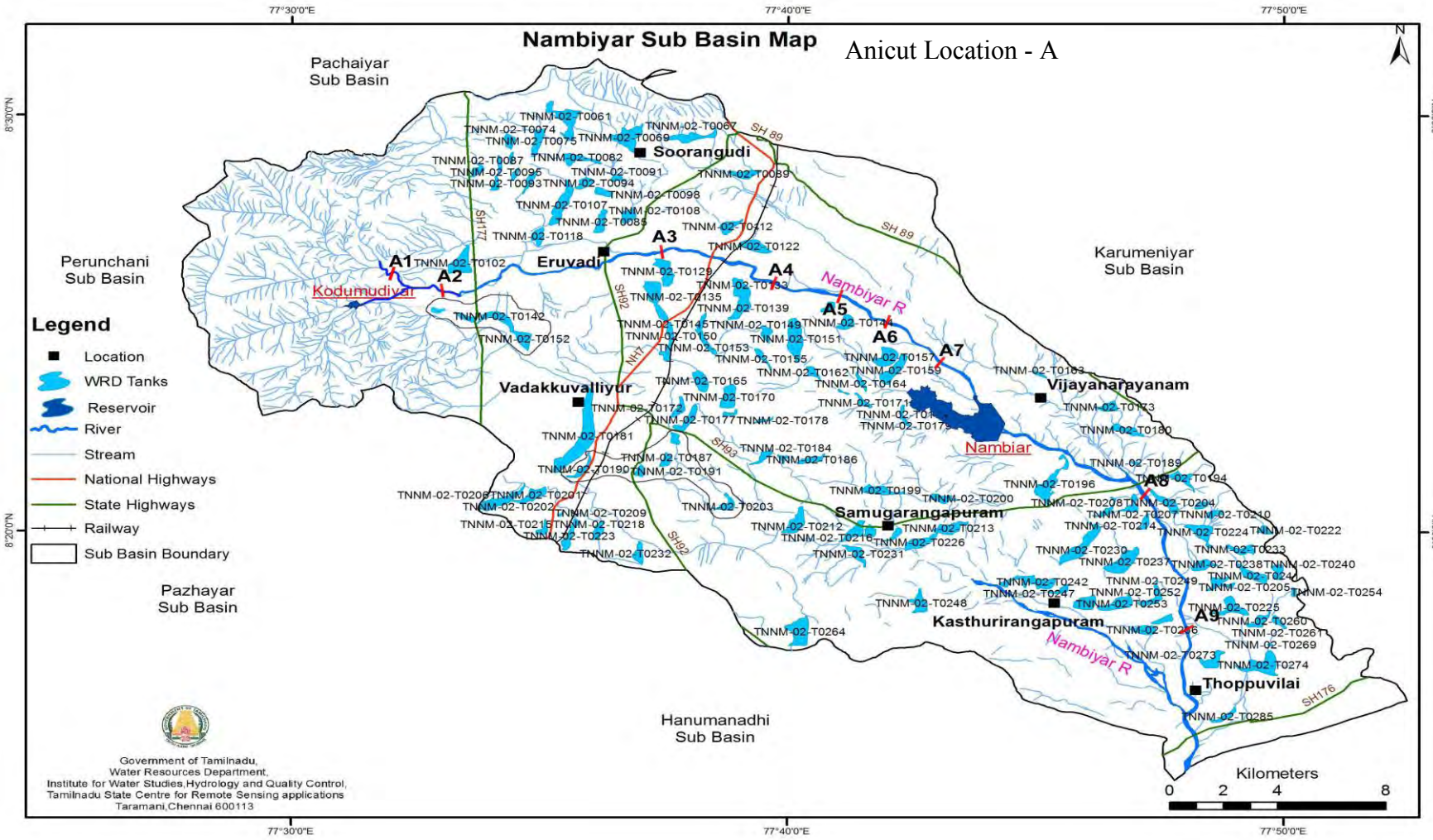
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Nanguneri

Executive Engineer, PWD/WRD.,
Chittar Basin Division,
Tenkasi.

NAME OF WORK : PADALAYAR KULAM	VILLAGE : THIRUKURANKUDI
BLOCK : KALAKAD	REHABILITATION TO SLUICE



NAME OF TANK : KARISAL KULAM	VILLAGE : THIRUKURANKUDI
BLOCK : KALAKAD	REHABILITATION TO BUND



NAME OF WORK :GANAPATHIYAR KULAM	VILLAGE : THERKU VALLIOOR
BLOCK : VALLIOOR	REHABILITATION TO BUND



NAME OF TANK: ALANKULAM	VILLAGE : A.THIRUMALAPUAM
BLOCK : RADHAPURAM	REHABILITATION TO BUND



NAME OF WORK :VATTA KULAM	VILLAGE :VADDAKU VALLIOOR
BLOCK :VALLIOOR	REHABILITATION TO BUND



NAME OF WORK : KATTYANERI KULAM	VILLAGE : SAMUGARANGAPURAM
BLOCK :RADHAPURAM	REHABILITATION TO BUND



NAME OF TANK : NAMBIKURICHI KULAM	VILLAGE : KOTTAIKARUNKULAM
BLOCK : RADHAPURAM	REHABILITATION TO SLUICE



NAME OF TANK : KANNAN KULAM	VILLAGE : KOTTAIKARUNKULAM
BLOCK : RADHAPURAM	REHABILITATION TO WEIR



NAME OF TANK : VILIMAN KULAM	VILLAGE : URUMAN KULLAM
BLOCK : RADHAPURAM	REHABILITATION TO BUND



NAME OF WORK :AIMUDI KULAM	VILLAGE : KASTHURIRANGAPURAM
BLOCK : RADHAPURAM	REHABILITATION TO BUND



NAME OF WORK : PALATHI KULAM	VILLAGE : KASTHURIRANGAPURAM
BLOCK : RADHAPURAM	REHABILITATION TO WIER



NAME OF WORK : PAPPAN KULAM	VILLAGE : KASTHURIGANGAPURAM
BLOCK : RADHAPURAM	REHABILITATION TO BUND



NAME OF WORK : PERIYALANKULAM	VILLAGE : KASTHURIRANGAPURAM
BLOCK : RADHAPURAM	REHABILITATION TO BUND



NAME OF TANK : KAILASAPERI KULAM	VILLAGE : KASTHURIRANGAPURAM
BLOCK : RADHAPURAM	REHABILITATION TO SLUICE



NAME OF WORK : PONNATHI KULAM	VILLAGE : KASTHURIRANGAPURAM
BLOCK : RADHAPURAM	REHABILITATION TO SLUICE



NAME OF WORK : KARUTHANERI LULAM	VILLAGE :DHALAPATHISAMUTHIRAM
BLOCK : NANGUNERI	REHABILITATION TO BUND



NAME OF WORK : SINAMMALPURAM AND PUDUKULAM	VILLAGE : THALAPATHI SAMUTHIRAM
BLOCK : NANGUNERI	REHABILITATION TO SLUICE



NAME OF WORK : NALLAPETHAN KULAM	VILLAGE : DHALAPATHI SAMUTHIRAM
BLOCK : NANGUNERI	REHABILITATION TO SLUICE



NAME OF WORK : KANDIAIPERI KULAM	VILLAGE : DHALAPATHI SAMUTHIRAM
BLOCK : NANGUNERI	REHABILITATION TO BUND



NAME OF WORK : KOVANERI KULLAM	VILLAGE :VADAKKU VALLIOOR
BLOCK :VALLIOOR	REHABILITATION TO SLUICE



NAME OF WORK : KALLIKULAM	VILLAGE : KALLIKULAM
BLOCK : VALLIOOR	REHABILITATION TO BUND



NAME OFWORK : KARUPPUKAL KULAM	VILLAGE : ANAIKULAM
BLOCK : VALLIOOR	REHABILITATION TO BUND



NAME OF WORK : THANUVAN KULAM	VILLAGE : ACHAMPADU
BLOCK :VALLIOOR	REHABILITATION TO BUND



NAME OF WORK :IYYAPANERI KULAM	VILLAGE :KANNANALLUR
BLOCK :VALLIOOR	REHABILITATION TO BUND



NAME OF WORK :PADALAYARKAL	VILLAGE :THIRUKKURANGUDY
BLOCK :KALAKKAD	REHABILITATION TO SLUICE



Awareness Creation Activities and Walk - Through Surveys held on 3.2.2020



Awareness Creation Activities and Walk - Through Surveys held on 4.2.2020



Awareness Creation Activities and Walk - Through Surveys held on 12.2.2020



Awareness Creation Activities and Walk - Through Surveys held on 14.2.2020



Awareness Creation Activities and Walk - Through Surveys held on 15.2.2020



Awareness Creation Activities and Walk - Through Surveys held on 17.2.2020



Awareness Creation Activities and Walk - Through Surveys held on 19.2.2020

