Cascade Management Plan

Per Aaru

Under

Climate Smart Irrigated Agriculture Project (CSIAP)

19.05.2025

In

Per Aaru River Basin

Oddusudan & Puthukudiyirupu DSD

Mullaiththivu District

Northern Province

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Acknowledgements

We would like to express our sincere gratitude and appreciation to all those who have contributed to the development of the Per Aaru cascade profile. Your efforts and dedication have been instrumental in bringing this cascade profile to fruition.

First and foremost, we would like to thank our team members for their hard work, expertise, and collaborative spirit. Each of you has played a crucial role in designing and implementing the transect walk to develop the cascade profile, and your commitment to excellence has been truly commendable. The collective knowledge and skills you have brought to the table have made this assessment a success.

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Furthermore, we would like to acknowledge the guidance given by the representative of government departments in this transect walk that has improved the cascade profile and thanks to their comment and advice. Their meticulous attention to detail and innovative thinking have been vital in shaping the cascade profile into an effective and efficient tool.

Last but not least, many thanks go to our DPD, Mr. A. C. G. Babu who has invested his full effort in guiding the team in achieving the goal. His contributions have undoubtedly enriched the cascade profile development process and enhanced its overall quality.

We extend our heartfelt thanks to everyone involved in the development of the cascade profile. Your unwavering commitment, dedication, and expertise have made this achievement possible. We are truly grateful for your contributions and look forward to the continued success and impact of the cascade profile.

1. Introduction

Small water storage is recognized as a key invention that facilitated the colonization of the dry zone of Sri Lanka. These small reservoirs are referred to as "*Kulam*" (tanks). In the

dry zone of Sri Lanka, natural or man-made tanks have served for the collection, storage and distribution of rainfall and runoff and provided irrigation water for the cultivation of paddy and Other Field Crops (OFC) for more than 2000 years. During the two main rainy seasons in April - May and September - December, surface runoff is collected and stored in these tanks and subsequently distributed during the dry periods to the fields located in the downslope.

The tanks are arranged in a cascade-like fashion along shallow valley courses. They are connected by canals, natural drains and spillways and build a complex system of floodwater harvesting, water storage and water distribution. The tank cascade system (*wewa-ellangava* in Sinhala or *viluneer kulathodar* in Tamil) is an ancient Sri Lankan irrigation infrastructure. The system is a network of small tanks draining to large reservoirs that store rainwater and surface runoff for later use.

Besides irrigation, the stored water is used for domestic purposes, dried out tank beds serve as pasture for the cattle and in general deposited sediments are used as raw material for brick production. Thus, the tanks have characterized the cultural landscape and have become an identity-generating factor for the rural culture.

The main principle behind the Tank Cascade System is recycling and re-using water through a network of small to large-scale tanks. The advantage of such a system is that excess water flowing from a reservoir along with the water used in its command area is captured by the next downstream reservoir and, thus, put to use again in the command area of the second reservoir. This water is continuously filtered and recycled in subsequent tanks. Tank Cascade Systems buffer the effects of climatic fluctuations and work as a cornerstone in coping with future climate change in the dry zone of Sri Lanka.

The management of Tank Cascade Systems is intimately associated with their sociological setting and the evolution of rural settlements. Therefore, the overall objective of cascade management is to enhance the living standards of rural communities and the environment through the restoration and improvement of the system on a sustainable basis.

Tank cascade systems did not exist in the Per Aaru River basin until the implementation of CSIAP. Tank cascade systems were identified from the Participatory Rural Appraisal (PRA), Hydrology studies, Engineering Surveys, and Preliminary Investigation Report (PIR) reports. Accordingly, a cascade consisting of 6 tanks were identified and named as “Per Aaru” based on the consultation with all stakeholders, including farmers and officers. Finally, it was declared as a cascade by the Department of Agrarian Development (DAD) & Provincial Department of Irrigation (PID) at the Divisional Agriculture Committee, Oddusuddan.

1.1 General Information about the Cascade

Per Aaru cascade lies under the Per Aaru river basin in Oddusudan DSD. The general information of the cascade is shown in Table 1.

Table 1: General Information of Per Aaru Cascade

Information	Details
Name of the District	Mullithivu
Name of the Divisional Secretariat/s	Oddusudan, Puthukudiyirupu
Name of the electorate	Vanni
Name of the river basin	Per Aru
Name of the Cascade:	Per Aru
Name of the Agrarian Development Center/s.	Oddusudan,Puthukudiyirippu
Name/s of Grama Niladari Division/s	Pandaravanni, Katsilaimadu, Oddusudan, Puliyankulam, Puthukudiyirupu East, Malikaithivu, Mannakandal, Muthuiyankaddu
Extent of the cascade in hectares	
Command area in the cascade (Ac)	**217**
Number of Total tanks & Anicuts in cascade	Tanks 06 & Anicuts 14
Number of tanks & Anicuts used for agriculture	05
Restricted forest areas (ha), if any	
Number of families living in the command areas of the Cascade	147
Number of tanks located within the forest	0

1.2 The Cascade Maps

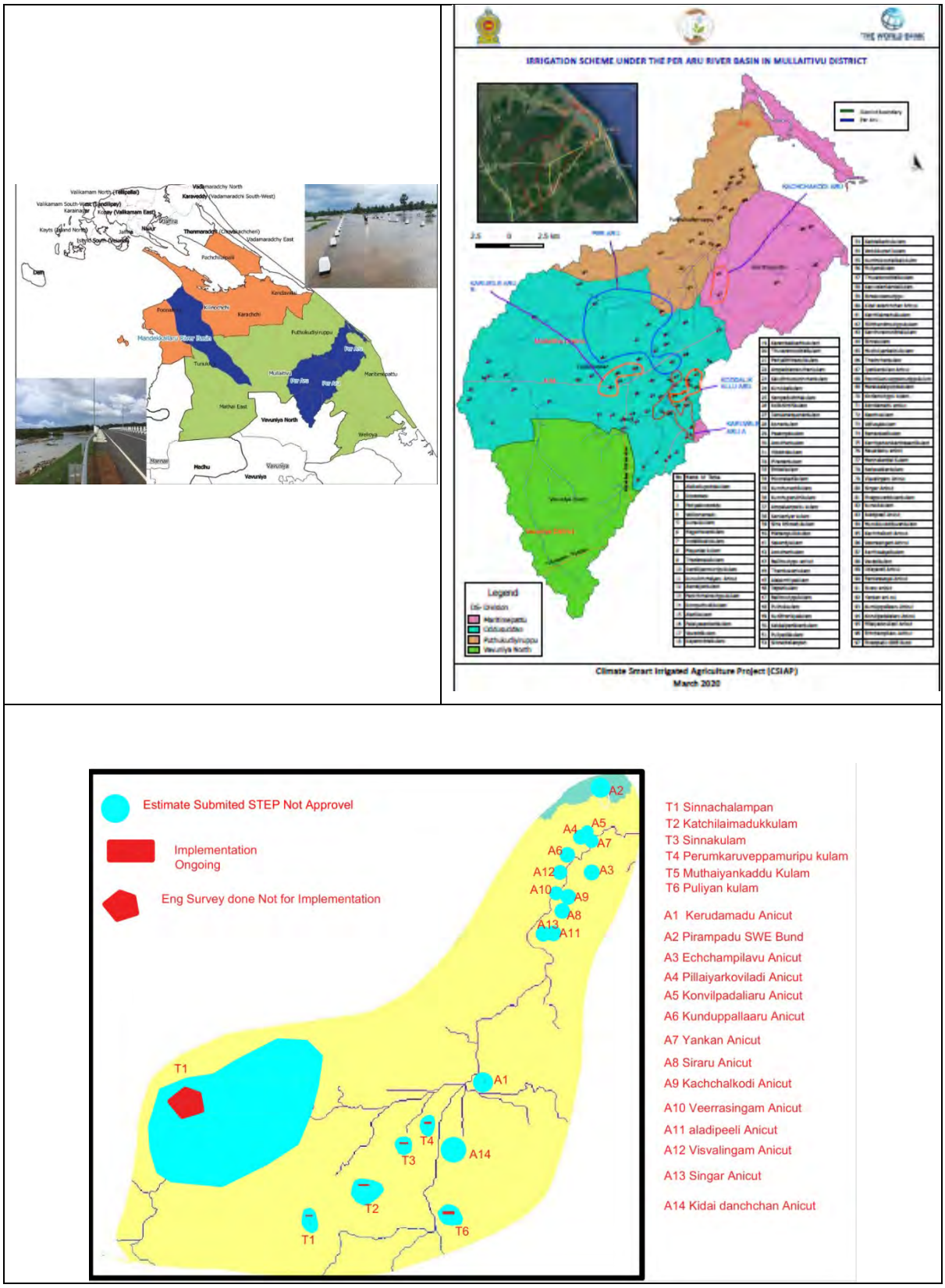

Figure 1: Map of Per Aru Cascade

1.3 Definition of the Cascade and Cascade Management

A cascade system is described as a connected series of tanks organized within a micro-catchment of the dry zone landscape, storing, conveying and utilizing water. It provides water for irrigation, domestic purposes, animals and ecosystems. In a broader sense, the system can be considered as a sustainable ecosystem.

1.4 Need for Cascade Management Committee

- Ensure the sustainability of Cascade Systems.
- Make all stakeholders in a cascade actively involve in the management of the system ensuring their perspectives.
- To ensure the Environmental and ecosystem stability of the cascade.
- To avoid/minimize high tank water losses, frequent repairs of structures, low system productivity, waterborne diseases *etc*.
- Tanks serve multiple purposes, such as irrigation for agriculture, water for livestock, inland fisheries, groundwater recharge, flood control, *etc*.
- Maintain the regional groundwater table in cascade area.
- Other than agriculture water users, there is hardly any contribution from the other users for the maintenance of the irrigation system.
- The resources are used by other users without any limitation.
- Common resources, such as water and the environment, should be managed as common property.

1.4.1. Role and Responsibilities of the Cascade Management Committee

- The committee should make necessary decisions to manage the resources of the cascade with a joint approach of all agencies and beneficiaries of the cascade and follow up the implementation of those decisions.
- The committee should discuss the maintenance work to be carried out in the cascade by respective farmer organizations.
- It should organize participatory activities of the development programs at the cascade level
- The committee should discuss the outcomes of cultivation committee meetings and issues that can be solved at the cascade level.
- They should plan cultivation, water issues, input supply, training programmes, and other production activities and make arrangements for the marketing of products.
- They should bear the overall responsibility of the development and production programs within the cascade and the management of water and associated resources (including ecosystems) in the cascade.
- Through integrated management, ensure drinking, agricultural, livestock, and inland fisheries requirements are equitably met.
- Promote climate-smart agriculture practices and technologies.
- Prepare/ update an agriculture development plan for the entire cascade.
- Facilitate market access to the production from the agriculture plan implementation.
- Facilitate the community to access the weather and agriculture advisories.

1.4.2. Composition of a Cascade Management Committee

Strengthening the institutional framework in the cascade is identified as one of the key requirements for managing the cascade system. Therefore, CMCs consisting of farmer Organizations and local-level officials are to be formed for resources (water and land) management at the cascade level.

i. Representative of the Divisional Secretary (DS) - Chairman
ii. Divisional officer of the Department of Agrarian Development (DAD) - Secretary
iii. Agriculture Instructors (AIs) in the cascade
iv. Representative of the Department of Irrigation (DoI)
v. Representative of the Department of Wildlife Conservation (DoWC)
vi. Representative of the Provincial Irrigation Department (PID)
vii. Representative of the Department of Forest Conservation (DOFC)
viii. Representative of the Geological Survey and Mines Bureau (GS & MB)
ix. Representative of the Water Resources Board (WRB)
x. Representative of the Local Government Authority (Pradheshiya Saba)
xi. Representatives of the Grama Niladhari level Committee
xii. Representatives of the Department of Land Use Planning
xiii. Representatives of NACTA
xiv. Department of Police
xv. Representative of Farmer Organizations (FOs)
xvi. Representative of Community Base Organizations (CBOs) in the cascade

The Co-Chairman of the CMC must be a representative of farmer organizations.

1.4.3 Existing Institutional Framework Related to Cascade Management.

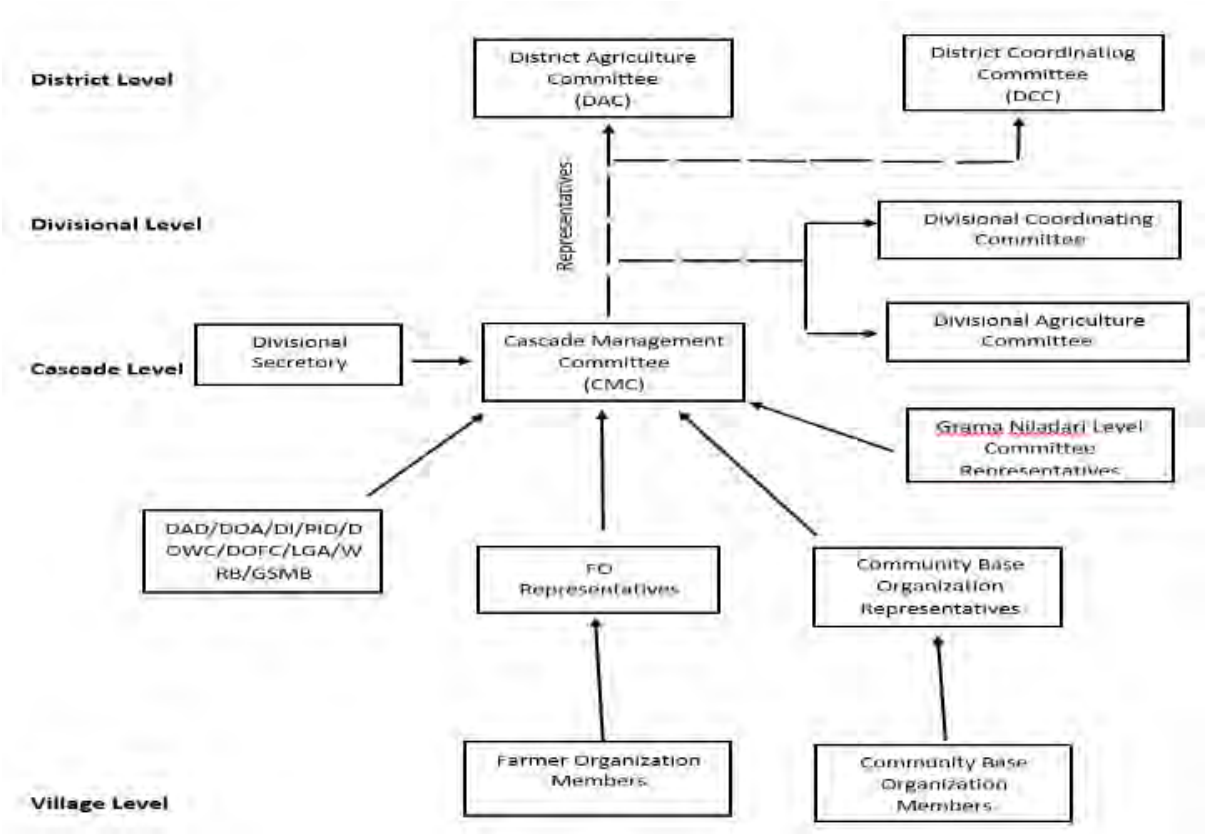

Figure 2: Institutional arrangement for cascade management

1.5 The Methodology

The participatory assessment process is the basic methodology for developing the cascade profile, and appropriate tools were used to identify the bio-physical condition of the cascade area. The primary & secondary data collection techniques were used to develop this CMP. Focused group discussion, key informant interviews, matrix ranking, and transect walk were the main tools. Participants living in the hotspot area and members of Cascade Management Committees (CMCs) have participated in this assessment process.

The objectives of the cascade profile development and how needful data is to be collected and generated during the interactive and iterative process have been conducted in Focus group discussions. The need for tank cascade system was identified through the Participatory Rural Appraisal (PRA), Hydrology studies, Engineering Surveys, and Preliminary Investigation Report (PIR) reports during the project period. The main intervention was identified and ranked during the discussion.

A cascade consisting of 3 tanks was identified and named as “Per Aru ” based on the consultation with all stakeholders, including farmers and officers. Finally, it was declared as a

cascade by the Department of Agrarian Development (DAD) & Provincial Department of Irrigation (PID) at the Divisional Agriculture Committee, Oddusuddan.

Participants were grouped into three groups based on their knowledge of the area and subject matter, and Safeguard Officers took the leading role in each group as group coordinators with the support of IDCB and Specialist of CSIAP-NP. Each group conducted the transect walk to cover tanks and the adjoining settlement area.

The gathered data in the transect walk, was validated in the discussion with the members of the cascade. This validated information was compiled as a report and shared among the CSIAP officers who participated in the transect walk of Per Aru cascade. Finally, the report was developed and submitted to PMU for further improvement.

1.6 Particulars of the Tanks under the Cascade

There are 6 tanks and 14 no of anicuts located under the Per Aru cascade in Oddusudan & Puthukudiyirupu DSDs. These tanks/ anicuts are known as Sinnachalampan, Katchilaimadukkulam, Sinnakulam, Perumkaruveppamuripu kulam, Muthaiyankaddu Kulam, Puliyan kulam, Kerudamadu Anicut Pirampadu SWE Bund , Echchampilavu Anicut , Pillaiyarkoviladi Anicut , Kovilpadaliaru Anicut , Kunduppallaaru Anicut , Yankan Anicut , Siththaru , Kachchalkodi Anicut , Veerrasingam Anicut , Aladipeeli Anicut, Visvalingam Anicut , Singar Anicut & Kidai Danchchan Anicut. All tanks and are intended to be used for paddy and OFC Cultivation and recharging groundwater.

Table 2: Particulars of the Tanks

No	Tank's name	Tank ID Name	GND	Existing Capacity (Ac.ft)	Comm and Area (ac)	No of farmer families
1	Sinnachalampan	13/5/T/W/076	Oddusudan	9.44	35	47
2	Katchilaimadukkulam	13/5/T/W/071	Katsilaimadu	490.20	140	172
3	Sinnakulam	13/5/T/W/099	Katsilaimadu	15.82	23	29
4	Perumkaruveppamuripu kulam	13/5/T/W/070	Katsilaimadu	89.64	85	18
5	Muthaiyankaddu Kulam	N/A	Muthuiyankaddu	41,000.00	3686	4600
6	Puliyan kulam	13/5/T/W/091	Puliyankulam	121.21	48	66
7	Kerudamadu Anicut	N/A	Mannakandal	N/A	200	66
8	Pirampadu SWE Bund	N/A	Malikaithivu	N/A	200	93
9	Echchampilavu Anicut	N/A	Malikaithivu	N/A	93	40
10	Pillaiyarkoviladi Anicut	N/A	Malikaithivu	N/A	125	35
11	Kovilpadaliaru Anicut	N/A	Malikaithivu	N/A	75	30

12	Kunduppallaaru Anicut	N/A	Malikaithivu	N/A	25	10
13	Yankan Anicut	N/A	Malikaithivu	N/A	480	12
14	Siththaru	N/A	Puthukudiyirupu East	N/A	250	75
15	Kachchalkodi Anicut	N/A	Puthukudiyirupu East	N/A	115	27
16	Veerrasingam Anicut	N/A	Puthukudiyirupu East	N/A	114	70
17	aAadipeeli Anicut	N/A	Puthukudiyirupu East	N/A	302	175
18	Visvalingam Anicut	N/A	Puthukudiyirupu East	N/A	300	164
19	Singar Anicut	N/A	Puthukudiyirupu East	N/A	165	90
20	Kidai Danchchan Anicut	N/A	Pandaravanni	N/A	10	83
			Total		**9171**	**5842**

Table 3: Brief Details of Area Capacity of Tanks in the Cascade

1. Sinnachalampan

Contour	Height Between Contours (m)	Area(Sq m)	Average Area(Sq m)	Volume (Cu m)	Capacity (Cu m)	Remarks
44.1	0.0	135.1	0.0	0.0	0.0	
44.4	0.3	252.5	193.8	75.7	75.7	SSL
44.7	0.3	464.1	358.3	139.2	215.0	
45.0	0.3	877.7	670.9	263.3	478.3	
45.3	0.3	1728.5	1303.1	518.5	996.8	
45.6	0	11866.9	6797.7	0.0	996.8	
45.9	0.3	22512.1	17189.5	6753.6	7750.5	
46.2	0.3	30286.8	26399.4	9086.0	16836.5	
46.5	0.3	40239.4	35263.1	12071.8	28908.3	
46.8	0.3	53111.9	46675.7	15933.6	44841.9	
47.1	0.3	65556.5	59334.2	19666.9	64508.8	
47.7	0.6	99568.1	82562.3	59740.9	124249.7	
47.8	0.1	105527.1	102547.6	10552.7	134802.4	FSL
48	0.2	117832.1	111679.6	23566.4	158368.8	
48.4	0.4	141533.5	129682.8	56613.4	214982.2	HFL
48.7	0.3	145568.6	143551.1	43670.6	258652.8	

2. Katchilaimadukkulam

Contour	Height Between Contours (m)	Area(Sq m)	Average Area(Sq m)	Volume (Cu m)	Capacity (Cu m)	Remarks
32.4	0.000	1647.2	0	0.0	0.0	Existing SSL
32.7	0.300	6101.1	3874.15	1162.2	1162.2	
33.0	0.300	29414.5	17757.8	5327.3	6489.6	
33.3	0.300	52637.4	41025.95	12307.8	18797.4	
33.6	0.300	76214.3	64425.85	19327.8	38125.1	
33.9	0.300	96802.2	86508.25	25952.5	64077.6	
34.2	0.300	125606.2	111204.2	33361.3	97438.9	
34.5	0.300	165258.1	145432.15	43629.6	141068.5	
34.8	0.300	227569.4	196413.75	58924.1	199992.6	
35.1	0.300	288065.8	257817.6	77345.3	277337.9	
35.4	0.300	322343.1	305204.45	91561.3	368899.2	
35.7	0.300	400776	361559.55	108467.9	477367.1	
36.0	0.300	447783	424279.5	127283.8	604651.0	Existing FSL
36.3	0.300	489790	468786.5	140635.9	745286.9	Existing HFL

3. Sinnakulam

Contour	Height Between Contours (m)	Area(Sq m)	Average Area(Sq m)	Volume (Cu m)	Capacity (Cu m)	Remarks
25.1	0.0	585.8	0.0	0.0	0.0	SSL
25.4	0.3	6441.4	3513.6	1054.1	1054.1	
25.7	0.3	15367.9	10904.6	3271.4	4325.5	
26.0	0.3	20870.0	18118.9	5435.7	9761.1	
26.3	0.3	29558.4	25214.2	7564.3	17325.4	FSL
26.6	0.3	32651.3	31104.8	9331.4	26656.8	
26.9	0.3	35603.8	34127.5	10238.3	36895.1	HFL

4. Perumkaruveppamuripu kulam

Contour	Height Between Contours (m)	Area(Sq m)	Average Area(Sq m)	Volume (Cu m)	Capacity (Cu m)	Remarks
20.3	0.000	476.7	0.0	0.0	0.0	
20.6	0.300	14150.5	7313.6	2194.1	2194.1	Existing SSL
20.9	0.300	28022.3	21086.4	6325.9	8520.0	
21.2	0.300	38455.6	33239.0	9971.7	18491.7	
21.5	0.300	48049.7	43252.7	12975.8	31467.5	
21.8	0.300	69007.3	58528.5	17558.6	49026.0	
22.1	0.300	106871.2	87939.3	26381.8	75407.8	
22.4	0.300	127527.9	117199.6	35159.9	110567.7	Existing FSL

5. Muthaiyankaddu Kulam

25.2	0.3	4138.1	2923.6	877.1	1365.4	
25.3	0.1	5840.0	4989.1	498.9	1864.3	SSL
25.5	0.3	7840.3	5989.2	1796.8	3661.0	
25.8	0.3	12633.1	10236.7	3071.0	6732.1	
26.1	0.3	23112.3	17872.7	5361.8	12093.9	
26.4	0.3	37436.5	30274.4	9082.3	21176.2	
26.7	0.3	54450.6	45943.6	13783.1	34959.1	
27.0	0.3	74193.3	64322.0	19296.6	54255.9	
27.3	0.3	94391.8	84292.6	25287.8	79543.6	
27.6	0.3	115676.9	105034.4	31510.3	111053.9	
27.9	0.3	143990.0	129833.5	38950.0	150004.0	FSL
28.2	0.3	168851.5	156420.8	46926.2	196930.2	
28.5	0.3	194349.7	181600.6	54480.2	251410.4	HFL

31.8	0.3	2226253.8	2072383.7	621715.1	3538293.0	
32.0	0.2	2449231.9	2337742.8	467548.6	4005841.5	SSL
32.1	0.1	2560721.0	2504976.4	250497.6	4256339.2	
32.4	0.3	2929529.4	2745125.2	823537.5	5079876.7	
32.7	0.3	3331267.6	3130398.5	939119.5	6018996.3	
33.0	0.3	3781082.4	3556175.0	1066852.5	7085848.8	
33.3	0.3	4268562.3	4024822.3	1207446.7	8293295.5	
33.6	0.3	4948144.3	4608353.3	1382506.0	9675801.5	
33.9	0.3	5507502.5	5227823.4	1568347.0	11244148.5	
34.2	0.3	5828496.4	5667999.5	1700399.8	12944548.3	
34.5	0.3	6046241.7	5937369.1	1781210.7	14725759.0	
34.8	0.3	6191623.2	6118932.4	1835679.7	16561438.8	
35.1	0.3	6296880.6	6244251.9	1873275.6	18434714.3	
35.4	0.3	6394113.9	6345497.2	1903649.2	20338363.5	
35.7	0.3	6487786.5	6440950.2	1932285.1	22270648.6	
36.0	0.3	6580340.2	6534063.3	1960219.0	24230867.6	
36.3	0.3	6697313.4	6638826.8	1991648.0	26222515.6	
36.6	0.3	6808840.0	6753076.7	2025923.0	28248438.6	
36.9	0.3	6944279.2	6876559.6	2062967.9	30311406.5	
37.2	0.3	7047694.3	6995986.8	2098796.0	32410202.5	
37.5	0.3	7151247.7	7099471.0	2129841.3	34540043.8	
37.8	0.3	7237562.7	7194405.2	2158321.6	36698365.4	
38.1	0.3	7357303.3	7297433.0	2189229.9	38887595.3	
38.4	0.3	7477165.9	7417234.6	2225170.4	41112765.7	
38.7	0.3	7604414.3	7540790.1	2262237.0	43375002.7	
39.0	0.3	7773522.6	7688968.5	2306690.5	45681693.2	
39.3	0.3	7902379.5	7837951.1	2351385.3	48033078.5	FSL
39.6	0.3	8056861.5	7979620.5	2393886.1	50426964.7	
39.9	0.3	8211343.4	8134102.4	2440230.7	52867195.4	HFL
40.2	0.3	8352171.3	8281757.4	2484527.2	55351722.6	
40.5	0.3	8535228.7	8443700.0	2533110.0	57884832.6	
40.8	0.3	8860008.4	8697618.5	2609285.6	60494118.2	

25.2	0.3	4138.1	2923.6	877.1	1365.4	
25.3	0.1	5840.0	4989.1	498.9	1864.3	SSL
25.5	0.3	7840.3	5989.2	1796.8	3661.0	
25.8	0.3	12633.1	10236.7	3071.0	6732.1	
26.1	0.3	23112.3	17872.7	5361.8	12093.9	
26.4	0.3	37436.5	30274.4	9082.3	21176.2	
26.7	0.3	54450.6	45943.6	13783.1	34959.3	
27.0	0.3	74193.3	64322.0	19296.6	54255.9	
27.3	0.3	94391.8	84292.6	25287.8	79543.6	
27.6	0.3	115676.9	105034.4	31510.3	111053.9	
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28.2	0.3	168851.5	156420.8	46926.2	196930.2	
28.5	0.3	194349.7	181600.6	54480.2	251410.4	HFL

6. Puliyan kulam

7. Kerudamadu Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
8.90	29.2	0.00	0.00	0.00	0.00	
9.20	30.2	0.06	0.03	0.03	0.03	Sill of Pro: Anicut
9.50	31.2	0.26	0.16	0.16	0.20	
9.80	32.2	0.47	0.37	0.37	0.56	
10.10	33.1	0.61	0.54	0.54	1.10	
10.40	34.1	0.70	0.65	0.65	1.76	
10.70	35.1	0.80	0.75	0.75	2.51	
11.00	36.1	0.88	0.84	0.84	3.35	
11.30	37.1	0.95	0.92	0.92	4.27	
11.60	38.1	1.03	0.99	0.99	5.26	
11.90	39.0	1.11	1.07	1.07	6.33	
12.20	40.0	1.21	1.16	1.16	7.49	
12.50	41.0	1.29	1.25	1.25	8.74	
12.80	42.0	1.37	1.33	1.33	10.07	
13.10	43.0	1.45	1.41	1.41	11.48	
13.40	44.0	1.56	1.50	1.50	12.99	
13.70	44.9	1.70	1.63	1.63	14.61	
14.00	45.9	1.88	1.79	1.79	16.41	
14.30	46.9	2.16	2.02	2.02	18.43	
14.60	47.9	2.70	2.43	2.43	20.85	
14.90	48.9	3.46	3.08	3.08	23.93	

8. Pirampadu SWE Bund

N/A

9. Echchampilavu Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
1.20	3.9	0.01	0.01	0.01	0.00	
1.50	4.9	0.07	0.04	0.04	0.04	
1.80	5.9	0.14	0.10	0.10	0.14	
2.10	6.9	0.22	0.18	0.18	0.32	Sill of Anicut
2.40	7.9	0.32	0.27	0.27	0.59	
2.70	8.9	0.45	0.39	0.39	0.98	F.S.L (Proposed)
3.00	9.8	0.61	0.53	0.53	1.51	B.T.L (Proposed)
3.30	10.8	0.95	0.78	0.78	2.29	

10. Pillaiyarkoviladi Anicut

10. Kovilpadaliaru Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
0.90	3.0	0.01	0.01	0.01	0.00	
1.20	3.9	0.04	0.02	0.02	0.02	
1.50	4.9	0.11	0.07	0.07	0.10	
1.80	5.9	0.23	0.17	0.17	0.27	
2.10	6.9	0.38	0.30	0.30	0.57	Sill of Pro: Anicut
2.40	7.9	0.57	0.47	0.47	1.05	
2.70	8.9	0.72	0.65	0.65	1.69	
3.00	9.8	0.88	0.80	0.80	2.49	
3.30	10.8	1.05	0.96	0.96	3.45	
3.60	11.8	1.23	1.14	1.14	4.59	
3.90	12.8	1.45	1.34	1.34	5.94	

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
0.00	0.0	0.02	0.02	0.02	0.00	
0.30	1.0	0.03	0.03	0.03	0.03	
0.60	2.0	0.14	0.08	0.08	0.11	Sill of Pro: Anicut
0.90	3.0	0.29	0.21	0.21	0.32	
1.20	3.9	0.46	0.37	0.37	0.69	
1.50	4.9	0.59	0.52	0.52	1.21	
1.80	5.9	0.76	0.67	0.67	1.89	
2.10	6.9	1.33	1.05	1.05	2.93	F.S.L (Proposed)
2.40	7.9	4.33	2.83	2.83	5.76	B.T.L (Proposed)

12. Kunduppallaaru Anicut

Contour level		Area (ac)	Mean Area	Volume (ac.ft)	Capacity (ac.ft)	Remarks
meters(m)	feet(ft)					
-2.10	-6.9	0.03	0.03	0.03	0.00	
-1.80	-5.9	0.22	0.12	0.12	0.12	
-1.50	-4.9	0.56	0.39	0.39	0.51	
-1.20	-3.9	1.05	0.81	0.81	1.32	
-0.90	-3.0	1.56	1.31	1.31	2.62	
-0.60	-2.0	2.05	1.80	1.80	4.43	
-0.30	-1.0	2.51	2.28	2.28	6.71	Sill of Yankan Anicut(Proposed)
0.00	0.0	2.91	2.71	2.71	9.42	
0.30	1.0	3.39	3.15	3.15	12.57	
0.60	2.0	3.69	3.54	3.54	16.12	
0.90	3.0	3.96	3.82	3.82	19.94	Sill of Kunduppallaaru Anicut(Proposed)
1.20	3.9	4.21	4.08	4.08	24.02	
1.50	4.9	4.49	4.35	4.35	28.37	
1.80	5.9	4.81	4.65	4.65	33.02	F.S.L (Proposed) of Kunduppallaaru Anicut (Proposed)
2.10	6.9	5.15	4.98	4.98	38.00	F.S.L (Proposed) of Yankan Anicut (Proposed)
2.40	7.9	7.68	6.42	6.42	44.42	B.T.L (Proposed) of Kunduppallaaru Anicut (Proposed)
2.70	8.9	10.29	8.98	8.98	53.40	B.T.L (Proposed) of Yankan Anicut (Proposed)

13. Yankan Anicut

Contour level		Area	Mean	Volume	Capacity	Remarks
meters(m)	feet(ft)	(ac)	Area	(ac.ft)	(ac.ft)	
-2.10	-6.9	0.03	0.03	0.03	0.00	
-1.80	-5.9	0.22	0.12	0.12	0.12	
-1.50	-4.9	0.56	0.39	0.39	0.51	
-1.20	-3.9	1.05	0.81	0.81	1.32	
-0.90	-3.0	1.56	1.31	1.31	2.62	
-0.60	-2.0	2.05	1.80	1.80	4.43	
-0.30	-1.0	2.51	2.28	2.28	6.71	Sill of Yankan Anicut(Proposed)
0.00	0.0	2.91	2.71	2.71	9.42	
0.30	1.0	3.39	3.15	3.15	12.57	
0.60	2.0	3.69	3.54	3.54	16.12	
0.90	3.0	3.96	3.82	3.82	19.94	Sill of Kunduppallaaru Anicut(Proposed)
1.20	3.9	4.21	4.08	4.08	24.02	
1.50	4.9	4.49	4.35	4.35	28.37	
1.80	5.9	4.81	4.65	4.65	33.02	F.S.L (Proposed) of Kunduppallaaru Anicut (Proposed)
2.10	6.9	5.15	4.98	4.98	38.00	F.S.L (Proposed) of Yankan Anicut (Proposed)
2.40	7.9	7.68	6.42	6.42	44.42	B.T.L (Proposed) of Kunduppallaaru Anicut (Proposed)
2.70	8.9	10.29	8.98	8.98	53.40	B.T.L (Proposed) of Yankan Anicut (Proposed)

14. Siththaru

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
5.40	17.7	0.00	0.00	0.00	0.00	
5.70	18.7	0.01	0.01	0.01	0.01	
6.00	19.7	0.03	0.02	0.02	0.02	
6.30	20.7	0.09	0.06	0.06	0.08	Sill of Pro.Anicut
6.60	21.7	0.20	0.14	0.14	0.22	F.S.L(Proposed)
6.90	22.6	0.27	0.23	0.23	0.46	
7.20	23.6	0.33	0.30	0.30	0.76	
7.50	24.6	0.39	0.36	0.36	1.12	
7.80	25.6	0.75	0.57	0.57	1.69	
8.10	26.6	1.13	0.94	0.94	2.63	B.T.L (Proposed)

15. Kachchalkodi Anicut

Contour level		Area	Mean	Volume	Capacity	Remarks
meters(m)	feet(ft)	(ac)	Area(ac)	(ac.ft)	(ac.ft)	
3.00	9.8	0.03	0.03	0.03	0.00	
3.30	10.8	0.15	0.09	0.09	0.09	Sill of Pro: Anicut
3.60	11.8	0.32	0.24	0.24	0.33	
3.90	12.8	0.41	0.36	0.36	0.69	
4.20	13.8	0.51	0.46	0.46	1.15	
4.50	14.8	0.71	0.61	0.61	1.76	F.S.L(Proposed)
4.80	15.7	0.92	0.81	0.81	2.57	B.T.L(Proposed)

16.Veerrasingam Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
2.50	8.2	0.00	0.00	0.00	0.00	
2.80	9.2	0.00	0.00	0.00	0.00	
3.10	10.2	0.00	0.00	0.00	0.00	
3.40	11.2	0.00	0.00	0.00	0.00	
3.70	12.1	0.01	0.01	0.01	0.01	
4.00	13.1	0.06	0.04	0.04	0.05	
4.30	14.1	0.16	0.11	0.11	0.16	Sill of Anicut (Proposed)
4.60	15.1	0.39	0.27	0.27	0.43	
4.90	16.1	0.61	0.50	0.50	0.93	
5.20	17.1	0.85	0.73	0.73	1.66	
5.50	18.0	1.04	0.94	0.94	2.61	F.S.L (Proposed)
5.80	19.0	1.26	1.15	1.15	3.75	B.T.L (Proposed)

17. Aladipeeli Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
3.90	12.8	0.00	0.00	0.00	0.00	
4.20	13.8	0.00	0.00	0.00	0.00	
4.50	14.8	0.06	0.03	0.03	0.04	
4.80	15.7	0.29	0.18	0.18	0.21	Pro. Anicut Sill
5.10	16.7	0.63	0.46	0.46	0.67	F.S.L (Proposed)
5.40	17.7	0.94	0.79	0.79	1.46	
5.70	18.7	1.37	1.15	1.15	2.62	
6.00	19.7	1.50	1.43	1.43	4.05	B.T.L (Proposed)
6.30	20.7	1.71	1.61	1.61	5.66	

18. Visvalingam Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
2.20	7.2	0.00	0.00	0.00	0.00	
2.50	8.2	0.01	0.00	0.00	0.00	
2.80	9.2	0.03	0.02	0.02	0.02	
3.10	10.2	0.23	0.13	0.13	0.15	Sill of Pro: Anicut
3.40	11.2	0.49	0.36	0.36	0.50	
3.70	12.1	0.71	0.60	0.60	1.10	
4.00	13.1	0.86	0.78	0.78	1.89	
4.30	14.1	1.04	0.95	0.95	2.84	
4.60	15.1	1.29	1.16	1.16	4.00	F.S.L (Proposed)
4.90	16.1	1.87	1.58	1.58	5.58	B.T.L (Proposed)

19. Singar Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
4.80	15.7	0.03	0.03	0.03	0.00	
5.10	16.7	0.13	0.08	0.08	0.08	
5.40	17.7	0.24	0.18	0.18	0.26	Sill of Pro: Anicut
5.70	18.7	0.41	0.33	0.33	0.58	
6.00	19.7	0.63	0.52	0.52	1.11	
6.30	20.7	0.80	0.72	0.72	1.82	
6.60	21.7	0.91	0.86	0.86	2.68	F.S.L(Proposed)
6.90	22.6	1.00	0.96	0.96	3.64	
7.20	23.6	1.08	1.04	1.04	4.68	
7.50	24.6	1.17	1.12	1.12	5.80	
7.80	25.6	1.31	1.24	1.24	7.04	
8.10	26.6	1.55	1.43	1.43	8.47	B.T.L(Proposed)

20. Kidai danchchan Anicut

Contour level		Area(ac)	Mean Area(ac)	Volume(ac.ft)	Capacity(ac.ft)	Remarks
meters(m)	feet(ft)					
17.90	58.7	0.01	0.01	0.01	0.00	
18.20	59.7	0.06	0.04	0.04	0.04	
18.50	60.7	0.21	0.14	0.14	0.17	
18.80	61.7	0.42	0.31	0.31	0.49	
19.10	62.7	0.71	0.56	0.56	1.05	
19.40	63.6	1.10	0.90	0.90	1.95	
19.70	64.6	1.57	1.33	1.33	3.29	
20.00	65.6	2.09	1.83	1.83	5.12	F.S.L (Existing)
20.30	66.6	3.21	2.65	2.65	7.77	B.T.L (Existing)

1.7 Existing & Designed Parameters of Tanks

By renovating the head works of these tanks under CSIAP, we can greatly enhance the surface water storage capacity of the cascade, as indicated in Table 4.

Table 4: Details of Existing and Designed Capacity

No	Name of Tank	Existing Capacity (Ac.ft)	Designed Capacity (Ac.ft)	Coordinate	
1	Sinnachalampan	93.44	93.44	9.166561417	80.629364339
2	Katchilaimadukkulam	490.2	490.2	9.175543957	80.652467467
3	Sinnakulam	15.82	15.82	9.189120359	80.660869351
4	Perumkaruveppamuripu kulam	89.64	89.64	9.193136409	80.66983842
5	Muthaiyankaddu Kulam	41000	N/A	9.211270269	80.627140331
6	Puliyan kulam	121.21	121.21	9.166657279	80.676524091
7	Kerudamadu Anicut	N/A	N/A	9.2099128	80.6879875
8	Pirampadu SWE Bund	N/A	N/A	9.3049784	80.728368
9	Echchampilavu Anicut	N/A	N/A	9.2804353	80.7243556

10	Pillaiyarkoviladi Anicut	N/A	N/A	9.2863247	80.71623421
11	Kovilpadaliaru Anicut	N/A	N/A	9.294567	80.722497
12	Kunduppallaaru Anicut	N/A	N/A	9.2919945	80.721164
13	Yankan Anicut	N/A	N/A	9.291073	80.7240465
14	Siththaru	N/A	N/A	9.26027602	80.7842256
15	Kachchalkodi Anicut	N/A	N/A	9.2681169	80.714098
16	Veerrasingam Anicut	N/A	N/A	9.27314805	80.7125733
17	aladipeeli Anicut	N/A	N/A	9.27255	80.716078
18	Visvalingam Anicut	N/A	N/A	9.2810157	80.7130672
19	Singar Anicut	N/A	N/A	9.2604736	80.7103193
20	Kidai danchchan Anicut	N/A	N/A	9.18717	80.6781958

After conducting hydrological, PIR, and engineering surveys, it has been determined that the FSL (Full Supply Level) has not been raised for several schemes during the ongoing development works initiated by CSIAP. Irrigation structures were constructed according the needful and site conditions. You can find all the details in Table 5

Table 5: Details of Existing and Designed Full Supply Level.

No	Name of Tank	Existing FSL (m MSL)	Designed FSL (m MSL)	Spill raised by (m)
1	Sinnachalampan	47.805	47.805	0
2	Katchilaimadukkulam	35.99	35.99	0
3	Sinnakulam	26.4	26.4	0
4	Perumkaruveppamuripu kulam	22.401	22.401	0
5	Muthaiyankaddu Kulam	39.3	Not applicable	
6	Puliyan kulam	27.9	27.9	0

Some tanks in this cascade did not have spill structures or spill pathways, causing them to become breached. However, as part of the CSIAP Project, spill and irrigation structures were constructed according to the topography as much as possible, as outlined in Table 6

Table 6: Existing and Designed Spill Length (based on Design Afflux)

No	Name of tank	Design Peak flow (m3/s)	Existing Spill Length (m)	Designed Afflux (m)	Design Spill length (m)
1	Sinnachalampan	75.2229	39.0	0.6	89
2	Katchilaimadukkulam	20.371	24	0.3	24
3	Sinnakulam	19.0	25.7	0.3	25.7
4	Perumkaruveppamuripu kulam	54.92	30	0.7	30
5	Muthaiyankaddu Kulam	N/A	75	N/A	N/A
6	Puliyan kulam	15.401	30.5	0.6	31

Table 7: Bund Top Level

No.	Name of Tank	Existing BTL (MSL)	Designed BTL (m MSL)
1	Sinnachalampan	48.7	49.1
2	Katchilaimadukkulam	37.4	37.7
3	Sinnakulam	27	27.6
4	Perumkaruveppamuripu kulam	23.2	23.9
5	Muthaiyankaddu Kulam	43	N/A
6	Puliyan kulam	29.1	29.4

1.8 Tanks

Layouts with Basic Details

Figure 3: Layout of Kerudamadu Anicut

Figure 4: Layout of Pirampadu SWE Bund

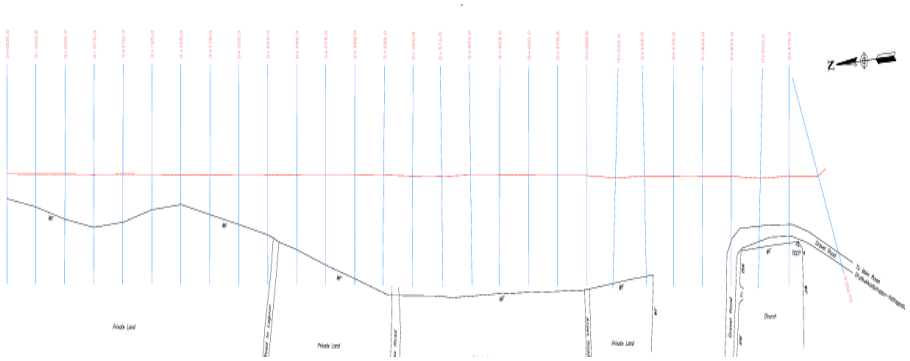

Figure 5: Layout of Echchampilavu Anicut

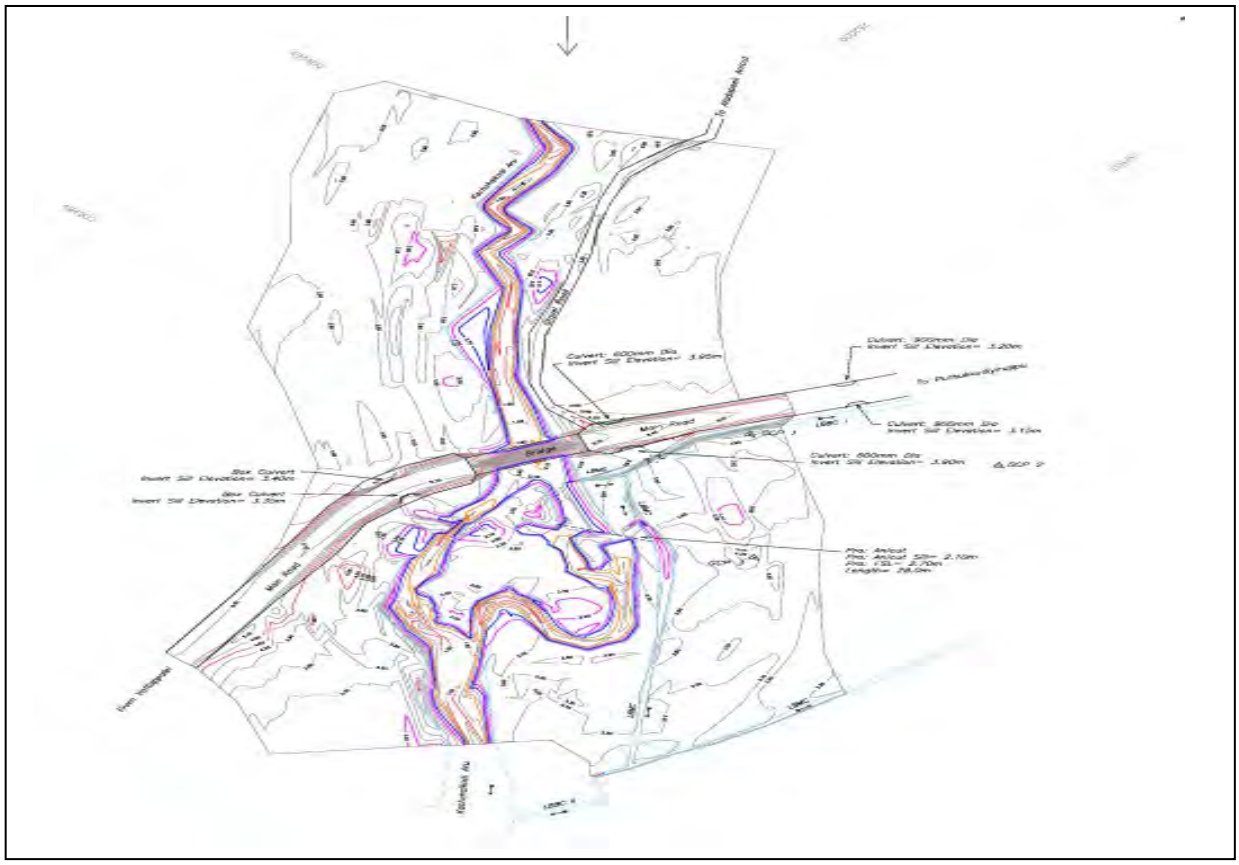

Figure 6: Layout of Pillaiyarkoviladi Anicut

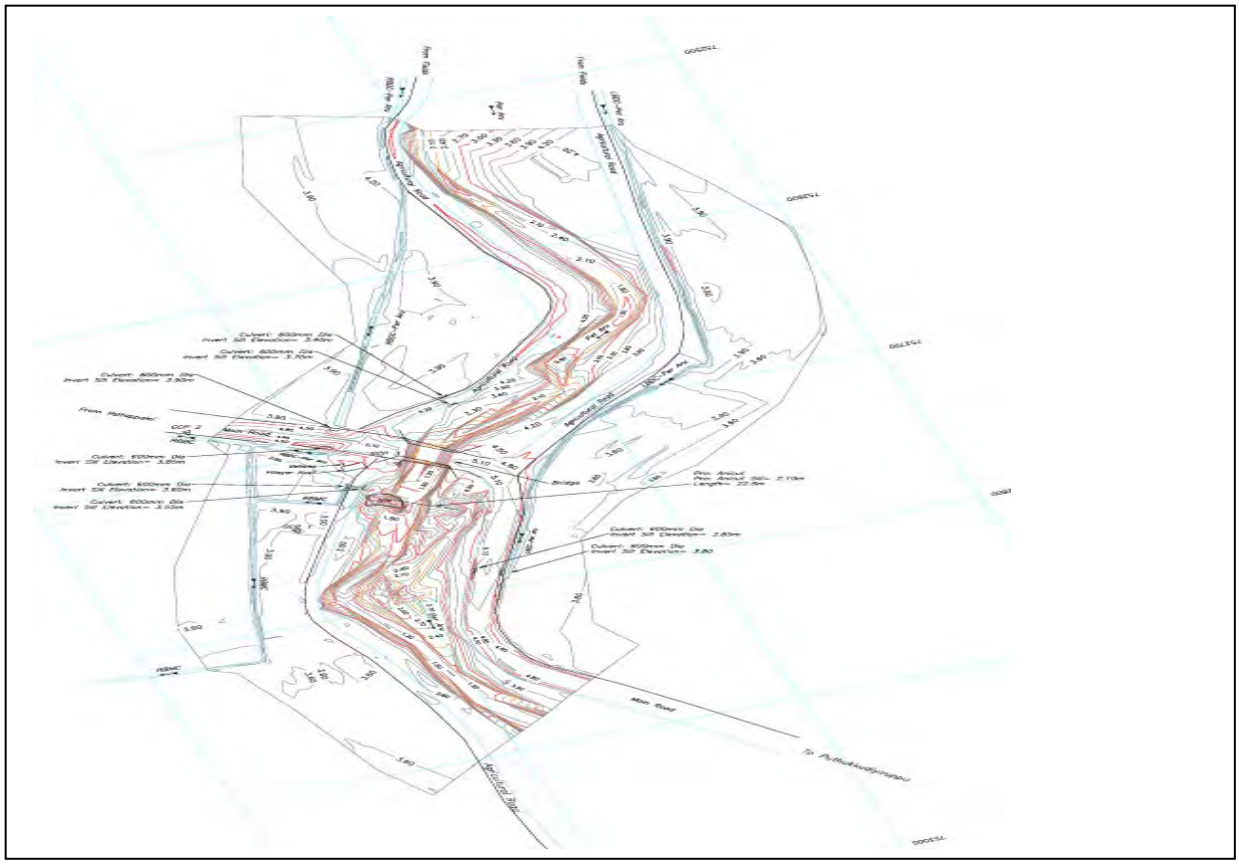

Figure 7: Layout of Kovilpadaliaru Anicut

Figure 8: Layout of Kunduppallaaru Anicut

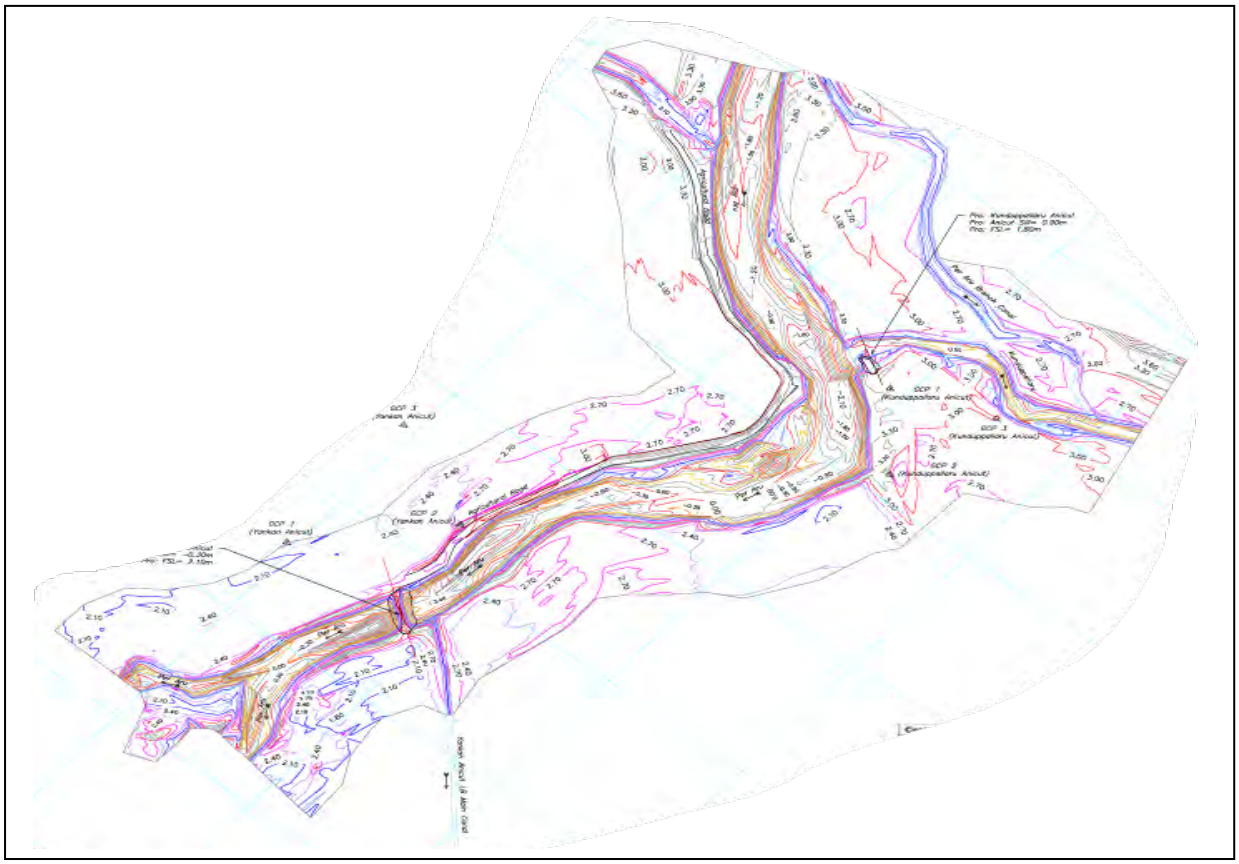

Figure 9: Layout of Yankan Anicut

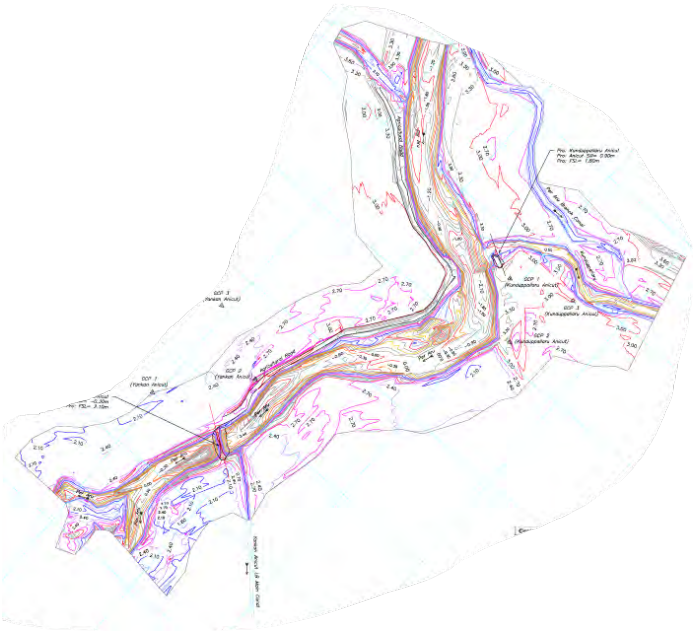

Figure 10: Layout of Siththaru

Figure 11: Layout of Kachchalkodi Anicut

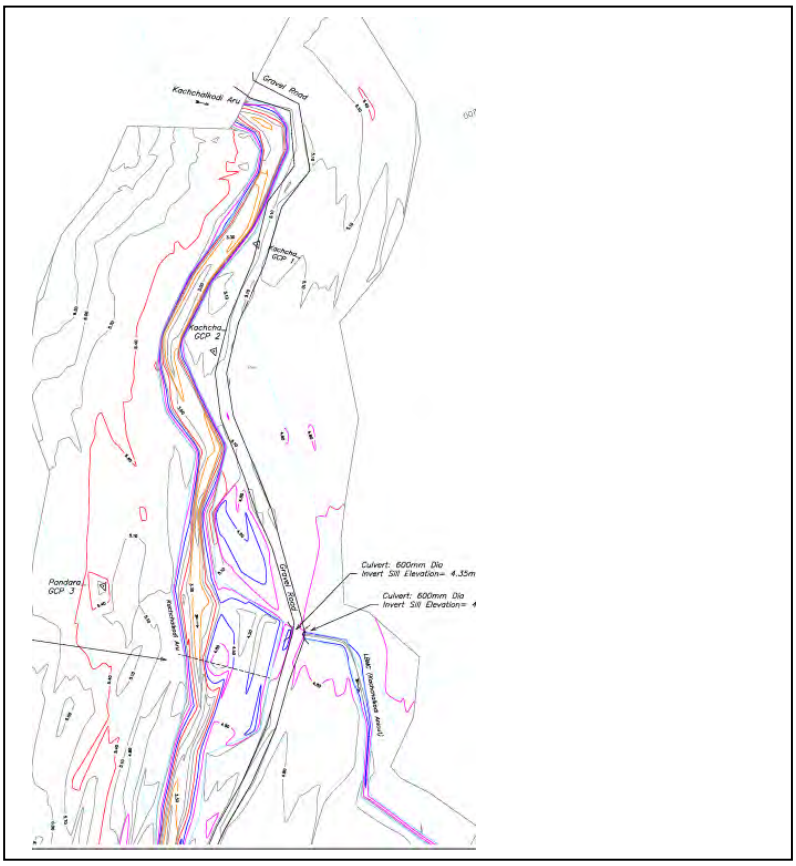

Figure 12: Layout of Veerrasingam Anicut

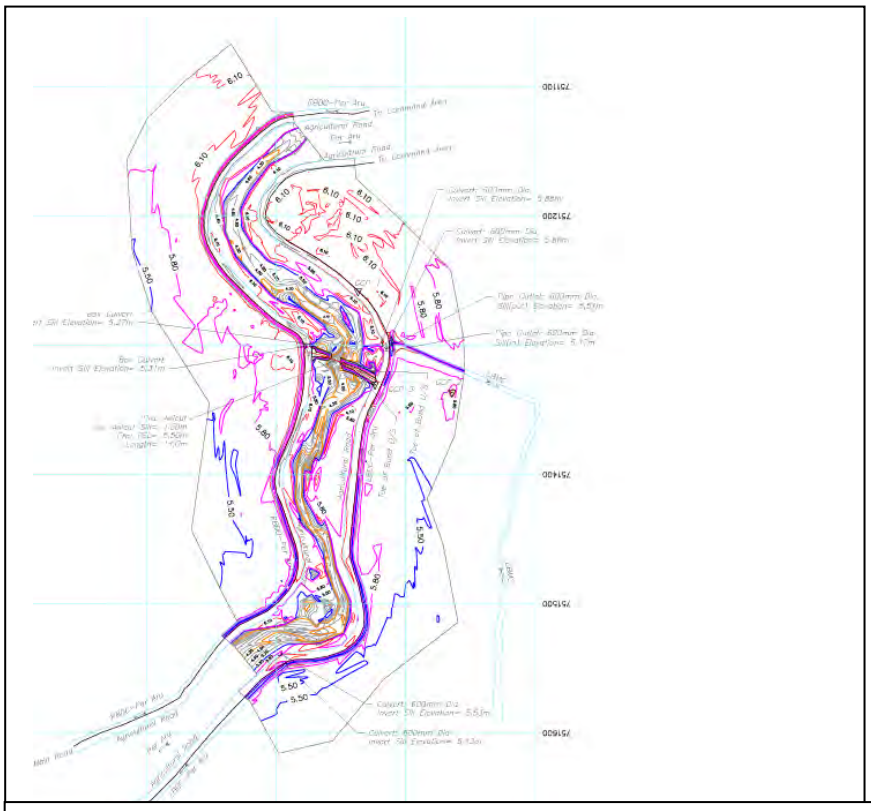

Figure 13: Layout of Aladipeeli Anicut

Figure 14: Layout of Visvalingam Anicut

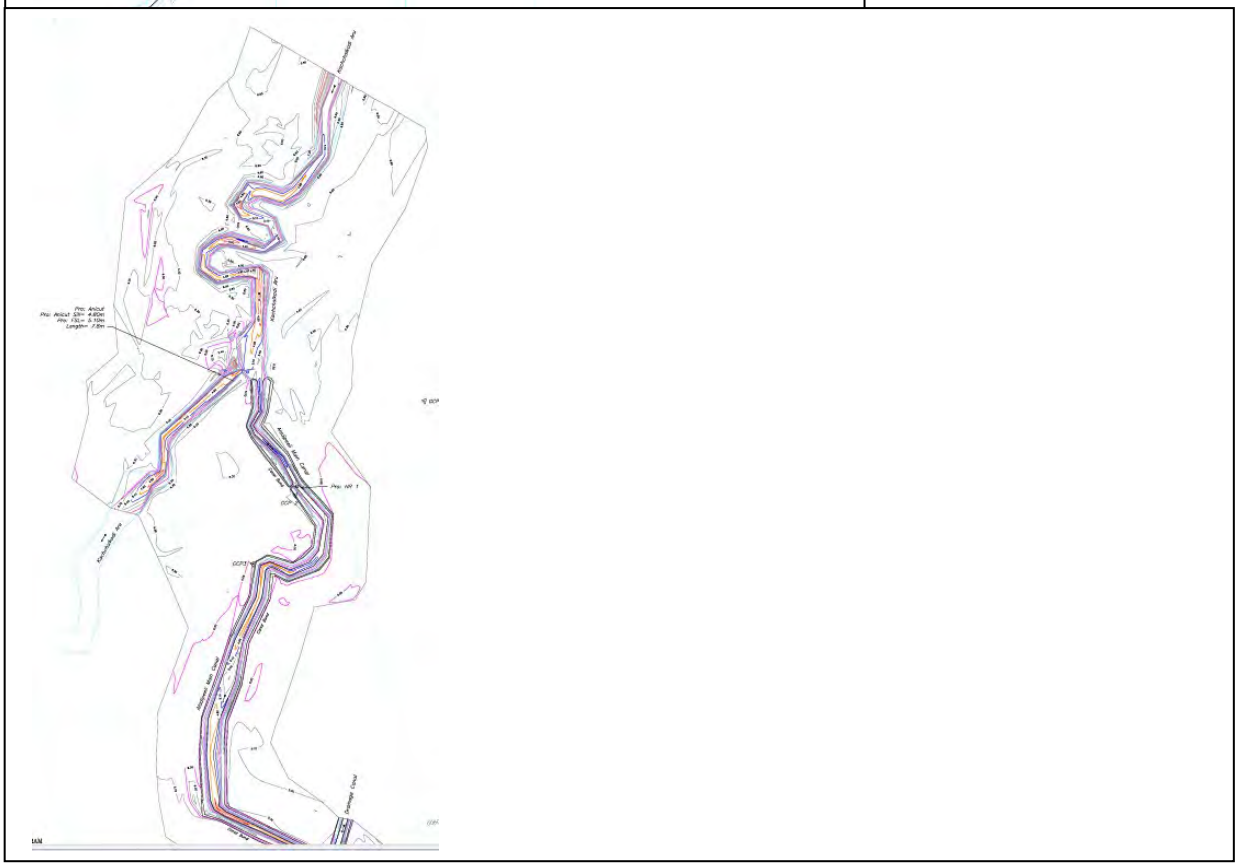

Figure 15: Layout of Singar Anicut

Figure 16: Layout of Kidai danchchan Anicut

1.9 Importance of Cascade Profile and Basic Development Plan

The Per Aru cascade refers to a system of interconnected irrigation channels and downstream water flows that are strategically designed to provide water to agricultural fields and ensure efficient water distribution. This system is often employed in areas where water scarcity is a challenge and where there is a need to optimize water usage for agricultural purposes.

Additionally, the cascade profile allows for the regulation of water flow and storage. By incorporating storage reservoirs at different levels, excess water can be stored during periods of high rainfall or low irrigation demand, ensuring a steady water supply during dry spells.

2. Details of the Current Profile of the Per AruCascade

The main objective of the cascade profile is to facilitate and to learn the cascade status, and issues that affect the cascade negatively which enables developing a pragmatic cascade

management plan to ensure the sustainability of the cascade and the water productivity of the tank system in the area.

2.1 Geological Aspect

Topography

The Topography of Mullaitivu district is flat land, gently sloping to the East and North and in the western part it is directed towards the West and South. This district has 70 km of coastal belt and four lagoons namely Kokkulai, Nayaaru, Nanthikadal and Mathalan with high potential for prawn culture. The elevation varies from sea level to 36.5 meters.

Soil

Reddish Brown Earth and Red yellow latosols which are suitable for cultivation. Reddish brown earths cover 44 % of the land area in the district other soil types namely Grumusols, Alluvial soil, Regosols and Solodized solonetz and solonchaks are scattered in the district. Some of the surfaces are corded and it accounts about 12 % of the total land area of the district.

The district is located in the low country dry zone. There are two agroecological regions namely DL1 and DL3 are found in the district. The DL1 region sub divided into 4 sub regions *i.e.* DL1 b, DL1e, DLIf and DLId.

2.2 Ecosystem

This cascade exhibits a remarkable biodiversity. There were several species of flora, fauna

and natural aspects observed in and around the cascade during the transect walk.

a. Flora

The forest cover in Mullaitivu district is 148876.99 ha (57% of total area), and the type of forest cover found in this area is tropical thorn forest, which is primarily influenced by monsoon rains. The vegetation around the cascade system is diverse and includes both terrestrial and aquatic plant species. Common plant species found in the area include mangroves, grasses, reeds, water lilies, and various types of aquatic vegetation. These plants provide habitats for a wide range of wildlife.

b. Fauna

The tank cascade system supports a diverse array of fauna, including both terrestrial and aquatic species. The tanks and their surrounding areas attract numerous animals like elephants, monkeys, deer, sambar, rabbits, and wild boar, as well as birds, such as herons, egrets, wood peckers, jungle fowl, peacock, and waterfowl making it an excellent spot for bird watching. Other common fauna in the region includes reptiles like crocodiles, snakes, and lizards, as well as fish, amphibians, and small mammals.

c. Aquatic Life

The tanks within the cascade system are home to various fish species. These fish serve as a food source for local communities and contribute to the overall ecological balance of the tanks. Some of the common fish species found in these tanks include Tilapia, Catfish, and Gourami.

d. Natural Features

Per Aaru cascade system is characterized by its unique hydrological features. The interconnected tanks create a natural water flow system, where water from one tank flows into the next, allowing for effective water management and irrigation. This system is designed to capture and store rainfall during the wet season and release water gradually during the dry season, ensuring a steady water supply for agriculture. Additionally, the tanks and their surrounding areas often attract migratory birds, especially during the winter months when bird populations from colder regions seek warmer climates. This seasonal influx of birds adds to the biodiversity of the area

Effect on flora and fauna: The forest area of this cascade is enriched with different trees. *Muthirai* (*Chloroxyglon swietenia*) a high timber value tree is commonly seen in this area. *Paalai* or *Pallu (Manilkara hexandra* (Roxb)dubard), a high timber value tree is also common in the cascade. It bears edible, sweet fruit during May - August. Area residents pluck this fruit, sell it for passing by passengers and earn a substantial amount. Veerai (*Drypetes sepiaria*), *Karungkali* (*Drospyros* spp), *Kaddmanakku* (*Vitex altissimamilla*), and *Kaya* (*Memecylon umbellatum*) are some of the trees that can be seen very commonly in the forest area of this cascade. It figures as one of the 100 flowers offered to Lord Shiva in the famous Tamil Poet Kapilar's work (Kurinjip Paatu). It is a treat to the eyes when it is in full bloom. The leaves (especially the midrib region) are rich in glucose and eaten by giant squirrels. The leaves are also offered as prasadam (like tulsi) by a saint. They taste slightly sweet and sour.

The forest area is the habitat of a wide range of animals and birds. Elephants, deer, shambar, rabbit, monitor lizard, and wild boar can be seen commonly in this area. Though leopard also live in this forest, it is rarely seen. Garganey (*Vennpuruwa Vaathu*), Eurasian Wigeon (*Naamaththalai Vaathu*), Asian Open Bill (*Nathaikuththi Naarai*), Cattle Egret (*Unnik Kokku*), Herons, Ibis and common Myna are some of the birds commonly seen in this area.

2.3 Hydrological Aspect

Table 08: Hydrological Characteristics of the Cascade

Hydrological Character	Current Status
***Perung Kulam* or *Keell Kulam* (Mahawewa or Pahala wewa)**, is being used for agricultural activities.	Observed the hydrological characters of *Perungkulam* (Mahawewa) in all tanks under cascade Rehabilitation of these tanks is being implemented under CSIAP.
Kuluwewa (forest tank) was constructed in the upper catchment to capture rainwater, provide water for animals and filter debris and silt.	N/A
Kayan wewa is built in degraded or cleared upper catchment to trap sediments and control salinity.	Meyankulam is situated in the upper cascade area, and collects water from the upper catchment area. Rehabilitation works are being carried out by CSIAP.
Olagam Wewa is situated close to village and provide water for seasonal cultivation	KunchupAaruthi were used for seasonal agriculture
Goda wala (Water hole): constructed for the trapping and deposition of silt, to avoid	N/A

siltation and sedimentation of the main village tank.	
Ihala Wewa (Storage tank): constructed for the storage of water, and is associated with paddy cultivation and other community activities.	All the tanks were constructed for the storage of water and rehabilitation is being carried out under CSIAP

Table 09: Current Status of Cascade Elements (PE)

Elements	Current Status
Tank bed	Observed in all tanks under this cascade
Tank bund	Observed in all tanks under cascade
Soil ridge	Not observed in Cascade
Up-stream waterhole	Not observed in Cascade
Up-stream tree belt	Observed in most of the tanks in the cascade
Rain-fed farm	Observed in all ta in the cascade
Down-stream interceptor	Not observed in the Cascade
Hamlet buffer	Not observed in the Cascade
Paddy field	Observed in all tanks in the cascade
Drainage	Natural drainage paths were observed in the cascade
Shrub land	Observed in all tanks in the cascade

2.4 Environmental Aspect (Rainfall & Temperature)

The district is located in the dry zone of Sri Lanka. The average annual rainfall of the district is 1275mm with a bimodal rainfall pattern, where 75% of the rain is received during the early phase of the northeast monsoon period from November to February and temperature during this period is relatively low. The remaining periods are parched and warm, especially during the southwest monsoon season from June to August. The monthly average temperature ranges between 23 ℃ and 39 ℃.

Table 10: Average Monthly Rainfall & Evaporation during 2022

S/N	Month	Evaporation (mm/month)	Rainfall (mm/month)
1	January	11.32	99.5
2	February	105.35	70.4
3	March	136.03	24.7
4	April	139.67	39.5
5	may	130.85	81.1
6	June.	141.83	18.5
7	July	139.13	47.5
8	August	137.95	57.8
9	September	140.00	82.90
10	October	117.35	175.8

11	November	88.00	360.50
12	December	99.85	290.9

Source: Hydrology Study-Page no-31

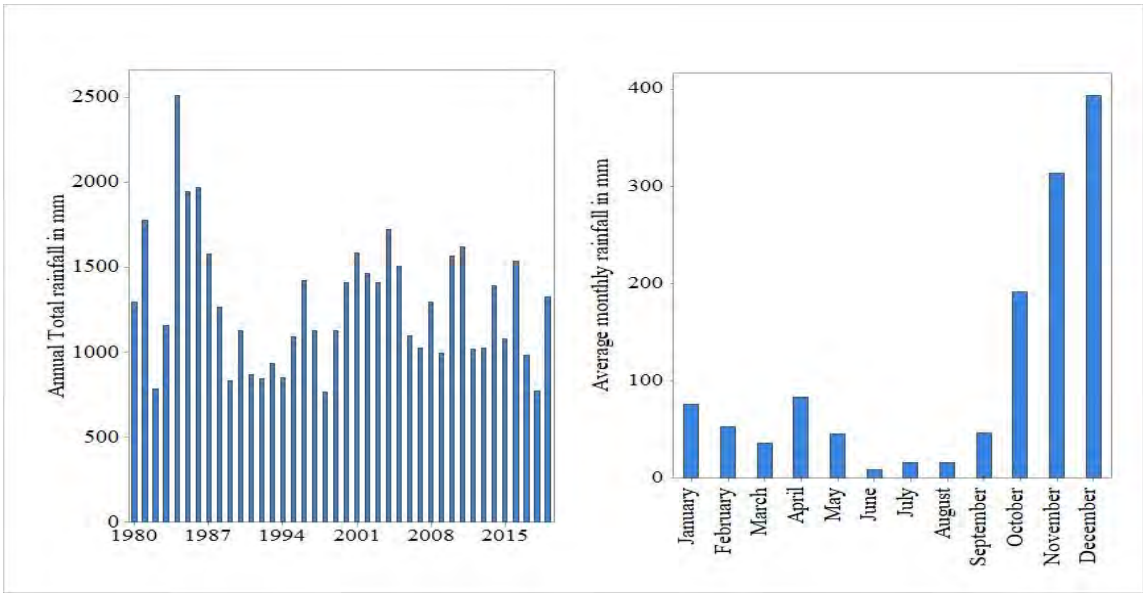

Figure 17: Annual total rainfall and average monthly rainfall pattern of the Mullaitivu District from 1980 to 2020.

(The data were gathered from the Spatio-temporal variability of drought over the Mullaitivu District in Sri Lanka from 1980 to 2020)

Rainfall is the leading cause of drought and flood hazards in the cascade area. Generally, very little rainfall is recorded in June, July, August and September and in some months, no rainfall is recorded in the study area in some years. Figure 3 illustrates the monthly pattern of rainfall for the Mullaitivu district. No rainfall in May-June leads to a water shortage in subsequent months because July onwards is the hottest months in the cascade area. There are no significant changes in the annual total rainfall for the Northern region of Sri Lanka. Still, there is a decreasing pattern in the monthly rainfall in the Mullaitivu district. The percentage of forest cover has been increased in the cascade area. The percentage of forest cover has been increased in the cascade area during the last two decades. Coastal stations have fewer drought conditions compared to the stations located far from the ocean. Generally, drought conditions originate in Western land areas such as Thunukkai, Naddankandal, or Ambalapperumal and extend eastward. There are many reasons for these conditions, such as geographical location (distance from the sea), soil, and land use patterns. Besides, groundwater is in poor condition in this area. Changes in sea surface temperature will impact Mullaitivu. Because its eastern boundary is a colossal sea surface (bay of Bengal). Previous studies on IOD in other parts of SL also revealed a positive relationship between IOD and rainfall in Sri Lanka.

The study area has seven (7) primary minor tanks and 01 anicut providing water for domestic and irrigation purposes. These tanks & anicut function as drought mitigation sources for the area during the first inter and southwest monsoon. If the reservoir's water-holding capacity is increased, the stored water can be used during high temperature and no/less rainfall periods to mitigate or prevent the impact of drought in the district.

2.5 Details of the Socio-Economic Aspect

Demographic Details

The proposed cascade profile demographic details are given below. Due to the prevailed war a significant increase in disabled and women-headed families was observed.

Table 11: Demographic Detail of Per Aaru cascade

Tank Name	Total Population	Total Farm Families	Vulnerable Family			
			Women Headed	Disable	Elders	Samurdhi
Yankan Anicut	506	125	03	01	40	73
Kundupallaru Anicut	161	45	01	00	27	12
PillaiyarKoviladi Anicut	152	40	00	00	18	15
Siththaru Anicut	266	62	02	01	31	21
Sivasami Anicut	271	66	01	05	28	19
Katsilaimadu		329	54	12	135	125
Veerasingam Anicut	348	87	04	03	34	41
Sinnakkulam	143	29	02	01	12	10
Perumkaruveppamurippu	90	18	01	03	35	40
Muthaiyankaddu Kulam	17400	4600	89	12	1345	2240
Puliyan kulam	330	66	05	02	32	30
Kerudamadu Anicut	310	66	07	04	28	32
Pirampadu SWE Bund	455	93	05	02	34	42
Echchampilavu Anicut	197	40	03	01	12	20
Kachchalkodi Anicut	132	27	01	01	08	15
Visvalingam Anicut	563	164	09	03	56	87
Kovilpadaliaru Anicut	143	30	02	00	14	13
Singar Anicut	420	90	04	01	21	60
Kidai danchchan Anicut	345	83	05	02	34	41
Sinnachalampan	231	47	02	03	17	23

The rehabilitation of anicuts under the Per Aru cascade marks a transformative step toward sustainable water management and agricultural development in Mullaitivu District. Spanning two Grama Niladhari Divisions, Puthukkudiyiruppu East (MU/36) and Mallikaitheevu (MU/39), the project is set to bring significant benefits to these communities under Puthukkudiyiruppu ASC.

This ambitious initiative, implemented under Phase II of the Climate Smart Irrigated Agriculture Project (CSIAP) in the Northern Province, is supported by the Department of Agrarian Development (DAD), Mullaitivu. As the custodian of the tanks and irrigation infrastructure in the region, the DAD plays a pivotal role in ensuring the project's success.
To provide a comprehensive understanding of various aspects related to this agricultural system, we'll delve into several key dimensions including socio structure, economic patterns, farm families, farm practices, water availability, infrastructure development, traditional

practices, land use patterns, income generation techniques, land issues, wild havoc issues, threat to human livelihood, and market linkages and facilities.

Social Structure:

The social structure of the Per Aru Cascade region is deeply rooted in traditional village life, with a strong emphasis on community ties and mutual support. Most residents are smallholder farmers who have inherited their lands through generations. Extended families often live together or in close proximity, creating tightly-knit social units. Leadership within the community is often informal, with elders and religious figures playing significant roles in conflict resolution and decision-making, especially related to water management. Farmer organizations and water user groups (WUGs) are active in some areas, promoting cooperation in managing irrigation resources. Gender roles are well-defined, with men primarily engaged in farming activities and women contributing significantly to household economies through home gardening and local markets. Although the social fabric remains strong, challenges such as youth migration to urban areas and changing aspirations are beginning to reshape the traditional structure.

Economic Pattern:

The economy of the Per Aru Cascade area is predominantly based on agriculture, with paddy farming being the principal activity during the Maha season. Many farmers practice double cropping, using available water resources to cultivate pulses and vegetables during the Yala season. Livestock rearing, especially of cattle and goats, provides an additional source of income and security against crop failure. Inland fishing is common in the larger tanks like Muthaiyankaddu Kulam, offering both food and income. Employment is highly seasonal, peaking during planting and harvesting periods. Beyond agriculture, a small percentage of the population engages in trade and small businesses, selling agricultural produce, groceries, or services like tractor rentals. Migration for employment both temporary and permanent is an emerging trend, with many households increasingly dependent on remittances sent by family members working in nearby towns or overseas.

Infrastructure Development:

Infrastructure development across the Per Aru Cascade varies from well-developed to needing critical upgrades. Most of the tanks and anicuts, though originally well-constructed, now require rehabilitation such as desilting, strengthening bunds, and repairing sluices to improve irrigation efficiency. Rural road networks connect the villages to larger markets and towns, but poor maintenance and seasonal flooding can make travel difficult. Electricity supply is available in almost all villages, although power cuts remain an issue during peak agricultural seasons. Education infrastructure includes several primary schools and a few secondary institutions, but access to higher education often requires travel to urban centers. Healthcare services are basic, typically limited to rural hospitals or clinics, leading to challenges in addressing major health issues. Storage and post-harvest facilities are minimal, forcing many farmers to sell produce immediately after harvest at lower prices, emphasizing the need for improved cold storage and processing centers.

Traditional Practices:

Traditional agricultural practices such as crop diversification like paddy and ground nuts in the paddy field, traditional irrigation methods by looking at auspicious times and producing seedlings during the dark moon period, and first harvesting on an auspicious day *('Puthir eduththal'* in Tamil) and manual harvesting with traditional songs are prevalent in the region, passed down through generations.

Income Generation Techniques:

Farming is a major source of income for the local population. Income is generated through the sale of agricultural produce in local markets, supplemented by off-farm activities or employment.

Several income generation techniques are emerging to improve livelihoods in the Per Aru Cascade region. Agricultural diversification is increasingly promoted, with farmers encouraged to grow high-value crops like chilies, onions, and pulses during the Yala season to reduce dependency on paddy alone. Small-scale value addition, such as rice milling and pulse processing, offers opportunities for enhancing farm incomes. Agro-ecotourism has potential due to the scenic landscapes and traditional farming practices, which could attract visitors seeking authentic rural experiences. Skill development programs targeting youth and women such as training in mechanical repairs, organic farming, and ICT-based marketing are beginning to gain traction. Inland fish farming in larger tanks presents another promising avenue for supplementary income. Lastly, the formation of Farmer Producer Organizations is helping farmers collectively market their products, secure better prices, and reduce exploitation by middlemen, thus improving the overall economic resilience of the communities.

2.6 Details of Construction Activities within the Cascade System

The below table describes the construction activities under Per Aru Cascade

Table 12: Construction Activities are Planned to be Implemented under CSIAP

No.	Sinnachalampan	Katchilaimadukkulam	Sinnakulam	Perumkaruveppamuripu kulam
1	Improvements to Tank Bund & Spill tail canal	Improvements of Katchilaimadu Tank Bund	Improvements of Sinna kulam Tank Bund	Improvements of Tank Bed

2	Sulice Repiars	Katchilaimadukulam Rip rap	Improvements of Sinna kulam Earth Channel	Improvements of Perumkaruveppamurippu kulam Tank Bund
3	Construction of (450mm x 450mm) Canal lining	Repair of Katchilaimadu kulam CO Spill	Construction of Sinna kulam Channel Farm Turn Ou	Construction of CO Spil
4	Construction of 100mm dia. hump pipe Farm Turnout (2.44 m Long)	Katchilaimadu kulam Spill site Improvement	Construction of Sinna kulam main Earth channel Cut Throat Flume	Construction of Bathing Step
5	Construction of 100mm dia. hump pipe Farm Turnout (7.32 m Long)	Katchilaimadu kulam Earth Channel	Repair of Sinna kulam Agro road	Improvements of Perumkaruveppamurippu kulam LB/RB Earth Channel
6	Construction of Curtain Wall	Construction of Katchilai madu Channel Farm Turn Out		Construction of Perumkaruveppamurippu kulam Center/RB Channel Farm Turn Out
7		Construction of Katchilaimadukulam LB/RB Earth channel		Construction of Perumkaruveppamurippu kulam LB/RB Earth channel Drop
8		Improvements of Katchilaimadu Agro roads		nstruction of Perumkaruveppamurippu kulam Center/RB Earth channel Cut Throat Flume Structure
9		Construction of 600 mm Dia Hume Pipe One Row Culvert		Construction of Perumkaruveppamurippu kulam RB Channel 600 mm Dia Hume Pipe One Row Culvert
10		Construction of Katchilaimadukulam Agro Road Box Culvert		

2.7. Land Use and Crop Pattern within the Cascade System

The Per Aru Cascade, situated within an important watershed system, is characterized by a network of tanks and anicuts that play a vital role in sustaining the agricultural and socio-economic fabric of the region. The major tanks/anicuts include Sinnachalampan, Katchilaimadukkulam, Sinnakulam, Perumkaruveppamuripu Kulam, Muthaiyankaddu Kulam, Puliyan Kulam, Kerudamadu Anicut, Pirampadu SWE Bund, Echchampilavu Anicut, Pillaiyarkoviladi Anicut, Kovilpadaliaru Anicut, Kunduppallaaru Anicut, Yankan Anicut, Siththaru, Kachchalkodi Anicut, Veerrasingam Anicut, Aladipeeli Anicut, Visvalingam Anicut, Singar Anicut, and Kidaidanchchan Anicut.

The Per Aru Cascade covers an approximate command area of about 4,000 to 4,500 hectares, benefiting from an interconnected network of tanks and anicuts that regulate irrigation across multiple villages. Out of this total area, around 70% (approximately 2,800 to 3,000 hectares) is actively cultivated, with paddy fields occupying the majority. Paddy is grown intensively during the Maha season (October–March), accounting for nearly 85% of the total cultivated area in Maha, mainly due to sufficient rainfall and storage in major tanks like Muthaiyankaddu Kulam and Sinnachalampan Tank. During the Yala season (April–August), when water resources are limited, cultivation shifts toward more drought-tolerant crops, with about 30% to 40% of the command area being used for Other Field Crops (OFCs) such as black gram, green gram, cowpea, gingelly (sesame), maize, and chili.

In addition to seasonal cultivation, around 10–15% of the land, especially near homesteads, is utilized for home gardening, producing vegetables (such as brinjal, okra, and tomatoes), fruits (like banana, mango, and lime), and coconut palms, mainly for subsistence and local market sales. Livestock grazing areas and fallow lands occupy about 8–10% of the total landscape, particularly in upland and less irrigated zones. The cascade also contains vital tank bed and catchment areas (covering roughly 5–8% of the total area), which are critical for water collection and natural regeneration of grasslands during the dry periods.

Overall, land use and cropping patterns are closely tied to water availability from the tanks and anicuts. Traditional mono-cropping of paddy is gradually evolving towards crop diversification strategies encouraged by agricultural extension services, promoting resilient farming systems to cope with climate variability. Efforts are being made to optimize the use of uplands through dryland farming techniques and to introduce high-value crops that require less water, thus improving land productivity and income levels within the cascade.

2.8 Details of Irrigation Management within the Cascade System

The Per Aru Cascade System manages irrigation across an estimated command area of approximately 4,000 to 4,500 hectares, relying on a series of around 20 interconnected tanks and anicuts such as Muthaiyankaddu Kulam, Puliyan Kulam, Sinnachalampan Tank, and Pirampadu SWE Bund. The system mainly depends on rainwater harvesting, with tanks capturing monsoon rainfall and redistributing it through a network of canals and channels. Nearly 70% of the cascade’s irrigable land is covered under the command areas of major tanks, while the remaining 30% depends on minor tanks and direct river diversions. The management structure primarily involves Farmer Organizations (FOs) and Water User Groups (WUGs), which are responsible for seasonal water allocation, scheduling, minor maintenance, and resolving disputes among farmers.

Water is distributed based on a rotational irrigation system, commonly known as "turn system", where farmers are allocated specific days and times for water access to ensure equitable distribution. Around 65–70% of farmers participate actively in WUG meetings to plan irrigation schedules before the Maha and Yala seasons begin. However, maintenance responsibilities for larger tanks, such as desilting and major repairs, typically fall under the

Department of Agrarian Development (DAD) and the Irrigation Department, with occasional support from donor-funded rehabilitation projects. On average, around 10–15% of the canal systems experience leakage and water loss annually, primarily due to siltation and unlined channels.

Water productivity varies across the cascade; in Maha season, average paddy yields reach about 3.5 to 4.2 tons per hectare, while in Yala, due to limited water availability, yields drop by nearly 30–40%. Water management challenges include inadequate tank capacity due to sedimentation (reducing storage by an estimated 20–25% over decades), seasonal variability in rainfall, and occasional unauthorized water tapping. To improve irrigation efficiency, recent initiatives promote System of Rice Intensification (SRI) methods, rehabilitation of sluices, and community-led tank maintenance programs. Overall, effective irrigation management remains critical to sustaining agricultural productivity and rural livelihoods in the Per Aru Cascade.

3. Issues Identified in the Cascade

3.1 Hydrological Issues

The cascade faces the below mentioned hydrological issues which were observed during the Focus group discussion and transect walk.

a. Water Scarcity

The proposed cascade experiences significant water scarcity due to limited water storage facilities and irregular rainfall patterns. Even though the region relies heavily on monsoon rains, a significant amount of water is lost due to inadequate storage capacity. Further any deviation in the normal precipitation leads to water shortages.

b. Groundwater Depletion

The excessive extraction of groundwater for agriculture, domestic and industrial purposes has resulted in the depletion of the groundwater level in the area. Overexploitation of groundwater can lead to saltwater intrusion, making the water unfit for consumption and irrigation.

c. Flooding

Despite water scarcity issues, the cascade area is also prone to periodic flooding, particularly during the North-East monsoonal period. The region's flat topography and inadequate drainage systems contribute to flash floods, causing damage to infrastructure and agriculture and eventually displacing local communities.

d. Water Pollution

Pollution from agricultural runoff and inadequate wastewater treatment pose a significant threat to the water quality in the cascade area. Contamination of surface water and groundwater sources negatively affects human health and the ecosystem.

3.2 Environmental Issues

The effects of climate change, such as rising temperatures and variation in precipitation patterns, increased frequency of droughts and intense storms exacerbate hydrological concerns in the cascade system. Since this village is in a coastal area, sea-level rise and intrusion pose additional challenges for water resource management.

- **Climate Change Impact:**

Climate change poses additional challenges to irrigation management in the cascade area. The Cascade area is vulnerable to climate change and natural disasters such as floods and droughts, which negatively affect agriculture and other livelihoods. The availability of water from the Per Aru cascade system is crucial for agricultural activities. Adequate and reliable water supply is necessary for sustaining crops and ensuring a successful harvest. Sinnachalampan is an upper tank in a cascade system that receives water from its own catchment area. It has the earth bund and spill, sluice structures. Katsilaimadu tank receives water from its own catchment area as this tank also being the another upper tank of the cascade. The Perumkaruveppamuripu kulam is situated in the middle of a cascade. It receives water from the Muththaiyankaddu kulam, which spills water, and it also has its own catchment. The Muthaiyankaddu Kulam is the major upper tank and it receives water from its own catchment area which is high compared to the other tanks in the same cascade in the middle of a cascade. The Puliyan kulam is situated in the middle of a cascade. It receives water from the Muthaiyankaddu Kulam and its small own catchment area.

Erratic rainfall patterns, increased temperatures, and prolonged dry spells can affect water availability and crop water requirements. Developing climate-resilient irrigation strategies, such as implementing micro-irrigation systems, using drought-tolerant crop varieties, and practising conservation agriculture, can help mitigate the adverse impacts of climate change and ensure the sustainability of agriculture in the area.

- **Effect on domestic water supply:**

Neither water distribution nor domestic water supply schemes is from this cascade also for domestic consumption.

- **Soil erosion:**

Water flowing through the cascade system can cause soil erosion, particularly in areas where the sandy type soil. This erosion can lead to the loss of fertile topsoil, affecting the long-term productivity of the land.

There is a high chance of inducing soil erosion due to the rehabilitation of this cascade system by clearing vegetation, excavation activities, and developing bunds, barrow pits, and soil piles. However, rehabilitation works are proposed to be carried out in the dry season with the aim of controlling soil erosion due to rehabilitation activities.

Being a flat terrain, there is less chance of getting soil eroded due to cultural practices. However, if the land preparation is done and exposed to intensive rains occurring during September and October there is more chance for soil erosion as these soils are not much stable.

On the other hand, the soils get compacted due to the absence of organic matter and tend to generate more runoff leaving soils with low water holding capacity. As a result, the soil soon becomes dry and crops are affected with soil moisture deficit even during a short dry spell. Since no one has done any study on this aspect in this area, it is appropriate to initiate studies on soil erosion and soil regeneration.

- **Siltation:**

There is significant siltation was observed in this cascade area. This would have been due to mass-scale land clearing for cultivation soon after the war and the resettlement of a large number of families. The rehabilitation of the cascade system will mitigate these impacts. Anyway, farmers have an opinion that all the tanks in a cascade should be renovated to reap the full benefit of these neglected tanks for more than 40 years. However, the rehabilitation of all seven tanks in this cascade will immensely benefit the farmers. But if the anicut also could be rehabilitated the farmers will enjoy the full benefit of the cascade.

3.3 The Issues related to Irrigation

Limited infrastructure for water storage and distribution hampers effective water management in the area. Insufficient river paths, irrigation systems and canals lead to inefficient water management, hindering agricultural productivity and economic development. The critical issues were identified and ranked during the workshop; and interventions were proposed for each critical issue.

- **Improper Feeder & Drainage Network:** One of the primary issues in irrigation management is improper feeder & drainage network. Due to outdated or poorly maintained infrastructure in most of the tanks in the cascade, water may not reach all areas evenly, leading to water scarcity for some farmers in down-stream tanks while others face waterlogging especially during heavy rainfall or when excessive irrigation occurs. Waterlogged soil can negatively impact crop growth, causing root suffocation and increased susceptibility to diseases and then resulted in uneven growth and yield variations among the cultivated crops.

- **Lack of Awareness:** Many farmers lack knowledge about efficient irrigation practices, scheduling and water management techniques, leading to inefficient water use and reduced crop yields. This is often due to a lack of access to information, training, and modern technologies, or the inability to adapt to new techniques.
  At present, the CSIAP is conducting training programs on CSA and workshops to educate farmers about the benefits of sustainable irrigation practices, including water-saving methods, which can enhance their awareness and understanding of the irrigation schemes of this cascade area.

3.4 Issues in the Command Area

Addressing these issues requires a comprehensive approach that includes improved water governance, sustainable water management practices, investment in infrastructure development, and initiatives to promote water conservation and pollution control. It is crucial to prioritize long-term solutions that ensure water availability, quality, and resilience in the Per Aru cascade.

- **Land Issues:**
  Land issues may encompass concerns related to land ownership, land fragmentation, land tenure systems, and disputes over land boundaries. These issues affect agricultural productivity and livelihoods.

- **Land Fragmentation:** The Per Aru cascade command area is often divided into smaller plots to accommodate the flow of water. This fragmentation can make it challenging for farmers to manage their crops efficiently, especially when it comes to mechanized farming practices. It may also lead to difficulties in accessing and maintaining the land.

- **Sedimentation:** As water moves through the cascade system, it can carry sediment, which may accumulate in lower-lying areas or reservoirs. Sedimentation can reduce the water storage capacity and hinder the effective functioning of the irrigation infrastructure. Regular maintenance and sediment removal are essential to ensure the efficient operation of the cascade system.

- **Land Subsidence:** Intensive irrigation practices, especially if not managed properly, can lead to land subsidence. Over-extraction of groundwater in the dry season can cause the soil to compact and sink, resulting in a permanent loss of land elevation at proposed command areas. Land subsidence can affect the overall stability of the irrigation cascade system and may require remedial measures such as groundwater management and land-use planning.

3.5 Other Issues

- **Disaster**
  Various threats found in the area to human livelihood may include natural disasters (e.g., droughts 2022), changes in weather patterns affecting crop yields, and economic fluctuations impacting market prices.

  Wild animals' havocs include the challenges posed by wild animals (elephant, monkeys, wild boar and peacocks) damaging crops, which is a common problem in the cascade area. This leads to huge economic losses for farmers. A person was attacked by elephant in the Anicuts area is recorded as a wild havoc in 2013. Further, steps have been taken to erect wild animal protection fence in this cascade and the necessary materials are already distributed among the respective ASCs.

- **Market Linkages and Facilities:**
  The Per Aru cascade system in the Puthukkudiyiruppu area faces significant challenges related to market facility and linkages. The existing market infrastructure and connectivity are inadequate and inefficient, hindering the smooth flow of agricultural produce and other goods from the region to larger markets. This lack of proper market facilities limits the opportunities for farmers and local producers to get better prices and to reach broader market. Improving market facilities and enhancing linkages within the cascade system are crucial to address these issues, and to promote economic development.

- **Health hazard:** Increased hardness of groundwater, fertilizer run-off from agricultural activities and extensive agricultural practices are often blamed for the incidence of Chronic Kidney Diseases in this area. Studies on groundwater quality indicated the necessity for prior treatment before consumption since quality parameters of samples from most ground water sources exceeded the drinking water standard of WHO and also contaminated with coliforms and *Salmonella*.

Table 13: Critical Issues of the Cascade System

No	Identified Issues and Request	Rank
01		**01**
02	A new anicut requested	**02**
03	Issues identified regarding control of water at Puthukuditiruppu (PKT)	**03**
04	No enough space for drying the harvested paddy	**04**
05	Issues identified regarding transportation	**05**
06	Issues identified regarding control of water at Aladipeli	**06**
07	Bad condition of agro road at Puthukkudiyiruppu East	**07**
08	Agricultural fields are damaged by wildlife	**08**
09	Lack of facilities for micro irrigation	**09**
10	Abandoned agro-wells	**10**
11	Lack of inputs & equipment limits the development of aqua culture	**11**
12	Unavailable of electricity	**12**
13	Issues were identified due to lack of grazing land	**13**

4 Major Elements of Cascade Management Plan (CMP)

The need for a well-designed CMP arises due to several reasons.

Firstly, it enables equitable water distribution, ensuring that all agricultural fields within the system receive their required share. This helps to minimize water wastage and reduces the risk of waterlogging or erosion.

Secondly, the Per Aru CMP helps to manage the gravity-driven flow of water. By constructing the channels and structures at appropriate elevations, the system can take advantage of the natural force of gravity to move water from higher to lower elevations, reducing the need for energy consumption.

Overall, the Per Aaru cascade profile plays a vital role in maximizing water conveyance efficiency, minimizing losses, and promoting Climate Smart Agricultural practices in water-scarce areas. It allows for the optimal utilization of available water resources and helps farmers to meet their irrigation needs while minimizing environmental impact.

4.1. Goal

The goal of the CMP, Per Aru cascade is to reduce wastage of water by the percentage between 25 and 35 through creating awareness and sharing knowledge in water management techniques, irrigation scheduling, operation and maintenance of tank cascade system.

And to ensure the efficiency in water management (Water Conveyance Efficiency and Water Use Efficiency)

4.2 Objectives

The specific objectives are:

- To reduce vulnerability of climate change
- To enhance the living standards of rural communities on sustainable basis.
- To restore the watershed of the system
- To address the water scarcity faced by rural communities living in the cascade (addressing the farming, drinking and environmental water requirements of the area)
- To manage water and associated natural resources in a sustainable manner
- To promote crop zoning programmes and facilitate marketing

4.3 Targets/ Specific Objectives

1. To ensure availability of water throughout the year
2. To facilitate transportation and marketing.
3. To promote irrigation practices
4. To provide facilities for harvest
5. To increase the yield

4.4 Proposed Strategic Interventions to Resolve/ Mitigate Critical Issues

It requires careful planning and monitoring to ensure equitable water distribution throughout the cascade system. To address this issue, modernizing and upgrading the irrigation infrastructure with proper water sharing plans. Proper drainage infrastructure is crucial to prevent waterlogging and ensure optimal growing conditions.

Constructing the Anicuts across the streams or rehabilitating tanks and small-scale surface water harvesting structures can help to capture and store water for dry periods, ensuring a more consistent water supply throughout the year.

Implementing modern irrigation management techniques like precision agriculture, which utilizes sensors and analytical data, can provide real-time information on soil moisture levels, weather patterns, and crop water requirements. This data-driven approach enables farmers to optimize irrigation schedules and apply water precisely when and where it is needed, minimizing water wastage. Considering the soil and weather conditions of the cascade, the introduction of micro irrigation can help to optimize water usage.

By addressing these issues and implementing sustainable irrigation management practices, the Per Aru cascade area, can enhance water efficiency, increase agricultural productivity and ensure the long-term sustainability of water resources.

Table 14: Proposed Activities to Achieve the Targets / Specific Objectives

Targets		Proposed Activities	
1	To ensure availability of water throughout the year	1	Construction of 12 Anicuts and a bund
		2	Reconstruction of cannel at PKT East & Mallikaithivu
		3	Reconstruction of Control Structure at Aladipeli
		4	Renovation of the agro-wells
2	To facilitate transportation and marketing.	5	Tractor crossing for Singar & Siddharu
		6	Renovation of 30 KM agro road at PKT East
3	To promote irrigation practices	7	Provision of agricultural equipment to promote micro irrigation
4	To provide facilities	8	Providing Tarpaulins
		9	Installation of solar panel water pumps
		10	Establishment of the pastureland for free grazing
5	To increase the yield	11	Support Farmers' Organizations to get the air gun to FOs
		12	Installation of hanging fence
		13	Strengthen the community to get the fingerlings through NAQDA

Table 15: Proposed Strategic Intervention for Critical Issues

No	Identified Issues and Request	Proposed Intervention

01		Proposed anicut
02	A new anicut requested	Proposed anicut
03	Issues identified regarding control of water at Puthukuditiruppu	Reconstruction of cannel & farm turnout for Puthuvajal & Sivasami Anicut at PKT East
04	No enough space for drying the harvested paddy	Provision of tarpaulins
05	Issues identified regarding transportation	Tractor crossing for Singar & Siddharu
06	Issues identified regarding control of water at Aladipeli	Reconstruction of control structure at Aladipeli
07	Bad condition of agro road at Puthukkudiyiruppu East	Renovation of agro road - PKT East
08	Agricultural fields are damaged by wildlife	Relocated the wildlife from agro field at Manampullu, Kankaiyar, Amuthan, Alaisinthiyakulam & Kunchukodalikallu kulam
09	Lack of facilities for micro irrigation	Provision of micro irrigation (sprinkler & drip) & needed agricultural equipment (insect proof net, inter - cultivator, seeder)
10	Abandoned agro-wells	Renovation of agro-wells at Mallikaithivu
11	Lack of inputs & equipment limits the development of aqua culture	Promoting the fishing activities at Kunchukodalikallu kumal
12	Unavailable of electricity	Provision of solar panel water pump
13	Issues were identified due to lack of grazing land	Establishment of the pastureland for free grazing

4.5 Community's Responsibilities in the Cascade

Recognizing the ecological importance of the cascade area, community members actively engage in practices that promote environmental conservation and sustainability. This can involve initiatives such as organizing local clean-up events, promoting recycling and waste reduction, and supporting the preservation of natural habitats.

Being an active participant in community affairs is crucial for the maintenance of the improved facilities of Per Aru cascade area. The responsibilities entail attending meetings, Sramadana activities, voicing opinions on important issues, and actively participating in the initiatives of farmers' organizations. By engaging in civic affairs, individuals can help shape local policies and promote positive change. The community must bear the responsibility to advocate the local government to effectively use resources for the maintenance of the assest which are created or renovated through CSIAP.

Embracing the spirit of giving back, community members actively seek opportunities to volunteer their time, skills, and resources. This could involve mentoring local youth, assisting with community events, providing support to vulnerable populations. Volunteering fosters social cohesion and empowers individuals to make a tangible difference in the lives of others.

Recognizing the value of education as a catalyst for progress, community members prioritize to supporting educational initiatives within the cascade area. This can involve advocating for quality schools, promoting adult education programs, or participating in mentoring programs. By investing in education, individuals help to equip community members with the knowledge and skills needed to thrive in rapidly changing farming practices and community as well.

Fostering economic growth and stability is a critical responsibility within a cascade area. Community members contribute by supporting local businesses, encouraging entrepreneurship, and attracting investments that align with sustainable development goals. This responsibility also includes advocating for job creation, providing training opportunities, and supporting initiatives that enhance the economic viability of the community.

Celebrating and preserving the unique cultural heritage of the cascade area is an important responsibility. Community members engage in activities that promote local art, music, traditions, and historical preservation. By valuing and promoting cultural diversity, individuals contribute to a vibrant and inclusive community that fosters pride and unity among its members.

4.6 Total Estimated Cost for Implementing Interventions and Contribution Expected from the Stakeholder Agencies

Effective irrigation management requires strong collaboration among various stakeholders. Establishing participatory irrigation management systems can lead to more inclusive and sustainable water resource management. Additionally, improving good governance, promoting transparency and enforcing regulations related to water usage and irrigation practices are essential for efficient and equitable water allocation.

Table 15: Gannt Chart for Proposed Activities and Responsible Entities for Implementing

No.	Proposed Activities	Tentative Budget (Rs. Mn.)	Time Frame														Responsibility of Implementation	
			Short Term (Jul - Dec 2023)						Mid Term (Jan - Dec 2024)				Long Term (Jan - Dec 2025)					
			Jul	Aug	Sep	Oct	Nov	Dec	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Major	Others
1	Construction of Pirampadi SWE Bund	20.00															DAD	FO
2	Construction of Echchampillavu Anicut	20.00															DAD	FO
3	Construction of Pillaiyarkoviladi Anicut	20.00															DAD	FO
4	Construction of Kovilpadaliaru Anicut	20.00															DAD	FO
5	Construction of Kunduppallaru Anicut	20.00															DAD	FO
6	Construction of Yankan Anicut	20.00															DAD	FO
7	Construction of Siddharu Anicut	20.00															DAD	FO

8	Construction of Kachchakodi Anicut	20.00																DAD	FO
9	Construction of Veerrasingam Anicut	20.00																DAD	FO
10	Construction of Aladipeeli Anicut	20.00																DOA	FO
11	Construction of Visvalingam Anicut	20.00																	FO
12	Construction of Singer Anicut	20.00																	
14	Puthuvajal & Sivasami Anicut at Ptk East	40.00																	
15	Reconstruction of cannel at PKT East & Mallikaithivu	20.00																	
16	Providing Tarpaulins	10.00																	
17	Shaping the tractor crossing for Singar & Siddharu	5.00																	
18	Reconstruction of control structure at Aladipeli at Mallikaithivu	20.00																	
19	Renovation of agro road at PKT East - 30 Km	150.00																	
20	Support Farmers' Organizations to get the Air gun to FOs	1.00																	
21	Provision of micro irrigation (sprinkler & drip) & needed	5.00																	

	agricultural equipment (insect proof net, inter - cultivator, seeder)																		
22	Installation of hanging fence - 20 Km	60.00																	
23	Renovation of the agro-wells	20.00																	
24	Strengthen the community to get the fingerlings through NAQDA	1.00																	
25	Installation of solar panel water pumps	10.00																	
26	Establish the pastureland for free grazing	1.00																	

Table 16: Proposed Activities with Expected Contribution from Stakeholder Agencies

No.	Proposed Activities	Total Budget (Rs. Mn.)	Expected Budget Contribution in Rs. Mn.			
			Private	Line Agencies	Farmer	Funding Agencies
1						
2						
3						

4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

4.1 Interventions and Major Activities Expected to be Implemented by the CSIAP within its Project Period

Table 17: Gannt Chart for Proposed Activities to be Implemented by CSIAP

No.	Proposed Activities	Total Budget (Rs. Mn.)	Time Frame								
			2023					2024			
			Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1											
2											
3											
4											
5											

4.7 Implementation Methodology of the Cascade Management Plan

CMBDP should be submitted to the Divisional Agriculture Committee and the District Agriculture Committee for approval. After getting the approval, it will be implemented.

The sub-project proposal (Attachment No. 04) will be prepared by CMC with the support of the relevant implementing agencies for obtaining capital assistance

Major partner institutions are committed to implementing the proposed activities, preparing and supporting existing investment plans, budget reports and implementation plans, and assisting CMC in submitting grant funding proposals to be provided.

Social Audit Committees of sub-project implementation effectiveness. CMC appoints Social Audit Committees and gives active contributions to the beneficiaries to enhance the quality of work performed by the CMC

Annexure 1: Circular No 6 of 2023 issued by the Department of Agrarian Development on 3 rd August 2023 to establish cascade management committees

சுற்றறிக்கை இலக்கம் – 06/2023
அனைத்து மாவட்ட செயலாளர்களுக்கும் பிரதேச செயலாளர்களுக்கும்,

<u>குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழு உருவாக்கம் மற்றும் நடாத்திச்செல்லல் ஒழுங்கு முறைகள்</u>

நாட்டின் உள்ளகத்திலிருந்து கடலுக்கு வழிந்தோடும் பிரதான ஆறுகள் மூன்றாம் நிலை நீர்வழிகள் எனவும், அப்பிரதான ஆறுகளை சேரும் கிளை ஆறுகள் இரண்டாம் நிலை நீர்வழிகள் எனவும் அக்கிளை ஆறுகளுக்கு நீர் வழங்கும் சிறிய நீர்வழிகள் ஆரம்ப நிலை நீர்வழிகள் எனவும் அழைக்கப்படும். கிராமிய மட்டத்திலான குளங்களும் நீர்த்தேக்கங்களும் பெரும்பாலும் ஆரம்ப நிலை நீர்வழிகளினூடு அமைக்கப்பட்டுள்ளதோடு பூமியின் மேற்பரப்பில் நீரைத்தேக்கி கீழே வழிந்தோடச் செய்ய அமைக்கப்பட்டிருக்கும் வாவிகளும் இதனுள் அடங்கும்.

02. நாட்டின் உள்ளகத்தில் காணப்படும் ஆரம்ப நிலை நீர்வழியொன்று அல்லது நீர்வழி வலையமைப்பிலுள்ள நீரியல் ரீதியாக ஒன்றிணைந்த சிறு மற்றும் நடுத்தர அளவிலான வாவி அமைப்புக்கள் அல்லது குளங்கள் மற்றும் நீர்த்தேக்க அமைப்புக்கள் அல்லது நீர்த்தேக்க அமைப்புக்களினாலான நடுத்தர அளவிலான நீரேந்து பகுதி குளஅடுக்குத் தொடர் அமைப்பு என கூறப்படும்.

03. இலங்கையில் 1166 குளஅடுக்குத் தொடர் அமைப்புக்கள் கண்டுபிடிக்கப்பட்டுள்ளன. இக் குளஅடுக்குத் தொடர் அமைப்புக்களை மையமாகக்கொண்டு புவியியல், நீரியல், சூழலியல் மற்றும் சமூக பொருளாதார மேம்பாடு குறித்து வளப்பயன்பாட்டினை வினைத்திறனாகவும் நிலையானதாகவும் கொண்டு செல்வதனை இலக்காகக் கொண்டு 1968 இலக்கம் 48 நீர்ப்பாசன (திருத்தங்கள்) கட்டளைச் சட்டத்தின் திருத்தியமைக்கப்பட்ட 1946 இலக்கம் 32 நீர்ப்பாசன கட்டளைச்சட்டத்தின் 1(அ) 1,2,3,4 உறுப்புரைகளின் பிரகாரம் கமநல அபிவிருத்தி ஆணையாளர் நாயகத்திற்கு வழங்கப்பட்டிருக்கும் அதிகாரங்களுக்கமைய மேற்குறிப்பிட்ட சட்டத்திற்கமைய நடாத்தப்படும் மாவட்ட வேளாண்மை குழுவின் போது, நீர்ப்பாசனக் கைத்தொழிலை மையமாகக் கொண்ட நெல் உற்பத்தி உள்ளிட்ட வேளாண்மையில் தாக்கம் செலுத்தும் அல்லது அனைத்து துணைக்காரணிகள் குறித்து நடவடிக்கைகளை மேற்கொள்ள குறித்த சட்டத்தினால் உங்களுக்கு வழங்கப்பட்டுள்ள அதிகாரங்களின் பிரகாரம் குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்களை உருவாக்குதல் மற்றும்

நடாத்திச்செல்லுதல் ஒழுங்கு முறைகள் தொடர்பாக வேளாண்மைக் குழுவில் கலந்துரையாடுமாறும் அதற்கு கீழ் குறிப்பிட்டுள்ள விடயங்களை வழிகாட்டிகளாக பயன்படுத்துமாறு கனிவுடன் தெரிவிக்கிறேன்.

3.1 <u>குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்களை உருவாக்குவதற்கான குறிக்கோள்கள்</u>

i) குளஅடுக்குத் தொடரில் அமைந்துள்ள அனைத்து இயற்கை வளங்கள், அதாவது மண், நீர், வன வளம்,உயிரியல் அமைப்புக்கள், காணி மற்றும் நீர்ப்பாசன கட்டமைப்புக்களை முகாமைத்துவம் செய்வதற்காக நலன்விரும்பிகள் மற்றும் குறித்த அரச அதிகாரிகள் ஒருமித்த அணுகுமுறையுடன் செயல்படுவதற்கான நிறுவன கட்டமைப்பொன்றினை அமைத்தல்.
ii) நீர்ப்பாசன வேளாண்மை, கால்நடை தொடர்பான நடவடிக்கைகள் மற்றும் நன்னீர் மீன்பிடிக் கைத்தொழிலிற்கு நீர் வழங்கல், வன வளம் மற்றும் வன விலங்குகளின் தேவைப்பாடுகளை சமாந்தரமாக நடாத்திச் செல்லல், நிலத்தடி நீரினை உகந்தவாறு பேணுதல் வீட்டுத்தோட்ட பராமரிப்பு உள்ளிட்ட வீட்டு நீர் பாவனையினை முறையாக முகாமைத்துவம் செய்தல்.
iii) வேளாண்மை நடவடிக்கைகளுக்கு நீர்ப்பாவனை செய்பவர்கள் உள்ளிட்ட படிநிலை அமைப்பினை பராமரிப்பு செய்வதற்காக வேறு பயனாளிகள் மற்றும் பங்குதாரர்களின் ஒத்துழைப்பினை பெற்றுக் கொள்ளல்.

3.2 <u>குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்களை உருவாக்குவதற்கான நோக்கங்கள்</u>

i) குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவம் மற்றும் நிலையான பேணுகைக்காக சட்டபூர்வ அங்கீகாரத்துடனான நிறுவன கட்டமைப்பொன்றினை உருவாக்குதல்.
ii) ஒவ்வொரு குளஅடுக்குத் தொடர் அமைப்புக்களுக்கு ஏற்ப அதன் செயல்பாட்டிற்கும் நிலையான பாவனைக்கும் தொடர்புடைய பிரச்சினைகள் மற்றும் முன்மொழிந்த தீர்வுகளை ஒருங்கிணைந்த அணுகுமுறையுடன் கலந்தாலோசித்து சட்டபூர்வ அங்கீகாரத்துடனான முறைமை ஒன்றினை உருவாக்குதல்.
iii) குளஅடுக்குத் தொடரிற்குள் உள்ள வேளாண்மை, நீர் முகாமைத்துவ, சூழலியல்,சமூக பொருளாதார மற்றும் புவியியல் காரணி அமைப்பின் செயல்திறனுக்காக தொடர்ச்சியாகவும் வினைத்திறனாகவும் நடாத்திச் செல்வதற்கான முறைமையொன்றை ஏற்படுத்தல்.

iv) குளஅடுக்குத் தொடர் அமைப்பின் அபிவிருத்தி நடவடிக்கைகளில் முழு அமைப்பிற்கும் இடம்பெறும் சேதங்களைத் தடுத்து தேவைகளை உறுதிப்படுத்தல், நீர்வளத்தினை வினைத்திறனான முறையில் பாவனை செய்வதற்காக சாகுபடி உற்பத்தியினை அடித்தளமாகக் கொண்டு திட்டங்களை நிர்மாணித்தல்.
v) குளஅடுக்குத் தொடர் அமைப்பிற்கு ஒருங்கிணைந்த வேளாண்மை உற்பத்தி திட்டமொன்றினை நிர்மாணித்தல் மற்றும் அத்திட்டத்தின் செயல்திறன் நிலைமையை கண்காணித்தல்.
vi) குளஅடுக்குத் தொடர் அமைப்பொன்றில் காணப்பட வேண்டிய கூறுகளை மாற்றுவதற்கு தேவையான நடவடிக்கைகளை மேற்கொள்ளல்.
vii) குளஅடுக்குத் தொடர் அமைப்புடன் தொடர்புடைய சமூக பொருளாதார தொடர்புகளை பேணுதல் மற்றும் அது தொடர்பிலான பங்குதாரர்களை விழிப்புணர்த்துதல்.

3.3 <u>குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவின் பணிகள்</u>

i) குளஅடுக்குத் தொடர் அமைப்பிற்கான திட்டங்களை தயாரித்தல், நடைமுறைப்படுத்தல் மற்றும் கண்காணித்தல்.
ii) குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழு அங்கத்தவர்களால் முன்வைக்கப்படும் பிரச்சினைகள், முன்மொழிவுகள் மற்றும் திட்டங்களுக்காக தீர்வுகளை முன்வைத்தாலும் தீர்வு காண முடியாத பிரச்சனைகளை பொருத்தமான பிரதேச/ மாவட்ட வேளாண்மை குழுவிடம் முன்வைத்து தீர்த்துக் கொள்ளல்.
iii) குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவத்துடன் தொடர்புடைய அறிக்கையினை சந்தர்ப்பத்திற்கேற்றவாறு பிரதேச/மாவட்ட வேளாண்மை குழுவிடம் முன்வைத்தல்.
iv) கிராமிய குளஅடுக்குத் தொடர் களில் அமையப்பெற்றிருக்கும் அனைத்து நீர் மூலங்கள் மற்றும் நீர் நுகர்வோர்கள் ஒன்றிணைத்து குளஅடுக்குத் தொடர் சேர்ந்த மத்திய நீர்பிடிப்புப் பகுதிக்காக ஒருங்கிணைந்த வேளாண்மை திட்டமொன்றினை உருவாக்கி நடைமுறைப்படுத்தல்.
v) குளஅடுக்குத் தொடர் அமைப்பொன்றினுள் நடவடிக்கைகளில் ஈடுபடும் அனைத்து நீர் நுகர்வோர்களினதும் தேவைப்பாடுகளுக்கேற்ப நீர்பிடிப்பு பிரதேசத்திலுள்ள இயற்கை வள முகாமைத்துவம் தொடர்பிலான தீர்மானங்களை மேற்கொள்ளுதல் மற்றும் நடைமுறைப்படுத்துதல்.

vi) இயற்கை அனர்த்தங்கள், அழிவுகள், தீங்கு விளைவிக்கும் மனித நடவடிக்கைகளை குறைக்கக்கூடிய வகையில் அனைத்து நீர்மூலங்களையும் முகாமை செய்தல்.

vii) குளஅடுக்குத் தொடரிலுள்ள அனைத்து நீர் மூலங்களையும் மையமாகக் கொண்ட நீர் வாடிக்கையாளர்களுக்கிடையே வினைத்திறனான தகவல் தொடர்பாடல் முறையொன்றினை உருவாக்குதல்.

viii) படிநிலையிலுள்ள சுற்றுச்சூழல் அமைப்புக்களுடன் தொடர்புடைய உள்ளீடுகள் மற்றும் வெளியீடுகள் திறனான முறையில் முகாமைத்துவம் செய்ய முறையான வழிமுறை ஒன்றினை உருவாக்குதல்.

ix) தற்போதைய மற்றும் எதிர்காலத்தில் நிகழும் என கணிக்கப்படும் காலநிலை மாற்றங்களுக்கு தகுந்த காலநிலை நட்பு உபாயமுறை திட்டங்களை நடைமுறைப்படுத்தலும் நீர் நுகர்வோர்களை அவ்வாறான காலநிலை மாற்றங்களுக்கு பழக்கப்படுத்துதல்.

x) குளஅடுக்குத் தொடர் அமைப்பு முறைமைக்குள் நீர் வாடிக்கையாயாளர்களிடையே அறிவு, திறன், மனப்பாங்கு மற்றும் வளங்களை வினைத்திறனான முறையில் பரிமாற்றம் செய்து கொள்ளல்.

xi) நீர் நுகர்வோர்களின் காணி, நீர் மற்றும் சுற்றுச்சூழல் அமைப்புக்களின் வினைத்திறனை மேம்படுத்துவதற்கான நடவடிக்கைகளை மேற்கொள்ளல்.

xii) வேளாண்மைக்கு மற்றும் நீர் நுகர்விற்கேற்ற சுற்றுச்சூழல் அமைப்புக்களுடன் தொடர்புடைய பாரம்பரிய சட்டங்கள் மற்றும் இயற்றப்பட்ட சட்டங்களை அமுலுக்கு கொண்டு வருவதற்குத் தேவையான ஆதரவினை வழங்குதல்.

xiii) காணி உரித்துடைய விவசாயிகள் மற்றும் உரிமையாளர்களின் கூட்டத்தினை(சாகுபடி உற்பத்திக் கூட்டம்) நடாத்த தேவையான அடிப்படை தீர்மானங்களை மேற்கொள்ள விவசாயிகளுக்கு உதவி புரிதல்,அதனோடு தொடர்புடைய ஒருங்கிணைப்பு நடவடிக்கைகளை மேற்கொள்ளுதல் மற்றும் கண்காணித்தல்.

xiv) குளஅடுக்குத் தொடர் அமைப்பு அதிகாரப்பிரதேசக்குள்ளான அனைத்து நீர் மூலங்கள் மற்றும் அதனோடு தொடர்புடைய ஏனைய சுற்றுச்சூழல் அமைப்புக்களின் நிலையான தன்மையினை பேணுவதற்காக குறித்த குறித்த அரச நிறுவனங்களின் வழிகாட்டல்கள் மற்றும் அறிவுறுத்தல்களை பின்பற்றி பாதுகாப்பதற்கு உரிய நடவடிக்கைகளை மேற்கொள்ளல்.

xv) குளஅடுக்குத் தொடர் அமைப்பிற்கு பாதிப்பினை உண்டுபண்ணும் பங்குதாரர்களுக்கு எதிராக சட்ட

செயற்பாடுகளை மேற்கொள்வதற்கு தேவையான நடவடிக்கைகளை மேற்கொள்ளல்.

xvi) குளஅடுக்குத் தொடர் அமைப்பின் அனைத்து அபிவிருத்தி நடவடிக்கைகளிலும் செயன்முறை ரீதியாக பங்களிப்பினை வழங்கலும் முன்னேற்றத்தை கலந்தாலோசித்தலும்

xvii) குளஅடுக்குத் தொடர் அமைப்பில் நீர்ப்பாசன கைத்தொழிலில் கூட்ட தீர்மானங்களை நடைமுறைபடுத்தும் நிலைமையினை கண்காணித்தல்.

xviii) குளஅடுக்குத் தொடர் அமைப்பின் நீர்ப்பாசன கைத்தொழில்களின் செயல்பாடுகள் மற்றும் பராமரிப்பு நிகழ்வுகளை கண்காணித்தல்.

3.4 குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவின் கலவை

3.4.1 பிரதேச மட்டம்

இக்குழு குறித்த பிரதேச செயலக அதிகாரப் பிரதேசத்தின் கீழுள்ள அதிகாரிகளினால் உள்ளடக்கியதாகும்.

i. பிரதேச செயலாளர்
ii. கமநல அபிவிருத்தி பிரதேச அதிகாரி
iii. வேளாண்மை ஆலோசகர்
iv. மாகாண நீர்ப்பாசன திணைக்களத்தினை பிரதிநிதித்துவப்படுத்துமாறு பொறியியலாளர் / தொழிநுட்ப அதிகாரி
v. கமநல அபிவிருத்தி திணைக்களத்தினை பிரதிநிதித்துவப்படுத்தும் பிரதேச பொருளியலாளர் / தொழிநுட்ப அதிகாரி
vi. வேளாண்மை ஆராய்ச்சி மற்றும் உற்பத்தி உதவியாளர்
vii. கிராம அலுவலர்
viii. சமுர்தி அபிவிருத்தி உத்தியோகத்தர்
ix. பொருளாதார அபிவிருத்தி உத்தியோகத்தர்
x. காணி பயன்பாடு மற்றும் கொள்கை உருவாக்க திணைக்களத்தின் பிரதிநிதி ஒருவர்
xi. மாகாண மீன்பிடித் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xii. நீர் உயிரினவளர்ப்பு அபிவிருத்தி அதிகார சபையின் பிரதிநிதி ஒருவர்
xiii. சுற்றாடல் அதிகாரசபையின் பிரதிநிதி ஒருவர்
xiv. பொலிஸ் சுற்றாடல் பிரிவின் பிரதிநிதி ஒருவர்
xv. விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களத்தின் பிரதிநிதி ஒருவர்

xvi. வேளாண்மை மற்றும் கமநல காப்புறுதி சபையின் பிரதிநிதி ஒருவர்
xvii. நீர்ப்பாசன பொறியியலாளர் / தொழிநுட்ப அதிகாரி
xviii. வனசீவராசிகள் பாதுகாப்புத் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xix. வனப் பாதுகாப்புத் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xx. புவிச்சரிதவியல் மற்றும் சுரங்கப் பணியகத்தின் பிரதிநிதி ஒருவர்
xxi. தேசிய நீர்வழங்கல் மற்றும் வடிகாலமைப்பு சபையின் பிரதிநிதி ஒருவர்
xxii. தொல்பொருளியல் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xxiii. சிவில் பாதுகாப்புத் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xxiv. உள்ளூராட்சி நிறுவனங்களை பிரதிநிதித்துவப்படுத்தும் அதிகாரமுடைய அலுவலர் ஒருவர்
xxv. விவசாய அமைப்புக்கள், மாதர் விவசாய அமைப்புக்கள், உற்பத்தி விவசாய குழுக்களை பிரதிநிதித்துவப்படுத்தி ஒவ்வோர் அமைப்புக்களினதும் தலைவர் அல்லது செயலாளர்
xxvi. சமுதாய நீர் வழங்கல் அமைப்பொன்றின் பிரதிநிதி ஒருவர்
xxvii. வேறு சமூக அமைப்புக்கள் மற்றும் சுற்றாடல் அமைப்புக்களை பிரதிநிதித்துவப்படுத்தி அமைப்பொன்றின் பிரதிநிதி ஒருவர்

3.4.2 <u>மாவட்ட மட்டம்</u>

இக்குழு குறித்த மாவட்டத்தின் கீழுள்ள அதிகாரிகளை உள்ளடக்கியது.

i. மாவட்ட தலைவர் அல்லது மாவட்ட செயலாளர்
ii. பிரதேச செயலாளர்
iii. கமநல அபிவிருத்தி பிரதி / உதவி ஆணையாளர்
iv. உள்ளூராட்சி நிறுவனங்களை பிரதிநிதித்துவப்படுத்தி உள்ளூராட்சி உதவி ஆணையாளர் அல்லது பிரதிநிதி ஒருவர்
v. மாவட்ட வேளாண்மை பணிப்பாளர்
vi. மாகாண மற்றும் மாகாணங்களுக்கிடையேயான பிரதி வேளாண்மை பணிப்பாளர்கள்

vii. நீர்ப்பாசனத்துறை பணிப்பாளர் அல்லது பிரதான பொறியியலாளர்
viii. மாகாண நீர்ப்பாசனத் திணைக்களத்தினை பிரதிநிதித்துவப்படுத்தி பிரதி பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
ix. காணி உபயோகம் மற்றும் கொள்கை உருவாக்க திணைக்களத்தின் உதவிப் பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
x. மாகாண மீன்பிடி திணைக்களத்தின் பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
xi. நீர் உயிரினவளர்ப்பு அபிவிருத்தி அதிகார சபையின் உதவிப் பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xii. சுற்றாடல் அதிகார சபையின் மாவட்ட உதவிப்பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xiii. விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களத்தின் பிரதிப்பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
xiv. வேளாண்மை மற்றும் கமநல காப்புறுதி சபையின் உதவிப்பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
xv. வனசீவராசிகள் பாதுகாப்புத் திணைக்களத்தின் உதவிப்பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xvi. வனப் பாதுகாப்புத் திணைக்களத்தின் மாவட்ட வனபாதுகாப்பு அதிகாரி அல்லது பிரதிநிதி ஒருவர்
xvii. தேசிய நீர்வழங்கல் மற்றும் வடிகாலமைப்பு சபையின் மாவட்ட அதிகாரி அல்லது பொறியியலாளர்
xviii. தொல்பொருளியல் திணைக்களத்தின் உதவிப்பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xix. புவிச்சரிதவியல் மற்றும் சுரங்கப் பணியகத்தின் பிரதிநிதி ஒருவர்
xx. கமநல அபிவிருத்தி பிரதேச அதிகாரி
xxi. பொலிஸ் சுற்றாடல் பிரிவின் நிலைய அதிகாரி
xxii. சிவில் பாதுகாப்பு திணைக்களத்தின் பிரதிநிதி ஒருவர்
xxiii. மாவட்ட விவசாய அமைப்புக்களின் கூட்டமைப்பினை பிரதிநிதித்துவப்படுத்தி தலைவர் / செயலாளர் அல்லது பிரதிநிதி ஒருவர்
xxiv. சமூக நீர் வழங்கல் அமைப்பின் பொறுப்பதிகாரி அல்லது மாவட்ட பிரதிநிதி ஒருவர்
xxv. வேறு சமூக அமைப்புக்கள் மற்றும் சுற்றாடல் அமைப்புக்களின் மாவட்ட மட்டத்தினை பிரதிநிதித்துவப்படுத்தி ஒரு அமைப்பிலிருந்து ஒரு பிரதிநிதி

க:வே :- குளஅடுக்குத் தொடர் அமைப்பு கட்டுப்பாட்டு பிரதேச எல்லைக்குள் குறித்த நிறுவனத்தில் கட்டுப்பாட்டு பிரதேசங்கள் ஒன்றை விடக் கூடுதலாகக் காணப்படும் சந்தர்ப்பத்தில் அவ்வவ் கட்டுப்பாட்டு பிரதேசங்களை பிரதிநிதித்துவப்படுத்தி மேலுள்ளவாறு பொறுப்பதிகாரிகள் கலந்து கொள்ள வேண்டும்.

3.5 குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவொன்றின் அதிகாரிகள் குழாம் – பிரதேச மட்டம்

i. படிநிலை அமைப்பிற்கு பிரதேச செயலாளர் பிரிவுகள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பத்தில் கலந்து கொள்ளும் அனைத்து பிரதேச செயலாளர்களும் குழுவின் இணைத்தலைவராக உத்தியோகபூர்வமாக செயல்பட வேண்டும்.

ii. படிநிலை அமைப்பிற்கான கமநல சேவை கட்டுப்பாட்டு பிரதேசத்தில் கமநல அபிவிருத்தி பிரதேச அதிகாரி குழுவின் செயலாளராக உத்தியோகபூர்வமாக செயல்பட வேண்டும். படிநிலை அமைப்பிற்கு கமநல சேவை கட்டுப்பாட்டு பிரதேசங்கள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பங்களில் கூடிய நீரேந்து ஏக்கர் எண்ணிக்கையினை கொண்ட கட்டுப்பாட்டு பிரதேசத்தின் கமநல அபிவிருத்தி பிரதேச அதிகாரி செயலாளராக செயல்பட வேண்டும்.

iii. குழு தலைவரின் அறிவுரைகளுக்கேற்ப செயலாளரால் கூட்டம் ஏற்பாடு செய்யப்பட வேண்டும்.

3.6 குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவொன்றின் அதிகாரிகள் குழாம் – மாவட்ட மட்டம்

i. குளஅடுக்குத் தொடர் அமைப்பிற்கு மாவட்டங்கள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பத்தில் கலந்து கொள்ளும் அனைத்து மாவட்ட செயலாளர்களும் குழுவின் இணைத்தலைவராக உத்தியோகபூர்வமாக செயல்பட வேண்டும்.

ii. குளஅடுக்குத் தொடர் அமைப்பின் மாவட்ட பிரதி / உதவி ஆணையாளர்கள் குழுவின் செயலாளராக உத்தியோகபூர்வமாக செயல்பட வேண்டும். குளஅடுக்குத் தொடர் அமைப்பிற்கு கமநல சேவை கட்டுப்பாட்டு பிரதேசங்கள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பங்களில் கூடிய நீரேந்து ஏக்கர்

எண்ணிக்கையினை கொண்ட மாவட்ட பிரதி / உதவி ஆணையாளர்கள் செயலாளராக செயல்பட வேண்டும்.

iii. குழு தலைவரின் அறிவுரைகளுக்கேற்ப செயலாளரால் கூட்டம் ஏற்பாடு செய்யப்பட வேண்டும்.

04. இலங்கையின் வேளாண்மைத்துறையின் நிலையான தன்மை தங்கி நிற்கும் பிரதான காரணியான உயிரியல் அமைப்புக்களின் முகாமைத்துவத்திற்காக குளஅடுக்குத் தொடர் நீர்ப்பாசன முகாமைத்துவத்தினை முறைமையாக்குமுகமாக உருவாக்கப்படும் குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்கள் மூலம் எதிர்பார்க்கப்படும் பணிகளை நிறைவேற்ற ஒருங்கிணைந்து செயற்படுவீர்கள் என எதிர்பார்க்கின்றேன்.

ஏ.எச்.எம்.எல்.அபேரத்ன
கமநல அபிவிருத்தி ஆணையாளர் நாயகம்

பிரதி :-

i. செயலாளர், பொது நிர்வாக, உள்நாட்டலுவல்கள், மாகாண சபைகள் மற்றும் உள்ளூராட்சி அமைச்சு
ii. செயலாளர், விவசாயத் திணைக்களம்
iii. அனைத்து மாகாண பிரதான செயலாளர்கள்
iv. கணக்காய்வாளர், தேசிய கணக்காய்வு அலுவலகம்
v. பொலிஸ் மா அதிபர், இலங்கை பொலிஸ் திணைக்களம்
vi. பணிப்பாளர் நாயகம், விவசாய திணைக்களம்
vii. பணிப்பாளர் நாயகம், நீர்ப்பாசன திணைக்களம்
viii. பணிப்பாளர் நாயகம், சமூர்தி அபிவிருத்தித் திணைக்களம்
ix. பணிப்பாளர் நாயகம், வனசீவராசிகள் பாதுகாப்புத் திணைக்களம்
x. வனப்பாதுகாப்பு நாயகம், வனப்பதுகாப்புத் திணைக்களம்
xi. பணிப்பாளர் நாயகம், விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களம்
xii. பணிப்பாளர் நாயகம், காணி உபயோக கொள்கை திட்டமிடல் திணைக்களம்
xiii. பணிப்பாளர் நாயகம், தொல்பொருளியல் திணைக்களம்
xiv. பணிப்பாளர் நாயகம், இலங்கை சிவில் பாதுகாப்பு திணைக்களம்
xv. பணிப்பாளர் நாயகம், நீர் உயிரினவளர்ப்பு அபிவிருத்தி அதிகார சபை
xvi. பணிப்பாளர் நாயகம், மத்திய சுற்றாடல் அதிகார சபை
xvii. பணிப்பாளர் நாயகம், புவிச்சரிதவியல் மற்றும் சுரங்கப் பணியகம்
xviii. தலைவர், வேளாண்மை மற்றும் கமநல காப்புறுதி சபை
xix. தலைவர் ,தேசிய நீர்வழங்கல் மற்றும் வடிகாலமைப்பு சபை

xx. அனைத்து மாகாண செயலாளர்கள், மாகாண வேளாண்மை திணைக்களம்
xxi. செயலாளர், மாகாண நீர்ப்பாசன அமைச்சு
xxii. அனைத்து மாகாண வேளாண்மை பணிப்பாளர்கள், மாகாண வேளாண்மை திணைக்களம்
xxiii. அனைத்து மாகாண விலங்குற்பத்தி மற்றும் சுகாதார பணிப்பாளர்கள், மாகாண விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களம்
xxiv. கருத்திட்ட பிரதானிகள் – CSIAP / CRIWMP / SARP
xxv. அனைத்து கமநல அபிவிருத்தி பிரதி / உதவி ஆணையாளர்கள்

(தகவலறிவதற்காகவும் தேவையான விவகாரங்களுக்காக)

Annexures 2: List of stakeholder agencies participated in transact walk to learn the participated in transact walk to learn the Per Aru cascade system.

F – 11
M – 57
68

CSIAP

The World Bank

Climate Smart Irrigated Agriculture Project (CSIAP), Northern Province.

Attendance of Participations

Province : Northern DS Division : PTK Venue : Nallikuli Hall

District : Mullaitivu ASC Division : PTK Date : 23/07/2024

Objectives of the Programme / Awareness : Transect walk for Per Aru at PTK

No	Name of the Participant (பெயர்)	Name of the Organization (அமைப்பு)	ID NO (அடையாள அட்டை இல)	Contact no (தொடர்பு இலக்கம்)	M (ஆண்)/ F (பெண்)	Signature
1	A. Dansthan	DAD mullai (wts)	933292690 V	0771307936	M	A. Danusthan
2	S. Kokularaj	DAD- mullai	893230329 V	0779595765	m	S-Secretary
3	R. kajeepan	DAD – mullai	942507125 4 V	0337883629	m	
4	E. J. A. Vasi	CSIAP	503022419 V	0772058846	M	
5	S. Jeswanth J A	[illegible]	29324370 V	0773758910	M	
6	[illegible]	[illegible]	762545241 V	0772881957	"	
7	[illegible]	"	556 572 877 V	077 8732 583	"	
8	K. Mendeep	Asc puthu	886332648 V	0772428[illegible]	F	K. Mendeep
9	N. Sajeela	Asc puthu	907022765 V	0776200972	F	N. Sajeela
10	V. Sivalosini	ASC puthu	198961400376	0765608013	F	V. Sivalosini
11	N. Tharsiny	Asc Ptk	1991 6060 0850	0776107331	F	N. Tharsiny
12	L. Jeharshan	"	942074366 V	0776435 792	M	
13	S. Ashokan	[illegible]	781304638 4	0779721767	M.	S. Ashokan
14	[illegible]	Pu		0771960873	M	
15	[illegible]	Mullikul	672511429 V	0778064883	M	

CSIAP

The World Bank

Climate Smart Irrigated Agriculture Project (CSIAP), Northern Province.

Attendance of Participations

Province : Northern | DS Division : PtK | Venue : Mallikai Huy

District : Mullaitivu | ASC Division : PtK | Date : 23/07/2024

Objectives of the Programme / Awareness : Transect walk at PerAru at PtK.

No	Name of the Participant (பெயர்)	Name of the Organization (அமைப்பு)	ID NO (தே.அ.அ இல)	Contact no (தொ.பே.இல)	M (ஆண்)/ F (பெண்)	Signature
1	[illegible]	[illegible]	751512270300	771812067	M	
2	[illegible]		752563977V	0777499820	M	
3	[illegible]	[illegible]	68149322760	0766525597	M	
4	[illegible]	[illegible]	803255431V	0779823367	M	
5	[illegible]	"	910374532V	0779925168	M	
6	[illegible]	[illegible]	729124490V	0711659396	M	
7	A. [illegible]	[illegible]	650121104V	0771257450	M	
8	[illegible]	[illegible]	630294076	0774062572	M	
9	[illegible]	[illegible]	650249	0777060802	M	
10	[illegible]	[illegible]	750347224V	0777026024	M	
11	[illegible]	[illegible]	673330509V	0777394062	M	
12	P.Pirasanthan	AI	910892800V	077-5817191	M	
13	P. Kohulan	CF	990390002214	0772001352	M	
14	[illegible]	CF	850251213V	0775980026	M	
15	[illegible]	FO	0771374355	077597563V	M	

CSIAP

Climate Smart Irrigated Agriculture Project (CSIAP), Northern Province.

The World Bank

Attendance of Participations

Province : Northern DS Division : Ptk Venue : Mallikaithivu

District : Mullaitivu ASC Division : Ptk Date : 23/7/2024

Objectives of the Programme / Awareness : Transect walk for Dev Any at Ptk

No	Name of the Participant (பெயர்)	Name of the Organization (நிறுவனம்)	ID No (தேசிய அடை இல)	Contact no (தொடர்பு இல)	M (ஆண்) / F (பெண்)	Signature
1	[illegible]	[illegible]			[illegible]	[illegible]
2	[illegible]	[illegible]	196782760703	07702029	[illegible]	[illegible]
3	[illegible]	[illegible]	933191347V	0773295332	[illegible]	[illegible]
4	[illegible]	[illegible]	195514201005	0774059807	[illegible]	[illegible]
5	[illegible]	[illegible]	620374067V	0741162782	[illegible]	[illegible]
6	[illegible]	[illegible]	771911421V	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	692274[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	196025405047	0740308947	[illegible]	[illegible]
9	R. Subas	[illegible]	[illegible] 810913924V	0776624653	[illegible]	[illegible]
10	S. Nirshiys	DO Lap	875210114V	0775796235	[illegible]	S. Nirshiys
11	L. Rasany	DS office	857903056 V.	0775677365	[illegible]	[illegible]
12	A. Mithila	DS office	915025080 V	077-1718458	[illegible]	[illegible]
13	S-[illegible]	[illegible]	566322382V	0768574382	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	0771474162	[illegible]	[illegible]
15	[illegible]	[illegible]	6316409617V	0770338176	[illegible]	[illegible]

Annexure 3: List of Stakeholder agencies to prepare and validate the cascade management plan

No.	Position	Name	Contact No.	Address
1	Chairman	S. Kirubasuthan	077-4233047	ADP, DS Office, Oddusudan
2	Co-Chairman	M. Mangala Kanthan	076-8002829	Farmer, Periyaththimadu
3	Secretary	P. Kankaiyamaran	077-8758519	Thaddamalai
4	Members	R. Sugantha	077-2272972	ADO, Oddusudan
5	Members	T. Ramgi	077-6416447	DAO, Mullaitivu
6	Members	N. Janarthanan	077-7364043	DO, Periyaththimadu
7	Members	M.Vigneswaran	077-5235181	Farmer, Meyankal, Thadamali
8	Members	K.Sankeethan	077-7031351	DAEO, ACAD Mullaitivu
9	Members	S. Sownthara Rajan	077-2010554	Farmer, Thadamali
10	Members	R. Ajanthan	077-0724102	Farmer, Kunsunahsi Kulam
11	Members	N.Varathan	077-2051230	Farmer, Periyaththimadu

Annexure 5: Guidance format for preparation of subproject proposals to raise funds to implement interventions and major activities

Format for preparing a Subproject Proposal (SPPs) to obtain funds for implementation of interventions.

1. Administrative Details:

No	Matters	Details
1	Contact details of proposal submitting agency: (postal, e-mail, telephone etc	
2	Contact Details of the implementing agency: (postal, e-mail, telephone etc.)	
3	Contact details with the position of the person responsible for providing information of the proposal (e-mail, telephone – land/mobile:	
4	Sector of the proposal (rehabilitation of tanks/catchment treatment/agriculture practices/ marketing/ institutional development/technology transferring/training/other (specify etc.).	
5	Ref. no of the concurrence of the Divisional Agriculture Committee (DAC).	

2. Sub-Project Details:

2.1. Title of the Sub-Project (Please note that the name may be very similar to that of the project development objective, but not in all time):

……

2.2. Summary of the sub-project (please give a very brief paragraph answering the questions of what it is, why it is, who it is, where it is and when it is implemented? The estimated total cost is also needed).

……

2.3. Project Location (details such as cascade, Agrarian Service Centre, Local Government Ward, GN Division etc. If the project location is considered as a highly vulnerable area to flood or drought, please indicate that too).

……

2.4. Project issue/rational/justification (This is very important and is considered as the main part of the proposal. Therefore, please highlight what the issue, how it is impacted on the farmers, how it was identified and what bad effects would happen, if it is not resolved).

……

2.5. How the critical issue was identified? (through community consultations, requests from farmer organisations, cascade management plan etc.).

……

2.6. Objective of the sub-project (please formulate this in very rational manner since it is important for the monitoring purpose).

……

2.7. Specific Objectives (Specific objectives need to be developed according to SMART form and this is also very important for the monitoring purpose.

1.

2.

2.8. Proposed sub- project activities (This part needs to be described very rationally and what actions the implementing agency proposed to address the critical issue and how it contributes to achieve the project objective?

……

2.9. Expected results (these may be economic, political, social, environment, cultural, nutritional etc.).

1.

2.

2.10. Beneficiaries (The nature of the beneficiaries – In addition to number of male and female, please indicate other characteristics also such as belonging to low-income or indigenous groups, affected by war etc.).

……

2.11. Who of the beneficiaries will participate in implementation?

2.12. How do women get benefited?

……

2.13. Who will be responsible for operation and maintenance (O&M) including estimated cost for O&M?

……

2.14. Potential Risks and strategies propose to minimize the risks

2.15. Does the project fall either under the negative list or prescribed list?

(a) If, Yes, please explain whether IEE or EIA is required.

……

(b) If No, IEER/EIS format will be required.

2.16. Name/names of the proposed farmer organizations or producer organizations that could be got involved in implementing the sub-project (if applicable, details need to be annexed).

……

3. Implementation methodology

3.1. How the project is planned to be implemented and with what stakeholders etc? (describe with adequate details).

……

3.1. Tendering process (explain how it is planned to procure required materials).

3.2. Activity plan (describe the activity plan with the time frame and the responsible agencies/persons in implementation. This need to be describe using a Gantt chart).

4. Subproject Monitoring Mechanism: (This is very important. Therefore, please describe how the monitoring activities are taken place providing adequate details).

.....

5. Subproject Evaluation Mechanism: (please indicate how the implementing agency plans to evaluate the project and at what intervals).

……

6. Reporting arrangement (please describe who will take the responsibility of making both financial and progress reporting and also the expected time period).

7. Estimated Cost:

No	Major Activity	Total estimated cost in LKR	Community Contribution (LKR)	Other sources(specify) (LKR)	Amount expected from donor agency (LKR)
1					
2					

8. Submission

8.1. Authorized person to submit the sub-project proposal on behalf of the Cascade Management Committee (CMC).

8.2. Position, contact details, frank, date of submission

09. Annexes:

(please annex all relevant additional details to provide adequate information to justify the subproject proposal and thereby to expedite the approval process.

Annexure 6: Glimpses