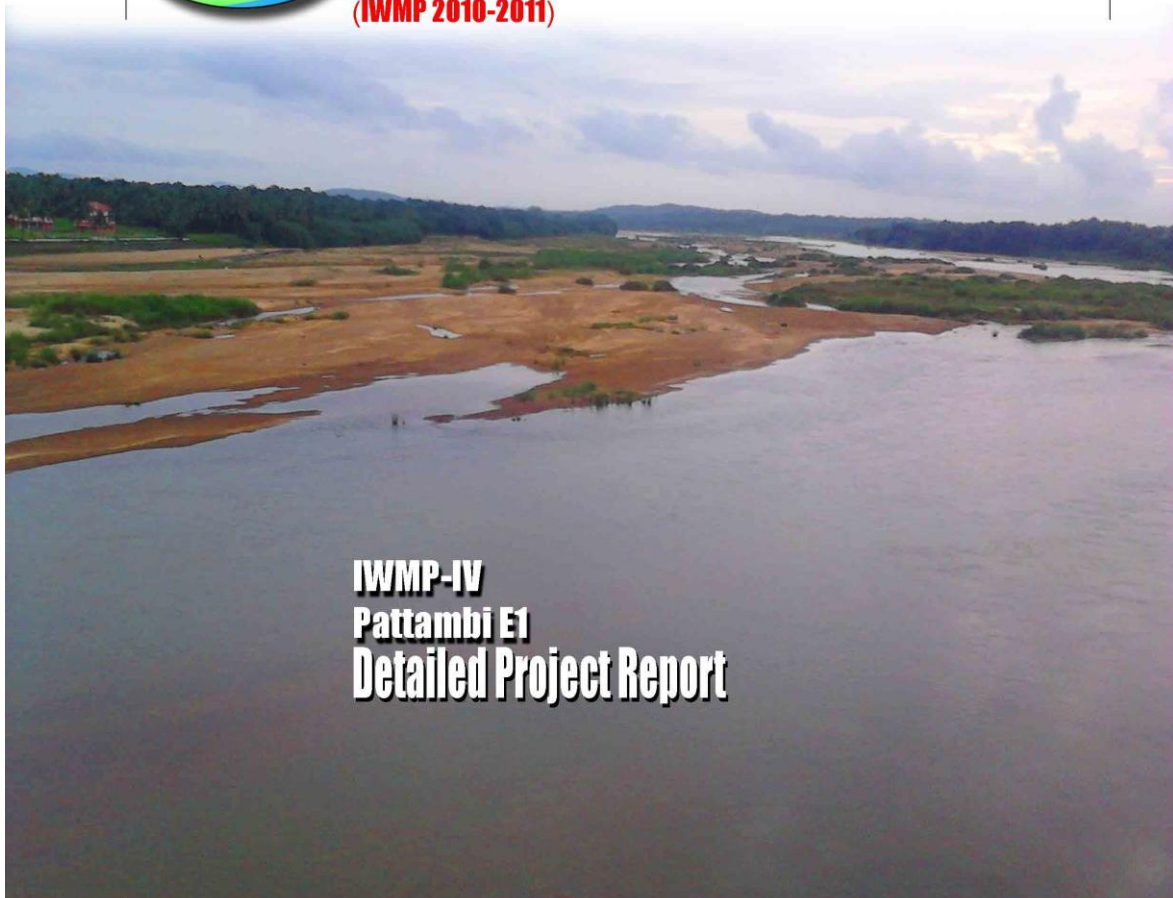




**Ministry of Rural Development  
Government of India**

**INTEGRATED WATERSHED MANAGEMENT PROGRAMME  
(IWMP 2010-2011)**



**IWMP-IV  
Pattambi E1  
Detailed Project Report**

**Government of Kerala,  
Pattambi Block Panchayth**

TSO:FlameKerala,Sulthan Bathery,Wayanad,Kerala

**INTEGRATED WATERSHED MANAGEMENT PROGRAMME- PALAKKAD**

**IWMP IV -PATTAMBI-E1**



**DETAILED PROJECT REPORT**



**PATTAMBI & OTTAPALAM BLOCK PANCHAYATHS**

**PIA: PATTAMBI BLOCK PANCHAYATH**

## Acknowledgement

We express our sincere Gratitude to the people of **IWMP-IV PATTAMBI E1** Project which covers Kulukkallur, Vallapuzha, Vilayur, Koppam and Thiruvegapura Grama Panchayaths for their priceless cooperation, support and participation especially elected members, women, farmers and labors in the preparation of DPR by providing authentic information covering all aspects of in-depth information and baseline data.

With the deep sense gratitude we are presenting the Detailed Project Report of IWMP projects of Pattambi & Ottapalam Block Panchayaths, Palakkad, Kerala. We have adopted different development activities in the project for helping the poor and marginalized people with environment sensitivity and Gender concern. As from our inception into the project we have given due importance to promote economically viable and people friendly structures for the future sustainability. The dedication and commitment of the partners, VWCs technical team members and executive committee was commendable, without their whole hearted support we could never been in this position. The guidance and support provided by Pattambi and Ottapalam blocks, SLNA, PAU Palakkad, WCDC, WDT Members, Panchayath Raj Institutions, Government and non government departments & institutions and other development organizations are worth to mention here. We are very positively looking towards the coming years where there will be more new initiatives under Integrated Watershed Management Programmes with peoples' participation and supervision.

**V. Vasantha**  
**President**  
**Pattambi Block Panchayath**  
**Pattambi, Kerala**

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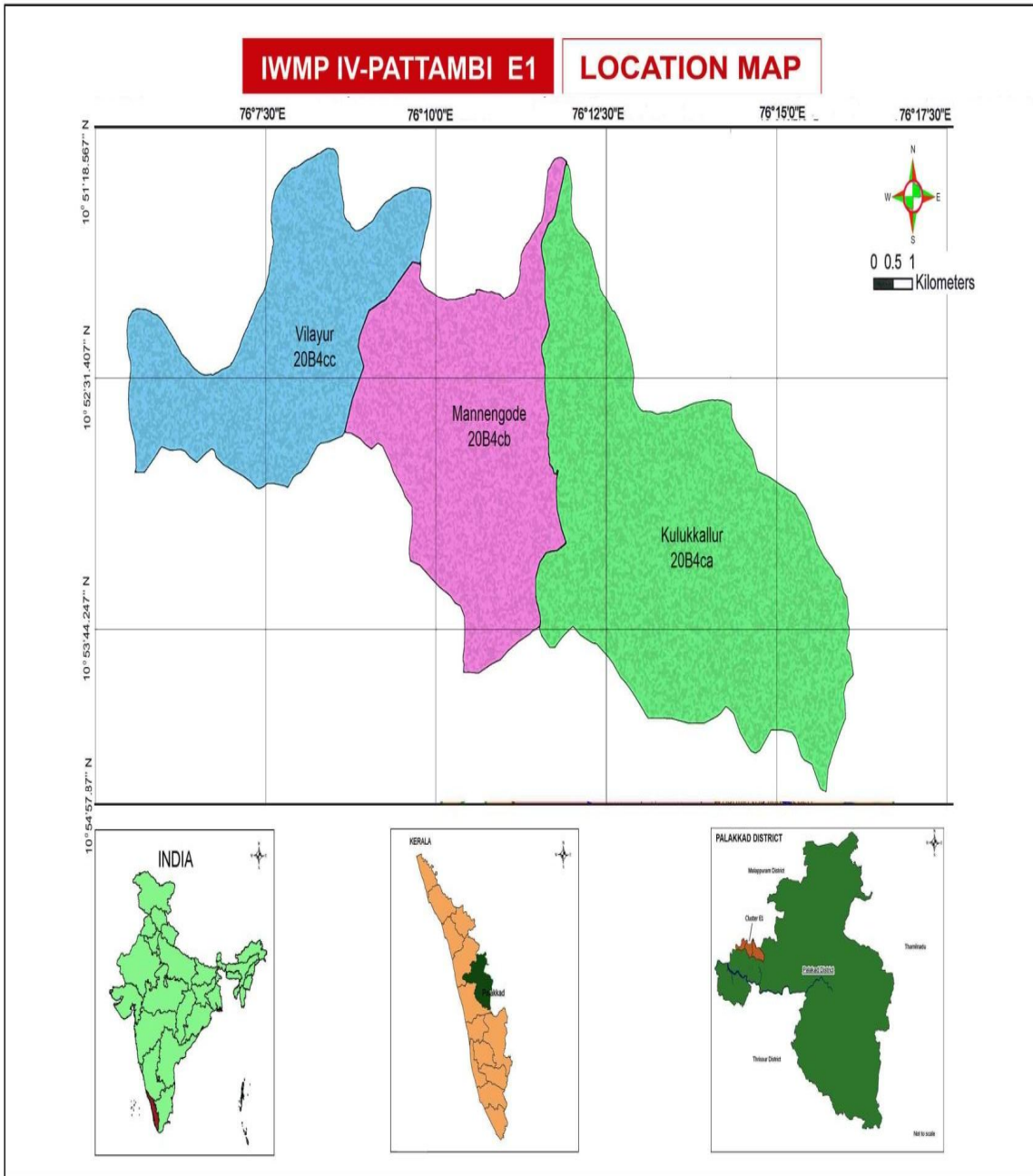
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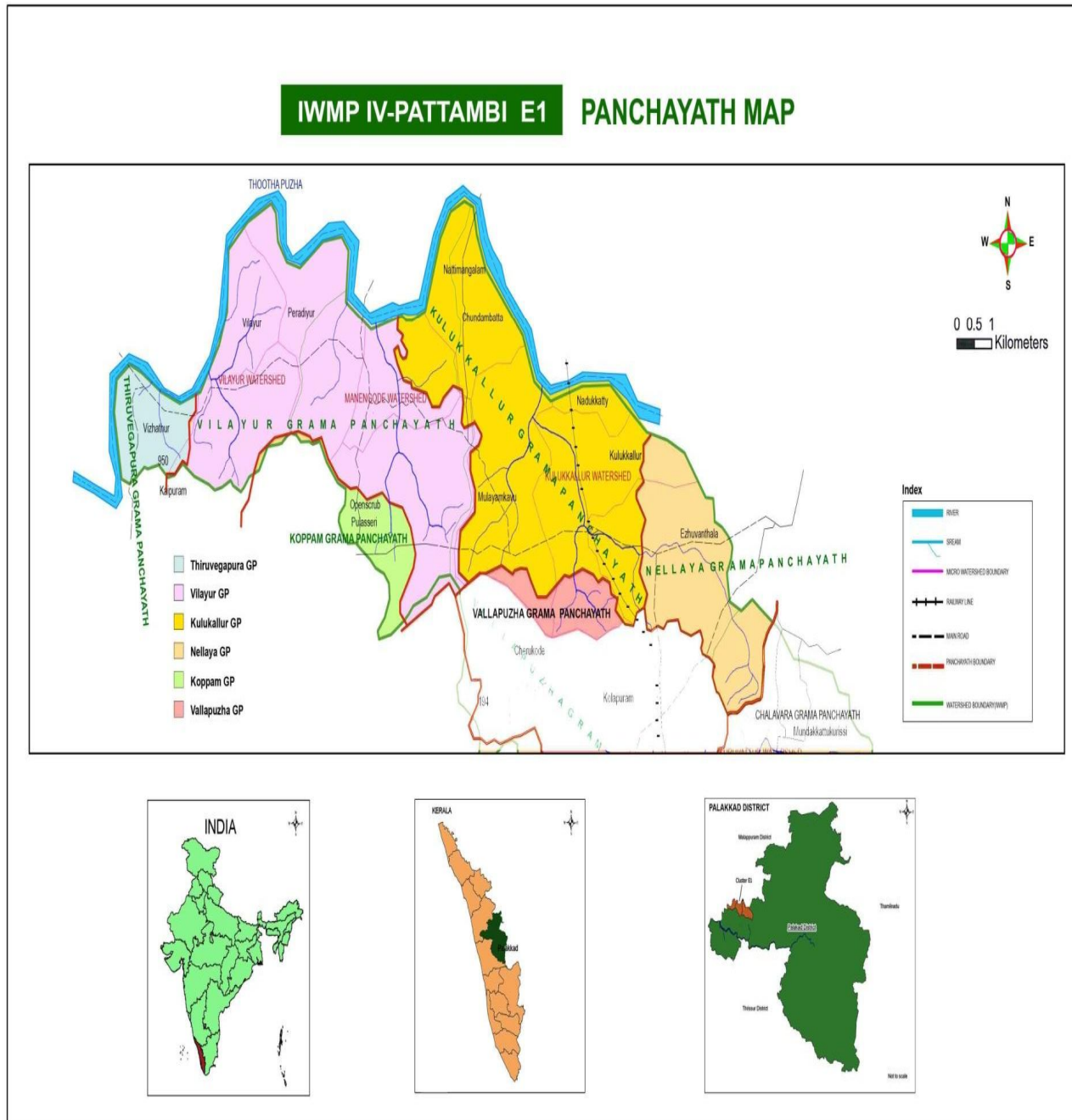
<b>ABBREVIATIONS</b>	
<b>AAP</b>	Annual Action Plan
<b>APL</b>	Above Poverty Line
<b>BLCC</b>	Block Level Coordination Committee
<b>BPL</b>	Below Poverty Line
<b>BRGF</b>	Backward Regions Grant Fund
<b>CEO</b>	Chief Executive Officer
<b>DLCC</b>	District Level Coordination Committee
<b>DPC</b>	District Planning Committee
<b>DPR</b>	Detailed Project Report
<b>EPA</b>	Entry Point Activities
<b>FGD</b>	Focus Group Discussion
<b>FLAME</b>	Forum for Learning Action Monitoring & Evaluation
<b>GIS</b>	Geographic Information System
<b>GP</b>	Grama Panchayath
<b>GW</b>	Ground Water
<b>IEC</b>	Information, Education and Communication
<b>IT</b>	Information Technology
<b>IWMP</b>	Integrated Watershed Management Programme
<b>LFA</b>	Logical Framework Analysis
<b>LSGD</b>	Local Self Government Department
<b>LSGI</b>	Local Self Government Institutions
<b>LSS</b>	Livelihood Support System
<b>MCM</b>	Million Cubic Meters
<b>MGNREGA</b>	Mahatma Gandhi National Rural Employment Guarantee Act
<b>MoU</b>	Memorandum of Understanding
<b>MSL</b>	Mean Sea Level
<b>NGO</b>	Non-Governmental Organization
<b>NRAA</b>	National Rainfed Areas Authority
<b>NRHM</b>	National Rural Health Mission
<b>NRM</b>	Natural Resource Management
<b>OBC</b>	Other Backward Caste
<b>PIA</b>	Project Implementing Agency
<b>PRA</b>	Participatory Rural Appraisal
<b>PRIs</b>	Panchayathi Raj Institution
<b>PS&amp;M</b>	Production System and Microenterprises
<b>SC</b>	Scheduled Caste
<b>SHG</b>	Self Help Group
<b>SLNA</b>	State Level Nodal Agency
<b>SPSP</b>	State Perspective and Strategic Plan

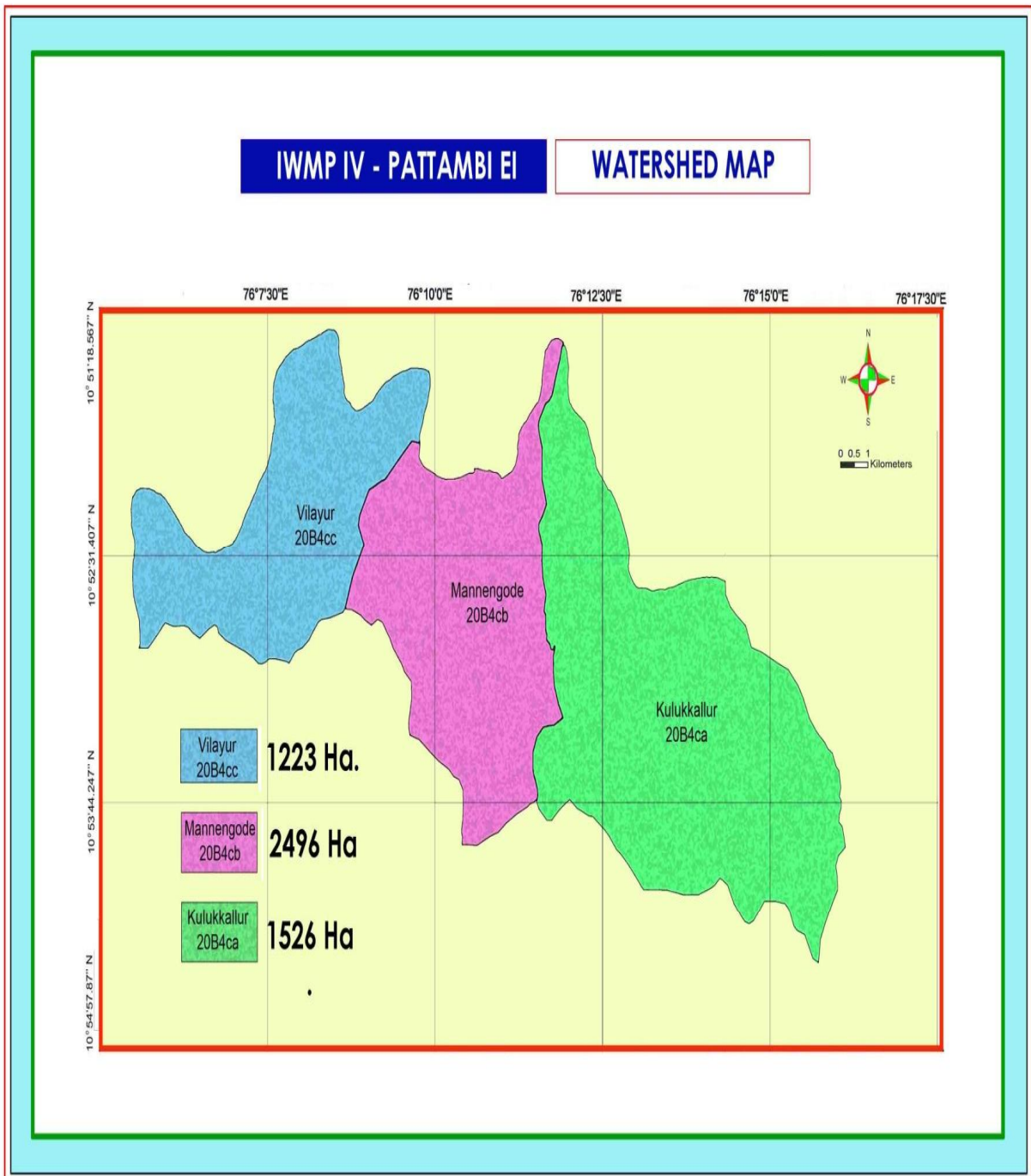


<b>ST</b>	Scheduled Tribe
<b>TSO</b>	Technical Support Organization
<b>UG</b>	User Group
<b>VEO</b>	Village Extension Officer
<b>WC</b>	Watershed Committee
<b>WCC</b>	Watershed Coordination Committee
<b>WCDC</b>	Watershed Cell cum Data Centre
<b>WDT</b>	Watershed Development Team
<b>WW</b>	Women Welfare









## **PART- 1**

### **Introduction**

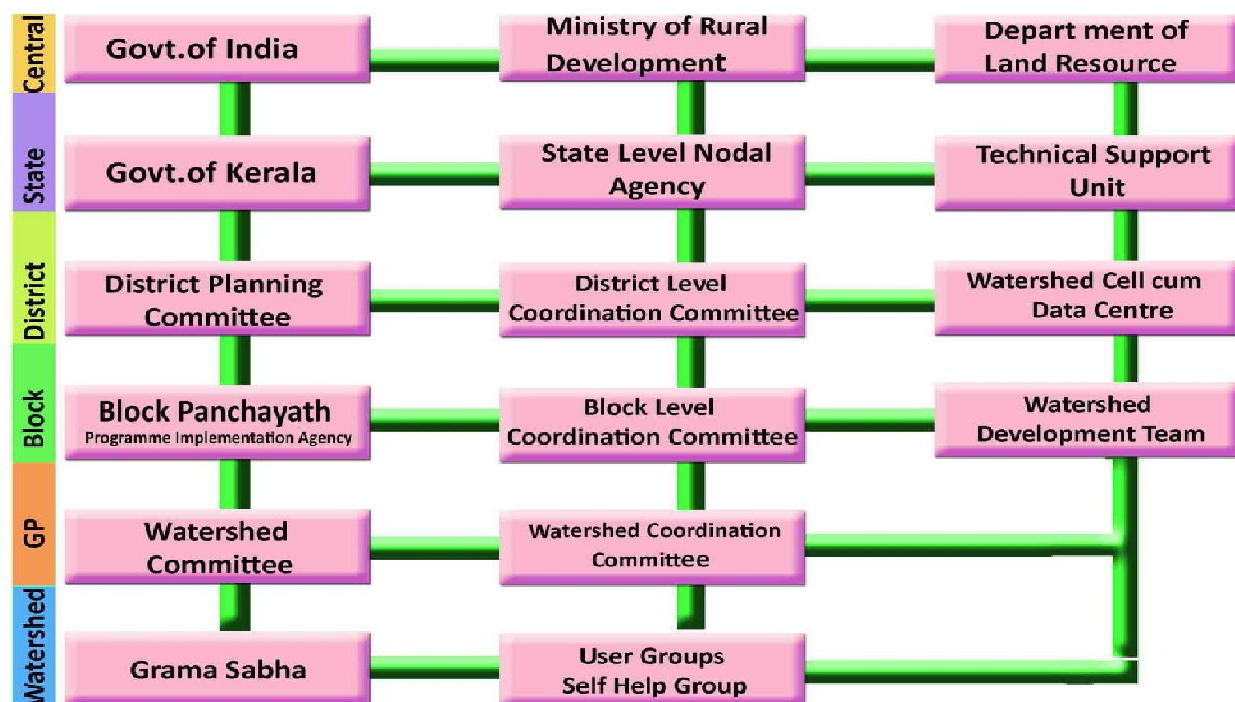
Kerala falls in the humid tropical climatic region, where the major climatic factor is the suitable rainfall. The average annual rainfall of the State is 3000 mm, of which 65-70% receives during southwest monsoon. Intolerable and exhausted human interventions and other geographical factors are adversely affecting the climate. Irregular and uneven rain fall, mismanagement of water, lack of soil and water conservation measures are the main causative factors for water scarcity. It leads to high shortage of water in the summer season which affects production and productivity, degradation of land and biomass etc. Conservation of resource trinity is the essential need of present scenario. In this juncture the integrated watershed management is an effective mechanism to tackle the issues by adopting systematic and scientific conservation methods.

Integrated Watershed Management Programme (IWMP) is mainly aims at conservation, restoration and sustained utilization of the natural resources. It implies the wise use of soil, water, bio mass and obtains optimum production with minimum disturbance of environment. The basic objective of watershed management is to dissolve the problems of soil, water and biomass. The sustainability of the programme can be ensured through the formation, and strengthening of viable people's structures like Watershed committees, user groups and SHGs. Integrated Watershed Management Programme is a people planned, people lead and people owned project.

## 1.1 Project Background

State	District	Taluk	Block	Project	Micro Watershed			Grama Panchayath	Included Ward			Total Area in Hec-tor	Project Area in Hec-tor	Project Amount in Lakhs	
					SINO	Name of Watershed	Code No.		Area In Hec-tor	Panchayath	Fully				Partly
Kerala	Palakkad	Pattambi	Pattambi & Ottapalam	IWMP IV - Pattambi E1	1	Kulukkallur	20B4Ca	2496	Kulukkallur, Vilayur, Koppam, Vallapuzha, Nellya, Thiruvegapura	Kulukkallur	3 to 16	1, 2	5245	5245	186.15
										Nellya	10 to 14	-			
					Vallapuzha	-	1, 2								
					Vilayur	5, 6, 7, 8, 9, 10	- 4								
					Koppam,	4, 5, 6	3								
					Kulukkallur	17	1, 2								
					Vilayur	1, 2, 3, 11 to 15	4								
3	Vilayur	20B4Cc	1223	Thiruvegapura	4	-									

## I.2. Organizational Setup



## I.3. Funding Pattern

Sl. No.	Particulars	Percentage of Fund	Amount
01.	Administration Cost	10.00%	78,67,500.00
02.	Monitoring	1.00%	7,86,750.00
03.	Evaluation	1.00%	7,86,750.00
04.	Entry Point Activities	4.00%	31,47,000.00
05.	Institution & Capacity Building	5.00%	39,33,750.00
06.	DPR	1.00%	7,86,750.00
07.	Watershed Development Works	56.00%	4,40,58,000.00
08.	Livelihood Activities	9.00%	70,80,750.00
09.	Production System & Micro Enterprises	10.00%	78,67,500.00
10.	Consolidation Phase	3.00%	23,60,250.00
<b>Total</b>		<b>100.00%</b>	<b>7,86,75,000.00</b>



**I.4. Fund Distribution –Watershed wise**

Item	Percentage	Kulukkallur	Manengode	Vilayur	Total
Administration Cost	10%	3744000	2289000	1834500	7867500
Monitoring	1%	374400	228900	183450	786750
Evaluation	1%	374400	228900	183450	786750
Entry Point Activities	4%	1497600	915600	733800	3147000
Institution & Capacity Building	5%	1872000	1144500	917250	3933750
DPR	1%	374400	228900	183450	786750
Watershed Development Works	56%	20966400	12818400	10273200	44058000
Livelihood Activities	9%	3369600	2060100	1651050	7080750
Production System & Micro Enterprises	10%	3744000	2289000	1834500	7867500
Consolidation Phase	3%	1123200	686700	550350	2360250
<b>Total</b>		<b>37440000</b>	<b>22890000</b>	<b>18345000</b>	<b>7,86,75,000</b>

## PART II

### General description of the Project area

#### II.1.1 History

The project area spreads in Pattambi and Ottapalam block Panchayaths. Pattambi and Ottapalam are the major townships of Palakkad district. These places are historically well known in India by the presence of eminent political and social leaders like K R Narayanan, former president of our nation, E M Sankaran Namboothiripad, the first Chief Minister of Kerala and E P Gopalan, a famous socialist leader etc. Pattambi is well known for its cultural importance by situating in the banks of river Bharathappuzha, historical name was 'Nila'. Nethirimangalam was the old name of Pattambi. A cultural combination of Malapurmam Thrissur and Palkkad obviously differentiating the area from other places of Palakkad. It is a junction that connects roads from Ottapalam, Perumbilavu, Perinthalmanna and Thrissur. The main tributary is Thootha puzha that leads to Bharatapuzha. Malayalam is official language and Hindi, Tamil, English are also familiarizing due to significant number of migrants from other districts and states.

#### II.2. Profile of the Area

##### II.2.1. Location

State	District	Taluk	Block	Panchayath	Revenue Village
Kerala	Palakkad	Pattambi & Ottapalam	Pattambi & Ottapalam	Kulukkallur, Vilayur, Koppam, Nelloya, Vallapuzha. Truvega pura	Kulukkallur, Nelloya, Vilayur, Koppam,

##### II.2.2. Boundaries of the Watershed

NORTH	Thoothapuzha
SOUTH	Vallapuzha , Koppam Grama Panchayath
EAST	Nelloya GP
WEST	Thoothapuzha , Thiruvegapura

##### II.2.3. Geographical Coordinates

<b>Longitude</b>	76°7'50.445"E	76°16'15.254"E
<b>Latitude</b>	10°51'18.567"N	10°54'56.039"N

## II.2. 4. Criteria for Selection

No	Criteria	Score	Ranges & Scores			
I	Poverty index (% of poor to population)	10	Above 80 % (10)	80 to 50 % (7.5)	50 to 20 % (5)	Below 20 % (2.5)
II	% of SC/ ST population	10	More than 40 % (10)	20 to 40 % (5)	20 to 40 % (5)	
III	Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (0)		
IV	% of small and marginal farmers	10	More than 80 % (10)	50 to 80 % (5)	Less than 50 % (3)	
V	Ground water status	5	Over exploited (5)	Critical (3)	Sub critical (2)	Safe (0)
VI	Moisture index/	15	-66.7 & below (15)	33.3 to -66.6 (10)	0 to -33.2 (0)	
	DPAP/ DDP Block		DDP Block	DPAP Block	Non DPAP/DDP Block	Above 70 % (Reject)
VII	Area under rain-fed agriculture	15	More than 90 % (15)	80 to 90 % (10)	70 to 80% (5)	Fully covered (0)
VIII	Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	
IX	Degraded land	15	High – above 20 % (15)	Medium – 10 to 20 % (10)	Low-less than 10% of TGA(5)	
X	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts(5)	
XI	Contiguity to another watershed that has already been developed/	10	Contiguous to previously treated watershed & contiguity within the	Contiguity within the micro watersheds in the project but non contiguous to previously treated wa-	Neither contiguous to previously treated watershed nor contiguity within the micro watersheds in the	

	treated		micro watersheds in the project (10)	watershed (5)	project (0)
XII	Cluster approach in the plains (more than one contiguous micro watersheds in the project)	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro watersheds in cluster (10)	2 to 4 micro watersheds in cluster (5)
	Cluster approach in the hills (more than one contiguous micro watersheds in the project)		Above 5 micro-watersheds in cluster (15)	3 to 5 micro watersheds in cluster (10)	2 to 3 micro watersheds in cluster (5)

### II.2.5. Weightage

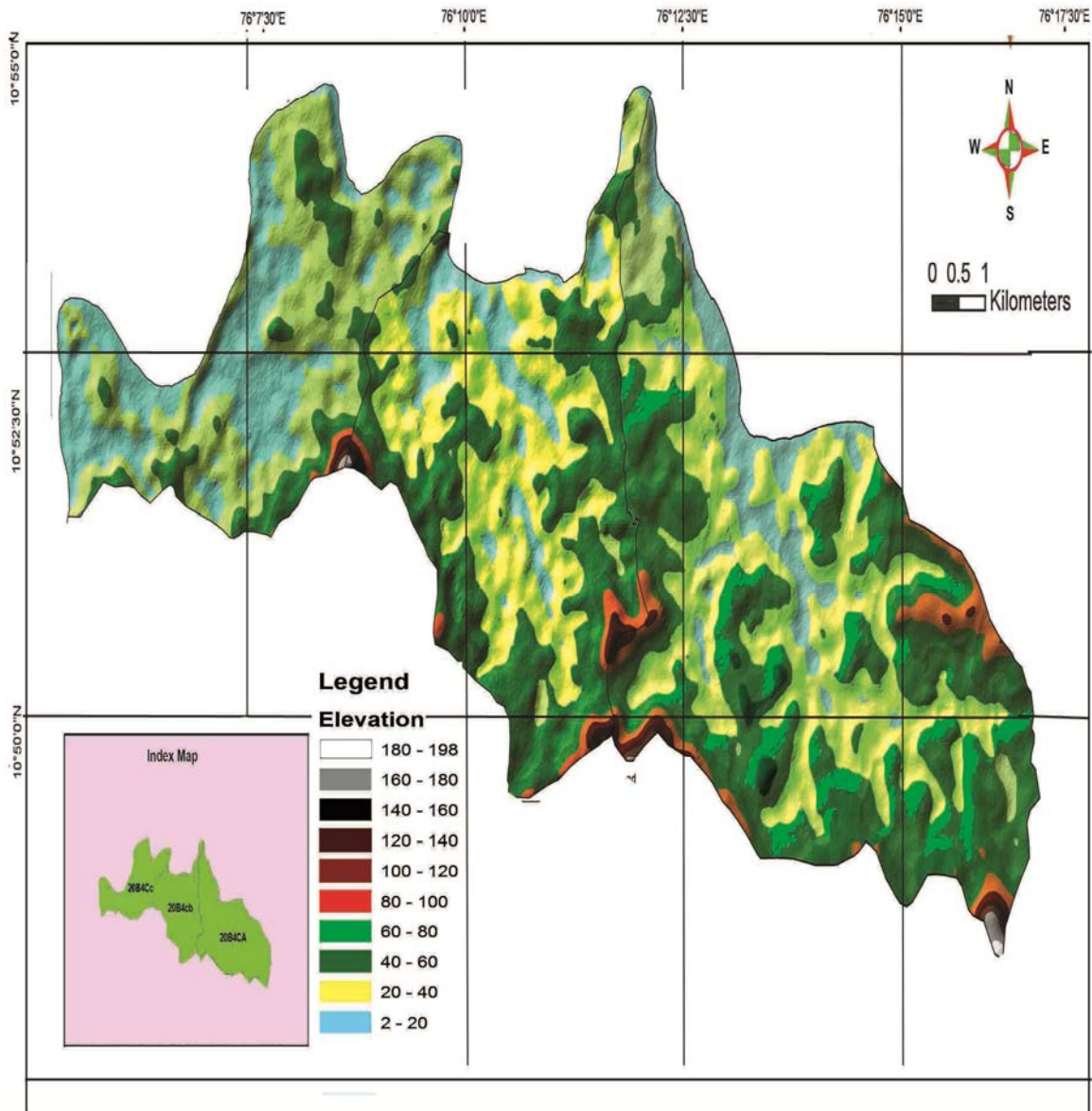
Project name	Weightage												
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Total
IWMP-PATTAMBI- IV –E1	10	10	5	10	5	15	15	10	15	15	10	15	135

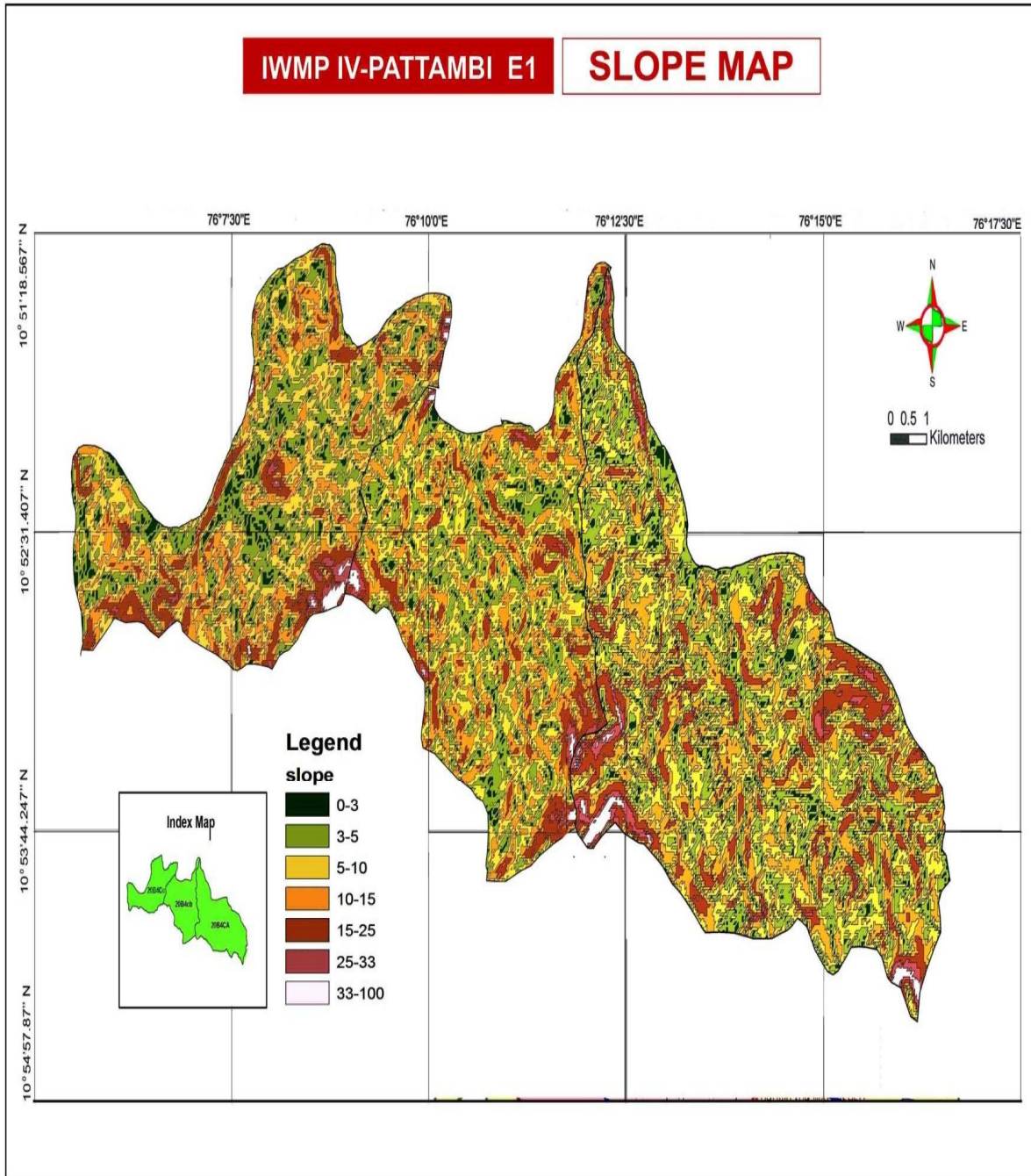
### II.3. Physiography, Relief and Drainage

Project Name	Physiography	Relief	Major Drainage
IWMP -Pattambi IV –E1	20-300 MSL	Midland	Thoothapuzha

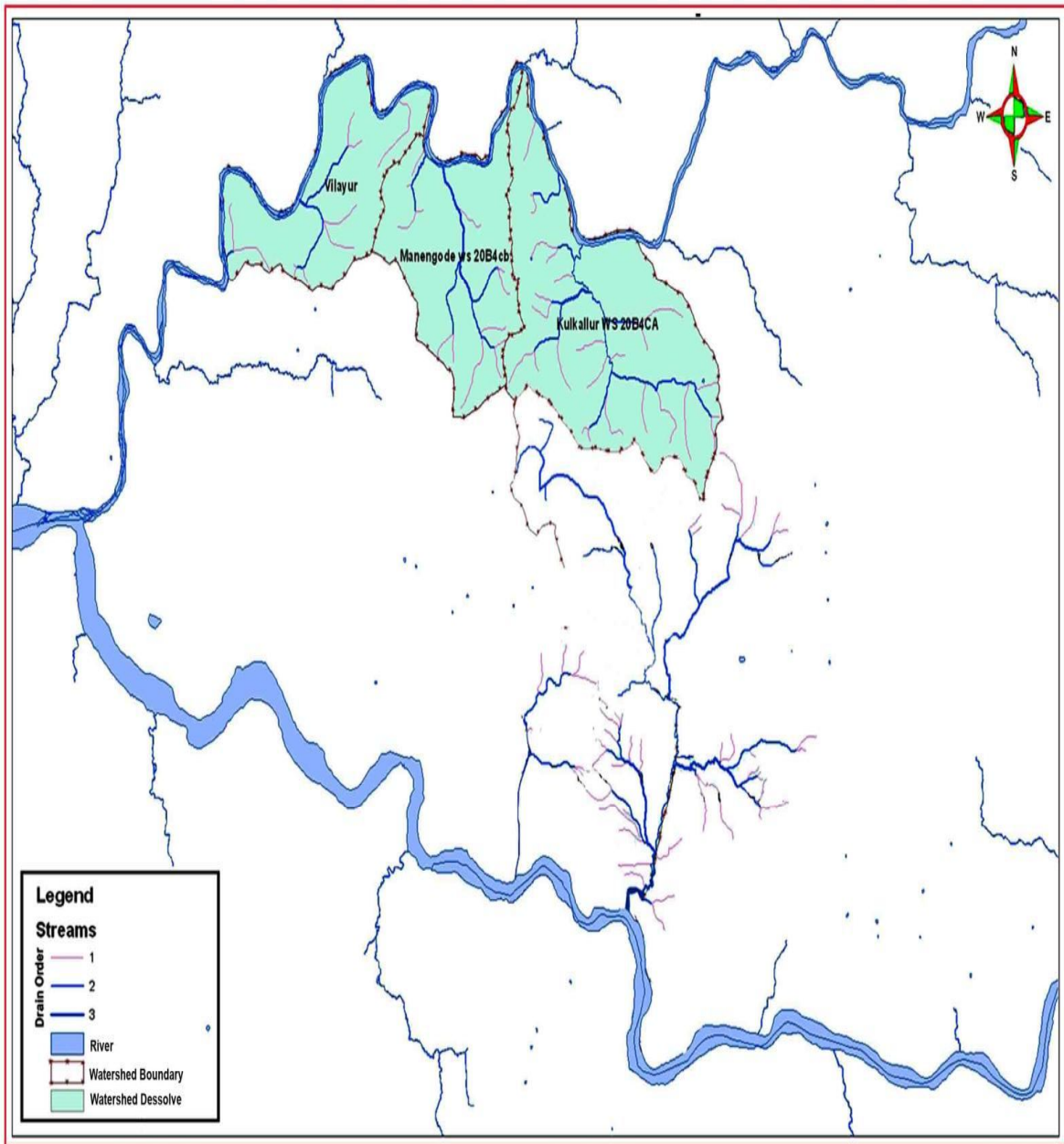
Palakkad district is divided mainly into three geographical regions namely highlands, midlands and lowlands. Pattambi and Ottapalam blocks belong to **mid land** division. The project area is drought prone area due to the irregular and uneven rain fall in the past. Land degradation is occurring in a drastic rate due to the unscientific land management practices. Paddy, coconut, areca nut and vegetables are the major crops. Bharathapuzha and Thoothapuzha (Tributary of Bharathapuzha) are the major rivers.

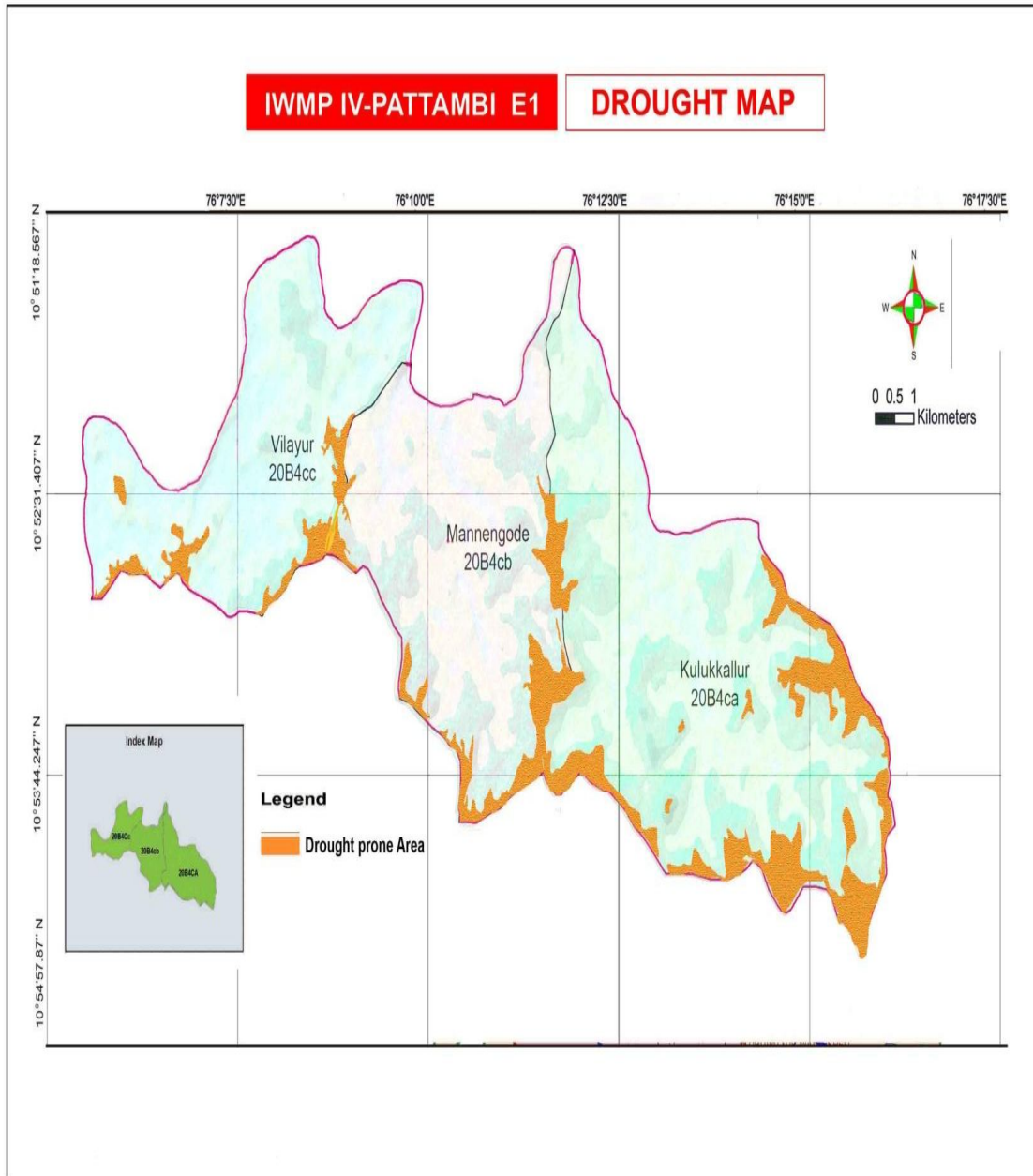
### IWMP IV PATTAMBI E1 RELIEF MAP





## IWMP IV- Pattambi E1 Stream Network Map







## II.4. Water Sources

Watershed	Streamlet	Ponds
<b>Kulukkallur</b>	24	59
<b>Mannengode</b>	13	26
<b>Vilayur</b>	9	62
<b>Total</b>	<b>46</b>	<b>147</b>

## II.5. Climate

The district has a tropical humid climate with hot wind. The district receives maximum rainfall during the South West monsoon followed by the North East monsoon. The other months receive considerably less rainfall. The temperature is pleasant from December to February. The annual rainfall varies from 1757.6 to 2849.5 mm based on long term normal. The block receives on an average of 2348 mm of rainfall annually. Major rainfall is received during June to September in the South West monsoon (71%). The North West monsoon contributes about 18%. The maximum temperature ranges from 28.1 to 39.5 whereas the minimum temperature ranges from 22.2 to 25.30. The average annual maximum temperature is 32.30 and the average annual minimum temperature is 23.40. The wind is predominantly from West and East during morning as well as in the evening hours. The wind speed is high is during August (13.6 kmph). The humidity is higher during the monsoon period ie, from June to September. It is around 90% during this period. All through the year, the humidity is high during the morning.

MONTHLY AVERAGE OF MAXIMUM TEMPERATURE												
YEAR/MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
2000	33.7	34.1	36.1	34.7	34.5	29.8	29.7	29.1	30.8	30.4	32.3	31.0
2001	33.1	34.2	35.2	34.5	33.0	29.4	29.3	29.5	31.6	31.1	31.8	31.9
2002	33.1	34.8	37.0	35.6	33.3	30.1	30.1	28.8	31.5	31.2	31.9	32.9
2003	33.5	35.2	35.2	34.8	33.7	31.3	29.5	30.2	31.1	31.3	31.9	32.6
2004	33.6	35.5	36.6	34.8	30.5	29.7	29.5	29.5	30.9	31.3	32.0	32.9
2005	33.9	35.1	36.3	34.0	34.1	30.6	29.0	30.0	29.8	31.3	31.5	32.2
2006	33.5	34.8	35.3	35.2	33.4	30.3	29.5	30.1	30.0	31.0	31.4	32.1
2007	33.1	34.5	36.5	36.4	34.0	30.3	28.5	29.6	29.4	30.5	32.1	32.1
2008	32.7	33.9	33.9	34.1	33.9	30.3	29.6	30.1	30.4	31.8	32.5	32.3
2009	33.3	35.7	35.6	34.6	33.4	31.0	28.9	30.7	30.4	32.2	32.1	32.8
2010	33.7	35.8	37.1	35.7	33.9	30.8	29.5	29.4	30.7	30.5	30.7	31.0
Average	33.4	34.9	35.9	34.9	33.4	30.3	29.4	29.7	30.6	31.1	31.8	32.2

MONTHLY AVERAGE OF MINIMUM TEMPERATURE (°C)												
YEAR/MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
2000	21.9	21.7	23.3	24.8	24.8	23.1	22.7	22.6	23.1	22.3	21.4	18.8
2001	21.1	22.1	23.2	24.2	23.7	22.8	22.5	23.3	23.3	23.2	22.6	20.7
2002	21.2	21.6	23.8	24.8	24.3	22.6	23.4	23.3	23.2	23.7	23.2	19.7
2003	21.0	22.8	23.9	24.5	25.7	24.0	23.4	23.8	23.2	23.6	22.5	20.4
2004	20.8	21.3	23.7	25.1	24.2	23.5	23.5	23.2	23.5	23.2	22.3	20.9
2005	20.7	20.9	23.7	24.3	24.6	23.7	23.3	23.1	23.4	23.5	22.5	20.9
2006	21.0	20.5	23.3	24.5	24.8	24.0	23.5	23.5	23.4	23.5	23.2	21.3
2007	20.2	20.8	23.8	24.7	24.7	24.1	23.4	23.4	23.6	23.2	21.6	21.1
2008	19.6	21.6	22.1	24.8	24.9	23.8	23.7	23.9	23.3	23.4	22.8	20.5
2009	19.9	20.8	23.7	24.8	24.5	23.7	22.9	23.7	23.8	23.8	23.4	22.7
2010	21.4	22.9	24.2	25.3	25.7	24.2	23.5	23.6	23.6	23.4	23.1	21.1
	20.8	21.5	23.5	24.7	24.7	23.6	23.3	23.4	23.4	23.3	22.6	20.7

MONTHLY AVERAGE OF MINIMUM TEMPERATURE (°C)												
YEAR/MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
2000	21.9	21.7	23.3	24.8	24.8	23.1	22.7	22.6	23.1	22.3	21.4	18.8
2001	21.1	22.1	23.2	24.2	23.7	22.8	22.5	23.3	23.3	23.2	22.6	20.7
2002	21.2	21.6	23.8	24.8	24.3	22.6	23.4	23.3	23.2	23.7	23.2	19.7
2003	21.0	22.8	23.9	24.5	25.7	24.0	23.4	23.8	23.2	23.6	22.5	20.4
2004	20.8	21.3	23.7	25.1	24.2	23.5	23.5	23.2	23.5	23.2	22.3	20.9
2005	20.7	20.9	23.7	24.3	24.6	23.7	23.3	23.1	23.4	23.5	22.5	20.9
2006	21.0	20.5	23.3	24.5	24.8	24.0	23.5	23.5	23.4	23.5	23.2	21.3
2007	20.2	20.8	23.8	24.7	24.7	24.1	23.4	23.4	23.6	23.2	21.6	21.1
2008	19.6	21.6	22.1	24.8	24.9	23.8	23.7	23.9	23.3	23.4	22.8	20.5
2009	19.9	20.8	23.7	24.8	24.5	23.7	22.9	23.7	23.8	23.8	23.4	22.7
2010	21.4	22.9	24.2	25.3	25.7	24.2	23.5	23.6	23.6	23.4	23.1	21.1
	20.8	21.5	23.5	24.7	24.7	23.6	23.3	23.4	23.4	23.3	22.6	20.7

MONTHLY AVERAGE OF RELATIVE HUMIDITY (%) - HOUR-I												
YEAR/MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
2000	75	84	85	87	87	94	93	95	93	94	88	84
2001	81	93	90	90	90	94	94	94	94	94	92	85
2002	85	82	88	87	89	94	94	95	94	94	89	85
2003	74	84	90	90	90	93	95	94	93	94	87	86
2004	80	80	89	90	94	95	94	94	94	92	87	81
2005	83	88	89	91	92	95	95	95	95	94	92	92
2006	83	80	90	89	89	95	95	95	95	94	90	81
2007	82	87	90	88	89	93	96	95	95	94	90	83
2008	87	90	87	86	87	93	93	93	93	92	92	83
2009	80	87	90	90	90	93	96	94	94	94	92	83
2010	79	79	87	86	89	93	95	93	93	94	93	90
	80.8	84.9	88.6	88.5	89.6	93.8	94.5	94.3	93.9	93.6	90.2	84.8

MONTHLY AVERAGE OF RELATIVE HUMIDITY (%) - HOUR-II												
YEAR/MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
2000	36	40	39	53	50	77	70	76	68	71	57	47
2001	41	45	44	55	62	77	74	73	63	68	60	47
2002	43	36	36	51	63	76	72	78	61	70	73	39
2003	34	40	44	55	57	70	77	72	62	69	55	41
2004	38	28	35	53	74	75	74	73	68	65	54	40
2005	40	34	39	57	56	75	83	69	74	70	63	54

2006	42	28	44	49	59	72	76	71	72	70	62	43
2007	39	32	37	46	59	74	83	75	77	68	52	45
2008	38	40	45	55	52	74	72	68	68	64	55	43
2009	34	31	45	56	61	72	81	71	72	62	62	50
2010	40	35	41	53	63	74	77	74	69	73	68	54
	38.6	35.4	40.8	53.0	59.6	74.2	76.3	72.7	68.5	68.2	60.1	45.7

## II.6. Geology

The archaean crystal lines are the major rock types encountered in the project area. Charnockites, hornblende gneiss, migmatites and gneisses occupy a major part of the area. Hard rock of the Archaean crystalline complex exists in Pattambi & Ottappalam with a wide range of rock types of different metamorphic grades. The rock types met within the district can be broadly classified into three groups viz., (i) The granulate group of rocks consisting of charnockites, basic granulites and the khondalites comprising garnet-sillimanite gneiss, calc granulate, crystalline limestone, sillimanite quartzite and associated migmatite gneiss, (ii) The leuco-to mesocratic gneissic group of rocks consisting of schistose, micaceous and amphibolitic rocks intruded by basic and ultramafic dykes and, (iii) the coarse pink pegmatite rich granitic rocks. A tentative geological succession of the rock types is given below:

Recent : Top soil, valley fill and revereie alluvium

Sub-recent : Laterite

Archaean : Pegmatites, quartz vein, dolerite, gabbro, granites,  
Quartz-mica schist, hornblende biotite gneiss, ultramafics,  
Charnockite khondalites and calc- granulate

## II.7. Ground Water

Palakkad district is underlain by rocks of archaean metamorphic complex. They include the granulate group, the gneisses and the schist above which laterite and alluvium are observed. Intrusive of pegmatite and quartz veins are also common in the northeastern parts of the district. Groundwater occurs in all the geological formation from archaean crystalline (hard rock) to recent alluvium (soft rock). Groundwater occurs in pre-tertiary condition in the laterite, alluvium and weathered crystalline. It is in semi confined to confined condition in the deep fractured rocks.

**Table: 2.7.1. Comparison of gross draft for all uses**

Sl. No	Name of Blocks	Net annual Groundwater Availability (MCM)	Existing gross ground water draft for irrigation (MCM)		Existing gross ground water draft for domestic & industrial works supply		Existing gross ground water draft for all uses (MCM)	
			As on 31.03.99	As on 31.03.04	As on 31.03.99	As on 31.03.04	As on 31.03.99	As on 31.03.04
1	Pattambi	35.37	9.67	10.31	9.44	10.03	19.12	20.34
	Ottapalam	30.47	8.47	9.03	5.102	5.25	13.58	14.28

### II.7.2: Drought Areas:

**Anakkal, Mannengode, Vandumthara, Pottachira, Mappattukara, Marayamangalam,**

### II.8. Drinking Water and Irrigation

The district is drained mainly by one river, viz Thoothapuzha. Soil erosion is more in the upstream parts of the basin. Dendrite is the common drainage pattern. 75 % of the population is depending on surface water resources for their irrigation needs, mainly from Thoothapuzha, its tributaries and other water bodies. There are no major irrigation projects in the project area. Farmers are depending small irrigation projects of department and PRIs.

Land irrigability sub classes are 4s- 4sd. Irritability class limitation is considered as marginal lands

Groundwater occurs in all the geological formation from Archaean crystalline (hard rock) to recent alluvium (soft rock). Groundwater occurs in pathetic condition in the, alluvium and weathered crystalline. It is in semi confined to confined condition in the deep fractured rocks.

### II.8.1. Existing Area under Irrigation

Name of Watershed	Open well		Tube well		Pond		Streamlet		Total (Ha.)
	No	Irrigated (Ha.)	No	Irrigated (Ha.)	No	Irrigated (Ha.)	No.	Irrigated (Ha.)	
<b>Kulukkallur</b>	2881	235	45	18	59	118	7	28	399
<b>Mannengode</b>	1222	100	25	10	26	52	13	52	214
<b>Vilayur</b>	1261	103	65	26	62	332	4	16	477

### II.8.2. Existing water supply schemes

Name of Water Supply Scheme	Owner ship	Watersheds
Anakal, Thathanampully, Oorpalamkunnu Irrigation Project	KWA , Kulukkallur	Kulukkallur
L.I.S. Thudikkal Kanal	KWA, Vilayur GP	Vilayur

### II.9. Socio Economic Details

The watershed community is constituted by small and marginal farmers. The major occupations of the people are agriculture and related activities. Major agriculture crops are paddy, Coconut, Rubber, Banana and tuber crops. The agrarian communities are leading miserable life due to the fluctuation occurring in this sector. 35 % of the people are under BPL category. The new generation is reluctant to come forward in agriculture sector. People paying more attention to the quality education.

#### 2.9.1. Demographic Profile of the Watershed

Name of Water Supply Scheme	Owner ship	Watersheds
Anakal, Thathanampully, Oorpalamkunnu Irrigation Project	KWA , Kulukkallur	Kulukkallur
L.I.S. Thudikkal Kanal	KWA, Vilayur GP	Vilayur

(Source: Baseline survey-TSO)

**Table: 2.9.2. Employment Analysis**

SI No.	Employment	Male	Female	Total
1	Agriculture	6617	3406	10023
2	Business	1726	799	2525
3	Coolie	6220	7936	14156
4	Government	1402	1389	2791
5	Non Government	2691	3567	6258
6	MGNREGS	683	2964	3647
7	Student	8712	8960	17672
8	Nil	2432	4070	6502
	<b>Total</b>	<b>30483</b>	<b>33091</b>	<b>63574</b>

(Source: Baseline survey-TSO)

### 2.9.3. Community organization

SI. No.	Community organization	Nos
1	No of SHGs / UGs	280
2	People registered under MGNREGS	1823
3	No. of Federations of SHGs	11
4	Self Employment Ventures	22

### II.9.4. Micro level Organizations and Wage rates in the Watershed

Name of Water Supply Scheme	Owner ship	Watersheds
Anakal, Thathanampully, Oorpalamkunnu Irrigation Project	KWA , Kulukkallur	Kulukkallur

(Source: Baseline survey-TSO)

**Table: II.9.5. Income Analysis**

SI No.	Income	No. of Families
1	0-5000	1730
2	5001-10000	3189
3	10001-25000	6247
4	25001-50000	2039
5	50001-100000	407
6	Above 100001	58
	<b>Total</b>	<b>13670</b>

(Source: Baseline survey-TSO)

**Table: II.9.6. House wise Classification**

SI No	House Type	No. of Families
1	Better Home	5068
2	Partially Better	6199
3	Not Better	2222
4	Temporary Shelter	181
	<b>Total</b>	<b>13670</b>

(Source: Baseline survey-TSO)

**Table: II.9.7. Social Conditions**

SI No	Items	Yes	No	Total
1	Toilet	13154	516	13670
2	Electricity	13573	95	13670

(Source: Baseline survey-TSO)

**Table: 2.9.8. Educational Institutions**

Sl.no	Category	Govt.	Aided & No	Un Aided & No	Total
1	Anganwadi	56	-----	-----	56
2	Lower Primary School	5	14	4	23
3	Upper Primary School	7	6	1	14
4	High school	1	-----	-----	01
5	Higher Secondary School	2	-----	-----	02
6	College	1	-----	-----	01

(Source: Baseline survey-TSO)

### II.9.9. Cooking Fuel

#### Cooking Fuel sources

Name of Water Supply Scheme	Owner ship	Watersheds
Anakal, Thathanampully, Oorpalamkunnu Irrigation Project	KWA , Kulukkallur	Kulukkallur

(Source: Baseline survey-TSO)

### 2.9.10: Health

#### Healthcare facilities in the watershed

Primary health centre & Sub Centre	Ayurveda Dispensary	Homieo Dispensary
7	5	3

(Source: Baseline survey-TSO)

### 2.9.11: Transport

Nearly 85% of the roads are motorable. Major roads are Pengattiri- Koppam, Muayankavuvallappuzha, Koppam - Pulamanadol. Bus and other taxi services are very common in the area. Privet buses are mainly servicing in area. There are about 30 minor road net works in the project area. Bus services are available in the above said roads.



**Table 2.9.12: Infrastructure in the Project Area**

Name of Water Supply Scheme		Owner ship		Watersheds				
Anakal, Thathanampully, Oorpalamkunnu Irrigation Project		KWA , Kulukkallur		Kulukkallur				
L.I.S. Thudikkal Kanal		KWA, Vilayur GP		Vilayur				
Family	Family			Population				
	Total General	Total SC	Total ST	Total	General	SC	ST	E
13670	11974	1696	0	63574	55844	7730	0	2
MLOS				Wages rate (Average/Day)				
BPL Family	No of SHGs	No of User Group		Unskilled	Skilled		MGNREG	
4763	280	10		350	450		180	
Wood	L.P.G.	L.P.G. + Wood		Biogas + Wood		Electrified + L.P. Wood		
3280	4220	3553		13		2602		
Sl.No.	Infrastructure						Number	
1	Anganwadi						56	
2	LP School						23	
3	UP School						14	
4	High School						03	

(Source: Baseline survey-TSO)

### II.10. Agriculture and Land use pattern

Majority of the area is under mixed crops. Paddy is the predominant crop in the watershed. Rubber is increasing year by year. Multi cropping is practiced in the middle reach of the watershed Banana, Tapioca and vegetables are the main inter crops. Cocoa and Nutmeg are also cultivated. But filling up of paddy field is noticed in the area. Total extent of the paddy is 899.99 ha. Mixed crops are cultivating in 3242.49 ha. 180.23 ha are under Rubber plantation. People are still depending upon the market for food article. People are cultivating only less food crops.

So food shortage is the common phenomenon in the watershed area. Paddy cultivation is decreasing in a drastic rate. Apart from this labor shortage is also occurring. Farmers are practicing chemical farming. Contamination of the water bodies are noticed in the watershed areas. Details of the agriculture crops and cropping pattern are give blow.

### 2.10.1: Details of Land Use and Major Crops

Sl. No	Type	Area in Ha.			Total
		Kulukallur	Mannengode	Vilayur	
1	Mixed crops	1491.25	959.62	791.62	3242.49
2	Paddy Cultivation	442.09	212.2	245.7	899.99
3	Plantation of Rubber	26.13	98.88	55.22	180.23
4	Coconut	158.78	99.86	94.62	353.26
5	Waste Land	256.85	84.19	24.84	365.88
6	Built up Land	21.92	44.75	0.96	67.63
7	Tuber Crop	98.98	26.5	10.04	135.52
	<b>Total</b>	<b>2496</b>	<b>1526</b>	<b>1223</b>	<b>5245</b>

(Source: Dept of Agriculture, Baseline survey, Dept. Land use board)

### 2.11. Productivity

The detailed study on the production and productivity is reveals that production of area is very low due to the degradation of land. Soil erosion, unscientific agriculture practices are the main causative factors for the low production. There is lot of wastelands in the watershed area. People are reluctant to cultivate paddy. The farmers are providing only a bare minimum attention to cultivation of food crops. Major part of the area is covered under Cash crops. The data of from agriculture department is given below.

Crop	Yield(MT)	Production(MT)	Available market rate	Cost of production
Paddy	2.3 Tone/acre	5750/ one crop	17/kg	25000/ acre /one crop
Coconut	60 nut / tree	120733 kg/year	10/kg	20000/ha-year
Areca nut	100 nut/ tree	12000kg/ha	50/kg	30000/ha-year
Banana	1.8tone/acre	4.2	15/kg	20000/acre /year

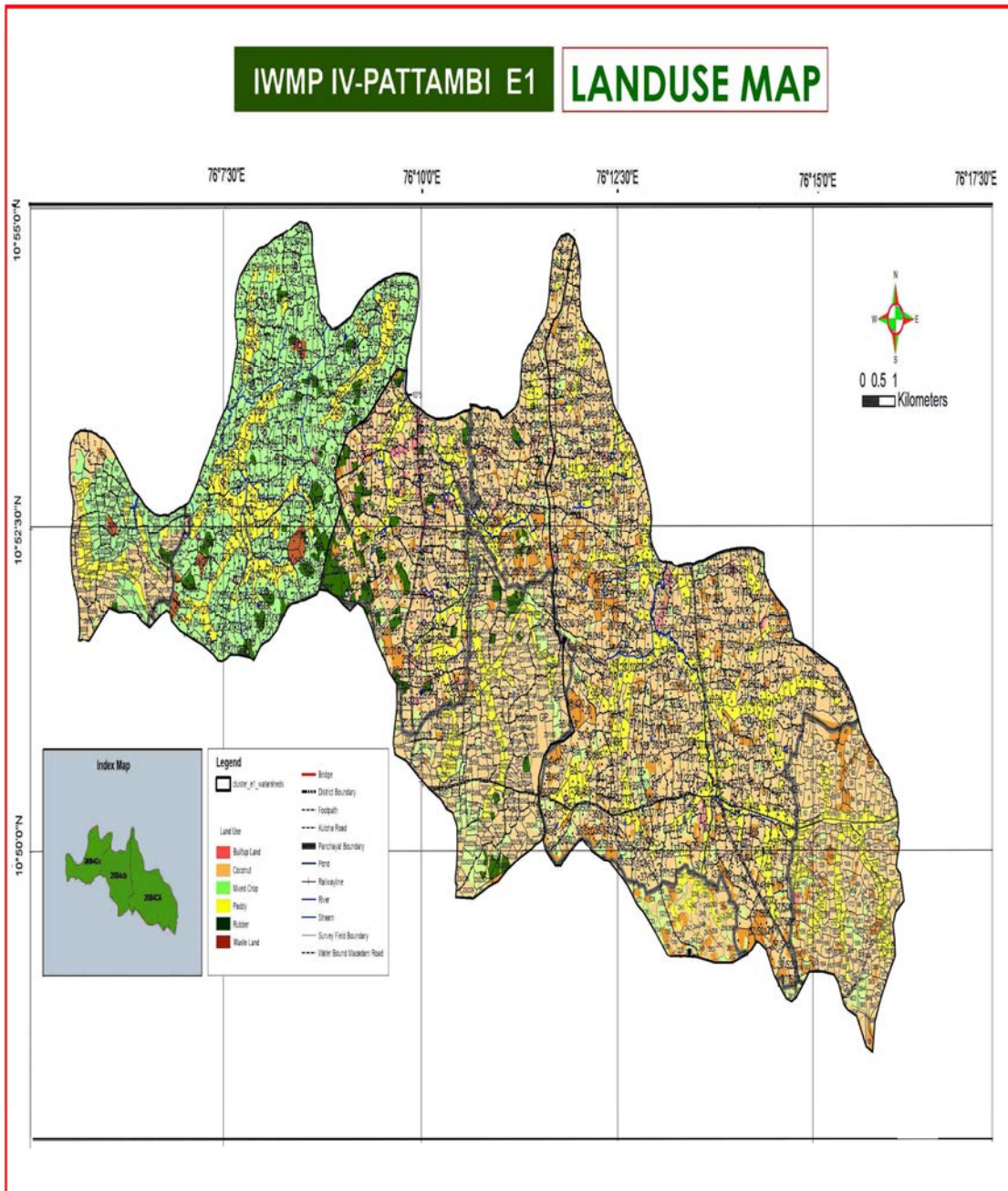
(Source: Primary survey)

## 2.12. Details of Major Crops \ Vegetation in Micro Watersheds

Sl No.	Name of Watershed	Major Crops \ Vegetation
1	Kulukkallur	Coconut, Mango, Tapioca, Plantain, Jackfruit, Mahogany, Wild Jack Ginger, Turmeric, Banana, Guava, Arecanut, Teak, Elephant foot yam, Jathy, Khamealu, Bamboo, Rubber.
2	Manengode	Paddy, Tapioca, Coconut, Mango, Jackfruit, Mahogany, Wild Jack, Pepper, Ginger, Turmeric, Banana, Guava, Arecanut, Teak, Elephant foot yam, Khamealu, Rubber.
3	Vilayur	Mango, Tapioca, Jackfruit, Mahogany, Wild Jack Rubber, Paddy, Ginger, Turmeric, Banana, Guava, Arecanut, Teak, Elephant foot yam.

(Source: Primary survey)

### 2.13. Land Use Map



**II.13.1.Land holding size**

Number of Large Farmers	Number of Small Farmers	Number of Marginal Farmers	Number of Landless
645	5962	7021	44
1390	1560	1876	-

**II.13.2. Details of Waste Land in the area**

Name of Water Supply Scheme	Owner ship	Watersheds
Anakal, Thathanampully, Oorpalamkunnu Irrigation Project	KWA , Kulukkallur	Kulukkallur
L.I.S. Thudikkal Kanal	KWA, Vilayur GP	Vilayur

Family	Family	Population
--------	--------	------------

**II.13.3. Target fixed for each year**

Sl. No	Name of Project	Extent of cultivable waste land	Target fixed for each year							
			1 <sup>st</sup> year		2 <sup>nd</sup> year		3 <sup>rd</sup> year		4 <sup>th</sup> year	
			Physical (Ha.)	Financial (Lakhs)	Physical (Ha.)	Financial (Lakhs)	Physical (Ha.)	Financial (Lakhs)	Physical (Ha.)	Financial (Lakhs)
1	IWMP – IV – Pattambi E1	100	20	9.72	29	15.83	31	15.83	20	97.2

## II.14. Livestock

Majority of the farmers are rearing local cow breeds. There is only a limited number of Cross breed cows. Goats, buffalo and Poultry are the other animal stock reared by the farmers. Lack of fodder, increase in the price of con-cent rates, price for milk is very less in compared with the production cost, diseases and absence of time bound service of the Veterinary doctor are the main causative factors for the withdrawal of the farmers from this sectors. Apart from this diseases of the animal are found in the area. Primary need of the farmers is to establish a milk collection centre or a Milk society in that area. Details are given below.

## II.15. Animal husbandry and Dairying:

Sl. No.	Watershed Name	Cow	Buffalo	Goat	Poultry	Duckery
1	Kulukallur	860	320	5400	13761	54
2	Mannengode	682	213	3400	11761	62
3	Vilayur	465	26	2450	12500	73
	<b>Total</b>	<b>2007</b>	<b>559</b>	<b>11250</b>	<b>38022</b>	<b>189</b>

(Source Primary Survey)

## II.16. Soil Type

The main soil series are Karakurissi- Tholannur- Pariyampatta, . this are deep to This series are deep soil formed from alluvial parent material having loam to silty clay loam surface and sandy loam to sandy clay loam sub soil layers. They have dark yellowish Brown to dark grey surface layer and grayish Brown to dark grayish surface layer. The presence of prominent mottling of varying shade imparts the brownish color to the soil. Apart from this Chengalery-Kuttippuram soils are also found. This are deep soils formed over alluvial sediments having sandy clay loam to clay loam dark yellowish Brown to dark brown surface layer and loam to clay dark yellowish brown sub soil layers. Anjur, Mannur- Sreekrishnapuram- Pookkottukavu, Mughilmada – Thekkanchira are the other soil associations in the project area. The soil is poor in organic content, micro and macro nutrients. Soil types are same to other watershed of the Pattambi Block.

Soil formation has been influenced chiefly by topography and climate. Erosion is moderate and is controlled by vegetation. The soils are deep and very deep, well drained loams and clay with fairly high. Soil erosion and related issues are seriously affecting in the project area.

**Table II.17 Land Capability Classification**

As per the detailed and technical study The land capability classes are class II, Class III and class IV to VIII.

S.I. No	Map symbol	Depth	Texture	Slope	Drainage
1	K 10	vd	gc	g	w
2	K 18	vd	c	g	w
3	K 22	vd	c	g	w
4	K 25	vd	c	g	w

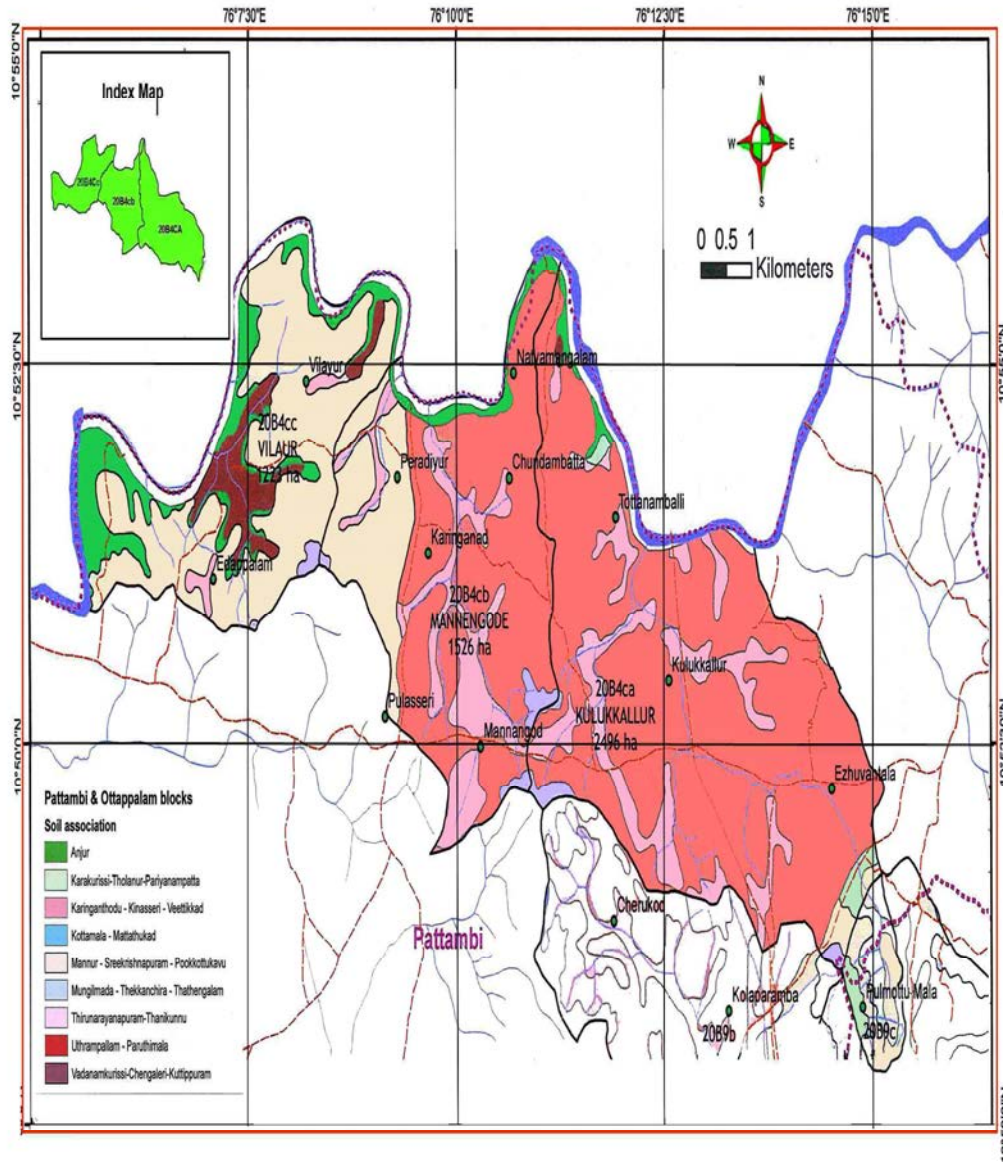
One of the Main problems in the Watershed Area is High level of soil erosion in upper and middle reaches. It affects the agricultural activities and results in low production. Further utilization of more chemical pesticides, manures and synthetic materials are causing degradation of soil. Formation of latterite in the plain land is also leading to soil's deprivation.

**II.18. Agro-Climatic Condition**

The State is subdivided into four agro-climate zones (South Zone, Central Zone, North Zone, Special Zone on Problem Areas, High Altitude Zone) as per State Land Use Board records. The project area comes under the South Zone. Based on altitude, rainfall, soil and topography, the state has been delineated into thirteen agro-ecological zones. Block Panchayath has been taken as the unit for purposes of delineation. The Pattambi and Ottapalam block is categorized as central mid land zone.

II.19. Soil Map

IWMP IV PATTAMBI EI - SOIL MAP





## **II.20. Major Issues and constraints in the watershed area**

The issues and constraints are mainly identified through the participatory Rural Appraisal, secondary data review, consultation with experts etc.

### **II.21.1. Agricultural and allied sectors:**

- Less awareness about the conservation of soil, water and biomass
- Soil erosion and Low productivity of the soil
- Mono cropping
- Degradation of bio diversity especially the agro biodiversity
- Unfavorable climate changes
- Excessive use of agro chemicals
- Crop diseases and pest attack
- Lack of bio resource based income generation programmes
- Scarcity for fodder
- Fluctuation in market
- Depletion of local seeds and traditional agricultural practices
- Lack of interest of youth to come into the agricultural field
- Low income from agriculture
- Scarcity of agriculture labors
- Unorganized farmers
- Inadequate financing for agricultural sector
- Lack of cultivation of food crops and less food security

### **II.21.2. Drinking Water / Irrigation:**

- Severe drought during summer in upper and middle reach and flood during the monsoon season in lower reach
- Depletion of ground water. Early drying up of water bodies
- Unscientific management of wells ponds and at non irrigation structures
- Water pollution due to Agro chemicals
- Lack of proper functioning of the existing schemes
- Lack of access for potable drinking water

### **II.21.3. Health and Sanitation:**

- Occurrence of contagious diseases

### **II.21.4. Social Sector:**

- Unorganized Farmers
- Exploitation of middle man

- Less participation of people in developmental interventions
- Reluctances of women to come in to the main stream of the society
- Disintegration of social values

#### **II.21.5. Financial Sector:**

- Indebtedness
- Fluctuation of the price of agricultural produces
- Poor family budgeting
- Lack of co-operative initiative

#### **II.22 Information, Education & Communication (IEC) Activities**

Capacity building of the stake holders is the effective strategy to bring them in the main stream of the society. Technical as well as community trainings will be imparted to the stake holders in various subjects. Soil and water conservation, sustainable agriculture practices, possible income generation activities, bio diversity conservation, agro forestry programme, live stock development are the main topics to be covered.

Village watershed committee has a vital important role in project. The project is aim to bring the community in the main stream of the society. Apart from this systematic and scientific soil and water conservation mechanism has to be initiated through the people. This project will bring a systematic and scientific approach in each and every intervention. It is planned to adopt professional approach to attain timely results. A multi disciplinary WDT has constituted. Linkages and collaboration with various developmental agencies is an effective mechanism for the integration in the project. We are going to practice result based monitoring and evaluation mechanisms in participatory base. People's organizations like WC, SHGs and farmers clubs have vital important role in participatory monitoring and evaluation process.

To attain the same Information, Education and Communication (IEC) is an important component and it has a vital role in creating awareness, mobilizing people and lays the basis for successful implementation of Integrated Watershed Management Programme (IWMP). IEC have vital role to create awareness about IWMP by informing, educating and persuading people about their roles and responsibilities in watershed management.

The main Information, Education & Communication (IEC) activities for the project area are

- Brochures and leaflets
- Printing and placing of watershed maps
- Wall writings
- Posters

- Seminars – water security seminars
- Formation of school health clubs
- Welcome boards
- Street plays

### **II.23. Capacity Building**

Training and capacity building programmes are mainly aim to capacitate the watershed community in various topics. Integrated watershed management programme, agriculture development, livelihood enhancement activities, people's institution building programmes and sustainability assurance strategies are the major training areas proposed under IWMP. Training is an effective mechanism to bring the watershed community in the main stream of the society. The above cited activities are proposed as per the net planning process conducted in the field. Proposed activities are designed in accordance with the technical aspects recommended by SLNA and other competitive agencies. Exposure visits to successful watersheds, discussions, debates etc. will be initiated. Experts from line departments, TSO and Local level institutions will handle the subjects.

**II.23.1. Training Target and Budget:**

Sl. no	Particulars	Target Group	Training Target and Budget														
			I st year			I I st year			I I I rd year			I V th year			Total		
			A m o u n t (in L a k h s)	N o . T r a i n i n g	N o . P a r t i c i p a n t s	A m o u n t (in L a k h s)	N o . T r a i n i n g	N o . P a r t i c i p a n t s	A m o u n t (in L a k h s)	N o . T r a i n i n g	N o . P a r t i c i p a n t s	A m o u n t (in L a k h s)	N o . T r a i n i n g	N o . P a r t i c i p a n t s	A m o u n t (in L a k h s)	N o . T r a i n i n g	N o . P a r t i c i p a n t s
1	General Orientation on IWMP and concept of watershed development and management programme	Watershed Committee, Padashekara samithy, SHGs and UGs	0.54	4	150	0.81	5	225	0.81	5	225	0.54	4	150	2.7	18	750
2	Awareness Programme of PSM	SHGs, UGs and Beneficiaries	0.60	2	120	0.90	4	180	0.90	4	180	0.60	2	120	3	12	600
3	Concept of Watershed Management, Role and Responsibilities	Watershed Committee and Officials	0.60	2	120	0.90	4	180	0.90	4	180	0.60	2	120	3	12	600
4	Empowering Peoples, Representative and Strengthen of PRIs, Gender development, convergence with IWMP etc	District , Block, Grama Panchayat Members	0.60	2	120	0.90	4	180	0.90	4	180	0.60	2	120	3	12	600

5	Awareness Programme of Livelihood Activities Better Management, Accounting Method etc	User Group, SHGs, Watershed Committees	0.60	2	120	0.90	4	180	0.90	4	180	0.60	2	120	3	12	600
6	Management of Revolving Fund , Accounting, Financial Discipline etc	SHGs	0.40	1	60	0.60	2	90	0.60	2	90	0.40	1	60	2	6	300
7	Exposure Visit, Organic Farming and Marketing etc.	SHGs, Watershed Committees, UGs	1.26	1	60	1.89	2	90	1.89	2	90	1.26	1	60	6.3	6	300
8	Promotion of Micro Enterprises and Value Addition Units	UGs and SHGs	1.00	2	120	1.50	4	180	1.50	4	180	1.00	2	120	5	12	600
9	Animal Husbandry and Better Management of Livestock Camps	SHGs , UGs and Beneficiaries	0.40	1	60	0.60	2	90	0.60	2	90	0.40	1	60	2	6	300

### II.23.2. Information Education and Communication (IEC) Plan

Sl.No.	Programme	Target Group	Budget(In Lakhs)
1	Awareness Programme for students. (Notice, Essay writing and Quiz competition, Book cover with messages, Rallies etc.)	School Level	2.5
2	Campaign through Poster Sicker, Banner , Calendar, Slides etc	Community	2.925
3	Hand Books, Brochure	Community	0.8
4	Soil testing, Fixing Rain gauge and Thermometer in watershed areas, Tree planting in Schools, government offices, Aganwadies, health centers	Farmers, Public	3.113
	<b>Total</b>		<b>9.338</b>

## **II.24 Entry Point Activities (EPA)**

Entry point activity is the first step of IWMP which helps to find out needs of people. Watershed development can be successful only by the people's participation. EPA is playing vital role in the first step of people mobilization and propagates importance of the Watershed development programmes. The most specific thing is to build a good rapport with the people residing in the area with good partnership. Nobody expect that watershed activities can find out a speedy solution for the problems because of this most of the people don't show interest in the implementation of watershed activities. People had lost their belief because of partial implementation of activities. So through EPA we have to change these view points and situation. Sometimes people can't fully understand some projects or what they mean by the activities in the project so to make awareness about EPA is important. We have found out the EPA work through NHG formation and watershed committee formation. EPA Work started means that the project is implemented here. EPA works is found out through the discussion with watershed committee members. And the EPA work is done on the basis of people's needs. Entry point activities identified in the project area are presented below:

S.No.	Names of the Gramapanchayath	Names of the villages	Amount earmarked for EPA	Entry Point Activities planned	Estimated cost (Rs in lakh)	Expected outcome	Name of agency which selected the EPA
1	Kulukkallur	Kulukkallur		Renovation of Existing well in Chundanpatta GUP School	4.38	148000 water storage	Watershed Committee
2	Kulukkallur	Kulukkallur	14.976	Side Protection of Mulyankavu Drainage	10.93	Side Protection of Mulyankavu Drainage	Watershed Committee
3	Vilayur	Vilayur	9.15	Shuttering Works in Kallumurithode	9.75	148000 water storage	Watershed Committee
4	Vilayur	Vilayur	73.38	Chittadippuram Koppadam thodu Side Protection & Checkdam	8.15	148000 water storage	Watershed Committee
Total			31.47		32.84		33,21,526

## **II.25. Ongoing Parallel Projects in the Area**

Centrally sponsored MGNREGS is one of the important parallel programmes under implementation in the watershed areas. Though the MGNREGS focuses on providing employment to poor people to support their household income in a regular manner, the programme appropriately recognizes the overriding priority of natural resources conservation in the interest of ensuring sustainability of rural development. Soil and water conservation has become a very important concern of the MGNREGS.

## **II.26. Convergence**

Since the activities undertaken/carried out under the MGNREGS in general are related to the conservation of natural resources of the concerned areas, they are almost totally in tune with the course of activities under IWMP. This is very similarity of the two programmes through open a wider area of scope for the convergence of the programmes for more Voluminous and sustainable achievements in the areas. The IWMP project of the Pattambi and Ottappalam blocks will be implemented by integrating the inputs and services from the MGNREGS. So also, efforts for converging suitable components of similar schemes and projects implemented in the area by agencies like Agriculture department, Soil and Water Conservation department, Animal Husbandry department, Dairy Development Department, Fisheries, and Kudumbasree Mission etc.



<b>Kulukkallur Watershed</b>				
<b>Project Items</b>	<b>Unit Rate</b>	<b>Unit</b>	<b>Estimate Amount</b>	<b>Linked Department</b>
Earthen Contour Bund	35/Rm.	14000	4.9	MGNREGS, Soil & Water Conservation Dept
Srenthening of field Bund	25/Rm	7500	1.875	MGNREGS, Soil & Water Conservation Dept
Coconut Baisn	126/ m3	7000	8.82	MGNREGS
Water Perculation Pit	126/ m3	1600	2.016	MGNREGS, Soil & Water Conservation Dept
Afforestation	32/Plant	6000	1.92	Social Forestry& MGNREGS
Live Fencing	15/m	4500	0.675	MGNREGS, Soil & Water Conservation Dept
<b>Mannengode Watershed</b>				
<b>Project Items</b>	<b>Unit Rate</b>	<b>Unit</b>	<b>Estimate Amount</b>	<b>Linked Department</b>
Earthen Contour Bund	35/Rm.	10250	3.588	MGNREGS, Soil & Water Conservation Dept
Srenthening of field Bund	25/Rm	7000	1.75	MGNREGS, Soil & Water Conservation Dept
Coconut Baisn	126/ m3	6000	7.56	MGNREGS
Water Perculation Pit	126/ m3	900	1.134	MGNREGS, Soil & Water Conservation Dept
Afforestation	32/Plant	5500	1.76	Social Forestry& MGNREGS
Live Fencing	15/m	4000	0.6	MGNREGS, Soil & Water Conservation Dept
<b>Vilayur Watershed</b>				
<b>Project Items</b>	<b>Unit Rate</b>	<b>Unit</b>	<b>Estimate Amount</b>	<b>Linked Department</b>
Earthen Contour Bund	35/Rm.	8650	3.028	MGNREGS, Soil & Water Conservation Dept
Srenthening of field Bund	25/Rm	5250	1.313	MGNREGS, Soil & Water Conservation Dept
Coconut Baisn	126/ m3	5400	6.804	MGNREGS
Water Perculation Pit	126/ m3	850	1.071	MGNREGS, Soil & Water Conservation Dept
Afforestation	32/Plant	4600	1.472	Social Forestry& MGNREGS
Live Fencing	15/m	3500	0.525	MGNREGS, Soil & Water Conservation Dept

## **II.27. Major Activities and Interventions Proposed**

### **II.27.1. Natural Resources Management (NRM)**

Under natural resources management programme the following activities are proposed to tackle the issues and constraints in the watershed area.

#### **1. Rain water harvesting**

Rain water harvesting means collecting rain water, storing and preserving it for the dry season. It can be practiced at any place where rainfall occurs and it has a particular advantage in hilly areas where the people are facing water shortage and the underground water depletion is occurring in drastic rate.

#### **2. Check Dams**

A check dam is generally constructed on small streams and long gullies formed by the erosive activity of water. Ideally a check dam can be constructed in a stream with high banks. The main advantage of check dam is that it cuts off the runoff velocity and reduces erosive activity and the water stored improves soil moisture of the adjoining areas allows percolation to recharge the aquifers.

#### **3. Pond Renovation**

One of the main objectives of this activity is to de silts the pond and increases the water holding capacity of the ponds. The water can be utilized for drinking and irrigation of the dry and wet lands. It is proposed to renovate farm ponds in the different parts of the watershed area to enhance the water availability. This activity will be ensure the recharging of ground water

#### **4. Stream bank protection**

##### **4.1. Construction of retaining wall**

This activity is mainly aim to protect the bank side of the streams. Majority of the water sources of the areas are not protected and caused for stream bank erosion. Widening of the bank side will be reducing the water holding capacity of the stream. So the retaining walls are effective mechanisms protect the water sources.

#### **5. Well recharging pits**

The project area having a lot of dugout wells. Bs mainly but most of the wells will be dried during the summer season due to the depletion of the ground water. This is mainly occurring because of the over extraction of the underground water. Apart from this the irregular and uneven rainfall and other climate change factors are adversely affecting the water availability. In this juncture promotion of the well recharging units will be ensure the conservation of the rain water and increase water table and also ensure the water availability throughout the year.

#### **6. Gully plugging**

Appropriate Gully control measures are to be adopted in the watersheds for checking the loss and deterioration of land resources in the areas. Widening and deepening of gullies, breach of the gully banks, damage caused by gullies to adjoining land etc need to be controlled under the watershed development projects. Cross Bars, Stone Checks, log Checks, Brushwood Checks, Live Checks, Flow Trap pits/Sinks, side protection measurers etc are to be consider for the purpose. As far as possible, vegetative support is to be provided to the Gully Banks instead of bluntly choosing structural works.

## 7. Construction of Tiller ramps

Tiller ramps are mainly aim to ensure the transportation facilities to the agriculture fields especially to the promotion of paddy cultivation activities. This will help to the transportation of the agriculture equipments, fertilizer and other materials for the farming activities. Apart from this transportation of the agriculture produces to the markets are very easy through the ramps.

## 8. Nursery for Agro forestry and Agro horticulture

Nursery Management helps to growing the perennial horticulture crops, including plantation crops and agro forestry would give a permanent protective cover for the soil. It is a suitable land management system conserving soil, water biomass, and meeting the multiple needs for fuel, fodder; fiber etc. In high rainfall areas of the humid tropics this higher level tree cover for the soil helps in reducing the soil erosion

## II.27.2 Production System and Micro Enterprises

### A) Production System

Promotion of the sustainable agriculture is the only and one solution to tackle the issue. It is aim to promote various sustainable agriculture practices among the farmers as part of the watershed management programme. Bio resource based and other possible IGP s has to be promoted.

There is only a bare minimum effort to promote agriculture based livelihood enhancement activities. Promotion of the income generation activities based on bio resources are the main focal area under this project. Agriculture and none agriculture based IGPs are planned to be promoted for the deserving community

Through this production system management we encourage scientific methods to increase the productivity and soil enrichment. To reduce the pressure on the natural resources due to over population and improper management of soil, we are enforced to adopted scientific methods of forming and modern techniques in agricultural to produce more products (like high yield varieties of seeds, resistance veracities of seeding, Eco-Friendly manner system etc)

Under production system management programme the following activities are proposed SRI (System of Rice Intensification ),vegetable cultivation in pot, vegetable cultivation in the land, weed cutter ,Organic manure banana, cultivation of tapioca, ginger ,turmeric, pineapple, pepper, coconut nursery, seed bank, biogas plants ,Beekeeping, Piscicultural, coir spinning unit, motorized rat, jackfruit processing ,Bamboo, reed and cane product, Copra processing etc. All programme under this head are implemented by, Agricultural department SHM, VFPC; Spices board KVK, Fishers department ANERT, KVIC, Bamboo Co operation, Kudumbasree coconut board etc. The project Is Elaborated Only through the Co operation Of line departments. Following are the details of the IGPs

## **B) Micro Enterprises**

### **1 Kondattam, Pickles**

Kondattam of bitter guard, green chilli, Brinjal, rice, Pickles of mango, lemon, Mixed Vegetables and Dried fish are used as a complement to meals. Nowadays increasing the demand of these homemade items is increasing and helps to earning income. Many of the women groups are producing and selling this variety of item qualitatively. The homemade items would have no proper label or attractive packing. Besides competencies of market they would not get sufficient price almost in the process. So the watershed Committees decided to promote women groups consisting four members for the production with wide aspect.

### **2. Pappad Making**

In the three watersheds there are many Pappad units struggling for their sustainability. Many of women and children are engaging in the home industry apart from other activities. So the watershed Committees decided to promote families who have being engaged in Pappad making process.

### **3. Mushroom cultivation**

Species of Pleurotus commonly known as oyster mushrooms grow saprophytic under natural conditions on trees, dead wood, stumps and branches. Today several species of Pleurotus are commercially grown in many parts of the world. Kerala enjoying a tropical climate is found to be the most suitable place for mushroom cultivation. Species of Pleurotus and Volvariella can be successfully cultivated in the State all round the year on a variety of agro-wastes like saw dust, vegetable and paper wastes, oil palm per carp waste and straw. But the best suitable substrate is found to be paddy straw. The paddy straw mushroom can be successfully cultivated in the plains of Palakkad throughout the year where the temperature ranges between 28-32°C. Paddy straw is plenty in the project area as a growing medium of mushroom. As part of the watershed development programme, we have planned to start two units of mushroom cultivation through women groups. Technical training will be imparting to the selected women group for the time being.

### **4. Pisci Culture**

Palakkad is a second largest District in Kerala. Paddy fields, plane lands and its typical greeneries are the major attractions in the area. The district is also well sound in farm ponds, springs and natural sources of water. More farmers are committing fisheries as an income generation programme. The Paddy cultivation provides suitable atmosphere to the Pisci culture practices. The inland fishing is also a time old practice in the extensive network of backwaters and also in the westerly flowing rivers. Kerala fisheries, developed over the years stand great scope for further expansion by way of more rational and fuller utilization of the resources. Fresh water fish culture in Palakkad district is also well established. Some of the farmers are engaged in this field and gaining more income. As part of this we have aimed to promote 10 fish culture units in the watersheds.

### **5. Bamboo Reed and Cane product**

IWMP aims to promote traditional IGPs and conventional activities. Unlimited possibility of manufacturing eco friendly products can be opening a multifaceted income source to the

new generation. Baskets, mats, chairs, tea pays, hanging chairs and variety of attractive other handicrafts are the byproducts of bamboos. Some of the families in watershed lead their life with traditional income generation and allied activities. In the sense watershed Committees decided to promote their indigenous activities as a livelihood component. Availability of raw materials is influencing the venture as a competitive one.

### **6. Rice Transplanting Machine**

Labour shortage is major problem in the paddy cultivation. It caused degradation of the Paddy fields and transformed to other crops instead paddy. Water shortages have been brutally affected in the paddy cultivation. Farmers are disappointing in the practicing of paddy because of its variation of income and expenditure in production. More over the protection the paddy field and promotion the paddy is only solution for ensure the sustainability of the water resources and food security. Majority of area in watersheds are coming under paddy cultivation. Watershed Committees decided to promote paddy cultivation in their area by giving two Rice Transplanting Machines as a pilot intervention. Definitely it would be an income generation programme and help reduce the labour shortage in future.

### **7. Mini Tiller Power Weeder**

This equipment is using for removing weed in field. This can be reducing the labour shortage and helps to the work of transplanting machine by its association. This weeder can be using for removing the weeds during the time of System of Rice Intensification (SRI). Watershed Committees decided to promote two units Power Weeder for selected groups consisting four members each.

## **II.27.3. Livelihood Supporting System**

### **1. Vegetable Cultivation**

The cool climate in Kerala has been found very conducive for vegetable cultivation. Those who tried the cultivation have received encouraging results. The cultivation during the cold season needs little care. Pests can be effectively controlled with home-made tobacco and garlic liquor. The common items cultivated are Okra, amaranth, bitter gourd, brinjal, chilly, pumpkin, cucumber and snake gourd. Normally people in these areas cultivate a mix of vegetables

### **2. Cow and Calf rearing**

The watershed communities of the area are familiar with animal husbandry practices especially cow rearing. People are getting reasonable price for the milk and milk related products. Marketing system is very much organized through the cooperative societies. Promotion of calf rearing is a support to the farmers to find out additional income for their livelihood.

An economically viable and sustainable Unit is recommended to have one cow so that yielding would remain intact throughout the year, the cows having mil Simple cattle sheds are planned using at the best locally available natural materials. Apart from this we will provide first priority for the people who have the cattle shed. Considering the pitiful financial condition of the concerned families created upon by the lasting agricultural disaster, the first milk cow will have to be made available through the Revolving fund assistance through JLG. As

part of the same the group or individual have to deposit 20% of the project cost in WC account. The unit cost per unit is 30000/- out of 24000 will be the Revolving fund assistance.

### **3. Backyard Poultry**

Many numbers of families in the district is rearing back yard poultry units as additional source of income. Majority of the farmers are providing much importance for eggery units. Backyard poultry rearing has been an integral part of rural life in the Watershed area. Poultry in backyards of rural households could become an important element in augmenting the household income and intake of nutrition by the families without any external inputs being made. The following are the

### **4 .Goat rearing**

Goat is the first domestic animal in the world and it is known as the poor man's cow. With very low investments goat rearing can be made in to a profitable venture for small and marginal farmers. Goats are reared for milk and meat. Goat is a multi functional animal and plays a significant role in the economy and nutrition of landless, small and marginal farmers in the country. Goat rearing is an enterprise, which has been practiced by a large section of population in rural areas. Goats can efficiently survive on available shrubs and trees in adverse harsh environment in low fertility lands where no other crop can be grown. The people of the watershed area are very much interested to rear the goat because most of the people have past experience or somebody is already doing this project. It is proposed to promote the unit for the women and tribal community of the area.

### **5. Rabbit rearing**

Rabbits are raised world-wide for a variety of reasons. Majority of countries the people are leading their life with rabbitary and it is the main source of their income. Rabbits produce white meat that is fine-grained; high in protein, low in fat, highly palatable, low in cholesterol, and that can be substituted for poultry in most recipes. Rabbit carcasses are only 10 percent bone. In the United States rabbits are raised predominantly for nonfood purposes. High quality rabbit skins are used in fur garments and trimmings. Medical and cosmetic research also requires a large number of rabbits each year. Many people raise rabbits for show or as pets

#### Advantages

- § Highest in protein%
- § Lower in % of fat
- § Unsaturated fatty acid is 63% of total fatty acids.
- § Low saturated fatty acids
- § Cholesterol level is much lower
- § Low sodium
- § Fine texture
- § Low bone to meat ratio

This is a people based and people own project should be implemented in a systematic manner. The discussion on the problems of the project area indicates that watershed development activities have long term impact on the ecosystem of the project area. In order to ensure that the benefits of the project reaches different sections of the population, particularly the vulnerable, the involvement of the community is essential right from the beginning of

the project. Community participation has to be ensured in planning, management and implementation of the project. The interventions identified as part of this exercise of preparing the Detailed Project has tried to ensure that the vulnerable sections of the society such as those living below poverty line, small and marginal farmers, women, landless families, SC/ST communities etc are benefitted out of the watershed development activities under the project. Community involvement is also essential to sustain the systems developed under the project and the positive outcomes of the project.

#### **6. Kondattam, Pickles**

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**II.28 Annual Action Plan**

Sl. No.	Particulars	Unit	Target									
			1 <sup>st</sup> Year		2 <sup>nd</sup> Year		3 <sup>rd</sup> Year		4 <sup>th</sup> Year		Total	
			Physical	Financial (Laksh)	Physical	Financial (Laksh)	Physical	Financial (Laksh)	Physical	Financial (Laksh)	Physical	Financial (Laksh)
<b>Watershed Development Works</b>												
<b>I</b>	<b>Vegetative and Engineering Structures</b>											
a	Gully plugging	M <sup>3</sup>	1.78	0.023	23.14	0.299	21.36	0.276	0	0	46.28	0.598
<b>II</b>	<b>Water Harvesting Structures</b>											
a	Ground water recharging	NOS	0	0	35	1.75	46	2.3	18	0.9	99	4.95
b	Farm ponds	NOS	16	75.429	12	61.037	11	29.848	5	19.9	44	186.214
c	Check dam (New)	NOS	1	38.89	5	22.75	3	1.2	12	40.669	21	103.509
d	Check dam (renovation)		0	0	1	0.365	0	0	5	3.808	6	4.193
e	Well renovation	NOS	5	0.75	20	3	8	1.2	0	0	33	14.95
f	<b>Others</b> Stream Side Protection	Ha.	0	0	105. ha.	15.61	501. ha.	75.144	293. ha.	43.912	899. ha.	134.666
g	Ramp	NOS	0	0	0	0	7. ha.	1.06	3. ha.	0.44	10. ha.	1.5
	<b>Total</b>			<b>115.092</b>		<b>104.811</b>		<b>111.028</b>		<b>109.649</b>		<b>440.58</b>
<b>IV</b>	<b>Livelihood</b>											
	Revolving Fund	NOS	37	9.25	64	16	64	16	33	8.25	198	49.564
	Seed Money for Major Livelihood Assessts		2	2.5	3	4.25	7	9.25	5	5.25	17	21.24
	Beneficiaries		584		1005		1065		570		3224	
<b>V</b>	<b>Production System and Micro Enterprises</b>											
a	Area	Ha	25	16.62	35	25.23	35	25.23	20	11.595	115	78.675
b	Beneficiaries	Nos	361		556		556		315		1788	



**II.29.EXPECTED OUTCOMES**

Projects under IWMP are a multi disciplinary which include Natural Resource Management, Production System, Micro enterprises and Livelihood activities. The project conceives to bring in holistic and sustainable development in the concerned areas. This programme mainly focus on activities which create employment opportunities, enhance income, decrease migration, increase productivity, which would ensure sustainable livelihood opportunities for the community. The expected outcomes are given in the table below.

<b>Intervention area</b>	<b>Activities</b>	<b>Outcomes</b>
Soil and Moisture Conservation	Adoption of suitable soil and moisture conservation measures. Gully plugging, Stream Side Protection	Rain water will be conserved to recharge Ground Water Level Protection Valuable Top Soil in about 1081 Ha of lands And also will be protected from soil erosion
Water Harvesting Structure	Well recharge, Pond and Check dams, Public well renovation Rainwater tank, Rain pits	Ground water will be increased and Problem of drinking water in the 33 MI. of rain water will be additionally collected in the project area
Agri & Horticulture	<u>Additional area under cultivation</u> System Rice Intensification(SRI)=20ha. Vegetable Cultivation = 36ha. Banana cultivation) = 15ha. Tuber Crops = 21ha. Ginger = 5ha. Turmeric = 8ha. Pineapple = 5ha. Sericulture = 5ha	Organic crop production from an extent of about 115 ha. of the watershed area can be enhanced substantially
Livelihood Activities	Increase in the Clean and strong cattle shed	Livestock population shall be increased livestock population shall be increased for 214- Group
Increase of Job Opportunities	Erecting/installing Engineering structure for NRM watershed areas Supply of supporting equipment for the labourers	33960 labour days will be created

**II.30. Additional area that can be brought under irrigation**

Name of watershed Cluster	Open well (Renovation)		Ponds (Renovation)		Total area
	No	Area (ha)	No	Area (ha)	
IWMP – IV – Pattambi _E1	38	38	44	1240	1278

**II.31. Consolidated area expected to be brought under Irrigation**

Name of watershed Cluster	Existing area under irrigation (ha)	Additional area expected- to be brought under irrigation (ha)	Total area (ha)
IWMP – IV Pattambi E1	1090	1278	2330

**II.32. Exit Protocol**

Watershed Development Fund is the main source of financial assistance for the implementation of the project. People's contribution is one of the mandatory conditions for the selection of villages for watershed project. The contribution to WDF shall be a minimum 10 % of the cost of NRM works executed on private land. In case of SC/ST, small and marginal farmers, the minimum contribution shall be 5 % of cost of NRM works executed on their land. Such contributions would be accepted either in cash at the time of execution of works or as voluntary labour. Each watershed committee should begin a bank account in a nationalized bank for the project fund. In addition to this account, the committee should begin a second account under the title, Watershed Development Fund in a nationalized bank. The user charges collected from the beneficiaries of the watershed, the Share from the beneficiaries, the income from the public assets, contributions and other source of income should be deposited with the WDF account. The WDF can be utilized as stipulated in the Guidelines for the maintenance of the assets created under the project and for meeting the expenses need for the general development of the watershed area after the project period, At least 50% of this fund should be set apart for such needs and the balance can be utilized as revolving fund for giving loans to those who have paid for creating the fund.

The Secretary of the Watershed Committee (WC) shall maintain a separate account of the income and expenditure of the WDF. Rules for operation of the fund should be prepared by the Watershed Committee (WC) and rectified by the Gramasabha. The WDF bank account will be operated jointly by the President of the Gram Panchayath and any implementing officers at the Grama Panchayath level as designated through necessary Govt. Orders. At the same time, the guidelines required for envisaging a system for the management and utilization of the WDF may be evolved by the concerned Nodal Ministry

### **II.33. The Process of DPR Preparation**

<b>Sl. No.</b>	<b>Activities</b>	<b>Date (During 2012)</b>
1	MOU Singed	February 17
2	DPR Team(TSO) selection and appointment	February 20-28
3	Training was given by TSO team members for the preparation of DPR	March 5 to 6
4	Awareness meeting for Block members	March 13
5	Area delineation, visiting GP & Departmental officials with in the watershed area	March 14 to 20
6	Transect walk, watershed boundary identification with the help of ward members, TSO and Common people etc.	March 20 to April 10
7	Two Day Training program for IWMP conduct by SIRD	March 26 to 27
8	Secondary data collection, map, (Topo sheet cadastral map, Panchayath map etc.) Department details, Neerthada master plan, GP & Block Annual action plan etc.	April 11 to May 5
9	First installment(Cheque) received	May 2
10	Block level Awareness Training (one day )	April 18
11	Half day Awareness Training in Panchyath level (8 GPs)	May 7 to 9
12	Review meeting (DRDA)	May 10

13	Panchayath coordination committee formation	May 11 to 31
14	BLCC	May 12
15	BLCC	May 25
16	NHG formation	May 12 to July 31
17	Baseline data survey	May 12 to August 10
18	PRA	June 14, 15, 16 & July 12
19	Feasibility study & Estimate preparation of identified works	May 26 to August 4
20	EPA Identification & Estimation	July 05- 25
21	AS & TS for EPA	
22	Drainage line survey	May 26 to 31
23	GIS Mapping	May 5 - August 30
24	Integration meeting with various departments (KVK, Agri., MI, Veterinary, LSGD, Fisheries, Industrial, etc.)	July 19
25	SLNA- Review meeting	August 7
26	Gramasabha and WC formation	September 3-5
27	Review meeting DRDA	September 20
28	Final Draft	September 22-28
29	Presentation in BLCC	September 29
30	Submission in DPC	October

## Estimates &amp; Plan

IWMP IV - PATTAMBI E1 -2012 - 13									
Estimate For Well Recharge Pit									
SI.NO	Particulars	No.	Length	Width	Height	Unit	Rate	Quantity	Amount(Rs)
1	Earth work in excavation in ordinary soil with a lead of 50m and lift upto 1.5 m	1	1.30	1.30	0.60	10 m <sup>3</sup>	1329.11	0.796	105.80
2	Brick Work in 1:6 with Country Burnd Brick 22.9x11.2x7 For Side Wall of Percolation Pit. including all cost of labour, materials and conveyance	1	3.60	0.24	0.60	m <sup>3</sup>	3620.52	0.518	1876.88
3	Plain cement concrete 1:3:6 using 20 mm broken stone for over the masonry including all cost and labour charges etc complete	1	3.60	0.24	0.05	m <sup>3</sup>	4278.29	0.072	308.04
4	Supplying 63mm PVC pipe (4KG/CM <sup>2</sup> )					M	120.00	10.00	2500.00
5	Supplying and fixing pre cast concrete slab for covering And Filling Sand and wood charcoal etc.including all cost of materials,labour charges etc complete.					LS			200.00
6	un foreseen items if any					LS			9.29
	<b>TOTAL</b>							<b>RS</b>	<b>5000.00</b>

Wooden shutters							
Korathodu- kulukkallur GP, 14th ward							
Sl.No:	Description	Measurements			Quantity	Rate	Amount
		NO:	Length	Width			
	Site Clearence						3000
1	Earth Work Excavation of ordinary soil for Foudation .Including All material and Labour Charges etc..Completly.	1	6.30	5.30	0.65	21.70	1329.11/10m <sup>3</sup> 2884.63
2	Plain Cement Concrete 1:4:8 for foundation Bed using 40mm Mat-al.Including All material and Labour Charges etc..Completly.	1	6.30	5.30	0.25	8.35	4278.29/ 35713.03
3	Reinforced Cement Concrete 1:2:4 using 20mm metal.Including All material and Labour Charges etc..Completly.						
	Footing	1	6.30	5.30	0.40	13.36	
	Beam	2	1.50	0.50	0.50	0.75	
	Path Slab1	1	6.00	1.00	0.10	0.60	
						14.71	13860.39/m <sup>3</sup> 203830.90

3	Random Rubble Work in CM 1:8 for wall with Foundation. Including all cost of materials and Labour charges etc.completely.							
	Wall	3	1.00	5.00	4.00	60.00	2629.57/m <sup>3</sup>	157774.20
4	Plastering Work 1:6 for wall using 12mm Thick. Including All material and Labour Charges etc..Completely.							
	Beam	16	1.50		0.50	12.00		
	Wall	4	5.00		4.00	80.00		
	Wall i	6	1.00		4.00	24.00		
	Top of Wall	4	1.00	4.00		16.00		
	Path Slab	2	6.00	1.00		12.00		
						144.00	1545.77/10m <sup>2</sup>	22259.09
5	Shutter Operating System Using Vegai wood with 75mm thick,including all cost of materials and Labour charges etc.completely.							30000.00
6	Unforeseen Items if any							4538.16
								<b>460000.00</b>

Gully Plugging Mathirakkattu Thodu								
Sl.No	Items	No	Measurement			Volume	Rate	Amount
			Length	Width	Height			
1	Earth Work Excavation in Ordinary Soil For Foundation including all cost of Material and Labour Charges completely.	1	2	0.8	0.3	0.48	1329.11/10m <sup>3</sup>	63.80
2	Dry Rubble Work for wall with foundation including all materials and labour charges etc..completely.	1	2	0.5	1.3	1.30	1450.58/m <sup>3</sup>	1885.75
3	unforeseen items if any							354.45
								2300.00

1	Public Well Protection						
1	Site clearence						500.00
2	Brick Work in 1:6 with Country Burnd Brick 22.9x11.2x7 For Side wall and Pillar of Well including all material and Labour Charges etc.Completely.						
	Side Wall	3.14	1.5	1.5	1	7.065	
	Side Wall	3.14	1.74	1.74	1	9.506664	



						2.441664		8840.09
	Pillar	3	0.3	0.3	1.2	0.324	3620.52/m <sup>3</sup>	1173.05
								<b>10013.14</b>
3	Plastering with cement Mortar 1:6, 12 mm Thick for Side wall and Pillar of Well including all material and Labour Charges etc. Completely.							
	Side Wall	2	10.93		1	21.8544		
	Pillar	12	0.3		1.2	4.32		
						26.1744	1545.77/m <sup>3</sup>	<b>4045.96</b>
4	White Washing and Three iron Bar fixing suitable places including all material and Labour Charges							440.90
								<b>15000.00</b>

### Chemmankuzhi paadam- Ramp, Nelloya GP- ward 12

	Site Clearence							600
1	Earth Work Excavation in Ordinary Soil For Foundation including all cost of Material and Labour Charges completely.							
		1	15.6	0.75	0.6	7.02	1329.11/10m3	825.38
2	Dry Rubble Work for Foundation including all materials and labour charges etc..completely.							
		1	15.6	0.75	0.6	7.02	1450.58/m3	10183.07

3	Dry Rubble Work for retaining wall .including all materials and labour charges etc..completly.							
	Side wall	2	15.7	0.6	1.5	28.26		
	Top Wall	1	2.4	0.6	3	4.32		
						28.26	1450.58/m <sup>3</sup>	40993.39
4	Reinforced Cement Concrete 1:2:4 with 10mm thick For Plinth beam over the Wall Using 40mm metal. Including all Material and Labour Charges.etc..Completly.							
		1	15.6	0.6	0.1	0.936	13860.39/m <sup>3</sup>	12973.33
5	Red Earth Filling, Well waterd and Ramped inside of Retaining wall.Including all Material and La- bour Charges.Etc. completly.				LS			7000.00
5	Unforeseen items if any							1393.68
								<b>65000.00</b>

Madhirakkattu Kulam 4 th ward, Kulukkaliur GP							
1	De- Watering and Desiltation						8000.00
2	Earth Work Excavation in Ordinary Soil For Foundation including all cost of Material and Labour Charges completely.						
	Side 1	1	32.8	1.5	0.6	29.52	
	Side 2	1	29.4	1.5	0.6	26.46	
						55.98	1329.11/10m <sup>3</sup>
3	Dry Rubble Work for pond retaining wall with Foundation.including all materials and labour charges etc..completly.						7440.36
	Side 1	1	32.8	1.05	4	137.76	
	Side 2	1	29.4	1.05	4	123.48	
						261.24	1450.58/m <sup>3</sup>
4	Reinforced Cement Concrete 1:2:4 with 10mm thick For Plinth beam over the Wall Using 40mm metal.Including all Material and Labour Charges.etc..Completly.						378949.52
	Side 1	1	32.8	1.05	0.1	3.44	
	Side 2	1	29.4	1.05	0.1	3.09	
						6.53	13860.39/m <sup>3</sup>
							90522.21

5	Plane Cement Concrete 1:3:6 with 10mm thick For Plinth beam over the Wall Using 40mm metal. Including all Material and Labour Charges. etc.. Completely.							
	Side 1	1	32.8	0.6	0.1	1.97		
	Side 2	1	29.4	0.6	0.1	1.76		
						3.73	4650.23m <sup>3</sup>	17354.66
6	Unforeseen items if any							1733.26
								<b>504000.00</b>

### Shuttering With Side Protection Kuthiranthodu- Kulukkallur GP , 6-7th ward

Sl.No:	Description	Measurements			Quantity	Rate	Amount	
		NO:	Length	Width				Height
	Site Clearence						1000	
1	Earth Work Excavation of ordinary soil for Foudation .Including All material and Labour Charges etc.. Completely.	1.00	10.30	5.30	0.65	35.48	1329.11/10m <sup>3</sup>	4716.15
2	Plain Cement Concrete 1:4:8 for foundation Bed using 40mm Matal. Including All material and Labour Charges etc.. Completely.	1.00	10.30	5.30	0.25	13.65	4278.29/	58387.96

3	Reinforced Cement Concrete 1:2:4 using 20mm met- al. Including All material and Labour Charges etc.. Completely.						
	Footing	1.00	10.30	5.30	0.40	21.84	
	Beam	6.00	2.00	0.50	0.50	3.00	
	Wall	2.00	1.00	5.00	4.00	40.00	
	Wall 1	2.00	1.00	3.00	4.00	24.00	
	Wall 2	8.00	0.50	0.50	4.00	8.00	
	Path Slab	3.00	2.00	1.00	0.15	0.90	
						97.74	13860.39/m <sup>3</sup>
							1354659.08
4	Plastering Work 1:6 for wall using 12mm Thick. Including All material and Labour Charges etc.. Completely.						
	Beam	18.00	3.00		0.50	27.00	
	Wall	4.00	5.00		4.00	80.00	
	Wall i	4.00	1.00		4.00	16.00	
	Wall 1	4.00	3.00		4.00	48.00	
	Wall 2	8.00	1.12		4.00	35.84	
	Top of Wall	4.00	1.00	5.00		20.00	
	Path Slab	6.00	2.00	1.00		12.00	
						238.84	1545.77/10m <sup>2</sup>
							36919.17

5	Shutter Operating System Using 12mm Plate, 125mm C Channel, 65mm Angle Threded iron bar, Stearing and Chain block including all cost of materials and Labour charges etc.completly.								LS		300000.00
6	Unforeseen Items if any										4317.64
											<b>1760000.00</b>
<b>1 side wall</b>											
1	Earth Work Excavation of ordinary soil for Foudation .Including All material and Labour Charges etc..Completly.										
		1	100.00	1.50	0.60	90.00	1329.11/10m <sup>3</sup>				11961.99
2	Randam Rubble Work in CM 1:8 for Retaining wall with Foundation.Including all cost of materials and Labour charges etc.completly.										
		1	100.00	1.05	4.60	483.00	2629.57/m <sup>3</sup>				1270082.31
3	Reinforced Cement Concrete 1:2:4 using 20mm metal.Including All material and Labour Charges etc..Completly.										
		1	100.00	0.60	0.20	12.00	13860.39/m <sup>3</sup>				166324.68

4	Side Protection for two side of Stream by Rama-cham..Including all materials and Labour charges etc.completly.	2	400.00	3.50	2800.00 34/m <sup>2</sup>	95200.00
4	Unforeseen Items if any					6431.02
						<b>155000.00</b>
						<b>331000.00</b>