INTEGRATED WATERSHED MANAGEMENT PROGRAMME

PATHANAPURAM

DETAILED PROJECT REPORT

Kollam/IWMP-II/2011-12

BATCH III

PIA
Pathanapuram Block Panchayat

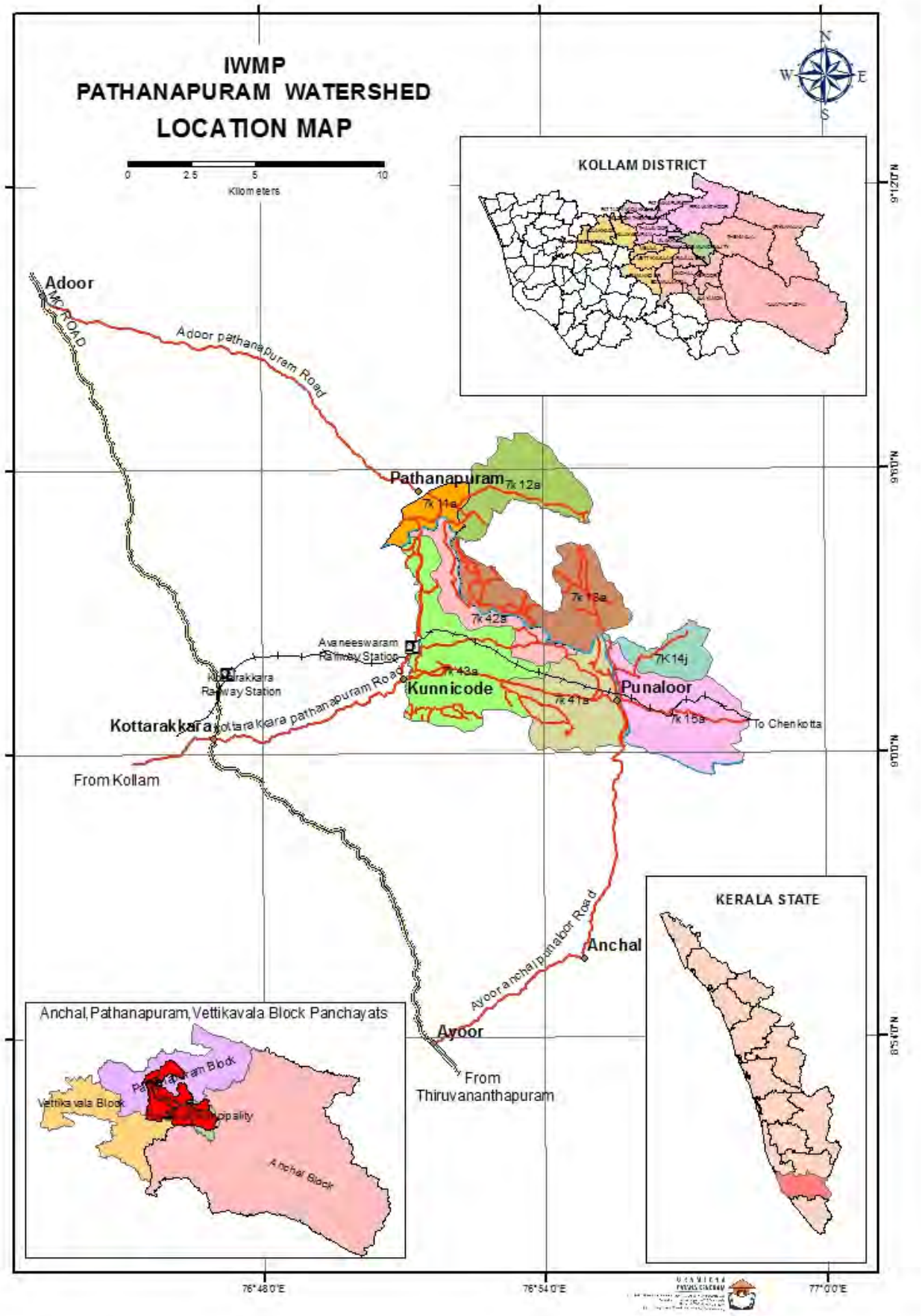
TSO
Grameena Padana Kendram

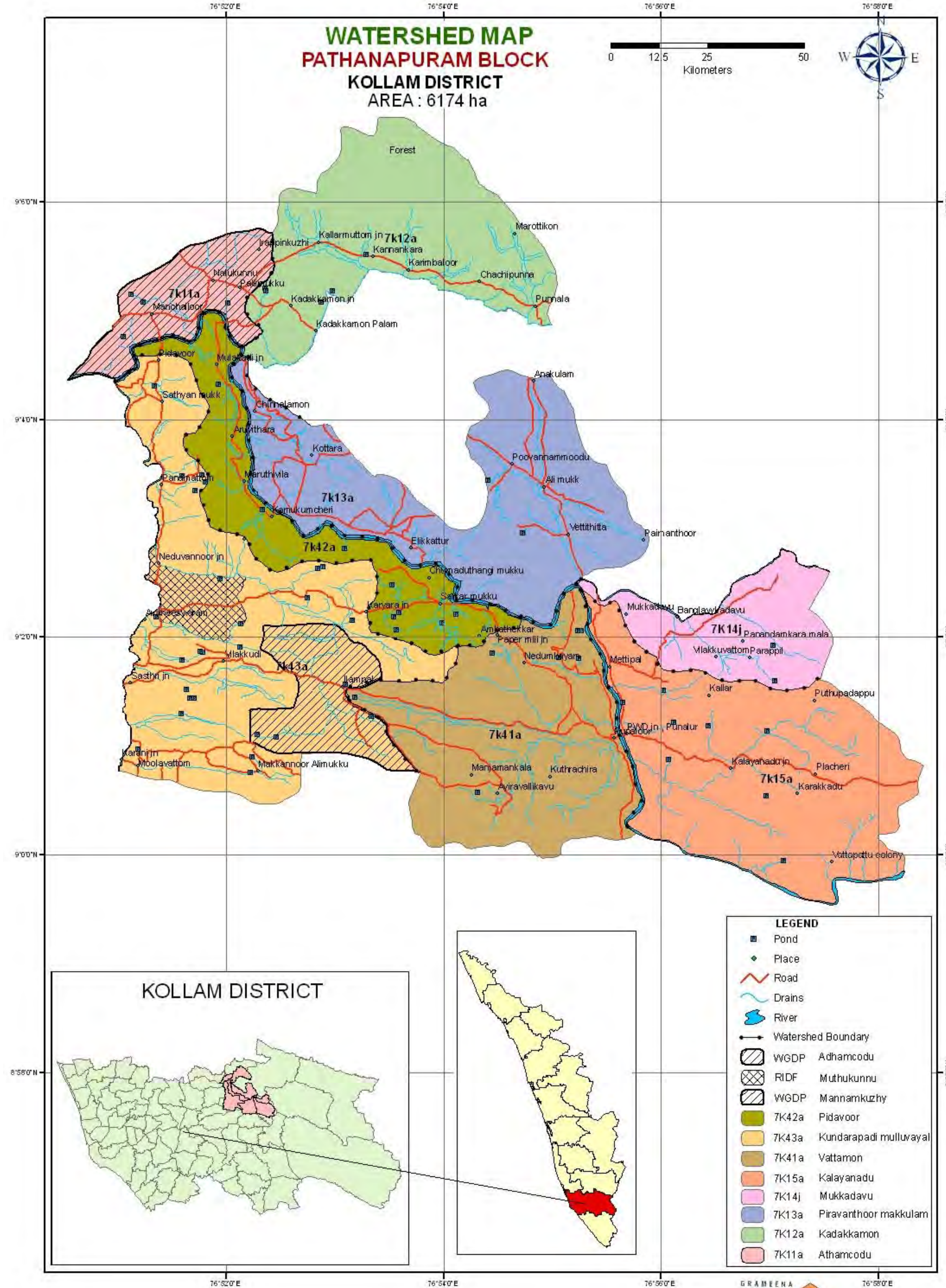
CONTENTS

ABBREVIATIONS

AAP	Annual Action Plan
APL	Above Poverty Line
BP	Block Panchayat
BLCC	Block Level Coordination Committee
BPL	Below Poverty Line
BRGF	Backward Regions Grant Fund
DLCC	District Level Coordination Committee
DPC	District Planning Committee
DPR	Detailed Project Report
EPA	Entry Point Activities
FGD	Focus Group Discussion
GIS	Geographic Information System
GP	Grama Panchayat
GW	Ground Water
IEC	Information, Education and Communication
IT	Information Technology
IWMP	Integrated Watershed Management Programme
LHA	Livelihood Activities
LSGD	Local Self Government Department
LSGI	Local Self Government Institutions
MCM	Million Cubic Meters
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Act
MLA LAD	Member of Legislative Assembly Local Area Development scheme

MPLAD	Member of Parliament Local Area Development
MSL	Mean Sea Level
NABARD	National Bank for Agriculture and Rural Develop ment
NGO	Non-Governmental Organization
NRAA	National Rain fed Areas Authority
NRHM	National Rural Health Mission
NRM	Natural Resource Management
OBC	Other Backward Caste
WCDC	Watershed Cell Cum Data Centre
WDT	Watershed Development Team
SHGs	Self Help Groups
UGs	User Groups


IWMP
PATHANAPURAM WATERSHED
LOCATION MAP
0 2.5 5 10
Kilometers
N
W
E
S
KOLLAM DISTRICT
Adoor
MC ROAD
Adoor pathanapuram Road
Pathanapuram
7k 12a
7k 11a
7k 13a
7k 42a
Avaneeswaram
Railway Station
7K14j
7k 43a
Kunnicode
Punaloor
7k 41a
7k 15a
To Chenkotta
Kottarakkara
Railway Station
Kottarakkara pathanapuram Road
Kottarakkara
From Kollam
Anchal
Ayoor anchal pathalor Road
Ayoor
From
Thiruvananthapuram
KERALA STATE
Anchal, Pathanapuram, Vettikavala Block Panchayats
Vettikavala Block
Anchal Block
76°48'0"E
76°54'0"E
77°0'0"E
9°12'0"N
9°6'0"N
9°0'0"N
8°54'0"N


WATERSHED MAP
PATHANAPURAM BLOCK
KOLLAM DISTRICT
AREA : 6174 ha
0 12.5 25 50
Kilometers
N
S
E
W
76°52'0"E
76°54'0"E
76°56'0"E
76°58'0"E
9°6'0"N
9°4'0"N
9°2'0"N
9°0'0"N
8°58'0"N
Forest
Marottikon
7k12a
Kallarmuttom jn
Kannankara
Karimbaloor
Chachipunna
Punnala
Kadakkamon jn
Kadakkamon Palam
7k11a
Manchalloor
Pidavoor
Sathyan mukk
Chirrnelamon
Kottara
Maruthivila
Kamukumcheri
7k13a
Anakulam
Poovannammoodu
Ali mukk
Vettithitta
Paimanthoor
Elikkattur
7k42a
Neduvannoor jn
Chemaduthangi mukku
Karyara jn
Amkothekkar
Paper mill jn
Nedumparyam
Vilakkudi
7k43a
Sasthri jn
Karani jn
Moolavattom
Makkannoor Alimukku
7k41a
Manjamankala
Kuthrachira
Aviravallikavu
Mukkadavu
Banglawkadavu
7K14j
Padandamkara mala
Vilakkuvattom
Parappil
Mettipal
Kallar
Puthupadappu
PWD jn
Punalur
7k15a
Kalayanadu jn
Placheri
Karakkadu
Vattapattu colony
KOLLAM DISTRICT
LEGEND
Pond
Place
Road
Drains
River
Watershed Boundary
WGDP Adhamcodu
RIDF Muthukunnu
WGDP Mannamkuzhy
7K42a Pidavoor
7K43a Kundarapadi mulluvayal
7K41a Vattamon
7K15a Kalayanadu
7K14j Mukkadavu
7K13a Piravanthoor makkulam
7K12a Kadakkamon
7K11a Athamcodu
GRAMEENA PATANA KENDRAM

Legend

WATERSHED MANAGEMENT PROJECT UNDER IWMP BATCH-II

PATHANAPURAM BLOCK

PART I

PREFACE

Integrated Watershed Management Programme (IWMP) is a Central Government programme meant for the sustainable development and management of land and land resources through watershed based approaches. The programme fundamentally focuses on strengthening the natural resource base of watersheds for generating adequate potentials for the sustainability of environmental stability, agricultural productivity, rural livelihood opportunities etc. The present, being a time of excessive and calamitous exploitation and abuse of the precious natural resources like rain water, top soil and vegetation, most aptly warrants the relevance of watershed based development programmes in strengthening our efforts for attaining better economic growth and improved living standards in rural India. Watershed based natural resource management will, no doubt, add much to our food security as most of the farming systems in the country are, by and large, rain fed.

The area covered under this Project is hilly and belongs to Pathanapuram Block in Kollam District of Kerala State. The area forms a part of the Western Ghats. The project area is comprised in Seven micro Watersheds. Portions of Vilakudy, Thalavoor, Thenmala, Piravanthoor and Pathanapuram Grama Panchayats and part of the municipality of Punalur fall under the project. Total extent of the project area comes to 8551 hectares that drain to the Kallada River.

KALLADA RIVER.

Kallda River takes its origin from the foot hills of Kulathoopuzha area and then flows by the northern part of Kollam District through places like Punalur, Pathanapuram, Kottarakara and Kallada. The project area forms part of the catchments of this river. The river is 121 kms long and is west flowing.

I.1 Location and Extent

Name of the project	State	District	Thaluk	Block	Village	Micro Watershed		Grama Panchayat	Wards covered		Total Area	Intervention Area	Project Amount
						Name	Code		Full	Partial			
IWMP-2	Kerala	Kollam	Pathanapuram, Punalur	Pathanapuram	Pathanapuram, Punnala	Kadakkamon	7k12a	Pathanapuram		7, 8, 9	**8551 ha**	**6174 ha**	**926.13 Lakhs**
								Piravanthoor	21	2, 17, 18, 19, 20			
					Pidavoor, Piravanthoor, Punnala	Piravanthoor-Makkulam	7k13a	Piravanthoor	9, 10, 14	8, 11, 12, 13, 15, 17			
					Edamon, Piravanthoor	Mukkadavu	7k14j	Piravanthoor		8			
								Punalur Municipality	11	10, 12, 15			
					Edamon	Kalayanadu	7k15a	Thenmala		13, 14			
								Punalur Municipality	13, 14, 16, 17, 18, 19, 20, 21, 22	10, 12, 15, 23			
					Karavaloor, Vilakudy	Vattamon	7k41b	Karavaloor		2, 5			
								Vilakudy	9, 10	11, 12, 14			
								Punalur Municipality	3, 4, 5, 6, 7, 8, 9, 30, 31, 32, 33, 34	2, 28, 29,35			
					Pidavoor, Vilakudy	Pidavoor	7k42a	Vilakudy		6, 7, 8			
								Thalavoor		8, 9, 10, 11			
					Melila, Pidavoor, Vilakudy, Chakuvarackal	Kundarapadi-Mulluvayal	7k43a	Vilakudy	3, 4, 5, 13, 15, 16, 17, 18	6, 7, 11, 14, 12			
								Thalavoor		7, 8, 9, 10, 11, 12			
								Melila		6, 7			
								Vettikavala		11			
								Punalur Municipality		1, 2, 35			

Name of the Project	Cluster w/s	Micro Watershed	W/S Code	GP. Name	Area covered (ha)	% of Area (ha)	Total Area (ha)
IWMP 2/2011-12	Pathanapuram	Kadakkamon	7k12a	Piravanthoor	1090.14	95	1147
				Pathanapuram	56.86	5	
		Piravanthoor-Makkulam	7k13a	Piravanthoor	1371	100	1371
		Mukkadavu	7k14j	Piravanthoor	121.92	25	507
				Punalur Municipality	312.36	61	
				Thenmala	72.72	14	
		Kalayanadu	7k15a	Punalur	1447.52	93	1548
				Thenmala	60.48	7	
		Vattamon	7k41b	Karavaloor	229.70	17	1319
				Vilakudy	303.41	23	
				Punalur Municipality	785.89	60	
		Pidavoor	7k42a	Vilakudy	219.87	31	708
				Thalavoor	487.13	69	
		Kundarapadi-Mulluvayal	7k43a	Vilakudy	1080.61	56	1952
				Thalavoor	524.46	27	
				Melila	144.57	7	
				Vettikavala	66.39	3	
				Punalur municipality	135.97	7	

I.2 Need and Scope of the project.

Pathanapuram and Punalur areas record a colourful history of excellent agriculture. The climate, soil parameters, social affinity etc pertaining to the area together had set conducive grounds that motivated agriculture. But the scenario changed drastically and crop husbandry in the localities lost its identity as a prestigious vocation. Long lasted land use and cropping pattern of the area has underwent undesirable changes and that lead to a situation of agriculture transforming itself into a no n remunerative exercise. Inter cropping and mixed cropping practices that catered to the dietary requirements of the local community have almost been dispensed with. Paddy cultivation has been confined to less than 20 % of the earlier position. Most of the land holders began adopting Rubber cultivation in a massive scale eliminating so many of the food crops from the area.

Neglect in land development and management has accelerated erosion of the fertile top soil from most of the crop lands in the locality rendering them less productive and even barren. Lack of community care and attention to control and conserve run off for productive uses has resulted in accelerated soil loss from the land holdings in the project area. Owing to uncontrolled runoff and soil erosion from the area, the rate of the process of ground water recharge has been seriously reduced. So also, the water holding capacity of the farm holdings have declined alarmingly. This has hampered the productivity of soil with regard to agriculture. Another problem is the siltation in the lower plains and water sources of the watersheds. Advancement of gullies and the related damages to adjoining land holdings form another set of issues that the watersheds face. Loss of crop/bio diversity and environmental degradation etc too remain major problems.

This project under IWMP has a lot to contribute in addressing most of many of the issues mentioned above. Since this project report envisages a proper scientific management of the micro watersheds in the project area, the issues affecting the productivity and sustainability of the micro watersheds can be solved in a very effective manner. 6174 ha intervention area under this watersheds cluster.

Major reasons for the Selection of Area

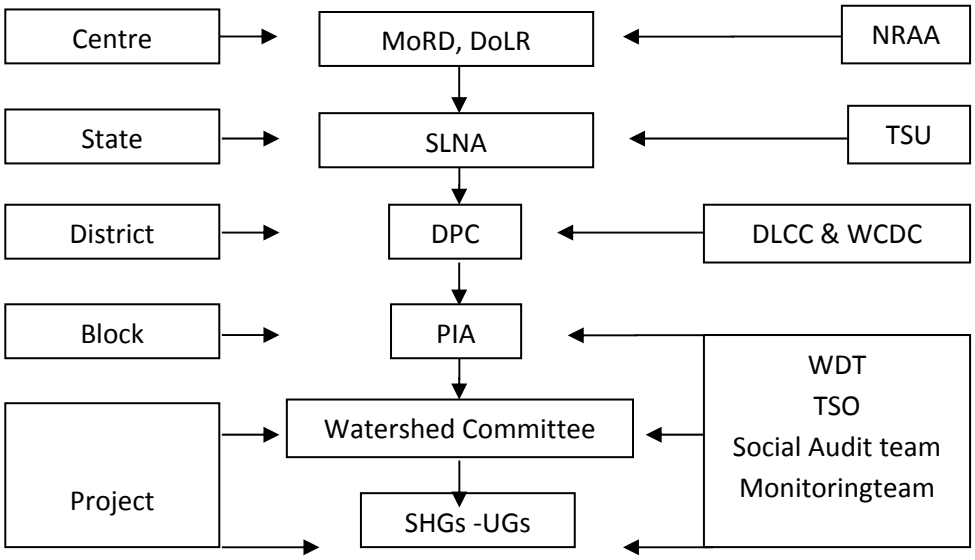
- Watershed degradation
- Low productivity
- Socio-economic backwardness
- Over exploitation of natural resources.
- Biodiversity degradation
- Drought and water scarcity
- Environmental pollution and degradation.

I.3 Major Objectives of the Project

- Take up necessary in-situ water conservation activities to mitigate the problem of water scarcity in the location and to augment groundwater recharge.
- Adopt necessary interventions to reduce soil erosion from the watershed areas with a view to maintaining sustainable productivity of the area
- Identify, promote and support various Production Systems and Micro Enterprises that have substantial bearing on the natural resource base of the project area
- Identify, promote and support various livelihood activities related with the natural resource base of the project area
- Plan various suitable production systems to bring more fallow/waste lands in the watersheds into use
- Carry out various activities necessary for the regeneration of environment pertaining to the project area.

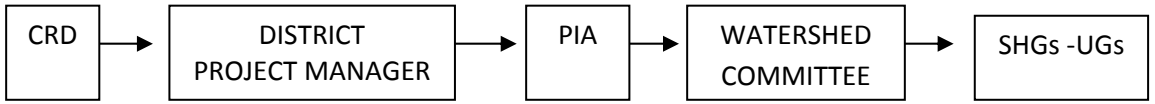
1. 4 Organizational set-up

The common Guidelines for the programme stipulate a specific organizational structure from the Centre to the Grassroots for the proper management of the project. The structure can be represented as follows.



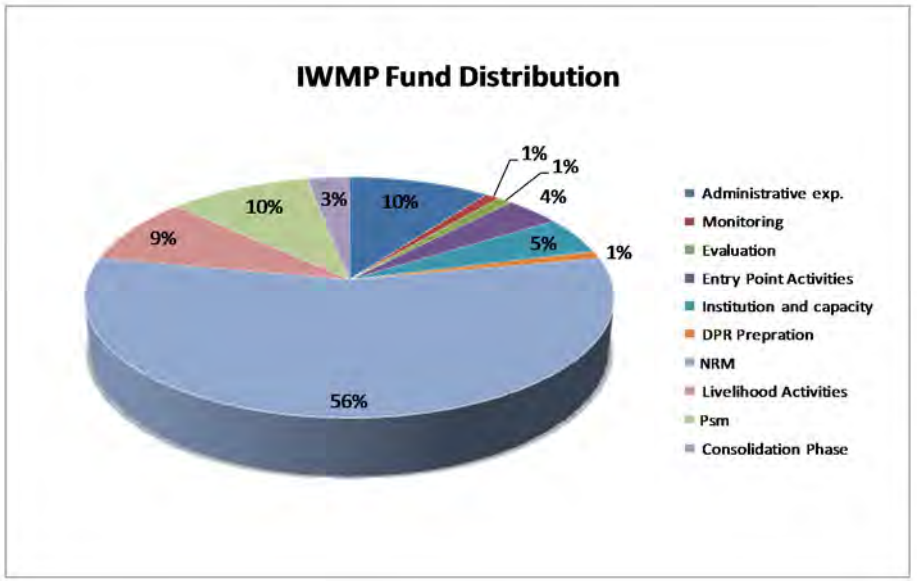
I.5 . Project Fund and Fund Flow

The cost structure of the Project is Rs.15,000 per Hectare. The Funds will be utilized as per the stipulations in the Common Guidelines issued by the GoI. The Funds received by the State is transferred to the lower levels as shown in the flow chart below.



I.6. Project Budget

The budget of the project is worked out as follows.



No	Head of the Account	%	Amount
1	Administrative exp.	10	9,261,300
2	Monitoring	1	926,130
3	Evaluation	1	926,130
4	Entry Point Activities	4	3,704,520
5	Institution and capacity building	5	4,630,650
6	DPR Preparation	1	926,130
7	Watershed development works(NRM)	56	51,863,280
8	Livelihood Activities(LHA)	9	8,335,170
9	Production System and Micro(PSM)	10	9,261,300
10	Consolidation Phase	3	2,778,390
	Total Project Cost	**100**	**92,613,000**

IWMP Fund distribution								
Watershed code		**7k12a**	**7k13a**	**7k14j**	**7k15a**	**7k41b**	**7k42a**	**7k43a**
Total Geographical Area (ha)		1147	**1371**	507	1548	1319	708	1952
Treatable area (ha)		614	**1083**	318	1049	1262	704	1144
Name of Watershed		Kadakkamon	**Piravanthoor-Makkulam**	Mukkadavu	Kalayanadu	Vattamon	Pidavoor	Kundarapadi-mulluvayal
Watershed development works(NRM)	56 %	51,61,296	90,93,336	26,71,872	88,09,668	1,06,02,984	59,12,844	96,06,660
Livelihood Activities (LHA)	9%	829,494	14,61,429	4,29,408	14,15,840	17,04,051	9,50,279	15,43,928
Production System and Microenterprises (PSM)	10%	921,660	16,23,810	4,77,120	15,73,155	18,93,390	10,55,865	17,15,475

PART II

GENERAL DESCRIPTION OF THE PROJECT AREA.

II.1. History

The area covered under this project belongs to the midland region of the State. It includes portions of Pathanapuram and Punalur Taluks in Kollam district of Kerala. The area is further delineated into eight Micro Watersheds comprised of parts of Vilakudi, Thalavoor, Piravanthoor, Thenmala, Melila and Vettikavala Panchayats and parts of Punalur Municipality. The project area stretching to an extent of 6174 hectare forms a part of the catchments of the River Kallada. The locality has a very long history of trade relations with the neighbouring Tamil Nadu. Equally great and long is the history of its agrarian economy too. There are many versions as to how this place came to be called “Pathanapuram”. The first educational institution here was the school established in 1890, which had conducted classes for the first standard only at that time. The foundation for the educational and cultural progress of the place has been set by government as well as private management schools.

Long back, Vilakudy had been under the rule of Elayadathu Royal Family of Kottarakara. Thalavoor was once the land of village chieftains and feudal lords. The school established in 1914 at Kalntharady Junction was the first one in Piravanthoor. Slave trade is said to have existed here some sixty years back. Kollam- Chenkotta railway line which was meter gauge formerly, passes through Thalavoor. Punalur is 45kms North East to Kollam and 75 kms North to Trivandrum. Punalur is located at a height of 34 meters from the mean sea level. Punalur had trade relations with Tamil Nadu from ancient time onwards. Elayadathu Royal Family was the sovereign here. Punalur became historically important through the introduction of Thirunelveli-Punalur Meter gauge railway line in 1901, the construction of the hanging bridge in 1877, the coming of paper mill in 1888 and the establishment of plywood factory in 1943.

II.2. Watershed Profile

Geographical Coordinates

Name of the project		Latitude	Longitude
IWMP- III/2011-12	North East	$8^0$59'30"N	$76^0$50'30"E
	South West	$9^0$6'45"N	$76^0$58'15"E

Prioritized list of projects proposed for sanction during the financial year 2011-12

1	2	3	4	5	6	7	8												
No	District	Name of the project	No. of micro Watersheds proposed to be covered	Proposed project area	Type of project (Hilly/ Desert/ Others)	Proposed cost (Rs lakh)	Weightage under the criteria												
							1	2	3	4	5	6	7	8	9	10	11	12	13	A
1	Kollam	IWMP- III /2011-12	8	6174	Hilly	926.13	5	3	0	5	2	0	15	7.5	15	15	10	0	15	92.5

Source: PPR

II.3. Criteria and Weightage for Selection of Watershed

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)	Less than 20% (3)	
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	None 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	
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/treated	10	Contiguous to previously treated Watershed & contiguity within the micro Watersheds in the project (10)	Contiguity within the micro Watersheds in the project but non contiguous to previously treated Watershed (5)	Neither contiguous to previously treated Watershed nor contiguity within the micro Watersheds in the 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
xiii	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)

(Source: PPR)

II.4 . Physiography, Relief and` Drainage

The project area belongs to the physiographic unit of midland and midupland. The highest place in the watershed cluster is located in the Kadakkamon forest area of Piravanthoor Grama Panchayat. This place is located 230 meters above the msl. Also, there are many hills towering above 200 meters from msl. Vettikavala area coming under the Kundarappady –Mulluvayal micro watershed is another place above 200 meters from msl. Some of the areas (portions of Vilakudy Grama Panchayat) coming under Vattamon micro watershed are at an elevation of 180 meters. Average elevation of the stretches of land boardering the Kallda River is at an average elevation of 20 meters from the sea level. Relief of the project area with reference to the outlet point and the remote point is found to be 220 mtrs. The project area is featured with dendritic pattern of drainage.

Name of the Project	No of Micro Watersheds in the cluster	Physiographic position	Elevation range	Slope range
IWMP- III/2011-12	7	Midland to Midupland	20-240 mtr	5^0 - 55^0

Slope (degrees)				
Slope	**Class**	**Area (hectares)**	**Area (Sq.km)**	**Percentage**
Less than 5 deg	Flat/Very Gentle	3145.65	31.45	50.95
5 - 15 deg	Gentle	1850.36	18.50	29.97
15 - 30 deg	Moderate Slope	1040.93	10.41	16.86
30 - 45 deg	Steep slope	126.56	1.26	2.05
Above 45 deg	Very steep slope	10.50	0.11	0.17

Elevation (mts)				
Height (mts)	**Class**	**Area (hectares)**	**Area (Sq.km)**	**Percentage**
< 25	Very Low	970.55	9.71	15.72
25 - 50	Low	2360.93	23.61	38.24
50 - 100	Medium	2321.42	23.21	37.60
100 - 150	Moderately high	382.19	3.82	6.19
150 - 200	High	136.44	1.36	2.21
Above 200	Very high	2.47	0.02	0.04

Slope Direction				
No	**Slope Direction**	**Area (hectares)**	**Area (Sq.km)**	***Percentage***
1	Flat	3250	32.50	*52.64*
2	North	266	2.66	4.26
3	NE	387.02	3.87	6.27
4	East	264.38	2.64	4.31
5	SE	282.76	2.83	4.58
6	South	513.14	5.13	8.31
7	SW	573.56	5.73	9.29
8	West	358.70	3.58	5.81
9	NW	278.44	2.78	4.51

(Source: GIS, data, gpk)

1	**2**	**3**	**4**	**5**	**6**
Sl No	**Name of the Watershed**	**Name of the Agro-climatic zone covers project area**	**Name of the Villages**	**Topography**	**Average rainfall in mm**
1	Kadakkamon	Midland	Pathanapuram, Punnala	Valleys-gently sloping to flat bottom	2440 mm
2	Piravanthoor-Makkulam	Midland	Pidavoor, Piravanthoor, Punnala	Valleys-gently sloping to flat bottom	
3	Mukkadavu	Midland	Edamon, Piravanthoor	Valleys-gently sloping to flat bottom	
4	Kalayanadu	Midland	Edamon	Moderately to steeply sloping ridges	
5	Vattamon	Midland	Karavaloor, Vilakudy	Moderately to steeply sloping ridges	
6	Pidavoor	Midland	Pidavoor, Vilakudy	Valleys-gently sloping to flat bottom	
7	Kundarapadi-Mulluvayal	Midland	Melila, Pidavoor, Vilakudy, Chakkuvarakkal	Valleys-gently sloping to flat bottom	

II.5 .Climate

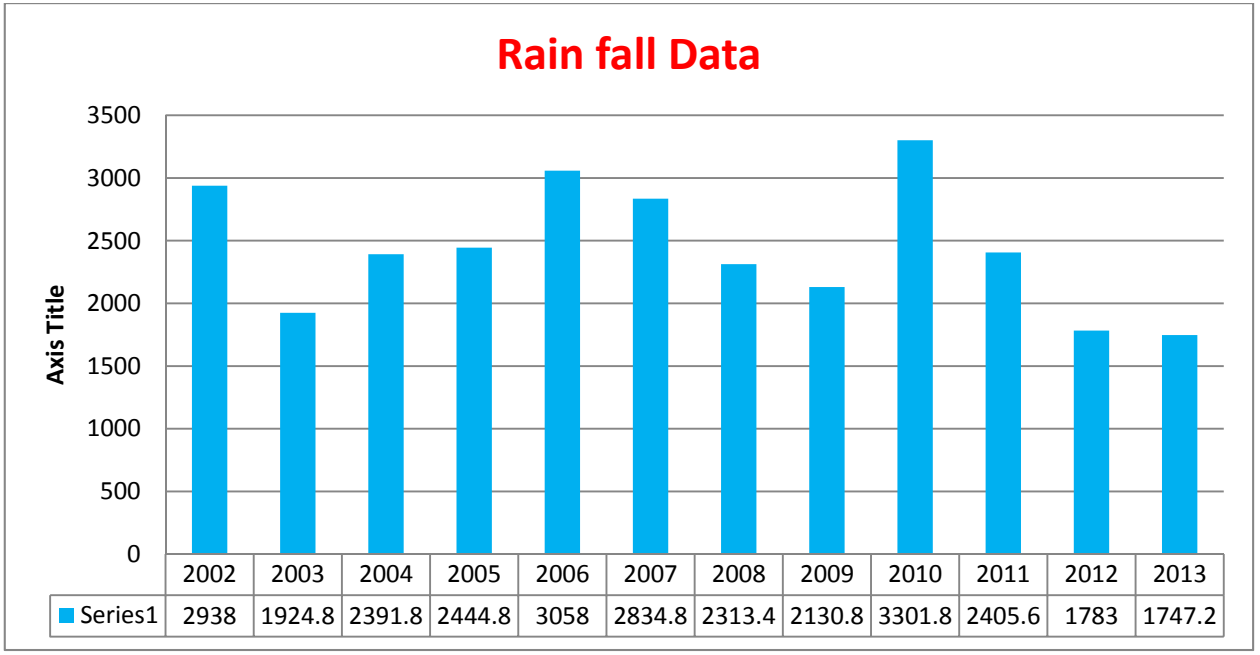
The general climate of Kerala prevails in most of the areas of the Watershed. Punalur, one of the hottest places of Kerala, is located in this Watershed. Average annual rainfall of the area is 2440 mm, The area faces severe water shortage during the summer period. Atmospheric temperature of the area shows a trend of rise.

PUNALUR												
MONTHLY TOTAL RAINFALL (mm)												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2002	6.8	24.6	76.6	299.6	207.0	329.8	347.6	299.0	139.0	710.0	498.0	0.0
2003	3.8	50.2	77.4	214.6	122.2	221.6	341.2	273.8	50.4	467.2	73.0	29.4
2004	0.0	54.4	92.6	232.6	563.0	416.8	221.4	169.6	190.6	321.4	121.2	8.2
2005	38.0	19.4	16.6	244.8	236.4	407.2	508.4	84.6	262.4	201.0	277.0	149.0
2006	11.4	28.2	144.2	159.2	406.4	316.6	461.0	215.6	395.6	528.6	384.2	7.0
2007	0.0	35.2	11.4	247.2	151.4	364.8	561.2	259.8	434.2	586.4	136.0	47.2
2008	0.0	55.8	223.6	282.8	55.6	160.8	478.4	261.0	301.6	385.6	102.6	5.6
2009	2.6	0.0	128.2	114.4	191.2	273.8	338.4	237.2	251.2	365.4	228.4	0.0
2010	1.2	0.0	123.0	329.4	194.8	402.2	395.6	410.8	223.8	636.4	494.2	90.4
2011	89.0	171.8	121.0	204.4	122.0	398.0	330.4	239.4	199.4	148.8	185.6	195.8
2012	29.8	18.6	78.4	314.4	79.4	198.0	228.0	295.6	161.6	244.6	123.6	11.0
2013	0.0	74.4	94.2	126.6	243.2	745.4	463.4	xx	xx	xx	xx	xx

PUNALUR												
MEAN MAXIMUM TEMPERATURE (^{O}c)												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2002	34.7	34.9	36.2	36.1	34.7	32.3	31.7	31.9	33.3	31.9	31.6	33.6
2003	34.9	35.8	36.0	35.3	34.3	33.8	33.2	33.4	33.8	32.8	33.6	33.9
2004	33.9	34.3	36.1	33.8	32.9	32.9	33.0	33.2	33.1	32.9	33.3	34.1
2005	34.8	36.1	36.4	34.0	34.3	32.6	32.7	33.4	32.7	32.8	32.3	32.5
2006	32.9	33.8	35.1	34.7	33.1	33.0	30.0	31.8	31.4	32.0	32.2	33.5
2007	35.2	36.0	38.0	36.1	34.7	31.9	29.7	31.6	31.3	30.5	31.7	31.0
2008	32.2	32.1	31.4	34.8	34.5	32.3	30.3	31.5	32.2	32.4	33.0	33.8
2009	34.8	36.9	37.6	35.6	33.9	31.5	30.3	31.1	30.9	32.6	31.7	33.6
2010	34.7	37.0	37.9	33.0	33.6	31.0	29.6	30.1	31.3	30.1	29.9	31.7
2011	33.5	35.6	35.9	34.8	34.6	31.3	30.3	30.4	30.8	33.4	32.0	32.4
2012	34.2	35.8	36.9	34.7	33.5	32.2	31.1	30.9	31.5	33.1	33.4	34.2
2013	35.5	36.3	36.6	36.4	34.0	27.8	28.9	xx	xx	xx	xx	xx

PUNALUR												
MEAN MINIMUM TEMPERATURE (^{O}c)												
YEAR	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
2002	21.3	22.0	22.0	22.6	22.8	22.4	22.2	22.1	22.5	21.7	22.1	20.8
2003	20.3	21.7	22.3	22.1	22.7	22.5	22.4	22.5	22.7	22.3	22.6	21.7
2004	21.9	22.3	22.3	22.9	21.4	21.9	21.9	22.0	21.7	21.9	21.9	20.9
2005	20.8	21.9	22.8	22.7	23.1	21.9	21.7	22.4	21.9	22.0	21.7	20.7
2006	20.2	21.0	22.0	22.4	22.1	22.1	22.4	22.1	22.0	22.2	22.0	20.7
2007	19.9	20.5	22.4	24.3	24.3	23.2	22.8	23.1	23.0	23.1	22.3	21.8
2008	21.2	22.7	22.8	23.9	24.2	23.6	23.2	23.5	23.1	23.3	23.2	21.6
2009	20.7	21.1	23.6	24.6	24.7	23.9	23.5	23.9	23.9	23.1	22.9	22.9
2010	21.8	22.7	23.8	24.9	25.0	22.3	20.0	21.1	21.3	23.0	22.9	22.0
2011	20.9	20.7	21.7	22.8	23.8	23.4	22.4	22.7	22.5	22.7	21.7	21.2
2012	19.9	20.5	22.1	21.5	22.8	21.6	21.5	20.8	22.0	22.9	23.0	22.1
2013	22.1	21.8	23.0	25.6	24.9	22.9	22.8	xx	xx	xx	xx	xx

Source: India Meteorological Department



II.6. Ground Water

Though the area receives sufficient rainfall, it remains a location experiencing severe water scarcity during the summer months. As the topography of the area is highly undulating, rain water drains out very quickly as runoff. So also, the land use in the area has been changed in favor of excessive overland flow of precipitation. Large scale plantations of acacia, eucalyptus and oil palm in areas of the Piravanthoor and Thenmala Grama Panchayats for industrial purposes and the spread of Rubber plantations in the locality have also added to the depletion of the ground water level of the area. Beds of most of the major drains in the project area have been alarmingly lowered due to indiscriminate extraction of sand for various construction purposes. This has very badly affected the stability of the ground water level in the area. According to the Central Ground Water Board (C.G.W.B.), the groundwater level of most of the places in the Watersheds is low and vulnerable.

Ground Water Level

KLM OW 18		KLM OW 20		KLM/10		KLM/15		KLM/7		KLM/30	
Date	W/L	Date	W/L	Date	W/L	Date	W/L	Date	W/L	Date	W/L
29-Jan-12	3.99	23-Jan-12	6.98	24-Jan-12	10.49	23-Jan-12	8.43	23-Jan-12	8.19	23-Jan-12	8.44
21-Feb-12	1.35	21-Feb-12	7.07	21-Feb-12	10.85	21-Feb-12	8.58	21-Feb-12	8.43	21-Feb-12	8.56
28-Mar-12	1.49	28-Mar-12	7.38	28-Mar-12	11.35	16-Mar-12	8.71	28-Mar-12	8.57	28-Mar-12	8.87
30-Apr-12	2.58	24-Apr-12	7.02	30-Apr-12	10.73	28-Apr-12	9.15	30-Apr-12	7.97	30-Apr-12	8.25
25-May-12	3.38	28-May-12	7.13	25-May-12	11.47	26-May-12	9.34	25-May-12	8.97	25-May-12	8.87
11-Jun-12	3.44	11-Jun-12	7.65	11-Jun-12	11.63	20-Jun-12	9.32	11-Jun-12	8.47	11-Jun-12	8.67
16-Jul-12	3.00	16-Jul-12	6.71	16-Jul-12	11.53	24-Jul-12	9.07	16-Jul-12	7.98	16-Jul-12	8.60
20-Aug-12	1.90	20-Aug-12	5.10	20-Aug-12	11.21	20-Aug-12	8.78	20-Aug-12	7.92	20-Aug-12	6.46
27-Sep-12	3.47	20-Sep-12	6.94	29-Sep-12	10.97	27-Sep-12	8.81	27-Sep-12	8.06	20-Sep-12	7.92
25-Oct-12	3.73	25-Oct-12	6.25	25-Oct-12	10.38	25-Oct-12	8.00	25-Oct-12	7.96	25-Oct-12	6.93
29-Nov-12	3.96	29-Nov-12	6.93	29-Nov-12	10.10	29-Nov-12	8.42	29-Nov-12	8.03	29-Nov-12	8.78
22-Dec-12	4.98	22-Dec-12	6.94	22-Dec-12	11.16	27-Dec-12	8.87	22-Dec-12	8.21	22-Dec-12	8.48
25-Jan-13	5.52	25-Jan-13	7.05	27-Jan-13	11.63	27-Jan-13	9.11	22-Jan-13	8.21	30-Jan-13	8.94
28-Feb-13	1.39	27-Feb-13	7.14	27-Feb-13	12.00	28-Feb-13	9.15	27-Feb-13	8.47	27-Feb-13	8.95
29-Apr-13	1.13	29-Apr-13	6.92	29-Apr-13	12.13	29-Apr-13	9.36	29-Apr-13	7.70	29-Apr-13	9.65
30-May-13	1.19	30-May-13	6.95	30-May-13	12.16	30-May-13	9.21	30-May-13	8.22	30-Jun-13	5.86
26-Jun-13	2.26	30-Jun-13	4.01	30-Jun-13	10.12	30-Jun-13	7.84	30-Jun-13	7.78	30-Jul-13	5.24
30-Jul-13	2.01	30-Jul-13	4.42	30-Jul-13	8.99	29-Jul-13	7.36	30-Jul-13	7.86		

Source: SGWD.Tvpm

Observation Wells

Well No	Well Type	Agency	District	Block / Mandal	Village	Sub Basin	Latitude	Longitude	Well Location
KLM OW 18	Dug Well	SGWD	Kollam	Pathanapuram	Karavoor	Kallada	09°03'27"	76°57'04"	Kerala Forest Development Corparation Compound.
KLM OW 20	Dug Well	SGWD	Kollam	Pathanapuram	Pattazhy	Kallada	09°04'57"	76°47'51"	Near Pattazhy Punchayat Office.
KLM/10	Bore Well	SGWD	Kollam	Pathanapuram	Vilakudy	Kallada	09°01'55"	76°53'59"	Near the Anganvady, Ambalamkunnu.Punalur
KLM/15	Bore Well	SGWD	Kollam	Pathanapuram	Edamon	Kallada	09°00'01"	76°58'54"	Village Office Compound.
KLM/O7	Bore Well	SGWD	Kollam	Pathanapuram	Karavoor	Kallada	09°03'27"	76°57'04"	Near Veterinary Hospital
OW-30	Dug Well	private	Kollam	Pathanapuram	Pathanapuram	Kallada	09°05'38"	76°51'15"	In front of the house.

(Source: SGWD.Tvpm)

Ground Water Resource of Pathanapuram Block (GEC-1997) As on 31 st March 2004

Block	Domestic -2004	Domestic-2009	Industrial-2004	Industrial-2009	Total Annual Recharge (mcm)	Natural discharge during non-monsoon season (mcm)	Net Annual GW availability (mcm) (7-8)	Existing gross GW draft for irrigation (mcm)	Existing gross GW draft for domestic and industrial water supply (mcm)	Existing GW draft for all uses. (mcm)	Allocation for domestic and industrial water supply up to next 25 (mcm)	Requirement for domestic and industrial water supply up to next 25 (mcm	Net GW Availability for future irrigation development (mcm)	Stage of GW development in percentage (%)	Category
Pathanapuram	6.15	7.25	-	0.45	47.65	4.77	42.88	6.80	6.15	12.95	7.70	8.87	28.38	30.20	Semi critical

(Source: KSLUB)

Block wise distribution of Ground Water Levels (April 2006)t

Name of Block	No. of wells analyzed	Depth to Water level		No/% of wells showing DTWL in the range of mbgl				
		Minimum	Maximum	0-2	2-5	5-10	10-20	20-40
Pathanapuram	4	2.42	9.76	0	1 25	3 75	0	0
Punalur	1	9.97	9.97	0	0	1 100	0	0
Kottarakara	3	3.92	6.92	0	1 33.33	2 66.67	0	0

Block wise distribution of ground water levels (November 2006)

Name of Block	No. of wells analyzed	Depth to Water level		No/% of wells showing DTWL in the range of mbgl				
		Minimum	Maximum	0-2	2-5	5-10	10-20	20-40
Pathanapuram	4	1.76	6.37	1 20	2 40	2 40	0	0
Punalur	1	7.86	7.86	0	0	1 100	0	0
Kottarakara	3	1.36	4.29	1 33.33	2 66.67	0	0	0

(Source: CGWB)

II.7 . Major Drains in the project area

Micro Watershed & Code	Major Drains	Area covered	Length (m)	Average width (m)	Water Availability (in Yearly)
Kadakkamon-7k12a	1.Kadakkamon-Punnala Thodu	Kadakkamon- Punnala	6880	12	12
	2.Parakadavu Thodu	Kadakkamon- Punnala	2220	2	12
Piravanthoor-Makkulam- 7k13a	1.Nilamel-KottaraThodu	Piravanthoor	2320	2.5	12
	2.AdayaraThodu	Piravanthoor	1050	2	8
	3.Thonikuzhi-Elikattoor ambalam Thodu	Piravanthoor	112	3	12
	4.Elikattoor Thodu	Piravanthoor	1200	3	12

	5.Mukkadavu-Piravanthoor Thodu	Piravanthoor	3238	5	12
	6.Pandakasala Thodu	Piravanthoor	2040	3	12
Mukkadavu-7k14j	Vattakundayam Thodu	Vattakundayam- Chaliyakara-Mukkadavu- Chemmanthoor	880	0.5	10
Kalayanadu-7k15a	Kalayanadu Thodu	Thenmala-Vellimala-Punalur Municipality-Thumbodu-Kakkodu-Karakkadu-Kalayanadu	4800	5	12
Vattamon-7k41b	Vettipuzha Thodu	Vilakudi-Kalladayar	5000	2	12
Pidavoor-7k42a	Aruvithara Ela Thodu	Aruvithara	1000	3	10
	Elangaman Ela Thodu	Kuriyodu -Sarkarmukku-Kalladayar	1200	2	10
	Ayithoor Ela Thodu	Thavalam North-Maravan Vayal-Kanikonam Vayal, Kalladayar	1840	1.5	10
	Sarkarmukku Thodu		1480	2	12
Kundarapadi-Mulluvayal-7k43a	Kuzhiveli- Neduvannoor – Kundarapadi-Kalladayar Thodu	Mannamkuzhi,,Vilakkudi, Neduvannoor,Kundarapadi	8625	5	12

Water bodies in the Watersheds

Name of the Watershed	W/S Code	Canal (Nos)	Streams (Nos)	Pond (Nos)	Bore well (Nos)	Public Well (Nos)	Open Well (Nos)
Kadakkamon	7k12a	1	35	5	45	2	1196
Piravanthoor-Makkulam	7k13a	1	36	6	48	14	1265
Mukkadavu	7k14j	0	7	2	2	2	838
Kalayanadu	7k15a	1	22	5	38	9	2756
Vattamon	7k41b	0	27	7	68	2	3060
Pidavoor	7k42a	0	40	14	12	6	1795
Kundarapadi-Mulluvayal	7k43a	1	27	14	20	14	3230

II.8. Water Supply and Irrigation

The area identified for implementation of this project under IWMP is almost under rain fed agriculture. Though the project area had no serious water scarcity issues to face during the earlier periods, presently it remains drought affected. Soil moisture status of the area starts declining with the cessation of the North-East monsoon showers. Top soil of the area becomes badly dry during the summer months. Issue of drinking water scarcity assumes unmanageable dimensions during the period of December – May. During this period most of the water sources of the project area gets dried up. Though the target area of Thenmala Irrigation Project is close by, the project area does not get any service from it.

Water supply schemes already operated for the area are not adequate to cater to the drinking water needs of the locality. Most of the drinking water schemes fail to ensure supply of drinking water beyond two or three days a week. Many people of the area are forced to purchase water for their daily household needs. Though a number of public wells, bore wells, public ponds etc. have been constructed for solving the problem of drinking water scarcity in the locality, most of them get dried up during the post monsoon spell due to the sinking of ground water table of the area. There are a number of drainage lines in the area which can be protected/ rejuvenated for enhancing the availability of water for various needs of the community inhabiting the project area. Prominent drainage lines and ponds in the project area can be listed as follows. Details of Irrigation Projects and Water Supply Projects operated in the locality are also furnished below.

Prominent Drainage Lines

Watershed	W/S Code	No of Drains	
		Non perennial	Perennial
Kadakkamon	7k12a	11	24
Piravanthoor-Makkulam	7k13a	11	25
Mukkadavu	7k14j	0	6
Kalayanadu	7k15a	0	22
Vattamon	7k41b	7	20
Pidavoor	7k42a		40
Kundarapadi-Mulluvayal	7k43a	1	26

Ponds & Neerurava details

Name of the Watershed	W/S Code	No. of Ponds	
		Private	Public
Kadakkamon	7k12a	2	2
Piravanthoor-Makkulam	7k13a	2	4
Mukkadavu	7k14j	2	
Kalayanadu	7k15a	3	2
Vattamon	7k41b	2	5
Pidavoor	7k42a	13	1
Kundarapadi-Mulluvayal	7k43a	2	9

Existing Irrigation Project

Grama Panchayat, Ward	Name of Watershed	Name of Irrigation Project	Locaton
Punalur Municipality-18	Kalayanadu	Irrigation- Thadayana	Kalayanadu thodu, Salom Junction
Vilakudi-18, 16	Kundarapadi-Mulluvayal	Kallada Irrigation Kanal (No Proper Function)	Kinattinkara micha bhoomi, Parayankunnu, Kunnokode, Kottavatta bhagam, Vilakudi
Piravanthoor-2	Kadakkamon	Kallada Irrigation Kanal (No Proper Function)	Punnala Ward

Existing Drinking Water Project

Name of LSG	Name of Watershed	Name of Project	Project Area	No. of Houses having water connection
Punalur Municipality	Mukkadavu	Kerala Water Authority	Palodu, Vilakuvattom, Ambalam Bhagam	Nil
Punalur Municipality	Kalayanadu	Kerala Water Authority	Kalayanadu, Gracing Block, Thundiyodu, Salom Junction, Punalur	170
		Thumbodu Water Irrigation Project	Pasumala, Chaithanya Road, Thundiyodu Road	125
		Kerala Water Authority	Vatta Bahagam	156
Punalur Municipality, Vilakudi GP	Vattamon	Rajeev Gandhi Water Irrigation Project Swajaladhara	Thannithadam Chaithanya Mala	50
			Kaduvakuzhi	52
			Manjamankala	55
			Urikodu	62
			Elikkodu	
			Manjamankala-Panikkar Junction	52
Vilakudi GP	Kudarapadi-	Rajeev Gandhi Water	Thekummoodu Leksham veedu,	80

	Mulluvayal	Irrigation Project Swajaladhara	Kulapuram	60
			Chakkupara	46
		Swajaladhara	Thekum moodu Leksham veedu	80
		Jalanidhi	Paruthivilakulam	45
		Kerala Water Authority	Near Elavu moozha School	
Piravanthoor GP	Kadakkamon	Kerala Water Authority, Rajeev Gandhi Irrigation Project	Kadakkamon Thodu	100
			Paleri	20
			Maikanna, Nellimuruppu Kulam	150
			Chembramon- Ponnilam Kulam	120
Piravanthoor GP	Piravanthoor-Makulam	Rajeev Gandhi Irrigation Project	S.N. D. P-Kamukumcheri	38
			Moolamkavu	50
			Pulichani Muruppu	75

Status of Drinking Water Sources

Name of the Watershed	W/S Code	Bore well	Open Well	Public well	Pond	Public Tap	Others	Total
Kadakkamon	7k12a	45	1497	57	20	270	82	1971
Piravanthoor-Makkulam	7k13a	48	1488	43	15	61	102	1757
Mukkadavu	7k14j	26	987	6	3	52	67	1141
Kalayanadu	7k15a	108	2901	134	54	451	341	3989
Vattamon	7k41b	182	4231	76	35	530	310	5364
Pidavoor	7k42a	63	1963	56	8	13	148	2251
Kundarapadi-Mulluvayal	7k43a	82	4370	152	36	105	273	5018

II.9 .Socio- Economic Status

Population

The total population of all the micro watersheds in the cluster is 80343. Population of all the micro watersheds has considerable representation of persons from scheduled class families except in the case of Mukkadavu micro watershed. Also, this watershed is quite thinly populated. Of the total families in the macro Watershed 39% belongs to the below poverty line (BPL) category. Male female population ratio is 969:1000. Rubber cultivation is the backbone of the local rural economy. Agriculture sector of the locality, once the largest provider of rural employment, has now become very feeble and non remunerative. Mahatma Gandhi National Rural Employment Guarantee Scheme- MGNREGS- has turned out to be a very potential factor augmenting the household income of the poor in the area.

Population

Sl. No	Name of the Watershed	Code	Total Population	Total Male	Total Female	SC Male	SC Female	Total SC Population	ST Male	ST Female	Total ST Population	Literature (Average)
1	Kadakkamon	7kl12a	7149	3579	3570	730	737	1467	85	100	185	96
2	Piravanthoor-Makkulam	7k13a	6273	3041	3232	310	382	692	120	128	248	92
3	Mukkadavu	7k14j	4071	1962	2109	203	239	442	0	0	0	95
4	Kalayanadu	7k15a	14204	6983	7221	480	532	1012	74	80	154	94
5	Vattamon	7k41b	20429	10085	10344	503	544	1047	94	92	156	94
6	Pidavoor	7k42a	8613	4301	4312	406	423	829	9	10	19	97
7	Kundarapadi-Mulluvayal	7k43a	19604	9661	9943	1279	1373	2652	28	38	66	95
Total			**80343**	**39612**	**40731**	**3911**	**4230**	**8141**	**410**	**448**	**828**	**83**

Family Details

Sl. No	Name of the Watershed	Code	General	SC	ST	Total	A P L	Percentage	B P L	Percentage
1	Kadakkamon	7kl12a	1495	428	48	1971	1088	55	882	45
2	Piravanthoor-Makkulam	7k13a	1503	191	63	1757	1076	61	68	39
3	Mukkadavu	7k14j	1008	133	0	1141	682	60	459	40
4	Kalayanadu	7k15a	3652	285	52	3989	2272	57	1717	43
5	Vattamon	7k41b	5043	272	49	5364	3216	60	2148	40
6	Pidavoor	7k42a	2026	217	8	2251	1538	68	713	32
7	Kundarapadi-Mulluvayal	7k43a	4312	690	16	5018	3258	65	1760	35
Total			**19039**	**2216**	**236**	**21491**	**13130**	**426**	**7747**	**274**

Details of Housing Pattern in the Project area

Sl No	Name of Watershed	Code	Concrete	Tiles	Thatched	Sheet	Others	Total
1	Kadakkamon	7k12a	939	723	23	23	263	1971
2	Piravanthoor-Makkulam	7k13a	795	738	14	145	65	1757
3	Mukkadavu	7k14j	589	374	9	84	85	1141
4	Kalayanadu	7k15a	2102	1347	29	384	127	3989
5	Vattamon	7k41b	3044	1686	50	439	145	5364
6	Pidavoor	7k42a	1002	997	15	194	43	2251

7	Kundarapadi-Mulluvayal	7k43a	2110	2062	61	596	189	5018
Total			**10581**	**7927**	**201**	**1865**	**917**	**21491**

Cooking Fuel Consumption in the project area

Sl No	Name of Watershed	Code	LPG	Firewood	Biogas	Others	Total
1	Kadakkamon	7k12a	724	1138	15	94	1971
2	Piravanthoor-Makkulam	7k13a	949	741	6	61	1757
3	Mukkadavu	7k14j	585	531	0	25	1141
4	Kalayanadu	7k15a	2152	1551	7	279	3989
5	Vattamon	7k41b	3815	1266	1	282	5364
6	Pidavoor	7k42a	607	1596	3	45	2251
7	Kundarapadi-Mulluvayal	7k43a	1662	3172	9	175	5018

Educational Institutions and Literacy

98% of the young generation from the Pathanapuram Watershed is educated. The proximity of the public and private educational institutions and the convenience for higher education also has been put to the maximum use by the people. Likewise, the nearness of cities like Kollam and Trivandrum has also contributed much to the outcome of efforts made by the people of the locality in achieving educational progress.

Educational Institutions

Sl No	Name of Micro Watershed	W/S Code	Educational institution	Govt./ Private	Nos				Facility		
					Male	Female	Total	Staff	Toilet	Drinking water	Electricity
1	Kadakkamon	7kl12a	HS	Govt.	255	338	593	28	Yes	Yes	Yes
			VHSC	Govt.	24	26	50	7	Yes	Yes	Yes
			HSS	Govt.	54	63	117	12	Yes	Yes	Yes
			LPS	Govt.	41	43	84	6	Yes	Yes	Yes
2	Piravanthoor-Makkulam	7k13a	LPS-2	Govt.	61	63	124	11	Yes	Yes	Yes
			UPS-2	Govt.	58	36	94	12	Yes	Yes	Yes
3	Mukkadavu	7k14j	LPS-1	Govt.	37	37	74	8	Yes	Yes	Yes
4	Kalayanadu	7k15a	LPS-4	Govt.	317	348	665	42	Yes	Yes	Yes
			HS-3	Govt.	882	1294	2276	56	Yes	Yes	Yes
5	Vattamon	7k41b	HS-2	Govt.	503	579	1082	52	Yes	Yes	Yes
6	Pidavoor	7k42a	LPS-2	Govt.	74	69	143	16	Yes	Yes	Yes
7	Kundarapadi-Mulluvayal	7k43a	LPS-10	Govt.& Private	472	504	976	72	Yes	Yes	Yes
			UPS-4		473	471	944	68	Yes	Yes	Yes
			HS-2		377	395	772	56	Yes	Yes	Yes

Educational status in the project area

Sl.No	Name of Watershed	W/S Code	UP Level	HS Level	HSS Level	UG Level	P G Level	Professional	Diploma	Illiterate
1	Kadakkamon	7kl12a	1799	1853	1793	526	85	116	70	321
2	Piravanthoor-Makkulam	7k13a	1362	1355	1780	580	102	141	152	236
3	Mukkadavu	7k14j	841	1007	1187	356	40	166	50	193
4	Kalayanadu	7k15a	2725	2855	4030	1868	350	537	301	403

5	Vattamon	7k41b	4058	4744	5392	2529	364	665	304	528
6	Pidavoor	7k42a	2235	1365	3057	723	175	248	156	225
7	Kundarapadi-Mulluvayal	7k43a	4658	4826	5243	1698	220	518	311	963
Total			**17678**	**18005**	**22482**	**8280**	**1336**	**2391**	**1344**	**2869**

Occupation Details in the Project Area

Sl No	Name of the Watershed	W/S Code	Agriculture	Private Sector	Public Sector	Govt. Employees	MGNREGS	Cooli/ Labours	Abroad	Pensioners	Un employees
1	Kadakkamon	7kl12a	488	220	70	174	372	1331	198	79	427
2	Piravanthoor -Makkulam	7k13a	507	315	60	199	434	717	224	135	362
3	Mukkadavu	7k14j	104	190	74	92	15	604	197	160	347
4	Kalayanadu	7k15a	380	777	176	490	21	1908	580	321	1091
5	Vattamon	7k41b	308	1268	298	643	308	2991	676	545	1119
6	Pidavoor	7k42a	583	404	134	317	416	947	634	306	527
7	Kundarapadi -Mulluvayal	7k43a	840	825	452	533	788	3097	708	421	1954

Anganavadi

Sl No	Name of the Watershed	W/S Code	No of Anganvadi	No of Children's	No of staffs	Toilet		Drinking Water		Building	
						Yes	No	Yes	No	Own	Rent
1	Kadakkamon	7kl12a	9	121	18	8	1	9	0	8	1
2	Piravanthoor-Makkulam	7k13a	10	68	20	10	0	9	1	7	3
3	Mukkadavu	7k14j	4	36	8	4	0	1	3	2	2

4	Kalayanadu	7k15a	1	15	2	1	0	1	0	0	1
5	Vattamon	7k41b	27	260	54	27	0	27	0	16	11
6	Pidavoor	7k42a	8	102	16	6	2	6	2	6	2
7	Kundarapadi-Mulluvayal	7k43a	24	315	48	24	0	21	3	22	2

Health and Hospital Facilities

The important public health management facility available for the project area is the Primary Health Centers and their Sub Centers under the LSGs of the Grama Panchayats of Vilakudy, Thalavoor, Pathanapuram, Piravanthoor and the Municipality of Punalur, and the Taluk Hospital at Pathanapuram. Though there are a number of private hospitals and dispensaries in the area, large scale and cheaper health service for the poor are provided by the above government health centers. It is estimated at nearly 25% of the average family budget of the local people goes for medical treatments. The unscientific changes in life style and dietary habits of the community have rendered the public health condition vulnerable.

Medical facilities in the project area

Sl No	Name of Watershed	W/S Code	Govt. Hospital (Nos)	Private Hospital (Nos)
1	Kadakkamon	7kl12a	0	0
2	Piravanthoor-Makkulam	7k13a	3	0
3	Mukkadavu	7k14j	1	0
4	Kalayanadu	7k15a	0	2
5	Vattamon	7k41b	3	8
6	Pidavoor	7k42a	1	0
7	Kundarapadi-Mulluvayal	7k43a	0	1

Banking Facilities

The common people of the area generally depend on cooperative banks for their banking services. Still, a big section of the watershed communities manage their financial transactions through the local branches of nationalized banks and certain private banks. Expansion of rubber cultivation in the locality has provided good support to the banking sector in the area. All workers associated with MGNREGS have established their finance management through the nationalized banks in the area or nearby. The money transactions of the Kudumbasree programme are also operated through the nationalized banks. A considerable section of the poorest of the area is under clutches of private money lenders. Money lenders from other states are also very active here.

Banking Facilities in the Watersheds

Sl No	Name of Watershed	W/S Code	Co. op. Banks	Nationalized	Private
1	Kadakkamon	7kl12a	0	1	7
2	Piravanthoor-Makulam	7k13a	3	1	1
3	Mukkadavu	7k14j	0	0	0
4	Kalayanadu	7k15a	0	0	0
5	Vattamon	7k41b	2	8	2
6	Pidavoor	7k42a	1	0	0
7	Kundarapadi-Mulluvayal	7k43a	2	2	1

Marketing Facilities

The Public Market at Pathanapuram and the market in Punalur Municipality are the major markets that serve the project area. Besides, small local markets are functioning in each Panchayat that come under the project area. The people of the area here occasionally depend on the markets in the neighboring places like Anchal and Kottarakara also. Centers of Vegetable and Fruit Promotion Council, Kerala-VFPCK- and HORTICORP, undertakings of Kerala Govt, also help the local farmers in marketing their produces. There are many whole sale and retail business establishments in all the eight micro Watersheds for marketing latex.

Nearest Major market	Kottarakara, Pathanapuram, Punalur, Anchal
VFPCK outlets	Piravanthoor,Elampal
Horti Corp.	Kollam, Ayoor

Transporting and Communications

It is through the project area that the Shenmcotta – Punalur- Kollam railway line, one the earliest of its kind, passes through. Punalur-Pathanamthitta state high way and the Punalur- Thirichendoor (TamilNadu) National High way pass through this area. The transport and communication network facilities are available in almost all places of the project area.

Sl No	Name of Watershed	W/S Code	NH(Nos)	PWD (Nos)	Panchayat (Nos)	Municipality (Nos)	Kacha Road (Nos)
1	Kadakkamon	7kl12a	0	7	36	0	20
2	Piravanthoor-Makkulam	7k13a	1	3	23	0	6
3	Mukkadavu	7k14j	0	2	2	9	0
4	Kalayanadu	7k15a	2	4	0	6	5
5	Vattomon	7k41b	1	2	4	15	5
6	Pidavoor	7k42a	0	3	5	1	17
7	Kundarapadi-Mulluvayal	7k43a	1	4	35	8	20

II.10 . Agriculture and Land Use

The locality of the project has a memorable past of glorious agriculture. The farmers in the area had been raising a wide range of Food Crops on a very large scale during the earlier periods. People in the area were appropriately concentrating on paddy. Three paddy crops were cultivated in most of the paddy lands in the locality. Those days, the farmers practiced local varieties and organic manure in their cropping systems. Most of the varieties were disease resistant and productive. But by 1985 rubber began substituting food crops in the area. Gradually rubber cultivation acquired such popularity and acceptance in the area that even paddy fields were converted to rubber. By this, rubber has established its supremacy in the area.

Simultaneously, farmers gave up the cultivation of food crops which was earlier considered as an activity of overriding poverty. Presently, most of the paddy fields remain fallow. Same is the case with dry land crops of the area also. This is the situation prevailing in the area since about 20-25 years. Such fallow fields must be reclaimed and brought under cultivation to enhance agricultural production.

Land Holding Size of Farmers

Sl No	Name of Watershed	W/S Code	0-5 Cents	6-50 Cents	51-250 Cents	251-500 Cents	Above 500 Cents
1	Kadaikamon	7kl12a	565	1221	168	13	4
2	Piravanthoor-Makulam	7k13a	545	1083	166	19	4
3	Mukkadavu	7k14j	288	765	68	15	5
4	Kalayanadu	7k15a	1177	2459	331	16	6
5	Vattamon	7k41b	1184	3303	845	27	5
6	Pidavoor	7k42a	684	943	585	32	7
7	Kundarapadi-Mulluvayal	7k43a	912	3348	702	48	8
Total			**5355**	**13122**	**2865**	**170**	**39**

Farmers Category in the Project Area

Sl No	Name of Watershed	W/S Code	Landless Farmers	Marginal Farmers	Small Farmers	Large Farmer
1	Kadaikamon	7kl12a	565	1389	13	4
2	Piravanthoor-Makulam	7k13a	545	1249	19	4
3	Mukkadavu	7k14j	288	833	15	5
4	Kalayanadu	7k15a	1177	2790	16	6
5	Vattomon	7k41b	1184	4148	27	5
6	Pidavoor	7k42a	684	1528	32	7
7	Kundarapadi-Mulluvayal	7k43a	912	4050	48	8

Land Use in the Watershed Area

Sl. No	Watershed Code	Paddy	Cashew	Paddy Converted to Vegetable & Tuber crops	Vegetable & Tuber crops	Paddy converted to Coconut	Coconut dominated mixed Crop	Paddy converted to mixed crop	Mixed Crop	Mixed Tree	Paddy converted to Banana	Banana	Paddy converted to rubber	Rubber	Cultivable waste Land	Total cultivated area	Built-up land	Paddy Converted to construction	River	Quarry Rock	Quarry land	Fallow land	Forest / Plantation
1	7kl12a				0.38		1.86	4.94		1.26	4.33		64.13	534.73	2.37	614	7.50		0.44	0.03	0.03		525
2	7k13a				0.18	2.38		10.68		26.06	21.07		54.98	955.65	12.03	1083	16.15	1.73	31.94	1.55	6.63		230
3	7k14j								5.67				16.25	296.08		318	0.67		3.33				185
4	7k15a	0.68						1.37	6.32	46.86	16.38		35.07	941.95	0.37	1049	7		29.94				462.06
5	7k41b					1.40		30.50		30.77	1.93	1.93	5.39	1166.07	24.01	1262	25.16	6.63	18.56			6.65	
6	7k42a	0.46			0.30	0.29		0.37	0.36	19.16	9.47	0.18	42.27	630.57	0.57	704	1.69		35.91	2.31			
7	7k43a	11.31	0.52	1.72	0.42		1.87		86.87	0.55	8.10		83.73	945.12	33.79	1144	33.73	2.35	2.45		12.65	0.82	

Cultivable Waste Land

Name of Watershed	Wasteland
Mukkadavu	1.Pananthankara, Vattakundayan 2. Chirapandra, Vettithitta, Poovannam moodu, Right side of Cheeyodu Thodu
Kalayanadu	Gracing Block, Salem Junction, Attumala, Chandanasseri
Vattamon	Plathara Ela
Kundarapadi -Mulluvayal	Manakara, Elambal, Cheeyodu, Kuttikonam Ela, Kalpalathinkal Ela
	Public Semitry, Veethamcode, Karimancode, Moovodu Ela, Puliyannoor Ela, Ambalapattu Ela, Chithrapuri, L. P. S Bhagam, kattavila
Piravanthoor- Makulam	Pirakadavu

Paddy Converted

Name of Grama Panchayat	Name of Watershed	Paddy	Present Land Use
Punalur Municipality, Thenmala, Piravanthoor	Mukkadavu	Two sides of Vattakundayam Thodu, Chaliyakara-Mukkadavu, Vilakuvattom, Ambalamkunnu, pananthamkara Ela, Vilakuvattom-Parappil, Chemmanthoor	Rubber, Banana, Aracanut, Mixed crops
Punalur Municipality	Kalayanadu	Koothanadi Ela	Rubber, Mixed Crops, Banana, Tapioca
		Poothappadappu Ela	
		Karakkadu Ela	
		Thamarampalli Ela	
		Placheri, Vattappada Pappangarcolony	
		Attumala	
Punalur Municipality, Vilakudi, Karavaloor	Vattamon	Manakkara, Cheeyodu, Ilambal, Madhuram mathi Ela	Rubber, Banana, Tapioca
Thalavoor, Melila, Vettikavala, Punalur Municipality, Vilakudi	Kundarapadi-Mulluvayal	Maravum vayal, Perumthottam Ela, Meenamcode, Vilakudi Panchayat	Rubber, Buildings, Houses
		Sarkar mukku, Ayithoor Ela, Near Banglavu Jn	Banana, Coconut, Tuber crops, Rubber

		Parayaruvila, parayaruvila thazhe bhagam, Chithrapuri,L P S	Banana, Tapioca, Rubber
		Kottavattom, Vilakudi	Rubber, Mixed Crops
Piravanthoor, Pathanapuram	Kadakkamon	Punnala, Thirunilam, Chembramon, Chambikunnu	Rubber
Piravathoor	Piravanthoor-Makkulam	Kottara Ela	Rubber
		Nilamel Ela	Rubber
		Adayarappu Ela	Rubber
		Kollala Ela	Banana, Aracanut, Rubber
		Chekam School Thazhe Bhagam Makkulam-Kurisadi Pinbhagam Thannikadavu, Chennalodu Piravanthoor, Poovannammoodu	Banana
		Chiranikkal Ela	Rubber, Banana, Tapioca
		Azhakath Padi Ela	Rubber
		Ambalam Bhagam Ela	Rubber
Punalur Municipality, Piravanthoor, Thenmala	Mukkadavu	Vattakodu, Chirappandra, Vettithitta, Poovannam moodu, Left side of Cheevodu Thodu, Nellamkulam	Rubber

II.11 . Present Level of Agricultural Management, Production and Practice

Since 1985, agricultural scenario in the locality has undergone serious shifts which are not understood to be desirable from the food security point of view. A big section of land owners and farmers gave up cultivation of food crops and choose rubber as the substitute. Commercial advantage of rubber was the major factor that motivated them to adopt such a shift. Even wet lands were converted to grow rubber at the cost of paddy. At present nearly 85% of the total farm lands in the area is under rubber while in the remaining area bears crops like plantain, tubers, coconut, vegetables etc.

Major Crops

1) Rubber

Rubber has become the major crop in the area. So many commercial firms like AVT, BEE BEE etc are maintaining very big rubber plantations in the area. Local farmers are also under the influence of the commercial value of rubber. Small and marginal farmers of the area have also switched to rubber cultivation in their homesteads. Attractive terms and financial assistances from the Rubber Board for popularizing rubber have motivated the farmers in the locality to try rubber at the cost of the food crops. 5522.17 ha of land in the project area is under rubber. A number of latex collection centers operated in the locality by private parties and by the Rubber Board itself have rendered marketing of the produce easy and profitable. Apart from posing threats to food security, rubber has caused a series of environmental issues like disintegration of local biodiversity, introduction of strange pests and insects.

2) Paddy.

Paddy cultivation has been confined to only 2% of the paddy fields in the area. Major portion of the paddy fields in the area is being either kept fallow or being converted for construction and for growing rubber and banana. About 1810 ha of paddy land, where annually two or three paddy crops were regularly grown before, has already been converted. The extent of paddy land that now remains suitable for paddy cultivation is only about 84.32 ha. Specific efforts need to be taken to retain this much of area available for paddy cultivation in days to come.

3) Coconut:

Though the climate and the soil of the Watershed are suitable for cultivating coconut, the famers have not adopted this as a major crop. Mono cropping of coconut is not a normal practice in the area. It had been managed as a crop supporting an intercropping system. But now Farmers have began neglecting intercropping in coconut gardens which are getting confined to homesteads only. Now, the total area under coconut is below 10 ha. Production of coconut in the area has to be encouraged under this project of IWMP.

4) Tubers and Vegetables

Though there exists enough potential for cultivating indigenous tubers like colocasia, yam, elephant foot-yam, sweet potato etc and for raising vegetables in the area, people of the locality are not adequately oriented to the practice. They generally depend on external markets for the produces. Even though VFPCK intervenes the scene, it seems inadequate to satisfy the demands. However, the cultivation of tubers and vegetables has to be encouraged and expanded for making better advancements towards local food security. This project provides ample opportunities for encouraging tuber linked production systems in the area.

5) Plantain

Plantain is mainly cultivated in the portions of wet land in the watersheds converted for the purpose. Earlier, nendran variety had been regularly cultivated in the dry land areas of the watersheds. But now the practice is very scarce. Banana cultivation in the wetland areas of the watersheds on lease basis by the land less poor is quite popular in the locality. This kind of lease method is common in the land holdings under young rubber plantation also. Unfortunately, the cultivators are inclined to use agro-chemicals in the cultivation of banana in an excessive manner. This accelerates the rate of environment pollution. The VFPCK has already taken the initiative to popularize banana cultivation in the locality. The banana based production systems can be supported under the Production Systems and Livelihood Systems components of this project.

6) Pineapple

In some of the rubber plantations, pineapple is found grown as an intercrop on commercial basis. But this has not yet been recognized as a profitable practice. Interested Self Help Groups from the project area can be motivated to attempt this practice to augment their household income. The area bears enough potential for growing pine apple as an inter crop or as a crop along borders of holdings.

7) Pepper

Pepper was once depended upon by the rural farm community of the area for increase income as the produce held very attractive price. At present, pepper is grown in a very scarce manner. Incidence of pests and diseases has rendered pepper cultivation a gloomy vocation. Climatic factors have also caused the decrease in pepper cultivation in the area.

8) Milk and Egg Production

Production of milk, meat and egg from the watershed area is in no way sufficient to meet the local demands. Though people in the area can attend to the related activities for generating better income and accessing indigenous and fresh food, they don't seem to recognize the values properly. They generally depend on external markets for the produces. This not only drains out the hard earned money of the rural community of the area but invites various health hazards caused by pollutants and chemical preservatives used in the produces from outside. Though MILMA and other cooperative societies are trying to help the community in the matter, external markets keep on establishing their relevance in the situation. This project can work out encouraging models of production systems to cater to the needs of the society as explained here.

Banks and Credit Services.

Service of many cooperative banks and commercial banks are available for the area. These banks provide sufficient credit facilities for business, housing, education etc to the people of the area. Most of the farmers here have taken either long term or short term loans from these institutions. The banks charge 4% to 8% of interest against these loans. Most of the farmers find it quite difficult to clear the debts and they are used to the practice of renewing earlier loans on higher interest rates. This practice entraps the poor community of the area in a vicious circle of debts. The situation very badly affects the economic stability of most of the households in the project area.

The Interventions of Governmental Agencies.

Though enormous development funds from government are being operated in the area for implementing various development schemes and projects, a comprehensive and integrated approach has not yet been developed and followed for making the efforts cost effective result oriented in a sustainable manner. Funds devolved to LSGs, various Development Departments, and funds available under various LADS can be converged proportionately on a need based manner to revitalize and help the agricultural sector. The role of organizations like NABARD, Horticorp, VFPCK, MILMA various cooperatives etc can be synchronized to better the situation of the farmers in the area.

THE IWMP aims at encouraging and supporting the development process initiated in the agriculture and allied sectors pertaining to the project area. The proposals included in this report will, no doubt, help materializing inclusive development of the area and regeneration of environment of the watershed entities.

Major Crops & Production

Name of the Watershed	W/S Code	Major crops	Production in year(Mt)
Kadakkamon	7kl12a	Coconut is cultivated in paddy field	113.925
		Banana is cultivated in paddy field	54.125
		Rubber	844.883
		Rubber is cultivated in paddy field	109.021
Piravanthoor-Makkulam	7k13a	Banana is cultivated in paddy field	262.625
		Coconut is cultivated in paddy field	145.775
		Tuber crops	1.44
		Rubber	1116.152
		Rubber is cultivated in paddy field	93.466
Mukkadavu	7k14j	Rubber is cultivated in paddy field	27.65
		Rubber	601.817
Kalayadu	7k15a	Paddy	1.904
		Banana is cultivated in paddy field	204.75

		Rubber	1471.41
Vattamon	7k41b	Banana	24.125
		Banana is cultivated in paddy field	24.125
		Coconut is cultivated in paddy field	85.75
		Rubber	1477.759
		Rubber is cultivated in paddy field	9.163
Pidavoor	7k42a	Banana	2.25
		Banana is cultivated in paddy field	118.375
		Paddy	1.278
		Coconut is cultivated in paddy field	17.7625
		Rubber is cultivated in paddy field	71.859
		Rubber	778.923
		Tuber crops is cultivated in paddy field	9
Kundarapadi-Mulluvayal	7k43a	Paddy	31.668
		Banana is cultivated in paddy field	101.25
		Rubber is cultivated in paddy field	142.341
		Rubber	1626.662
		Tuber crops	19.36

II.12. Ongoing centralized project in the Block Level -progress as on 2012-2013

Sl No	Project	No. of HH issued job card	No. of HH provide employment	No. of HH completed 100 days
1	MGNREGA	20953	12443	2804

IAY Physical Achievements as on 2012-2013

No of houses sanctioned	4258	No of houses completed	3814

Production system

Area under Paddy Cultivation at Present

Name of Watershed	Code	Paddy			Total (ha)
		Ist Crop	IInd Crop	IIIrd Crop	
Kadaikamon	7kl12a	0	0	0	0
Piravanthoor-Makulam	7k13a	0	0	0	0
Mukkadavu	7k14j	0	0	0	0
Kalayanadu	7k15a	0.68	0	0	0.68
Vattomon	7k41b	0	0	0	0
Pidavoor	7k42a	0.46	0	0	0.46
Kundarapadi-Mulluvayal	7k43a	11.31	0	0	11.31

Irrigation

Existing area under irrigation					
Sl No	Name of Watershed	Well (ha)	Pond (ha)	Canal (ha)	Total irrigated Area (ha)
1	Kadaikamon	118	2.5	1.5	122
2	Piravanthoor-Makkulam	126	3	2	131
3	Mukkadavu	83	1	0	84
4	Kalayanadu	250	3	2	255
5	Vattomon	280	5	0	285
6	Pidavoor	179	9	0	188
7	Kundarapadi-Mulluvayal	200	8	2	210

II.13. Animal Husbandry and Dairying

Animal husbandry and milk production had been one of the chief means of livelihood for the people of the locality till about 1985. With the decline of paddy cultivation in the areas, scarcity for paddy straw, a prominent cattle feed, emerged as a constraint in livestock management. Shrinking of grazing fields consequent on the excessive fragmentation of dry land and the exorbitant hike in costs of livestock management have affected the sector very badly. But the situation can be corrected and stabilized under this project. The potentials of the area suitable for animal husbandry and dairying can be well utilized to ensure sustained production of milk by ensuring the active involvement of Groups constituted under this project.

Livestock status in the project area

Sl No	Name of Watershed	W/S Code	Cow	Buffalos	Goat	Ox	Cock	Duck
1	Kadaikamon	7kl12a	169	0	314	29	3010	337
2	Piravanthoor-Makulam	7k13a	134	11	219	4	2940	91
3	Mukkadavu	7k14j	84	2	176	4	1468	99
4	Kalayanadu	7k15a	598	14	323	6	2510	171
5	Vattomon	7k41b	160	14	219	14	2715	155
6	Pidavoor	7k42a	241	15	262	9	2725	136
7	Kundarapadi-Mulluvayal	7k43a	458	9	510	24	5258	369
Total			**1844**	**65**	**2023**	**90**	**20626**	**1358**

Milk Marketing Society and Production

Sl. No	Name of Watershed	W/S Code	Milk society/ Collection center	Production /Day	
				Milk (Ltr)	Egg (Nos)
1	Kadaikamon	7kl12a	0	283	1017
2	Piravanthoor-Makulam	7k13a	1	675	773
3	Mukkadavu	7k14j	0	133	297
4	Kalayanadu	7k15a	1	662	1691
5	Vattomon	7k41b	0	364	919
6	Pidavoor	7k42a	1	520	1220
7	Kundarapadi-Mulluvayal	7k43a	1	1739	2000
Total				**4376**	**7917**

II.14 . Type of Soils in the Watershed Area

Name of Watershed	W/S Code	Soil maping unit
Kadaikamon	7kl12a	K09, K32, K35
Piravanthoor-Makulam	7k13a	K09, K35
Mukkadavu	7k14j	K09
Kalayanadu	7k15a	K09, K12
Vattomon	7k41b	K09, K12
Pidavoor	7k42a	K09, K12
Kundarapadi-Mulluvayal	7k43a	K09, K12

Soil maping unit	Description major soil	Classification major soils	Inclussions	Area (ha)
K09	Very deep, well drained, gravelly clay soils, with moderate surface gravelliness on moderately steeply sloping laterite mounds, with moderate erosion associated with deep , well drained, gravelly clay soils on gently slopes	Clayey-Skeletal, Kaolinitic, Oxic Humitropepts Clayey-Skeletal, Kaolinitic, Ustic Haplohumults	Clayey-Skeletal, Kaolinitic, Ustic Kandihumults, Fine-loamy, Mixed, Typic Kandihumults	5913.01
K12	Very deep, well drained, gravelly clay soils with moderate surface gravelliness on gently sloping midland laterites with valleys of southern Kerala, with moderate erosion, associated with very deep, well drained, clayey soils	Clayey -Skeletel, Kaolinitic, Ustic kanhaplohumults, Clayey, Kaolinitic, Typic kandiustults	Fine-Loamy , Mixed, Aquic Ustifluvents Clayey-Skeletal, Kaolinitic, Typic kanhaplustults	1837.12
K35	Deep well drained, gravelly clay soils with coherent material at 100 to 150 cm on moderately sloping isolated hillocks, with severe erosion, associated with moderately shallow,well drained, gravelly loam soils with coherent material at 50 to 75 cm on very gentle slops, moderately eroded	Clayey-skeletal, kaolinitic Oxic Humitropepts, Fine-loamy, mixed, Oxic Humitropepts	Clayey-Skeletal mixed, ustic humitropepts Clayey, mixed, Ustic Haplohumults	241.82
K32	Deep, well drained, loamy soils on gently sloping low hills with isolated hillocks, with moderate erosion; associated with deep, well drained, loamy soils with coherent material at 100 to 15) cm on moderate slopes, Severely eroded.	Fine-loamy, mixed, Ustic Humitropepts Fine-loamy, mixed, Ustic Haplohumults	Fine, mixed, Ustic Humitropepts Clayey-skeletal, mixed, Ustic Humitropepts	559.23

(Source: KSLUB)

II.15. The major problems identified in the project area

Area covered under the watersheds cluster faces a series of serious issues affecting its sustainability and productivity. Some of the major problems have been identified through an elaborate process of PRA, FGD and field survey. Following are some of the general issues noticed in the area with respect to the prominent concerns of this project.

- Watershed deterioration due to soil erosion
- Excessive runoff during monsoons leading to loss of water & soil

- Water scarcity during off monsoon spells
- Encroachment of drainage courses
- Environment pollution
- Uncontrolled conversion and fragmentation of land
- Biodiversity degradation
- Uncontrolled sand and mud extraction from streams and wetlands
- Scarcity for agricultural labourers
- Fallowing
- High cost of production and incidence of pests and diseases
- Inconsistent production systems
- Non availability of various critical inputs required for improving the production aspects of agriculture and allied areas.

II.16 . Institution Building and Project Management

State level Nodal Agency

The nodal agency for the state (SLNA) has been formed in the state consisting of the Agricultural Production Commissioner as the Chairman, the Principal Secretary to the Government for local self-government as the Co- chairman and Rural Development Commissioner as the Chief Executive Officer and the department heads of the governments as members.

The state nodal agency is responsible for preparing the state level perspective and the strategic plan for watershed development. It is also responsible for the submission of them to the central government and getting approval for the same.

District level

District Planning Committee (DPC) is responsible for district level planning, implementation and monitoring of the project. DPC is supported by District Coordination Committee. Final approval of the Watershed projects in the district, integration of

different technologies and programmes with IWMP and project monitoring are done at this level. A Watershed Cell Cum Data Centre (WCDC) is also functioning at the district level to help the District Coordination Committee.

Block level

The Project Implementation Agency-PIA- of this project under IWMP is Pathanapuram Block Panchayat as the major share of the project area belongs to this Block Panchayat. PIA is responsible for the proper formulation and implementation of the project as stipulated in the Common Guidelines. A Block Level Coordination Committee (BLCC) has been formed for the timely implementation of the project and to provide help to the PIA in technical and administrative matters related to the project.

Watershed Development Team (WDT)

A Watershed Development Team (WDT) has been formed and the same has started working with the PIA. The WDT provides the PIA and Watershed Committees with required technical support.

Technical Support Organization (TSO)

The PIA has utilized the Technical support of the Grameena Patana Kendram, a TSO empanelled by the SLNA to formulate this project report.

Project Level

A Watershed Committee will be constituted in every watershed covered under the project with all rights and powers to plan and implement the projects under IWMP in a most decentralized and transparent manner. The President of the Panchayat with major portion in the watershed will be the chairperson of the watershed committee. There will be adequate representation of the SHGs and UGs formed in the areas. .

Self Help Groups

Individuals belonging to various sections of the watershed community like asset less poor, small and marginal farmers, agricultural labourers, women, SCs and STs etc. depending on the watersheds for their livelihood are organized into Self-Help

Groups-SHGs-having homogeneity and common interests. Each Group shall be of 8-20 individuals. Properly performing SHGs will be provided with a Revolving Fund on the basis of grading and raking of them.

User Groups

The individuals holding land within the watershed areas and those who are most benefited by each watershed development activity are organized into User groups-UGs- on the basis of homogeneity and interests. Management of various Production Systems and Micro-Enterprises shall be the major concern of these groups. The groups benefited from a Resource developed under the project shall execute a Resource –Use Agreement based on the principles of equity and sustainability. The project sets apart a sum for providing Grants to excelling producers and entrepreneurs.

Watershed Sabha

The Watershed Sabha, sometimes otherwise called Watershed Gramasabha, is comprised of all the adult members of the watershed community. The Watershed Gramasabha will meet four times a year. Approval of Annual Action Plan, selection of beneficiaries, appraisal of the progress of the projects and social audit are the main responsibilities of the Gramasabha.

II.17 . Project Period and Management of the Project

The project period is divided in to three phases

Phase No I	Preparatory phase	1Years
Phase No II	Watershed Work phase	3 years
Phase No III	Consolidation & Withdrawal phase	1years

1. Preparatory phase

This phase is mainly concerned with the planning process. The planning of watershed development should be completed within six months of the commencement of the project.

Major activities in this phase are:

1. Deployment of the Watershed Development Team
2. Formation of Self Help Groups, User Groups and the Watershed Committee
3. Conduct of various Surveys, PRA, Transect Walks and development of data base- Part of DPR Preparation
4. Institutions Building and Capacity Building
5. Taking up Entry point activities
6. Preparation of DPR Annual Action Plan

2. Watershed Work phase

3 years succeeding the planning phase is termed as “implementation phase”. All the activities contained in the approved DPR must be completed in this phase. Ridge to Valley approach has to be followed for the implementation of the activities. All the related contribution from the community shall be collected and deposited in to separate Account operated for the Post project Management of assets created under the project, the Watershed Development Fund-WDF.

3. Consolidation & Withdrawal phase

This covers a period of about 12 months that precede the closure of the project. Completion of all the activities initiated in the watershed area, evolving a plan for Post Project Management of the assets and systems created under the project, institutionalization of all the people’s organizations and groups, up scaling of all the successful agricultural and nonagricultural activities encouraged under the project, preparation of the completion report specifically bringing out the merits and demerits of each initiative in the watershed area etc are the major steps under this phase.

Contribution from the Community

The individuals and groups benefited directly from watershed works shall contribute to the Post Project Management of assets created under the project. The contribution shall be in cash, kind or labour. The contribution shall be a minimum 10% of the cost of NRM works executed on private lands. However, in case of SC/ST, small and marginal farmers, the minimum contribution

shall be 5% of the cost. Contribution in cash and kind shall be collected in advance of the related activity. In the case of Community Works, the contribution is realized as Resource Use Fees.

In the case of cost intensive farming systems like such as Aquaculture, Horticulture, Agro-Forestry, Animal Husbandry etc. on private land directly benefiting the individual farmers, the contribution of farmers will be 40% for General category and 20% for the General and 20% for SC & ST beneficiaries and the remaining cost from the activities is 60% for the General and 80% for the SC/ST category will come from the project funds subject to a maximum limit of an amount equal to double of the standard unit cost norm for Watershed development project.

Watershed Development Fund (WDF)

A separate fund called Watershed development Fund-WDF- is maintained under the project. One of the mandatory conditions for the selection of Watersheds under the programme is the readiness of the concerned watershed community to contribute to the Watershed Development Fund (WDF). All the receipts including the beneficiary contribution from the watershed community shall be deposited in the WDF. In the case of contributions in kind and labour, amount equal to the value of the same shall be drawn from the Project Fund Account and deposited in the WDF. A clear procedure with regard to the management of the WDF during the Post Project Period shall necessarily be laid down in the consolidation phase itself.

II.18 . Capacity Building and IEC

One of the main aspects of IWMP consists in the building up the capacity of the watershed community to plan, implement, monitor and evaluate various development activities under the watershed project. Tendative Action Plans for the purpose have been prepared. Trainings in the Technological, Administrative and Financial aspects of the project have been conceived in the schedules. Various stakeholders related with the project shall comprise the clientele groups to be trained. IEC principles are also taken into account along with the capacity Building process.

II.19. Training Programme

Sl No	Subject Title	Target Group	Budget (in Lakhs)				
			I st Year	II nd Year	III rd Year	IV th Year	Total
1	Awareness Programme of IWMP	General people and Watershed Committee and officials	2.25	1.5	.5	.5	4.75
2	Awareness Programme of PSM	SHGs, UGs and Beneficiaries	2.25	1	1	.5	4.75
3	Concept of Watershed Management, Roles and Responsibilities	Watershed Committee and Officials	2	1	.5	0	3.5
4	Empowering Peoples of representative and Strengthen of PRIs	District , Block, Grama Panchayat Members	1.5	1	.5	0	3
5	Concept of Watershed Management, Roles and Responsibilities and Sustainable Development	Implementing Officers, other officials and stake holders	1	1	.5	0	2.5
6	Awareness Programme of Livelihood Activities , Better Management Accounting Method	User Group, SHGs, Watershed Committees	1	1.5	1	0	3.5
7	Management and Important of Revolving Fund , Accounting, Financial Discipline	SHGs	1	1	.5	0	2.5
8	Exposure Visit	SHGs, Watershed Committees, UGs	1	1	.5	0	2.5
9	Training for Promotion of Micro Enterprises and Value Addition Units (Skill Training)	UGs and SHGs	0.5	0.75	.5	.25	2
10	Agriculture and Animal Husbandry Management Workshops(Skill Training)	SHGs , UGs and Beneficiaries	0.5	0.75	.5	.25	2
Total			**13**	**10.5**	**6**	**1.5**	**31**

Training Target- Details

Sl no of subject title.	I st Year		II nd Year		III rd Year		IV th Year		Total	
	No of training	No of participants	No of training	No of participants	No of training	No of participants	No of training	No of participants	No of training	No of participants
1	9	450	8	360	2	100	2	100	21	1010
2	8	400	5	250	5	250	2	100	20	1000
3	5	150	4	120	1	60	0	0	10	330
4	5	150	3	90	2	100	0	0	10	340
5	4	180	4	180	2	100	0	0	10	460
6	5	200	8	320	5	200	0	0	18	7205
7	5	250	5	250	2	100	0	0	12	600
8	0	0	2	120	2	80	0	0	4	200
9	4	120	5	150	4	120	2	60	15	450
10	4	120	5	150	4	120	2	60	15	450

Information Education and Communication (IEC) Plan

1	Street Play	Public	3	1	0	0	4
2	Watershed Awareness Programme Through School Children's Slide shows Presentation competition	School Level	1	1	0.3	0	2.3
3	Road Shows of Watershed	Public	1	1	0.5	0	2.5
4	Camping through Poster Sicker, Banner , Calendar, Slides etc	Community	1	1	0.5	0	2.5
5	Hand Books, Broachers	Community	1	0.5	0.5	0	2
6	Quiz Programme, Competition and Mela	Students, Young people, Women Clubs etc	0.5	0.5	0.5	0.5	2
Total			**7.5**	**5**	**2.3**	**0.5**	**15.3**

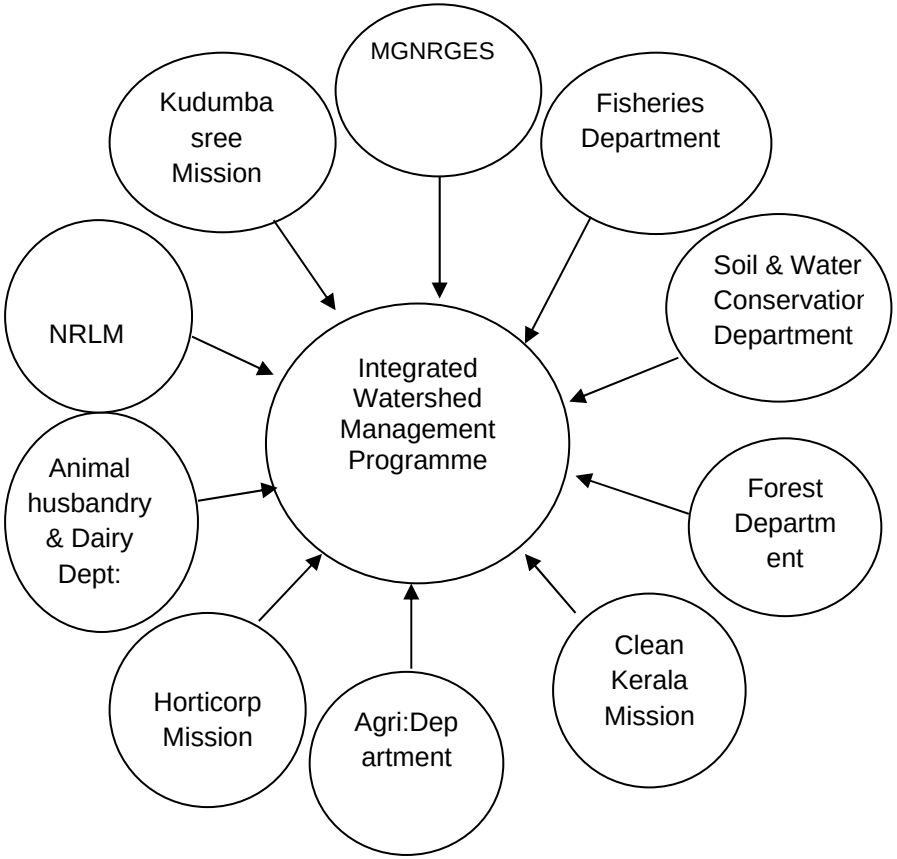
II.20. Convergence

Since IWMP contains the perspective of holistic development of the watersheds and the related communities, the project fund derived on the cost structure followed for the programme may not be sufficient to take up all activities inevitable for realizing the objectives conceived. Under the circumstance, it becomes essential to converge suitable components from other ongoing parallel programmes of the State and Central Governments operationalised in the areas with the action plans of IWMP for better and more sustainable results. In fact, the scope of Convergence of IWMP and MGNREGA is wonderful.

So also, components from projects implemented in the areas by the development agencies/departments like Soil and Water Conservation, Minor Irrigation, Agriculture, Animal husbandry, Dairy Development, Fisheries, Social Forestry etc can be very effectively converged on the IWMP platform. Support of Literacy Mission, KudumbaSree etc. can also be utilized for making IWMP more participatory, inclusive and effective.

The Neighbourhood Groups, Self Help groups, Users Groups, Watershed Committee, the related officials, the PRIs etc need to take joint initiative to work out a Convergence Plan for he areas. The Block Level Coordination Committee can take very effective steps in this line. More effective convergence plan can be evolved through an elaborate PRA process on the neighbourhood area basis. This will also help formulating more realistic and need based labour budgets for MGNREGAs with long term applicability acceptability in the concerned areas.

Integration



II.21.Convergence Plan

Kadakkamon Watershed				
Project Items	**Unit Rate**	**Unit**	**Estimate Amount**	**Linked Department**
Terracing	400/cent	2000 cent	8,00,000	MGNREGS, Soil & Water Conservation Dept.
Rain Pit	43/Nos	3900 Nos	167,700	MGNREGS, Soil & Water Conservation Dept.
Fodder Cultivation	391/Cent	1000 Cent	391,000	Dairy Dept. &MGNREGS and Agri. Dept.
Afforestation	35/plant	1800 Nos	63,000	Social Forestry Department&MGNREGS
Thodu cleaning silt removing	225/m	3000 m	63,00,000	MGNREGS, Soil & Water Conservation Dept.
Piravanthoor-Makkulam Watershed				
Project Items	**Unit Rate**	**Unit**	**Estimate Amount**	**Linked Department**
Terracing	400/cent	3000 Cent	12,00,000	MGNREGS, Soil & Water Conservation Dept.
Rain Pit	43/Nos	2500 Nos	107,500	MGNREGS, Soil & Water Conservation Dept.
Fodder Cultivation	391/Cent	1200 Cent	469,200	Dairy Dept. &MGNREGS and Agri. Dept.
Afforestation	35/plant	1500 Nos	48,000	Social forestry Department&MGNREGS
Pond renovation		1 No	1,00,000	MGNREGS
Thodu cleaning silt removing	225/m	3500 m	7’350’000	MGNREGS

Mukkadavu Watershed				
Project Items	**Unit Rate**	**Unit**	**Estimate Amount**	**Linked Department**
Terracing	400/cent	2200 Cent	880,000	MGNREGS, Soil & Water Conservation Dept.
Rain Pit	43/Nos	3000 Nos	129,000	MGNREGS, Soil & Water Conservation Dept.
Fodder Cultivation	391/Cent	1000 Cent	391,000	Dairy Dept. &MGNREGS and Agri. Dept.
Afforestation	35/plant	4000 Nos	140,000	Social forestry Department&MGNREGS
Thodu cleaning silt removing	225/m	750 m	15,75,000	MGNREGS
Kalayanadu Watershed				
Project Items	**Unit Rate**	**Unit**	**Estimate Amount**	**Linked Department**
Terracing	400/cent	3200 Cent	12,80,000	MGNREGS, Soil & Water Conservation Dept.
Fodder Cultivation	391/Cent	2500 Cent	977,500	Dairy Dept. &MGNREGS and Agri. Dept.
Rain Pit	43/Nos	500 Nos	21,500	MGNREGS, Soil & Water Conservation Dept.
Afforestation	35/plant	3000 Nos	105,000	Social forestry Department&MGNREGS
Thodu cleaning silt removing	225/m	4000 m	84,00,000	MGNREGS
Vattamon Watershed				
Project Items	**Unit Rate**	**Unit**	**Estimate Amount**	**Linked Department**
Terracing	400/cent	3000 Cent	12,00,000	MGNREGS, Soil & Water Conservation Dept.
Rain Pit	43/Nos	2500 Nos	107,500	MGNREGS, Soil & Water Conservation Dept.
Fodder Cultivation	391/Cent	1200 Cent	469,200	Dairy Dept. &MGNREGS and Agri. Dept.
Afforestation	35/plant	1500 Nos	52,500	Social forestry Department & MGNREGS
Thodu cleaning silt removing	2100/^{m2}	2500 m	52,50,000	MGNREGS

Pidavoor Watershed				
Project Items	**Unit Rate**	**Unit**	**Estimate Amount**	**Linked Department**
Terracing	400/cent	2000 Cent	800,000	MGNREGS, Soil & Water Conservation Dept.
Rain Pit	43/Nos	3000 Nos	129,000	MGNREGS, Soil & Water Conservation Dept.
Fodder Cultivation	391/Cent	1000 Cent	391,000	Dairy Dept. &MGNREGS and Agri. Dept.
Afforestation	35/plant	5000 Nos	175,000	Social forestry Department & MGNREGS
Thodu cleaning silt removing	225/m	500 m	10,50,000	MGNREGS
Kundrapadi –Mulluvayal Watershed				
Project Items	**Unit Rate**	**Unit**	**Estimate Amount**	**Linked Department**
Terracing	400/cent	3000 Cent	12,00,000	MGNREGS, Soil & Water Conservation Dept.
Fodder Cultivation	391/Cent	2500 Cent	977,500	Dairy Dept. &MGNREGS and Agri. Dept.
Rain Pit	43/Nos	250 Nos	10,750	MGNREGS, Soil & Water Conservation Dept.
Afforestation	35/plant	3000 Nos	105,000	Social forestry Department & MGNREGS
Pond Renovation	50000/Nos	3 Nos	150,000	MGNREGS

II.22. Major Conservation Interventions Proposed

I. Natural Resources Management

The following are some of the major interventions proposed in this report with a view to conserve and develop the natural resources in the area for bringing out the benefits conceived in the objectives of the project.

Rain Pits /Recharge Pits

Pits of appropriate dimensions are made at suitable locations in the watersheds for augmenting recharge of ground water through enhanced percolation of rain water. These pits may also be termed as rain pits. This is an intervention suitable for areas with moderate slopes. Plant Basins can also act as efficient recharge pits. Number and spacing of the pits shall be conducive to the land use in each holding. Rain pits are not recommended for areas with higher and for locations under water logging.

Terracing

enhancing recharge of ground water. Usually Table top, inwardly inclining and outwardly inclining are the three types of terraces in our areas. Inwardly inclined terracing shall not be practiced in steep slopes and in landslide prone areas. Narrow terraces are recommended for higher slopes and wider terraces are suited in moderate slope. But, practice of forming Terraces in highly sloping areas shall be discouraged for the threat of landslides/slips.

Stone Bunds

Contour bunding is one of the simplest methods of soil and water conservation. Stone bunding is a suitable method for areas where stones are available. The cost of construction with regard this structure can be considerably reduced if jungle stones are used. These kinds of bunds are effective in land under higher slopes where runoff velocity is greater. Spacing of the bunds depends on the slope of the land. Fodder grass, vetiveror pineapple could be planted on the bunds.

Earthen Bunds

Earthen bunds of varying dimensions are proposed for lands with slopes up to about 20%. In higher slopes earthen bunds may not last and may require frequent and costly maintenance. Earthen bunds are to be provided along contours to enhance their longevity and function. They can also be made in the form of Column Bunds, Batter Bunds, Circular Bunds, and Crescent Bunds etc as the local conditions permit.

Live Fencing

Live Fencing is a multi-purpose method with regard to conservation and development of soil. Selection of suitable sps will provide green manure for enriching soil. Live fences can control evaporation from topsoil by controlling currents of hot air during summer. Also, the fence can control to a considerable extend destructive encroachment of stray animals etc into farm lands. Improvement of biomass and protection of vegetation/crops from various pests by hosting natural predators are other important attributes of the intervention. Cassia, Hibiscus, Lettuce, Glyricidia, Vetiver etc can be tried as per local preference and suitability with land use.

Tree Basins

Formation of tree basins is an effective method to preserve rain water that falls on the canopy. This is normally a circular bund around the tree/coconut palms. In sloppy land this can be formed in a crescent shape downstream of the stem base. The basin shall be covered with any organic mulch. This is much useful in coconut plantations.

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, breech 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 considered for the purpose. As far as possible, vegetative support is to be provided to the Gully Banks instead of bluntly choosing structural works.

Renewal of Old Stone Bunds

Renewal of old stone bunds could be done by removing the loose stones of the top layers(15 cm from top) and filling back and leveling the surface with new set of stones. The renewal work could be done at the top portion, of the existing bund, with a dimension of 15 cm breadth and 45 cm height.

Compost Pit

Composting is an effective method to decompose organic household wastes. This will serve dual purposes such as controlling pollution and generation of organic manure. The compost pits can be of suitable dimensions on the basis of site conditions. A pit size of 3MX1.5MX1M may be ideal for management.

Vermi Compost

Vermi compost is an effective method for making compost at the house hold level. Initially a rectangular structure with dimensions of 9.4 x.45 x .30 m with channels along the bottom side above the ground is built in a. Once the construction is complete, earth worms could be deposited in the organic waste filled in the tank. It should be turned around periodically. The seepage water from the tank is a good source of nutrients and can be collected in a container and can be sprayed to crops.

Well Recharging

Years of neglect of water conservation practices in the area have caused water scarcity during summer. Though the watershed receives about 2500 mm rain fall annually, water scarcity is acute in most of the areas. Most of the wells in the upper areas of the watersheds remain dried up for months together every year. This is an indication of the lowering of water table in the areas due to poor recharge. Additional measures to recharge the wells can be taken up in the area to get around the problem. Roof water can effectively be directed to recharge/percolation pits in the upstream sides of the wells to help recharge. Charcoal, pebbles, gravel and sand can be used in the filter mechanism. Mixing of the water coarsely collected in the locations shall not be directly guided into the wells as it may pollute the ground water stock of the area in long run. A filtering mechanism can also be provided in the case of the water being polluted by solid wastes.

Portable Biogas Plant

Our fuel reserves are not at all sufficient to satisfy the demand. Increase in population and revolutionalisation of cooking styles of rural households together have widened the gap. It is high time for us to think of seeking alternate energy sources for cooking purposes. Generating cooking gas from domestic organic wastes can be a better option. The practice will also help controlling environment pollution by way of disposing household wastes in a productive manner. Small portable units of devices for the purpose will be an eye opener in the matter. This project proposes to provide some of the households in the area with portable biogas units.

II.Production System, Micro Enterprises and Livelihood Activities

Banana Cultivation

Banana cultivation is a promising activity for farmers in the area. Fallow land in the watersheds can be made productive through banana cultivation. The organic wastes available from the households of the project area can be converted as compost and the same can be used for the crop. Various Social Groups in the area can concentrate on banana cultivation for enhancing their household income.

Coconut farming

Though the name Kerala is linked much with the “Kera”(coconut), a pride of every Keralite, the status of *kera* is getting bleak over the years. It is facing a severe crisis across Kerala. Major issues are diseases like Kattuveezhcha (Rootwilt) and pests like coconut mite. Lack of good quality seed and higher charges involved in harvesting of coconuts are other threats to the sustenance of the crop. Coconut and coconut products have great market potential in India and abroad. Nearly 30 different products can be made out of coconut and its palms. It will serve as a highly benefitting commercial crop if managed properly. There need to be a multi prolonged approach covering supply of quality seedlings, provision for better means to control pests and diseases, ensuring the availability of labourers etc to revive this crop. This project envisages supporting coconut growing in the area under its Production Systems component.

Tuber Crops

Tubers are nutrient rich food big demand. Cultivation of tubers can substantially increase food productivity of the watershed by utilizing all the suitable land for the purpose. Both mono-cropping and inter cropping methods can be followed in the case of tubers. It can be grown organically and is one free from contamination by agrochemicals. Cultivation of tubers also helps improving physical conditions of soil. Farmers interested in growing tubers can get assistance under this project.

Vegetable Cultivation

Vegetable cultivation has not yet been seriously considered by the farmers in the project area. The people of the area mainly depend on Tamil Nadu for vegetables. But these vegetables that arrive from outside are highly contaminated with toxic agrochemicals and preservatives. Such vegetables will cause serious health problems in the people who regularly consumption them. Production of required vegetable locally is single way out. This project provides assistance for farmers and social groups interested in vegetable cultivation under its Production Systems and Livelihood Systems Components.

A variety of vegetables could be cultivated in rooftops, poly bags, pots and back yards and etc. It could also be upgraded to commercial level. The landless poor can grow vegetables in lease land.

Tailoring Unit

It is a much demanded and profitable craft that can be practiced at household and group level. The benefit of this program should be made available to young ladies who have been trained in this craft. The selection of beneficiaries of this must be on the basis of the principles and practices envisaged in the related guidelines issued by SLNA for the purpose. Required grading and ranking of the Groups shall be done on the basis of their performance before identifying the beneficiary groups for providing assistance under the livelihood component. Required marketing system for selling the products/service shall be worked out through the combined efforts of PIA, WDT and Watershed Committee before commencing the livelihood systems.

Poultry

Back yard Poultry is identified as a potential livelihood for the poor households in the project area. Interested Self Help Groups can be motivated to take up small poultry units under this project. Groups consisting of members from landless, SC/ST, OBC, BPL etc categories shall get preference in the process of selecting eligible Groups

Rabbit rearing

Rabbit rearing is turning out to be a very lucrative enterprise now as the demand for rabbit meat is ever in the increase. Eligible Self-Help Groups identified on the basis of performance grading and ranking can be given assistance under this project as per provisions in the guidelines.

Goat Rearing:

Goat Rearing on homestead and group basis is a profitable livelihood activity that can support their rural poor in the project area in enhancing household income in a sustainable manner As the gestation period is short and the number of the lambs per litter is usually two or more, goat rearing can be a very useful income generating livelihood for the area. Groups eligible on the basis of grading and ranking can be given assistance under the project as per the guidelines.

Hot Box:

Fire wood is the popular fuel used for cooking in the area. But most of the families/households depend on LPG for cooking. Both these energy sources are getting exhausted due to their excessive and unlimited use. This serious threat that mankind is going to face in the recent future. This would lead to a very miserable situation of scarcity of cooking fuel in the project area also. Under the circumstance, this project advocates the popularization of non-conventional energy like solar energy for cooking. Hot box is found to be ideal one for demonstrating the financial as well as environmental advantages involved in making use of non-conventional forms of energy for cooking purposes. The persons from households supplied with hot boxes shall be oriented/ trained in the management and maintenance of the hot boxes.

Coconut climbing devices:

The shortage of skilled labourers for undertaking the harvest of coconuts has grown as a big problem faced by coconut growers in the area. Providing the interested Community Groups with adequate number of the climbing device developed by certain agencies on the basis of the recognition of the Dept of Agriculture can be a great relief to the affected farmers. Interested persons from concerned Self Help Groups can be given required training in using the device. This can be a source of income for those members working in association with concerned Self Help Groups.

Cattle shed.

Concern and conditions for hygiene is considered as very important aspects of good Livestock Management Systems. Clean and convenient cattle sheds are indispensible for making livestock management by the SHGs attractive, safe and profitable. But, many of the cattle sheds in the area are found to be in an unhygienic and dilapidated condition. Hence this program envisages a plan to provide clean and hygienic cattle sheds to the promising farmers in the locality involved in cattle rearing. Assistance under this project is provided on Group basis as seed money.

II.23. Entry Point Activity

Various Entry Point Activities have been selected in connection with this project. The execution of the EPAs shall be a valuable lesson and experience for the concerned communities in the participatory aspects contained in the mode of implementation stipulated for various development activities envisaged under IWMP. The PRA and FGD etc were very useful in the process of identifying the EPAs too. The details of EPAs are tabulated hereunder.

All of the Works identified as Entry Point Activities are related with the protection and development of natural sources in the project area. Works required for the development of certain streams and ponds have been included under this. Some wells have also been identified for providing with them suitable measures to enhance recharging. These works will be very much beneficial to most of the members in Groups. These water sources developed under this component can be utilized for raising suitable crops

including vegetables in the adjoining land holdings. Each of these works will be carried out by the concerned Users' Group and Self Help Groups constituted for the purpose. These Groups will continue to maintain and manage these structures during the post project period also.

Sl no	Name of watershed & code	Name of entry point activity suggested	Grama Panchayat	Area benefited/no. of beneficiaries	Type of work	Amount
1	Piravanthoor – maakulam	Mukkadavu – piravanthoor thodu –side protection& check dam	Piravanthoor	100 ha	60m side protection, check dam and bio fencing	769000
2	Mukkadavu	Roof water harvesting	Punalur municipality	Vilakkuvattom LPS		153000
3	Pidavoor	Thiruvilangonappan Temple well renovation	Thalavoor gp	1ha	Well widening, platform and side protection	85000
4	Vattamom	Vettipuzha thodu	Punalur municipality	320 ha	Silt, waste, and light jungle removal	732000
7	Kalayanadu	Valakodu stream	Punalur municipality	250 ha	Silt, waste, and light jungle removal	572000
8	Kundrapadi-mulluvayal	Roof water harvesting	Thalavoor	Block office		200000
9	Kadakkamon	Well recharging	Piravanthoor	40 houses	Water conservation system	400000
10	Common to all watersheds	a)Horticulture b)Hot box c)Fodder Cultivation		1200 nos 1200 nos 2.25ha		368000 300000 125190
TOTAL						**37,04,190**

Natural Resource Management													
Annual Action Plan For Watersheds Cluster in Pathanapuram													
SL No	Activities (NRM)	unit	Rate in Rs	Physical	Financial	Ist year		IInd year		IIIrd year		Ivth Year	
						Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial
A	**Land Development**												
1	Agroforestry	Nos	60	38,400	2,304,000	7,680	460,800	13,440	806,400	9,600	576,000	7,680	460,800
2	Live Fencing	RM	13	50,800	660,400	10,160	132,080	17,780	231,140	12,700	165,100	10,160	132,080
B	**Soil & Moisture Conservation**				-	-	-	-	-	-	-	-	-
3	Earthen Contour Bund	RM	70	21,650	1,515,500	4,330	303,100	7,578	530,425	5,413	378,875	4,330	303,100
4	Stone Contour Bund	M2	114.84	21,800	2,503,512	4,360	500,702	7,630	876,229	5,450	625,878	4,360	500,702
5	Bit Trenches	RM	80	39,400	3,152,000	7,880	630,400	13,790	1,103,200	9,850	788,000	7,880	630,400
6	Agrostology Along Contour	RM	8.8	39,650	348,920	7,930	69,784	13,878	122,122	9,913	87,230	7,930	69,784
C	**Gully Plugging**				-		-		-		-		-
7	Check Dam	Nos	7500	280	2,100,000	62	465,000	97	727,500	69	517,500	52	390,000
8	Cross Bar	Nos	4000	260	1,040,000	57	228,000	96	384,000	58	232,000	49	196,000
D	**Water Harvesting Structure (WHS) New**				-		-		-		-		-
9	Recharge/ Percolation Pits	M3	118	44,050	5,197,900	8,810	1,039,580	15,418	1,819,265	11,013	1,299,475	8,810	1,039,580
10	Well Recharge Structure	Nos	10000	360	3,600,000	79	790,000	130	1,300,000	80	800,000	71	710,000

11	Rain Water Tank	Ltr	6	705,000	4,230,000	141,000	846,000	246,750	1,480,500	176,250	1,057,500	141,000	846,000
D2	**Renovation**				-		-		-		-		-
12	Stream Bank Protection (Structural)	RM	2100	6,125	12,862,500	1,345	2,824,500	2,204	4,628,400	1,431	3,005,100	1,145	2,404,500
13	Bank Stabilization (Vegetative)	RM			1,565,000		340,000		565,000		370,000		290,000
14	Pond	Nos			2,400,000		500,000		800,000		600,000		500,000
16	Well Renovation	Nos	10000	398	3,980,000	82	820,000	146	1,455,000	94	935,000	77	770,000
E	**Others**				-		-		-		-		-
17	Compost Tank (NADP Model)	Nos	5000	255	1,275,000	58	290,000	88	440,000	66	330,000	43	215,000
18	Biogas Unit (Portable)	Nos	13500	230	3,105,000	56	756,000	79	1,066,500	59	796,500	36	486,000
	Add for unforeseen items and rounding				18,928								18,928
Total					**51,858,660**		**10,995,946**		**18,335,681**		**12,564,158**		**9,962,874**

Production System and Micro Enterprises													
Annual Action Plan													
				I st year		II nd Year		III rd Year		IV th Year		Total	
No	PSM Activities	Rate(rs)	Unit	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Total (Rs)
1	Coconut Cultivation	75	Nos	1459	109425	933	69975	933	69975	686	51450	4011	300,825
2	Vegetable Cultivation	755	1 Cent	1050	792750	464	350320	343	258965	305	230275	2162	1,632,310
3	Banana Cultivation	5000	10 Cent	779	3895000	214	1070000	196	980000	100	500000	1289	6,445,000
4	Tuber Crops	1000	5 Cent	461	461000	201	201000	100	100000	120	120000	882	882,000
	Add for rounding												340
Total					**5258175**		**1691295**		**1408940**		**901725**		**9,260,475**

Livelihood Activities for Watersheds Cluster in Pathanapuram						
Annual Action Plan						
Slno	**Activities**	***I st Year***	***II nd Year***	***IIIrd Year***	***IVth Year***	***Total (RS)***
1	Revolving fund to SHGs		*2041935*	*2041935*	*1750230*	*5834100*
2	Grant And Incentives		*875115*	*875115*	*750099*	*2500328*
	TOTAL		***2917050***	***2917050***	***2500328***	***8334428***

Part III

EXPECTED OUTCOMES

This project aims at the holistic development of the area. The project envisages sustained production of food and generation of regular rural employment and sustainable livelihoods in the watersheds treated under it. The major outcomes expected of this project are given in the table below.

Interventions Area	Major Activities	Expected result/Benefits for Watershed people
Land Development	Planting of Trees, Fodder cultivation and expansion of cropped area	Establishing 38400 nos of additional trees Fodder cultivation in 28 ha
Soil and Water Conservation	Stone bund, Terracing, Rain Pits, Cover Cropping, Gully plugging, Live fencing etc	Soil erosion in about 2350 ha of area will be controlled. Ground water recharge will be augmented through in-situ rain water conservation
Water Harvesting Structure	Well recharge Stream Bank Protection Pond protection Check Dams Construction of Rainwater Harvesting Tank	Proper conservation rain water will be ensured in 200 ha Drinking water problems in the watershed area will be reduced. More than 7.5 lakh Ltrs of rain water will be directly saved Local ground water level will rise by 1m on an average
Energy Sector	Hot Box, Biogas Plant, Compost	Usage of LPG Cooking gas will be reduced Encourages proper management of organic wastes Organic farming will be substantially promoted in the area
Agricultural production	Provision of grant and incentives to farmers interested and committed to crops like Coconut, Vegetables, Tubers, Paddy etc.	An area of 70 ha will be additionally brought under agriculture. About 4000 nos of coconut palms would be planted additionally
Livelihood Activities	Revolving Fund and incentives to SHG s	Increased income to households from micro enterprises Better Livelihood opportunities for the rural poor New job opportunities are expected to generate 25000 man days of additional labour

Additional area that can be brought under irrigation

Additional area under irrigation					
Sl No	**Name of Watershed**	**Well (ha)**	**Ponds(ha)**	**Canal (ha)**	**Total (ha)**
1	Kadaikamon	30	1.5	1	38.5
2	Piravanthoor-Makulam	15	3	2	25
3	Mukkadavu	20	1	0	23.5
4	Kalayanadu	28	3	1	36
5	Vattomon	23	5	0	33
6	Pidavoor	19	9	0	34
7	Kundarapadi-Mulluvayal	15	8	1	28

Consolidated Area expected to be brought under irrigation

Name of Watershed	**Existing area under irrigation (ha)**	**Additional area under irrigation (ha)**	**Total (ha)**
Kadaikamon	196	38.5	234.5
Piravanthoor-Makulam	181	25	206.5
Mukkadavu	100	23.5	123.5
Kalayanadu	295	36	331
Vattomon	334	33	367
Pidavoor	248	34	282
Kundarapadi-Mulluvayal	254	28	282

Exit Protocol

Watershed Development Fund is the main source of financial assistance for the post implementation period of the watershed development project. Peoples' 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. In the case of contribution as labour, sum equivalent to the monetary value of the voluntary labour would be transferred from the watershed project account to the WDF bank account that will be distinct from the Watershed Committee (WC) bank account. User charges, other contributions, income earned from assets created under the project on common property resources etc. shall also be credited to WDF. Beneficiary contribution against grant given under Production Systems Management shall also be credited to WDF. Minimum of such contributions shall be 10 percent for general category and 5 percent for SC/ST beneficiaries. The will meet the cost of farming system activity to a maximum limit of project funds admissible under the Production Systems management shall be an amount equal to double the unit cost of the concerned project (i.e. Rs 15,000X2/12,000X2 per ha as the case may be).

The Secretary, Watershed Committee (WC) shall maintain separate Accounts and Records in respect of the WDF. Rules for operation of the fund should be prepared by the Watershed Committee (WC) and approved by the Watershed Gram Sabha. The WDF bank account will be operated by the President of the Gram Panchayat and any implementing officers from the Grama Panchayat as designated by necessary Govt. orders. The basics directives as laid down in the Common Guidelines for Watershed Programmes issued by the GoI shall not normally be overlooked. Nodal Ministry may also evolve appropriate protocols for the management of the WDF by the concerned watershed community.

ANNEXURE

Detailed Estimate

ESTIMATE REPORT

Name of work: IWMP 2012-13Pathanapuram Block Panchayat

piravanthoor – mukkadavu thodu side protecting walls, gully plug and

brushwood dams in piravanthoor –maakulam watershed in piravanthoor Panchayat

Estimate:-7,69,000/-

This project is proposing to include the Integrated Watershed Management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table, thereby minimising the scarcity of drinking water.

This project is executing in piravanthoor maakulam watershed which comes in piravanthoor Panchayat ward No 12 piravanthoor The total length of this streamlet is 4 km and in this 4 km, around 3.5km area is treated with side protection walls. Through this EPA work rest of the portion ie, the beginning portion of this streamlet is treating around 90m .As it is the high attitude place of this watershed with respect to the streamlet. It should be treated well .So, by providing side protection walls, gully plugs and brush wood dam etc. We can restrict run off of rain water ,and to reduce the velocity of water, to prevent soil erosion and to enhance ground water table recharging, hence to minimize scarcity of drinking water.

The estimate prepared on the 2012, SOR and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinising and approval.

Detailed Estimate of Piravanthoor- Mukkadavu thodu side protecting walls,gully plug & brushwood dam

1) Earth work excavation in hard Soil and depositing on bank with Initial lead up to 50 m and lift up to 1.5m including breaking clods,Watering, ramming and sectioning
Of spoil bank...etc. complete etc.

I)	Foundation	2	90.00	0.95	0.50	85.50
II)	Gully plug	6	0.70	1.50	0.50	3.15
III)	Concrete foundation	1	10.00	1.00	0.50	5.00
IV)	Brush wood check dam	6	1.50	1.00	0.30	2.70
						96.35
	Say 97 m^3 @ 2356.25/10m^3					22,856/-

2) Rough stone Dry packing foundation For aprons and revetments

	a)Foundation	6	0.70	1.50	0.50	3.15m^3
	b)super structure	6	0.50	1.50	0.70	3.15m^3
						6.30m^3
	Say 6.30m^3 @ 1992/m^3					Rs.12,550/-

3) Dry rubble masonry for foundation In lines and levels.

a)Foundation		2	90.00	0.95	0.50	85.50
b)super structure		2	90.00	(0.75+0.50) / 2	1.50	202.50
						288
	Say 288m^3 @ 1940/m^3					Rs.5,58,720/-

4) C C 1:3:6, graded mix for R C C Work 60% 40 mm and 40% 20 mm

Metal

i)	Foundation	1	10.00	1.00	0.50	5.00
ii)	Superstructure	1	10.00	(0.80+0..50) / 2	1.60	10.40
						15.40
	Say 16 m^3 @ 5718.98/m^3					91,504/-

Form work for C C 1:3:6 graded mix

2 x 10.00 x 1.00 = 20.00m^2

2 x (0.60+0.40) / 2 1.00 = 1.00m^2

21.00m^2

Area of form work =21 m^2

Quantity of concrete = 6.75m^3

Form work rate = 3754.81/10m^2 Say 3.1m2 @375.82/10m2 1164/-

5.cc 1:2:4 using 20 mm broken stone, curing Watering, ramming etc. and including all charges of form works but excluding the cost of reinforcement complete as per specifications

a)platform	1	2.50	1.50	0.10	0.375
b)parapette	2	2.50	0.10	0.70	0.35
c)foundation	1	10.00	0.70	0.25	1.75
					2.475

Say 2.475m3 @ 69.61/10dm3 17,229/-

Reinforcement

0.5 x 0.725 = 0.3625 Qtl

Say 0.3625Qtl @ 6344.61/Qtl 3000/-

6. Brush wood dam	6 Nos	LS	18,000/-
TOTAL			7,23,859/-
7.Add 6 % Tax& unforeseen items if any			45,141/-
			7,69,000/-

GRAND TOTAL (seven lakh sixty nine thousand rupees only) Rs. 7,69,000/-

DATA

1) Earth work excavation in hard Soil and depositing on bank with Initial lead up to 5 Cm and lift up To 1.5 m. including breaking clods Watering, ramming and sectioning of spoil bank....etc. complete

4.000 Nos Man mazdoor	Rs.377.001/each	Rs.1508.00
2.250 Nos man mazdoor	Rs.377.00/each	Rs.848.25
		Rs. 2356.25/10 m^3

2.Rough stone dry packing for foundation For aprons and and revetments including Extra 100 m conveyance

1.050m3 Rubble	Rs 420.00/m3	Rs.441.00
0.35nos Mason	Rs 471.00/each	Rs 164.85
0.70nos man mazdoor	Rs 377.00/Each	Rs.263.69
0.70nos women	Rs 377.00/Each	Rs. 263.90
1.05m3 Rubble conveyance	Rs 817.00/m3	Rs.857.85
		Rs.1992/m3

3. Dry rubble masonry for foundation In lines and levels(extra 100m conveyance)

1.050m 3	Rubble	Rs 420.00/ m3	441.00
0.35 Nos	mason	Rs 471.00/Each	164.85
0.70 Nos	man mazdoor	Rs 377.00/Each	263.90
1.05 m 3	rubble conveyance	Rs 817.00/m3	857.85
			1939.55/m^3

4.CC 1:3:6, graded mix for RCC work 60% 40mm and 40% 20 mm metal(extra 100 m conveyance)

0.570 m 3	40 mm metal	Rs 659.00/m 3	375.63
0.360 m 3	20 mm metal	Rs 942.00/m 3	339.12
0.468 m 3	Sand	Rs 2314/m 3	1083.00
223.200 Kg	Cement	Rs 5940.00/tonne	1325.81
0.140 Nos	mason	Rs 471.00/Each	65.94
1.000 Nos	man mazdoor	Rs 377.00/Each	377.00
2.240 Nos	women	Rs 377.00/Each	844.48
0.570 Nos	40mm metal conveyance	Rs.856.00/m3	487.92
0.360 Nos	20 mm metal conveyance	Rs.817.00/m3	294.12
0.468 m3	sand conveyance	Rs.945.00/m3	392.00
223.200kg	cement conveyance	Rs.375.00/tone	83.70

5.cc 1:2:4 using 20mm nominal size broken stone ,curing ,watering,ramming..etc and including all charges of form works but excluding cost of reinforcement…. Complete as per the specifications

(extra 100m conveyance)

0.009m^3	20mm stone	Rs.942.00/m^3	8.48
0.0045m^3	msand	Rs 2314.00/m^3	12.50
3.300kg	cement	Rs 5940.00/tone	19.60
0.002 Nos	mason	Rs 471.00/Each	0.94
0.010 nos	Man mazdoor	Rs 377.00/each	3.77
0.035 Nos	women	Rs.377.00/Each	13.20
0.009 m3	stone conveyance	Rs.817.00/m3	7.353
0.0045m3	sand conveyance	Rs.561.00/m3	2.5245
3.300 kg	cement conveyance	Rs.323.00/tonne	1.2375

69.61/10dm3

6. Making steel for wall dome and filterChamber with8mm bar including Supplying of material and labour (extra 100m conveyance)

1.000qtl MS rod(tor)TMTsteel	Rs5210.00/qtl	5210
1.000qtl MSrodconveyance	Rs375.00/ton	37.50
0.450kgiron wire 24 guage	Rs87.00/kg	39.15
1.00nos blacksmith	Rs500.00/E	500
1.480nos man	Rs377.00/E	557.96
Total		6344.61/qtl

7. Brush wood dam	1 Nos	LS	2,000/-

Detailed Estimate

Name of work:- IWMP 2012-2013 Pathanapuram block Panchayat -Construction of Roof water harvesting tank and recharging pit at vilakkuvattom Govt L.P.S of Punalur municipality

Estimate cost :- Rs.1,53,000

1. Providing 200 mm Gutter pipe	120 m	
Say 120 m @ 140/m		16800
2. Providing 200 x 92 mm Runner	15 Nos	
Say 15 Nos@200/E		3000
3. Providing 200 x 90 mm Dropper	5 Nos	
Say 5 Nos @ 200 x 90 mm Dropper/E		750
4. Providing 200 mm GI Clamp	200 Nos	
Say 200 mm GI Clamp @98/ E	`	19600
5. Providing 200 mm end cap	5 Nos	

Say 200mm 103 end cap@ 110/E			550
6. Providing 75 mm PVC 4 Kg	50 Nos		
Say 50 Nos PVC 4 Kg @103/E			11536
7. Providing 75 mm PVC Elbow	50 Nos		
Say 75 mm PVC elbow@85/E			4250
8. Providing 75 mm PVC Tee	15 Nos		
Say 75 mm PVC tee @113/E	15 Nos		1695
9. Providing 110 mm PVC 4 Kg pipe	120 m		
Say 120m @140/m			16800
10. Providing 110 mm PVC elbow	40 Nos		
Say 110 mm PVC elbow@110/E			4400
11. Providing 110 mm PVC Tee	20 Nos		
Say 110 mm PVC Tee@190/E			3800
12. Providing wood drilling and pathi fixing		LS	2500
13. Providing 5000 Litre ISI Tank		LS	32500
14. Providing 1000 Litre ISI Tank and filter material		LS	7500

15. Earth work excavation in hard soil and Depositing with initial lead up to 50 m and lift up to 1.5 m. Including breaking clods, watering ramming and sectioning of spoil bank etc. Complete.

1 120 0.3048 0.3048			11.15m^3
say 11.15m3 @ 2356.25/10m^3			2627
16. Providing Plumbing charges		LS	5000
17. Providing Solvent Cement		LS	650
18. Miscellaneous		LS	1500
18. Providing name board		LS	2000

TOTAL	1,37,458
19. Add 5 % for beneficiary contribution	6873
20. Add 6% tax & unforeseen items if any,	8669

GRAND TOTAL (One lakh fifty three thousand rupees only) **1,53,000/-**

Name of work:- IWMP 2012-2013 pathanapuram block panchayat -Construction of Roof water harvesting tank and recharging pit at vilakkuvattom Govt L.P.S of punalur municipality

DATA

1. Providing 200 mm Gutter pipe		Rs.140/ m
2. Providing 200 x 92 mm Runner		Rs.200E
3. Providing 200 x 90 mm Dropper		Rs.150E
4. Providing 200 mm GI Clamp		98E
5. Providing 200 mm end cap		110E
6. Providing 75 mm PVC 4 Kg		103/m
7. Providing 75 mm PVC Elbow		85E
8. Providing 75 mm PVC Tee		113E
9. Providing 110 mm PVC 4 Kg pipe		140/m
10. Providing 110 mm PVC elbow		110E
11. Providing 110 mm PVC Tee		190E
12. Providing wood drilling and pathi fixing	LS	2500
13. Providing 5000 Litre ISI Tank	LS	32500
14. Providing 1000 Litre ISI Tank and filter material	LS	7500

15. Earth work excavation in hard soil and Depositing with initial lead up to 50 m and lift up to 1.5 m. including breaking clods, wateringramming and sectioning of spoil bank etc. Complete.

4.000 Nos man mazdoor	Rs.377.00/E	1508.00
2.250 Nos Man mazdoor	Rs. 377.00/E	848.25
		2356.25/10 m^3
16. Providing Plumbing charges	LS	5000
17. Providing Solvent Cement	LS	650
18. Miscellaneous	LS	1500
19. Providing name board	LS	2000

Estimate Report

Name of work:- IWMP 2012-2013 pathanapuram block panchayat-Construction of Roof water harvesting tank and recharging pit at vilakkuvattom Govt L.P.S of punalur municipality

Estimate:- 1,53,000

This project is proposing to include the Integrated Watershed Management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table, thereby minimizing the scarcity of drinking water.

This project is executing in villakuvattom lp school in vilakkuvattom ward of punalur muncipality . As it will become as ideal work for common people and beneficiaries in the watershed area. Preservation and cancellation of rain water is an inevitable process in daily life to due to scarcity of water is an summer season like wise everyone should practice or get used to conserve the rain water.

The items proposed in the estimate are earthwork excavation, plumbing works, filter media to filter the collected rain water..

The estimate prepared on the 2012, SOR and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinising and approval.

Name of work:- IWMP 2012-13 Pathanapuram Block Panchayat Renovation of **THIRUVILANGHONAPPAN TEMPLE WELL** in Thalavoor Gramapanchayat.

Sl. No	**Item of work**		**Amount**
1	Bailing out water with 5 Hp engine and pump set including conveyances to the site and erection, cost of fuel, lubricatingoil and other stores, pay of staff etc complete	1 3days 1353/day	4059
2	Bailing out water by using man mazdor during the execution and after the completion of the work	1 7days 377E	2639
3	Earthwork excavation in hard soil and depositing on bank with initial lead upto 50m and lift upto 1.50m including breaking clodaswatering, ramming and sectioning of spoil bank etc complete a)widening of well about 0.8m b)steaning c)platform for well d)retaining wall Total	a)1 ($\pi x 2^2/4$)7.5 23.56m^3 b)1 $\pi(2.3^2-1.7^2)$0.6 4.52m^3 c)1 2 1 0.6 1.2m^3 d)1 5 0.5 0.7 1.75m^3 say31.03m3@2356.25/10m^3	7311
4	Earthwork excavation in hard soil and depositing on bank with initial lead upto 50m and lift upto 1.50m including breaking clods watering, ramming and	a)1(π 41.5)/4 4.71m^3 say 4.71m^3@2945/10m^3	1387

	sectioning of spoil bank etc complete for open well excavation upto 2.5mdia excavation. a)for the first depth 1.5m-3m b)for the second depth 3m-4.5m c)for the third depth 4.5m-6m d)fot the fourth depth 6m-7.5m e)for the fifth depth 7.5m-9m **Total**	b)1 (π 41.5)/4 4.71m^3 say4.71m^3@3681/10m^3 c) 1 (π 41.5)/4 4.71m^3 say 4.71m^3@4601/10m^3 d)1 (π 41.5)/4 4.71m^3 say 4.71m^3@5752/10m^3 e) 1 (π 41.5)/4 4.71m^3 say 4.71m^3@7190/10m^3	1734 2167 2709 3387 **11384**
5)	Dry stone masonry for retaining walls for foundation &super structure including all charges for cost and conveyances etc, complete a)foundation b)super structure Total	a)1 5 0.7 0.5 1.75m^3 b)1 5 0.5 1.2 3m^3 say4.75m^3@1827/m^3	8678
6)	Random rubble in cement mortar 1:6 for foundation and basement including all charges for cost and conveyances water curing etc, complete. a)steaning b)platform Total	a)1π(1.7^2- 1^2) 1 5.938m^3 b)1π(2.3^2-1.7^2) 0.5 3.768m^3 say9.706m^3@3137/m^3	30448
7	RCC 1:2:4 using 20 mm broken stone for slab Providing reinforcement for RCC work bend,tied and placed ain position.	12 0.2 0.4m^3 Say0.4m^3@65.90/10dm^3 2063.39 Say20kg@6339/qtl	2636 1268
8	Cement concrete 1:2:4 using 20 mm broken stone over platform and DR top belt	150.5 0.1 0.25m^3 Say 0.25m^3@65.90/10dm^3	1648

9	Hollow brick work in cement mortar 1:6 with hollow bricks of size 40X20X15 cm including all charges for cost and conveyances, watering, curing etc. complete. a)parapet b)pillar Total	a)$1\pi(1.3^2- 1^2)$ 0.8 $1.73m^3$ b)2 $0.4^2 1.2$ $0.384m^3$ say$2.2m^3$@3310.70/m^3	7282
10	Plastering with cement mortar 1:3,12mmthickone coat including all charges for cost and conveyances, watering,curingetc.complete. a)parapet b)pillar Total	a)$2\pi(1.3^2-1x^2)0.8$ $3.47m^2$ b)21.2 1.6 $3.84m^2$ say$7.31m^2$@1846.83/$10m^2$	1350
11	Providing 50 mm G.I of 2.7m long including all work welding charge etc complete	12.7213 Say 2.7m@213/m	575
12	Providing well pulley no.8	166	66
13	Providing coir and bucket	LS	200
	TOTAL		79,544
14	Add 6% extra for tax and unforeseen item if any		5456

GRAND TOTAL (Eighty Five thousand rupees only) 85,000

Name of work:-IWMP 2012-13 Pathanapuram Block Panchayat Renovation of
THIRUVILANGHONAPPAN TEMPLE WELL in ThalavoorGramapanchayat.

Estimate Cost Rs 85,000/-

This project is proposing to include the Integrated Watershed Management Programme (IWMP) of Govt of india, Ministry of rural development.

The aim of this project is rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimizing the scarcity of drinking water

due to this project it will become a main source of drinking water for certain region situated near by this well.

The THIRUVILANGHONAPPAN TEMPLE WELL is situated near by thiruvilanghonappan temple in kamukanchery ward No 10Thalavoorpanchayath. Now it is pitiable condition, because protection and maintenance are can't be done due to lack of fund. The edges are collapsed, causes reducing depth and formed an irregular shape and unusable water due to the flow soil, slit and clay to well because of no adequate side parappete protection. The inhabitants are depending upon the summer. Therefore urgent rectification is required.

The items proposed in the estimate are earthwork for widening and deepening,DR,RRmasonary for side protection and security purpose and for more easy to use and also proposed to cultivation of RAMCHAM at the nearby area of well to protect the soil erosion and flow of raining water. These are the minimum requirements for the proper completion.

The estimate prepared based on the 2012 SOR , and excluded the contractors profit but, included an amount for tax. The estimate submitting for scrutinizing and approval.

DATA

1. Bailing out water with 5 Hp engine and pump set including conveyances to the site and erection, cost of fuel, lubricatingoil and other stores, pay of staff etc complete

1.00 Day hire charges of 5hp engine and pump set	Rs 115.00	115.00
10.00 Ltr HSD oil	Rs.41.00	410.00
LS sundries etc	Rs.14.00	14.00
1.00 Driver	Rs.396.00	396.00
1.00 Nos Cleaner	Rs.396.00	396.00
1.00 LS Installation charges	Rs.22.00	22.00
TOTAL		1353/day

2.Bailing out water by using man mazdor during the execution and after the completion of the work

1.00 Nos man mazddoor	Rs.377.00	377.00

3.Earthwork excavation in hard soil and depositing
on bank with initial lead upto 50m and lift upto 1.50m
including breaking clodaswatering,ramming and sectioning
of spoil bank etc complete

4.000 Nos man mazdoor	Rs.377.00/E	1508.00
2.250 Nos Man mazdoor	Rs. 377.00/E	848.25
		2356.25/10 m^3

4.Earthwork excavation in hard soil and depositing on bank with initial lead upto 50m and lift upto 1.50m including breaking clods watering, ramming and sectioning of spoil bank etc complete for open well excavation upto 2.5mdia excavation. Add 25% for upto 2.5m dia excavations for each consecutive depths

4.000 nos man mazdoor	Rs.377.00/each	1508.00
2.250nos man mazdoor	Rs.377.00/each	848.25
Total		2356.25/10m3

Add 25% for upto 2.5m dia excavations

For 1st depth(1.5-3m)		2945.31/10m3
For 2nd depth(3-4.5m)	Add 25% for upto 2.5m dia excavations	3681.64/10m3
For 3rds depth(4.5-6m)	Add 25% for upto 2.5m dia excavations	4602.05/10m3
For 4th depth(6-7.5m)	Add 25% for upto 2.5m dia excavations	5752.53/10m3
For 5th depoth(7.5-9m)	Add 25% for upto 2.5m dia excavations	6327.82/10m3

5.Dry stone masonry for retaining walls for foundation &super structure including all charges for cost and conveyances etc, complete

1.050m 3	Rubble	Rs 420.00/ m3	441.00
0.35 Nos	mason	Rs 471.00/Each	164.85
0.70 Nos	man mazdoor	Rs 377.00/Each	263.90
1.05 m 3	rubble conveyance	Rs 710.00/m3	745.50
			1827.00/m^3

6. Random rubble in cm 1:6 for Super structure in lines and levels including all leads and lifts.. complete

1.000m^3 rubble	Rs.420.00/m^3	420
0.300m^3msand	Rs2314.00/m^3	694.20
72.00kg cement	Rs5940.00/ton	427.68
0.700nos mason	Rs471.00/E	329.70
0.350nos manmazdoor	Rs377.00/E	131.95
0.700 nos women	Rs377.00/E	263.90
1.000 m^3 rubble conveyance	Rs 710.00/m^3	710.00
0.300m^3 sand conveyance	Rs.454.00/m^3	136.20
72.000Kg cement conveyance	Rs.323.00/tonne	23.26
	TOTAL	3136.89/m^3

7. RCC 1:2:4 using20mm broken stone excluding Reinforcement.

0.009m^3	20mm stone	Rs 942.00/m^3	8.48
0.0045m^3	msand	Rs 2314.00/m^3	12.50
3.300kg	cement	Rs 5940.00/ton	19.60
0.002 nos	mason	Rs471.00/E	0.94
0.010 nos	man mazdoor	Rs 377.00/E	3.77
0.035nos	women	Rs 377.00/E	13.20
0.009 m^3	stone conveyance	Rs 710.00/m^3	6.39
0.0045m^3	sand conveyance	Rs 454/m^3	2.04
3.300 kg	cement conveyance	Rs 323/ton	1.07
TOTAL			65.90/dm^3

8. Providing reinforcement for RCC work bend,tied and placed ain position

1.000qtl	MS rod(tor)TMTsteel	Rs5210.00/qtl	5210
1.000qtl	MSrodconveyance	Rs323.00/ton	
	32.30		
0.450kg	iron wire 24 guage	Rs87.00/kg	
	39.15		
1.00nos	blacksmith	Rs500.00/E	
	500		
1.480nos	man	Rs377.00/E	557.96
Total			**6339.41/qtl**

9.Hollow brick work in cement mortar 1:6 with hollow bricks of size 40X20X15 cm including all charges for cost and

77.00nos	hollow brick	Rs 1900.00/100nos	1463.00
0.16m3	sand	Rs.2777.00/m3	444.32
46.00kg	cement	Rs.5940.00/tone	273.24
1.50nos	mason	Rs.471.00/each	706.50
0.35nos	man	Rs377.00/each	131.95
0.50nos	women	Rs.377.00/each	188.50
77.00nos	hollow brick conveyance	Rs.218.00/120nos	139.88
0.16m3	sand conveyance	Rs.454.00/m3	72.64
46.00kg cement conveyance		Rs.323.00/tone	14.86
Total			3310.00

10. Plastering cm1:3,12mm thick each on both side of tank wall applied in layers and Furnished smooth with cement flushing coat including material and labour.

0.140m^3msand	Rs 2314.00/m^3	323.96
66.00kg cement	Rs5940.00/ton	392.04
0.900nos mason	Rs 471.00/E	423.90
0.550 nosmanmazdoor	Rs 377.00/E	207.35
1.100 nos women	Rs 377.00/E	414.70
0.140m^3 sand conveyance	Rs 454.00/m^3	63.56
66.00kg cement conveyance	Rs323.00/ton	21.32
Total		1846.83/10m^2

11. Providing 50 mm G.I of 2.7m long including

all work welding charge etc complete Rs.213/m

12. Providing well pulley no.8 Rs.66E

13. Providing coir and bucket LS Rs.200E

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayath. Cleaning,shrub removal and planting of fooding grass in the banks of vettipuzha streamlet in college ward in punalur muncipality

Estimate Cost Rs 1,63,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The vettipuzha streamlet is situated in Punalur Municipality town,komalamkunnu,power house and college wards.Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal & planting of fooding grass in banks of vettipuzha streamlet in college ward in punalur muncipality

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to

a distance of 150 M outside				
the periphery of the area cleared.	1	550.00	3.00	1650.00 m^2
	Say 1650.00 m^2 @ Rs.377/100M^2			Rs.6221/-
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including				
neat banking	1	550.00	3.00 0.50	825.00m^3
	Say 825 m3 @ 1340/10 M^3			Rs.110550/-
3.planting vegetative plants in the bank				
of this 550m streamlet	Rs 33/m			Rs.36,300/-
TOTAL				Rs.1,53,071/-
4.Add 6 % tax & for unseen items if any,				Rs.9929/-
GRAND TOTAL (one lakh sixty three thousand rupees only)				Rs.1,63,000/-

DATA

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to

a distance of 150 M outsidethe periphery of the area cleared.

1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with		
all lead and lift including neat banking	observed from SoR 2012-13	Rs.1340/10m^3
3.planting fooding grass in the both sides of streamlet		Rs.33/m

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning,shrub removal and planting of fooding grass in the banks of vettipuzha streamlet near sn college

Estimate Cost Rs 1,63,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The vettipuzha streamlet is situated in Punalur Municipality town,komalamkunnu,power house and college wards.Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal & planting of fooding grass in banks of vettipuzha streamlet near sn college.

1.Clearing light jungle including uprooting of thick vegetation. and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside

the periphery of the area cleared. 1 550.00 3.00 1650.00 m^2

Say 1650.00 m^2 @ Rs.377/100M^2 Rs.6221/-

2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including

neat banking 1 550.00 3.00 0.50 825.00m^3

Say 825 m3 @ 1340/10 M^3 Rs.110550/-

3.planting vegetative plants in the bank

of this 550m streamlet Rs 33/m Rs.36,300/-

TOTAL Rs.1,53,071/-

4.Add 6 % tax & for unseen items if any, Rs.9929/-

GRAND TOTAL (one lakh sixty three thousand rupees only) Rs.1,63,000/-

DATA

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.

1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2

2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking observed from SoR 2012-13 Rs.1340/10m^3

3.planting fooding grass in the both sides of streamlet Rs.33/m

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayath. Cleaning,shrub removal and planting of fooding grass in the banks of vettipuzha streamlet in kommalamkunnu ward in punalur muncipality

Estimate Cost Rs 1,63,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The vettipuzha streamlet is situated in Punalur Municipality town,komalamkunnu,power house and college wards.Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal&planting of fooding grass in banks of vettipuzha streamlet in kommalamkunnu ward in punalur muncipality

1.Clearing light jungle including uprooting of thick vegetation. and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.	1	550.00	3.00		1650.00 m^2
Say 1650.00 m^2 @ Rs.377/100M^2					Rs.6221/-
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	1	550.00	3.00	0.50	825.00m^3
Say 825 m3 @ 1340/10 M^3					Rs.110550/-
3.planting vegetative plants in the bank of this 550m streamlet			Rs 33/m		Rs.36,300/-
TOTAL					Rs.1,53,071/-
4. Add 6 % tax & for unseen items if any,					Rs.9929/-
GRAND TOTAL (one lakh sixty three thousand rupees only)					Rs.1,63,000/-

DATA

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.		
1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	observed from SoR 2012-13	Rs.1340/10m^3
3.planting fooding grass in the both sides of streamlet		Rs.33/m

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayath. Cleaning,shrub removal and planting of fooding grass in the banks of vettipuzha streamlet in town ward & power house ward in punalur muncipality

Estimate Cost Rs 1,63,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The vettipuzha streamlet is situated in Punalur Municipality town, komalamkunnu, power house and college wards. Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal & planting of footing grass in banks of vettipuzha streamlet in town ward& power house ward in Punalur Muncipality

1. Clearing light jungle including uprooting of thick vegetation. and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.	1	550.00	3.00		1650.00 m^2
	Say 1650.00 m^2 @ Rs.377/100M^2				Rs.6221/-
2. Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	1	550.00	3.00	0.50	825.00m^3
	Say 825 m3 @ 1340/10 M^3				Rs.110550/-
3. planting vegetative plants in the bank of this 550m streamlet	Rs 33/m				Rs.36,300/-
TOTAL					Rs.1,53,071/-
4.Add 6 % tax & for unseen items if any,					Rs.9929/-
GRAND TOTAL (one lakh sixty three thousand rupees only)					Rs.1,63,000/-

DATA

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.		
1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	observed from SoR 2012-13	Rs.1340/10m^3
3.planting fooding grass in the both sides of streamlet		Rs.33/m

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayath. Cleaning, shrub removal&planting of fooding grass in banks of thamarapally streamlet in Punalur Municipality.

Estimate Cost Rs 1,43,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The kalayanadu Thodu is situated in Punalur Municipality in thamarapally, kalayanadu,karakkad,ikarakonam,valakode wards. Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal & planting of fooding grass in banks of thamarapally streamlet in Punalur Municipality.

1.Clearing light jungle including uprooting of thick vegetation. and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.	1	550.00	3.00		1650.00 m^2
	Say 1650.00 m^2 @ Rs.377/100M^2				Rs.6221/-
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	1	550.00	3.00	0.50	825.00m^3
	Say 825 m3 @ 1340/10 M^3				Rs.110550/-
3.planting vegetative plants in the bank of this 550m streamlet			Rs 33/m		Rs.18,150/-
TOTAL					Rs.1,34,921/-
4.Add 6 % tax & for unseen items if any,					Rs.8079/-
GRAND TOTAL	(one lakh forty three thousand rupees only)				Rs.1,43,000/-

DATA

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.		
1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	observed from SoR 2012-13	Rs.1340/10m^3
3.planting fooding grass in the both sides of streamlet		Rs.33/m

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayath. Cleaning, shrub removal&planting of fooding grass in banks of kalayanad streamlet in Punalur Municipality.

Estimate Cost Rs 1,43,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The kalayanadu Thodu is situated in Punalur Municipality in thamarapally,kalayanadu,karakkad,ikarakonam,valakode wards.Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal&planting of fooding grass in banks of kalayanad streamlet in Punalur Municipality.

1.Clearing light jungle including uprooting of thick vegetation. and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.	1	550.00	3.00	1650.00 m^2	
	Say 1650.00 m^2 @ Rs.377/100M^2				Rs.6221/-
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	1	550.00	3.00 0.50	825.00m^3	
	Say 825 m3 @ 1340/10 M^3				Rs.110550/-
3.planting vegetative plants in the bank of this 550m streamlet		Rs 33/m			Rs.18,150/-
	TOTAL				Rs.1,34,921/-
4.Add 6 % tax & for unseen items if any,					Rs.8079/-
GRAND TOTAL	(one lakh fourty three thousand rupees only)				Rs.1,43,000/-

DATA

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.		
1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	observed from SoR 2012-13	Rs.1340/10m^3
3.planting fooding grass in the both sides of streamlet		Rs.33/m

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal&planting of fooding grass in banks of kalayanad streamlet near kalayanadu junction in Punalur Municipality.

Estimate Cost Rs 1,43,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The kalayanadu Thodu is situated in Punalur Municipality in thamarapally,kalayanadu,karakkad,ikarakonam,valakode wards.Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal & planting of fooding grass in banks of kalayanad streamlet near kalayanadu junction in Punalur Municipality.

1.Clearing light jungle including uprooting of thick vegetation. and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.	1	550.00	3.00	1650.00 m^2
		Say 1650.00 m^2 @ Rs.377/100M^2		Rs.6221/-
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	1	550.00	3.00 x 0.50	825.00m^3
		Say 825 m3 @ 1340/10 M^3		Rs.110550/-
3.planting vegetative plants in the bank of this 550m streamlet		Rs 33/m		Rs.18,150/-
TOTAL				Rs.1,34,921/-
4.Add 6 % tax & for unseen items if any,				Rs.8079/-
GRAND TOTAL	(one lakh fourty three thousand rupees only)			Rs.1,43,000/-

DATA

1.Clearing light jungle including uprooting of thick vegetation and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.		
1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	observed from SoR 2012-13	Rs.1340/10m^3
3.planting fooding grass in the both sides of streamlet		Rs.33/m

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal & planting of fooding grass in banks of karrakkad streamlet in Punalur Municipality.

Estimate Cost Rs 1,43,000

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this project is, rain water harvesting and recharging of the land to increase the water table then enhance the agricultural productivity, foresting and minimize the scarcity of drinking water.

The kalayanadu Thodu is situated in Punalur Municipality in thamarapally,kalayanadu,karakkad,ikarakonam,valakode wards.Now due to huge amount of waste dumping and less maintenance, the condition is very pitiable. So immediate rectification and action is required for proper protection.

The items proposed to estimate are clearing light jungle, cleaning, removing waste and silt removal. It is proposed for that the cultivation of RAMACHAM or other soil protection vegetative plants in the sides. These are the minimum requirements for the proper completion.

The estimate prepared on the 2012 SOR, and excluded the contract profit but included an amount for tax. This estimate submitting for scrutinizing and approval.

ROUGH COST ESTIMATE

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayat. Cleaning, shrub removal&planting of fooding grass in banks of karakkad streamlet in Punalur Municipality.

1.Clearing light jungle including uprooting of thick vegetation. and small trees of girth up to 30 Cm including rooting out and removal of rubbish up to a distance of 150 M outside the periphery of the area cleared.	1	550.00	3.00	1650.00 m^2	
	Say 1650.00 m^2 @ Rs.377/100M^2				Rs.6221/-
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	1	550.00	3.00 0.50	825.00m^3	
	Say 825 m3 @ 1340/10 M^3				Rs.110550/-
3.planting vegetative plants in the bank of this 550m streamlet	Rs 33/m				Rs.18,150/-

TOTAL		Rs.1,34,921/-
4.Add 6 % tax & for unseen items if any,		Rs.8079/-
GRAND TOTAL	(one lakh fourty three thousand rupees only)	Rs.1,43,000/-

DATA

1.Clearing light jungle including
uprooting of thick vegetation
and small trees of girth up to
30 Cm including rooting out
and removal of rubbish up to
a distance of 150 M outside
the periphery of the area cleared.

1.000 Nos man mazdoor	Rs.377.00/Each	Rs.377.00/100m^2
2.Earth work excavation in ordinary soil (in and under water, liquid, mud) with all lead and lift including neat banking	observed from SoR 2012-13	Rs.1340/10m^3
3.planting fooding grass in the both sides of streamlet		Rs.33/m

Detailed Estimate of Roof water harvesting

Appendix A:-

1. Dismantling and clearing and carefully
   Stacking materials useful for reuse
   For any thickness rubble masonry in cement
   Mortar.
   2 10.00 0.40 0.30 2.40
   2 4.00 0.40 0.50 1.60

4.00 m^3

Say 4 m^3 @ Rs. 603.20/m^3 Rs. 2413.00/-

2. Earth work excavation in hard soil

For foundation and removal of

Earth bearm for site clearance etc.

Bearm- 1 15.00 5.00 0.70 52.50

Foundation- π [2.25^2-1.6^2]0.50 4

56.50 m^3

Say 56.50 m^3 @ Rs. 2356.00/10m^3 Rs. 13,312.00/-

3. Random rubble in cement mortar

1:6 for foundation and super structure etc.

Foundation 1 π [2.25^2-1.6^2]0.50 4

Super 1 π [2.15^2-1.7^2] 0.80 4.4

8.4 m^3

Say 8.4 m^3 @ Rs.3252 /m^3 Rs.27,317.00

4. Flooring with CC 1 : 4: 8 using 40 mm

Broken stone inside of tank

π x 1.70^2x 0.30 = 2.72m^3

say 2.72m^3 @ Rs.4874/m^3 Rs.13,257.00

5. Flooring with RCC 1:11/2:3 using 40mm

broken stone inside of tank π 1.70^2 0.10 0.91

π 4.30 0.45 0.05 0.30

say 1.21 m^3 @ 74.02/10dm^3 Rs. 8956.00

6. Supplying and providing form

Work for tank and dome

Tank	2	π x1.60x 2.50	25.12
Dome	1	π x1.60^2	8.03
			33.15

Provide 50% of form work 33.13 x 50% = 16.57 m^2

Say 16.57m^2 @ Rs 5978/10m^2 Rs 9,905/-

7. Re-inforcement for domes and

Tank wall etc. tore-steel including

Labour for bent lied and placed

In position etc. complete.

Say 150 Kg @ Rs 6339.00/qtl Rs 9,508.00

8. Supplying winding with 2

Layers of 20 gage 50mm x 50mm

Welded mesh over well doom.

2 x 2x π x 1.7 x 2.50	=	55.38
1 x π x 1.7^2	=	18.16
		71.54

Say 71.54m2 @Rs.78/ m2 Rs.5,580 .00

9.Supplying and winding with 2layers of 20 guage

12mm GI mesh over well dome

Wall-	2 x2x 3.14x 1.7 x 2.50	= 53.38	
Dome-	2 x 3.14x 1.7^2	= 18.16	
`say 71.54m2 @ Rs.60/m^2		71.54m^2	Rs.4292.00

10. Plastering with cement mortar 1:3

thickness on both Side of the tank wall

applied in layers and finished smooth

Including material and labour.

Wall- 2 x2x 3.14x 1.7 x 2.50 = 53.38

Dome- 2 x 3.14x 1.7^2 = 18.16

Basement 2x3.14x2.15x1.25 =16.87

88.41m^2

Say 88.41m^2 @ 1901/10m^2 Rs.16806

11.Cement washing two coats to

Cement plastered area without basement

Wall- 2 x2x 3.14x 1.7 x 2.50 = 53.38

Dome- 2 x 3.14x 1.7^2 = 18.16

71.54m^2

Say 71.54 m^2 @ Rs.71.00/10 m^2 Rs. 508.00

Appendix :-B

1. Earth work Excavation in hard soil

   And depositing on bank with

   Initial lead u[to 1.5 m

   Including breaking clods,

   Watering, ramming and

   Sectioning of spoil bank

   Spoil bank etc. complete

   1 x 2.50 x 2.00 x 2.80 = 14.00 m^3

   Say 14.00 m^3 @ Rs. 2356/10 m^3 Rs. 3298.00

2. Rough stone dry packing

1 x 2.50 x 2.00 x 1.00 = 5.00 m^3

Say 5.00 m^3 @ Rs.1770/m^3 Rs. 8855.00

3. Supplying and filling 36 m

Brocken stone 1x 2.50 x2.00x 1.00 = 5.00 m^3

Say 5 m 3 @ Rs. 1396/m^3 Rs. 6980.00

4. RR in Cm 1:6 for top of pit

For resting cover slab

2 x 1.00 x 0.50 x 0.50 =0.50

2 x.050 x 0.50 x 0.50 =0.250

0.75

Say 0.75m^3 @ Rs.3252/M^3 Rs. 2439/-

5. RCC 1:11/2:3 using 20 mm brocken

Stone for cover slab

1 x 1.00 x 1.00 x .0.10= 0.10m^3

Say 100 dm 3 @ Rs.74.02/10dm 3 Rs.740.00

6.Reinforcement for RCC work bent

Tried and placed in position

Say 7 Kg @ Rs.6339/Qtl. Rs. 443.00

7.Supplying and providing PVC 800mm dia

Gutter pipe with all fittings&scaffolding etc

55.00m @355/m Rs.19596.00

8.Providing 50 mm PVC pipe			
With all fittings	20 mts @ Rs.66.00/mt		Rs.1320.00
9.Providing filter media etc.			Rs. 1500.00
10.Providing 100 mm PVC pipe			
With all fittings			
	30.00 mts @ Rs. 299/m		Rs. 8970.00
11. conveying and filling water to tank			
Full of water conveyed from with in 5 km by lorry			
	7 load @ Rs 2500/load		Rs.17,500
12. plumbing labour charge and materials.tools etc		LS	Rs 3700/-
13.providing name board		LS	Rs 3000
TOTAL			**Rs.1,90,195/-**
14.Deduct cost and conveyance of			
Departmental Rubble obtained from item No.1			
Of Appendix A- 60% only serviceable.			
	Item 1- $4m^3$ x 60 %= 2.40 m^3		
	Say 2.40 m^3 @ Rs.641.00/m^3		
	Rs. 1,538/-		Rs. 1,88,657/-
6 % Tax, & unforeseen items, if any			Rs. 11,343/-
	GRAND TOTAL	**(Two lakh Rupees Only)**	**Rs.2,00,000**

DATA

1. Earth work excavation in hard soil and depositing with initial lead up to 50 m and lift up to 1.5 m. Including breaking clods, watering ramming and sectioning of spoil bank etc. Complete.

4.000 Nos man mazdoor	Rs.377.00/E	1508.00
2.250 Nos Man mazdoor	Rs. 377.00/E	848.25
		2356.25/10 m3

2. Random rubble in cm 1:6 for Super structure in lines and levels including all leads and lifts.. complete

1.000m3 rubble	Rs.420.00/m3	420
0.300m3 msand	Rs2314.00/m3	694.20
72.00kg cement	Rs5940.00/ton	427.68
0.700nos mason	Rs471.00/E	329.70
0.350nos manmazdoor	Rs377.00/E	131.95
0.700 nos women	Rs377.00/E	263.90
1.000 m3 rubble conveyance	Rs 710.00/m3	710.00
0.300m3 msand conveyance	Rs.838.00/m3	251.4
72.000Kg cement conveyance	Rs.323.00/tonne	23.26
TOTAL		3252.09/m3

4. Flooring concrete cc 1:4:8 using 40 mm stone

0.950 m340 mm stone	Rs 659.00/m3	626.05
0.480m3Msand	Rs 2314.00/m3	1110.72
171.00kgcement	Rs5940.00/ton	1015.74
0.100nos mason	Rs471.00/E	47.1
1.000nos man mazdoor	Rs377/E	377.00
1.400nos women	Rs377/E	527.8
0.950m3 stone conveyance	Rs710.00m3	674.5
0.480m3		
9 msandconveyance	Rs838.00/m3	402.24
171.000 cement conveyance	Rs323.00/ton	55.233
Total		4836/m3

5.Flooring concrete in RCC 1:11/2:3using 20mm broken stone curing,watering, ramming etcand including all chargesof form work complete as per the specification

0.009m3 20mm stone	Rs942.00/m3	8.48		
0.0045m3msand	Rs2314/m3			10.413
4.320kg cement	Rs5940.00/ton			25.66
0.002nos mason	Rs471.00/E			0.94
0.010nosman mazdoor	Rs377.00/E			3.77
0.035nos women	Rs377.00/E			13.20
0.009m3 stone conveyance	Rs710.00/m3	6.39		
0.0045m3msandconveyance	Rs838.00/m3	3.771		
4.320kg cement conveyance	Rs323.00/ton	1.40		
				74.02

6. Making steel for wall dome and filterChamber with8mm bar including Supplying of material and labour

1.000qtl MS rod(tor)TMTsteel	Rs5210.00/qtl	5210		
1.000qtl MSrodconveyance	Rs323.00/ton	32.30		
0.450kgiron wire 24 guage	Rs87.00/kg		39.15	
1.00nos blacksmith	Rs500.00/E		500.00	
1.480nos man	Rs377.00/E		557.96	
Total				**6339.41/qtl**

7. Supplying and winding with 3 layers of 20 guage12mm hexagonal GI wire mesh over the wall dome Including material and labour

observed data 60 /m2

8. Plastering cm1:3,12mm thick each on both side of tank wall applied in layers and furnished smooth with cement flushing

coat including material and labour.

10.140m3 msand	Rs 2314.00/m3	323.96
66.00kg cement	Rs5940.00/ton	392.04
0.900nos mason	Rs 471.00/E	423.90
0.550 nos manmazdoor	Rs 377.00/E	207.35
1.100 nos women	Rs 377.00/E	414.70
0.140m3 msand conveyance	Rs 838.00/m3	117.32
66.00kg cement conveyance	Rs323.00/ton	21.32
Total		1901/10m2

9. cement washing 2 coats

1.000 kg cement	Rs 5940.00/ton	5.94
1.000kg cement conveyance	Rs 323.00/ton	0.32
LS glue and other sundries		1.85
0.080nos special mazdoor	Rs 408.00/E	32.64
0.080 nos boymazdoor	Rs 377.00/E	30.16
Total		70.91/m2

10.Dismantling and clearing and carefullyStacking materials useful for reuseFor any thickness rubble masonry in cement Mortar.

1.600 nos man mazdoor Rs 377.00/each 603.20/m3

11. Supplying and providing PVC Rs 75/m

Gutter with all fittings

12. Providing 50 mm PVC pipe
With all fittings Rs.66.00/mt

13.Providing filter media etc. LS Rs. 1500.00

14.Providing 100 mm PVC pipe Rs. 299/m

With all fittings

15.conveying and filling water to tank

Full of water conveyed from with in 5 km by lorry Rs 2500/load

16. plumbing labour charge and materials.tools etc LS Rs 4000/-

ESTIMATE REPORT

Name of Work:- IWMP 2012-13 Pathanapuram Block Panchayath.**Well Recharging** in forty houses in Kadaikkamon Watershed in Piravanhoor Panchayath.

Estimate Cost :- **Rs 4,00,000/-**

This project is proposing to include the Integrated Watershed management Programme (IWMP) of Government of India, Ministry of Rural Development.

The aim of this Project is rain water harvesting and recharging of land to increase the grond water table. As it is executing in group of houses located nearly for effective result. By focusing the regions which facing serious scarcity of drinking water is mainly considered.

This region is situated in Kadaikamon watershed which comes under Piravanthoor Panchayath, Karimpaloor ward and punnala ward . 40 houses of beneficiaries from each ward have been selected and this project is executing in these 40 individual houses.

The items proposed in the estimate are earth work excavation for recharging pit, and water collection systems from roof of houses such as PVC gutter pipe, clamp, bend Tee, dropper, elbow etc. has been mention in estimate.

The estimate prepared, based on the 2012 SOR, and excluded the contractors profit but included an amount for tax and beneficiary contribution of 10 % is collected, the estimating submitting for scrutinizing and approval.

Estimate

NAME OF WORK: WELL RECHARGING

SL No	ITEM OF WORK	Nos	L	B	D	QTY	AMOUNT
1.	Earth work excavation in hard soil and depositing on bank with initial lead up to 50 mm and lift up to 1.5m. including breaking clods, watering, ramming and section of spoil bank..etc. Complete.						
i)	Rain pit	1	1.50	150	1.50	3.375	
ii)	One layer brick work	2	1.70	0.20	0.20	0.136	
		2	1.70	0.20	0.20	0.136	
						3.647	
	Say 4 m3 @ 2356.25/10m^3						Rs.943/-
2.	**C**ement Block in cm 1:6 (40 x 20 x20) block						
	2	1.70	0.20	0.20			0.136
	2	1.70	0.20	0.20			0.136
							0.272m^3
	Say 0.272 m^3@3068/m^3						Rs.835/-
3.	RCC 1:2:4, using 20mm nominal Size broken stone, using, watering, Ramming..etc. and including cost of Reinforcement…complete as per the Specifications.						
	1	1.80	1.80	0.10		0.324	
	Say 0.324m^3 @68/10dm^3						Rs.2204/-

Reinforcement

0.324 x 0.50 = 0.162

Say 0.162 Qtl@6339/Qtl Rs.1027/-

4.Providing 150 mm 2.5 Kg PVC		
Gutter pipe	10m	
Say 10 m @ 84/m		Rs.840/-
5.Providing 150 mm PVC stopper		
Say 1E @ 56 E		Rs. 56/-
6.Providing 150 mm PVC dropper		
Say 1E @ 60 E		Rs/-60/-
7.Providing 150 mm center proper		
Say 1E @ 75 E		Rs. 75/-
8.Providing 150 mm GI Clamp		
Say 10 Nos. @ 30 E		Rs. 300/-
9.Providing 63 mm PVC 4 Kg pipe		
Say 14 m @ 52/m		Rs. 728/-
10.Providing 63 mm PVC Bend		
Say 4 Nos. @27 E		Rs. 108/-
11.Providing 63 mm PVC Tee		
Say 2 Nos @ 55 E		Rs.110/-
12.Providing 53 mm PVC elbow		
Say 3 Nos @ 45 E		Rs.135/-
13.Providing 63 mm PVC coupling		
Say 1 Nos @ 19 E		Rs.19/-
14.Providing 63 mm MTA		
Say 1 Nos @ 17 E		Rs.19/-
15.Providing 62 mm thread end cap		
Say 1 Nos.@ 17 E		Rs.17/-
16.Providing 63 mm steel clamp		
Say 4 Nos. @ 2.5 E		Rs. 10/-
17.Labour charge	848 E	Rs. 848/-
18.Miscellaneous items	50 E	Rs.50/-
TOTAL		Rs.8384-

19.Beneficiary contribution

10% of Total = (10/100) * 8384 = Rs.839/-

TOTAL Rs.9223/-

20.Add 6% tax ,& unforeseen items if any, Rs 777/-

21.**Rate for one well recharging unit for one house** Rs.**10,000/-**

22**. Hence, cost for 40 well recharging unit**

for 40 houses 40 x 10,000 **Rs.4,00,000/-**

GRAND TOTAL (FOUR LAKH RUPEES ONLY) **Rs.4,00,000/-**

DATA

1. Earth work excavation in hard soil and depositing with initial lead up to 50 m and lift up to 1.5 m. Including breaking clods, watering ramming and sectioning of spoil bank etc. Complete.

4.000 Nos man mazdoor Rs.377.00/E 1508.00

2.250 Nos Man mazdoor Rs. 377.00/E 848.25

2356.25/10 m3

2.Cement Block in cm 1:6 (40 x 20 x20) block Rs 3068/m^3

3.Flooring concrete in RCC 1:11/2:3using 20mm broken stone curing,watering, ramming etcand including all chargesof form work complete as per the specification

0.009m3 20mm stone	Rs942.00/m3	8.48	
0.0045m3msand	Rs2314/m3		10.413
4.320kg cement	Rs5940.00/ton	19.60	
0.002nos mason	Rs471.00/E		0.94
0.010nosman mazdoor	Rs377.00/E		3.77
0.035nos women	Rs377.00/E		13.20
0.009m3 stone conveyance	Rs710.00/m3	6.39	
0.0045m3msandconveyance	Rs838.00/m3	3.771	
4.320kg cement conveyance	Rs323.00/ton	1.07	

Rs68/10dm3

4.Providing 150 mm 2.5 Kg PVC Gutter pipe Rs 84/m

5.Providing 150 mm PVC stopper Rs. 56/E

6.Providing 150 mm PVC droppe Rs60 E

7.Providing 150 mm center proper Rs75 E

8.Providing 150 mm GI Clamp Rs30 E

9.Providing 63 mm PVC 4 Kg pipe Rs52/m

10.Providing 63 mm PVC Bend Rs27 E

11.Providing 63 mm PVC Tee Rs55 E

12.Providing 53 mm PVC elbow Rs45 E

13.Providing 63 mm PVC coupling Rs19 E

14.Providing 63 mm MTA Rs17 E

15.Providing 62 mm thread end cap Rs17 E

16.Providing 63 mm steel clamp Rs2.5 E

17.Making steel for wall dome and filterChamber with8mm bar including Supplying of material and labour

1.000qtl MS rod (tor)TMTsteel	Rs5210.00/qtl	5210	
1.000qtl MSrodconveyance	Rs323.00/ton	32.30	
0.450kgiron wire 24 guage	Rs87.00/kg		39.15
1.00nos blacksmith	Rs500.00/E		500.00
1.480nos man	Rs377.00/E		557.96
Total			**6339.41/qtl**

Prepared by
AE (IWMP) Pathanapuram Block Panchayat

Rough Estimate
Gully plugging

Item No.	Description	No.	L	B	D	Qty	Rate	Unit		Amount
1	Earth work excavation in ordinary soil and depositing on bank with initial lead upto 50m and lift upto 1.5m including breaking, clods, watering, ramming and sectioning of spoil bank, etc. Complete.	1	4.24	0.80	0.15	0.5088	1326	10	m^3	67.47
2	Construction of gully plugs using picked up stones including conveyance labour etc.	1	3.00	0.55	1.00	1.65	792.00	1	m^3	1306.8
										1374.27
	For I m^3 of Gully plugging									832.89
	Unforeseen items if any									67.11
	Total									**900.00**

Data

Sl.no.	Description	Number	Rate	Amount	unit
1	Earthwork excavation in ordinary soil and depositing on bank with initial lead upto 50m and lift upto 1.5m including breaking, clods, watering, ramming and sectioning of spoil bank etc. complete-				
	Unskilled	**3.35**	**377**	1262.95	
	Add 5 % overhead charges			63.15	
	Total			1326.10	
	Say			**1326.00**	**10 m^3**
2	Construction of gully plugs using picked up stones including conveyance labour etc.				
	Picking up of available stones and conveying to the site by head load- unskilled labour	**0.5**			
	gully plugging - unskilled labour	**1.5**			
	Total	**2**	**377**	754.00	
	Add 5 % overhead charges			37.70	
	Total			791.70	
	Say			**792.00**	**m^3**

Earthern bund (for 100 m length)

Item No.	Description	No.	L	B	D	Qty	Rate	Unit		Amount
1	Clearing light jungle including uprooting of thick vegetation and small trees of girthupto 30cm and removal of rubbish upto a distance of 150 m outside the periphery of the area cleared.	1	110.00	2.10		231	188.50	100	m^2	435.44
2	Earth work exaction in all classes of soil for terracing and using the spoil for forming bunds where ever required including all leads and lifts etc. complete.	1	100.00	0.50	0.75	37.5	1590	10	m^3	5962.50
3	Consolidating the bund where ever required.	1	100.00	0.50	0.75	37.5	263.9	10	m^3	990.00

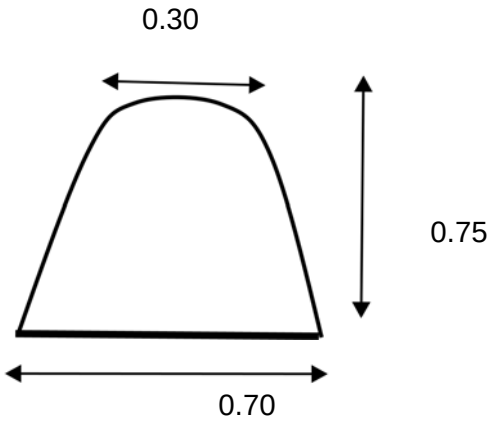
									7387.94
	Unforeseen items if any								12.06
	Total								**7400.00**

For 100 m R 7400 hence for 1 m = $\frac{7400}{100}$ 74.00

DATA

Sl.No.	Description	Number	Rate	Amount
1	Clearing light jungle including uprooting of thick vegetation and small trees of girthupto 30cm and removal of rubbish upto a distance of 150 m outside the periphery of the area cleared.			
	Unskilled labour	0.5	377.00	**188.50 / 100 m^2**
2	Earth work exaction in all classes (50% ordinary soil and 50% hard so) of soil for terracing and using the spoil for forming bunds where ever required including all leads and lifts etc. complete.			
	For Ordinary soil (2.9625 /2)	1.4813		
	For hard soil (5.475 /2)	2.7375		
	Total Unskilled	4.2188	377.00	**1590.00 / 10 m^3**
3	Consolidating the bund where ever required.	0.7	377.00	263.90
	Say			**263.90 / 10 m^3**

Cross Section of Bund



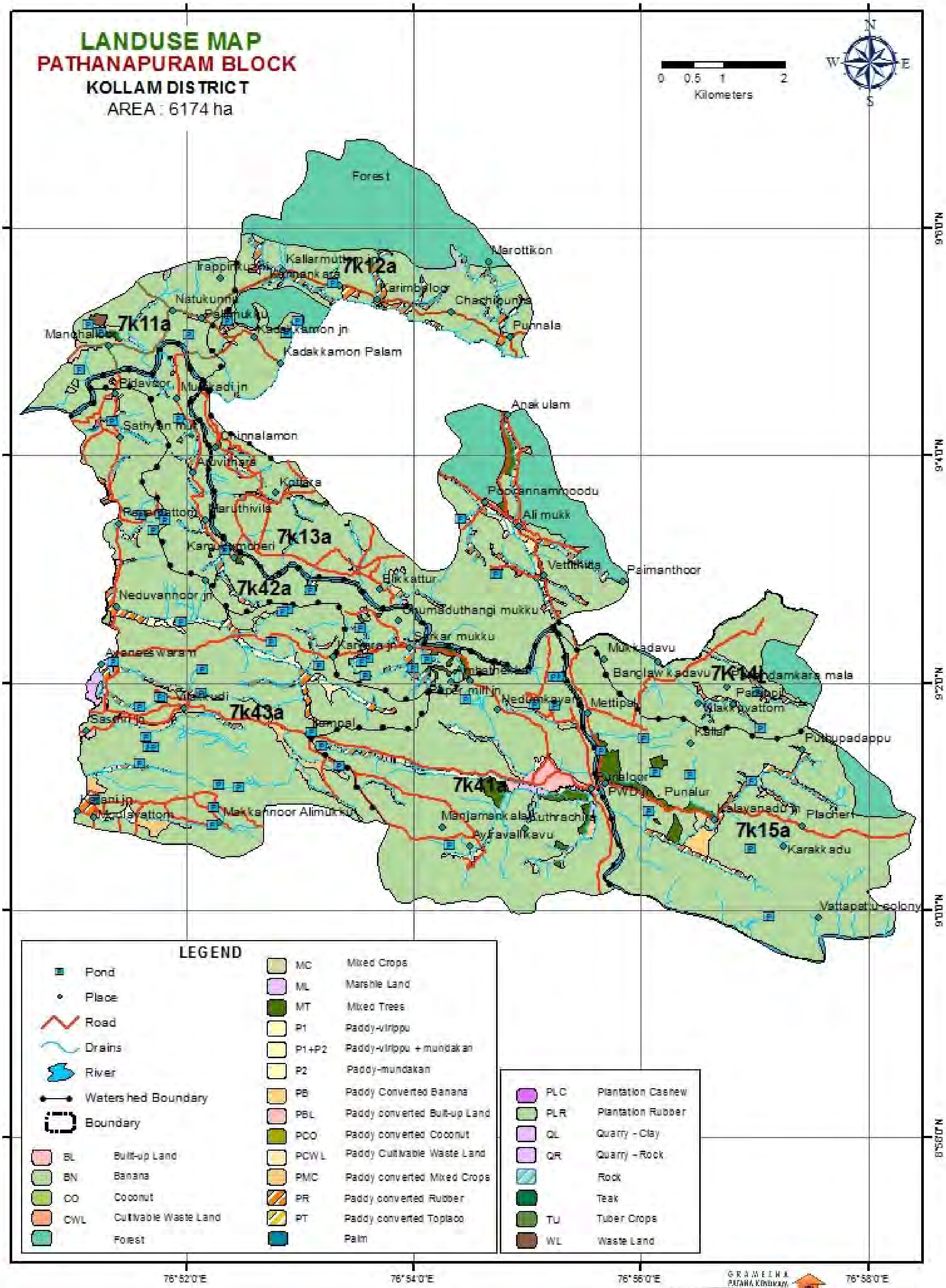
Side protection using stone masonry

Item No	Description	No	L	B	D	Qty	Rate	Unit		Amount
1	Clearing light jungle including uprooting of thick vegetation and small trees of girthupto 30cm and removal of rubbish upto a distance of 150 m outside the periphery of the area cleared.	1	100.00	0.80		80	396.00	100	m^2	316.80
2	Earth work excavation in ordinary soil and depositing on bank with initial lead up to 50m and lift upto 1.5m including breaking clods, watering, ramming and sectioning of spoil bank, etc. complete.	1	100.00	0.80	0.15	12	1326.00	10	m^3	1591.20
3	Earth work excavation in hard soil and depositing on bank with initial lead up to 50m and lift upto 1.5m including breaking clods, watering, ramming and sectioning of spoil bank, etc. complete.	1	100.00	0.80	0.30	24	2474.00	10	m^3	5937.60
4	Dry rubble masonry including all costs of material, labour, conveyance, and all other incidental charges involved etc complete as per standard specification									
	Foundation	1	100.00	0.80	0.45	36				
	Super structure	1	100.00	0.50	0.50	25				
	Total					61	1754.00	1	m^3	106994.00
5	Random rubble masonry in cement morter 1:6 (one coat cement and six sand) using 72kg of cement /1m3 masonry for wall with hammer dressed close finished joints without pinnings and pointing the exposed faces of masonry with the same morter simultaneously during the course of construction, including cost and conveyance of all materials, labour charges etc. complete	1	100.00	0.50	0.50	25	3342.00	1	m^3	83550.00
6	Plastering with cement morter 1:4, 12mm thick one coat using 54kg of cement /10m2 plastering, floated hard and trowelled smooth including cost and conveyance of all materials labour charges etc. complete	1	100.00	0.55		55	1993.00	10	10 m^2	10961.50
7	Back filling the available earth during the course of construction including consolidation, etc. complete.	1	100.00	0.50	1.00	50	974	10	m^3	4870.00
										214221.10
	Unforeseen, if any									**78.90**
	Grand Total									**214300.00**

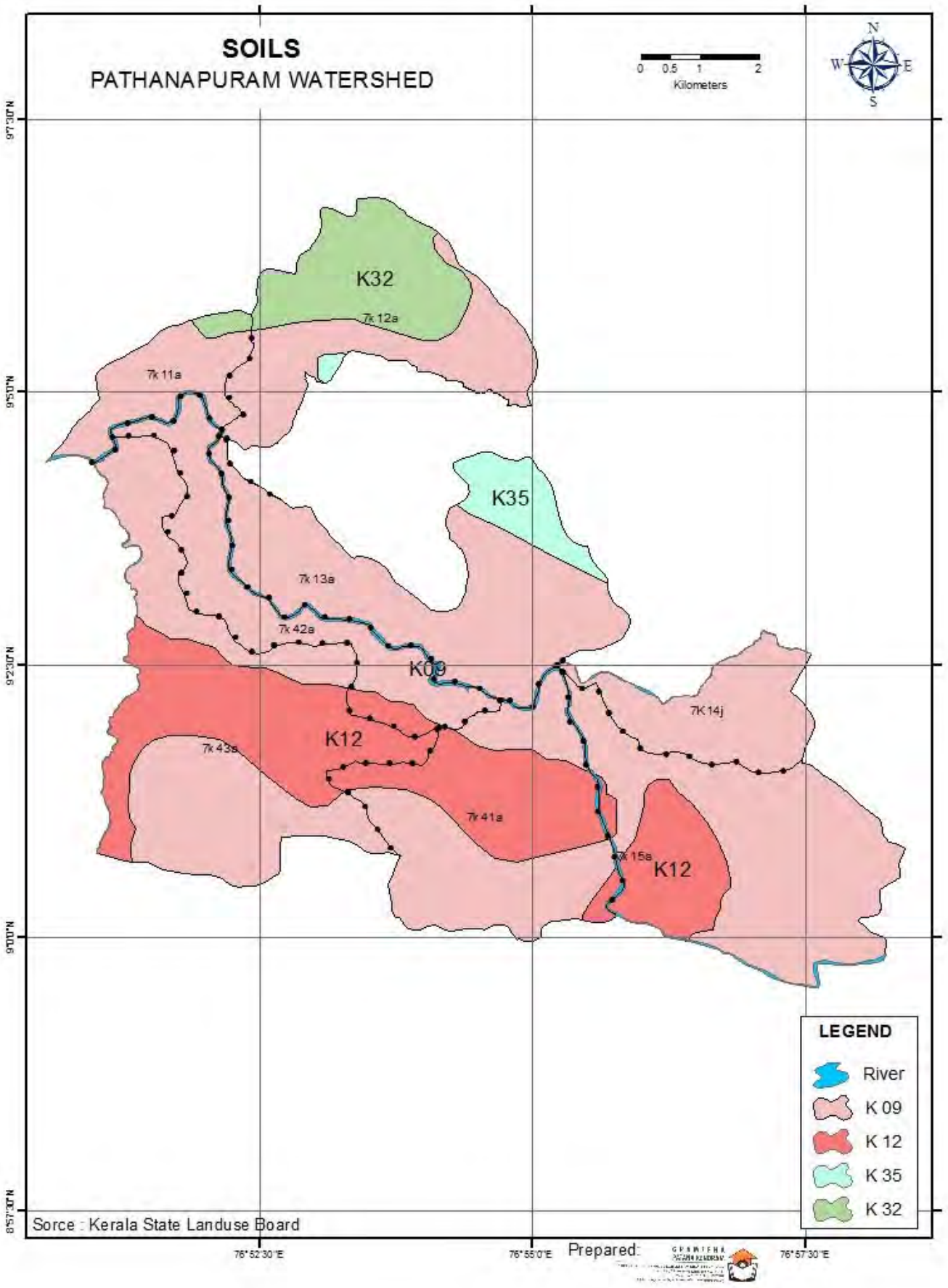
Data

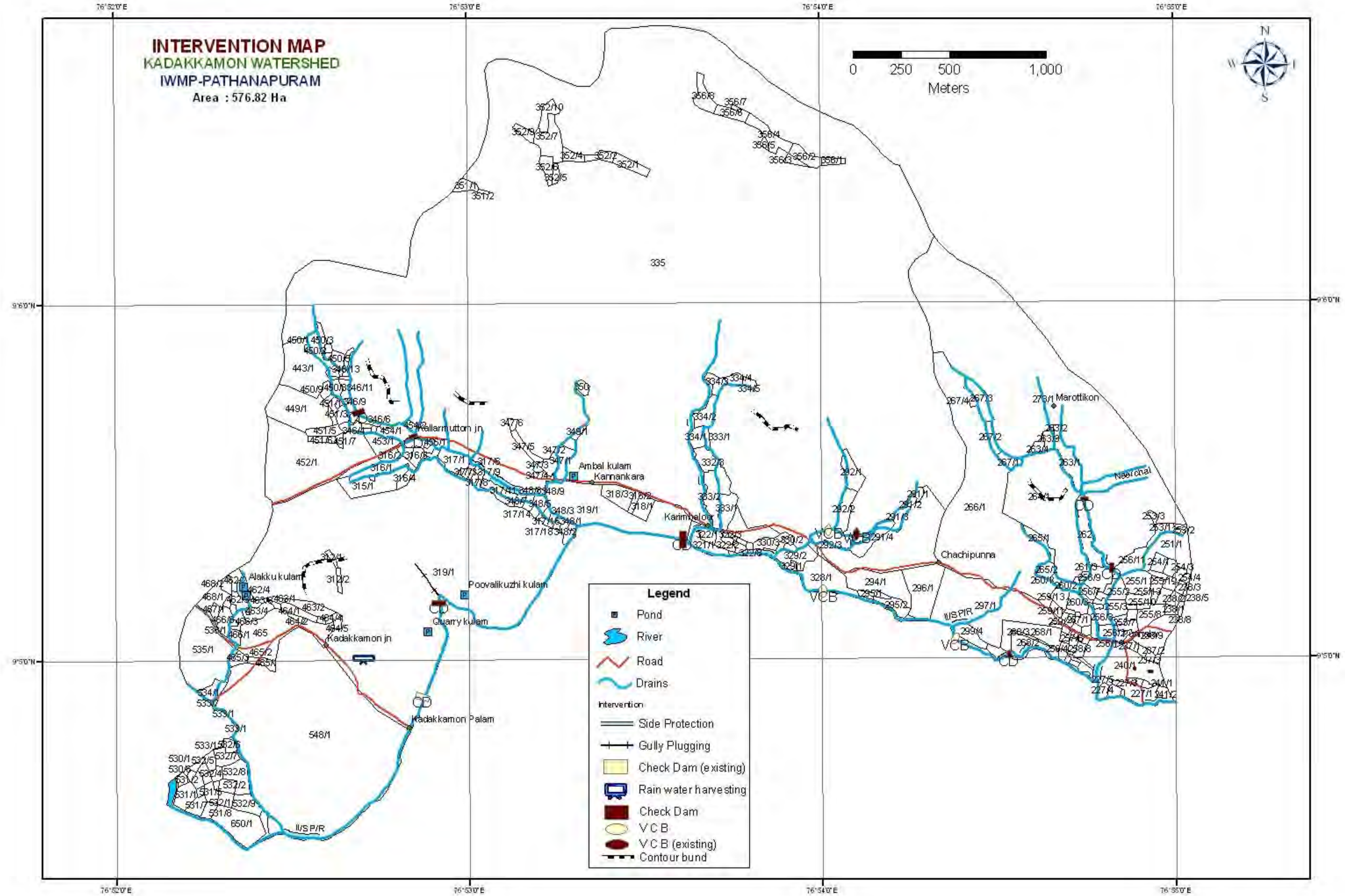
Sl. no	Description	Number	Rate	Amount	
1	Clearing light jungle including uprooting of thick vegetation and small trees of girthupto 30cm and removal of rubbish upto a distance of 150 m outside the periphery of the area cleared.				
	Unskilled labour	1	377	377.00	
	Add 5 % overhead charges			**18.85**	
	Total			**395.85**	
				396.00	**100m^2**
2	Earthwork excavation in ordinary soil and depositing on bank with initial lead upto 50m and lift upto 1.5m including breaking, clods, watering, ramming and sectioning of spoil bank etc. complete-				
	Unskilled	3.35	377	1262.95	
	Add 5 % overhead charges			**63.15**	
	Total			**1326.10**	
	Say			**1326.00**	**10m^3**
3	Earthwork excavation in hard soil and depositing on bank with initial lead upto 50m and lift upto 1.5m including breaking, clods, watering, ramming and sectioning of spoil bank etc. complete				
	Unskilled	6.25	377	2356.25	
	Add 5 % overhead charges			**117.81**	
	Total			**2474.06**	
	Say			**2474.00**	**10m^3**
4	Dry rubble masonry including all costs of material, labour, conveyance, and all other incidental charges involved etc complete as per standard specification				
	Rubble	1.05	420	441.00	
	Conveyance - Rubble	1.05	561	589.05	
	Labour				
	Mason	0.8	471	376.80	
	Unskilled	0.7	377	263.90	
				1670.75	
	Add 5 % overhead charges			**83.54**	
	Total			**1754.29**	
	Say			**1754.00**	**m^3**
5	Random rubble masonry in cement morter 1:6 (one coat cement and six sand) using 72kg of cement /1m3 masonry for wall with hammer dressed close finished joints without pinnings and pointing the exposed faces of masonry with the same morter simultaneously during the course of construction, including cost and conveyance of all materials, labour charges etc. complete				
	Blasted rubble	1	420	420	

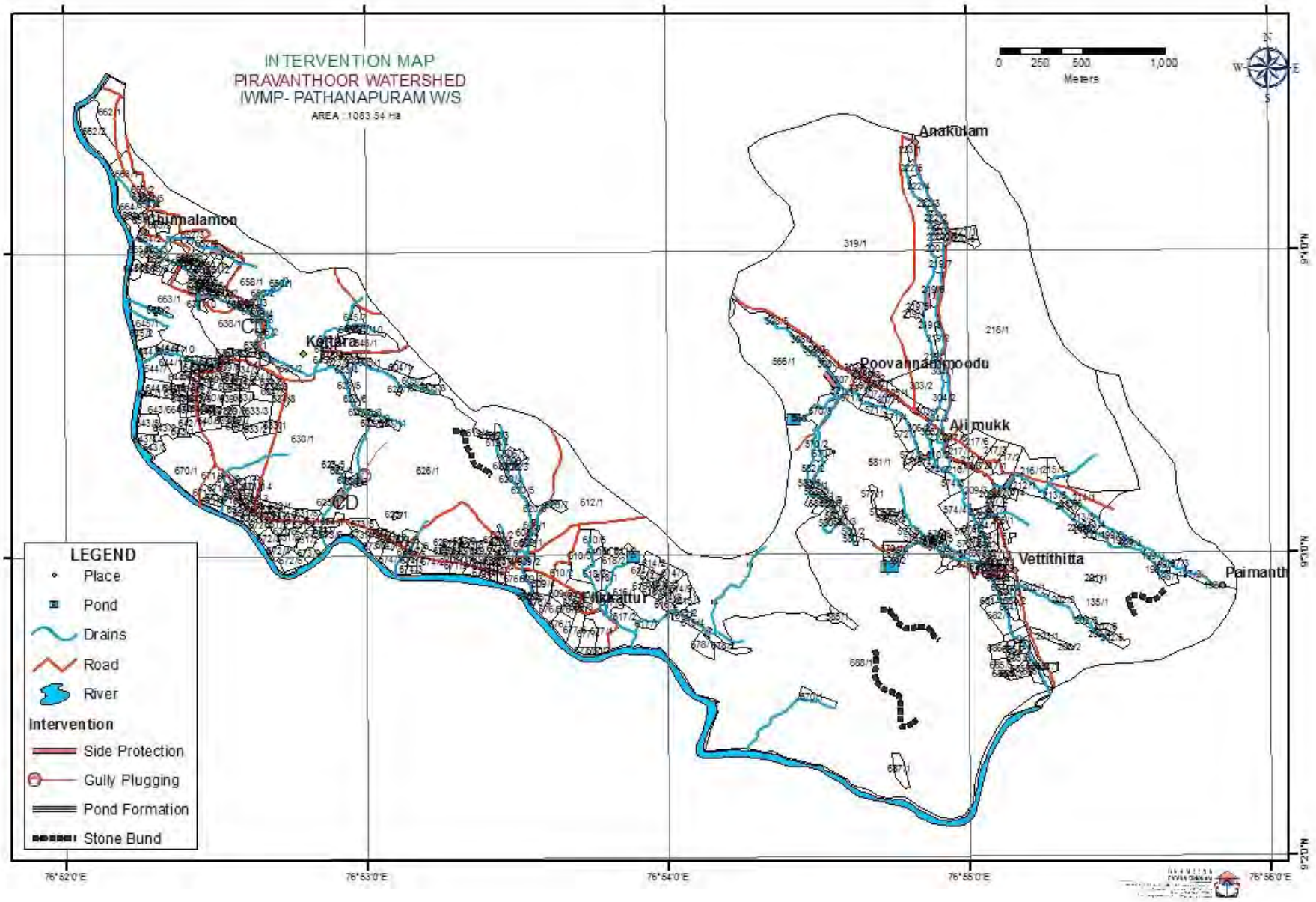
	Sand	0.3	2777	833	
	Cement	0.072	5940	428	
	Conveyance - Rubble	1	561	561.00	
	Conveyance - Sand	0.3	625	187.50	
	Conveyance - cement	0.072	375	27.00	
	rubble mason	0.7	471	330	
	Unskilled	0.35	377	132	
	Unskilled	0.7	377	264	
				3182.50	
	Add 5 % overhead charges			**159.13**	
	Total			**3341.63**	
	Say			**3342.00**	**m^3**
6	Plastering with cement morter 1:4, 12mm thick one coat using 54kg of cement /10m2 plastering, floated hard and trowelled smooth including cost and conveyance of all materials labour charges etc. complete				
	materials				
	Sand	0.15	2777	417.00	
	Cement	0.054	5940	321.00	
	Conveyance - Sand	0.15	625	93.75	
	Conveyance - cement	0.054	375	20.25	
	labour				
	Mason	0.9	471	424.00	
	Unskilled	0.55	377	207.00	
	Unskilled	1.1	377	415.00	
				1898.00	
	Add 5 % overhead charges			**94.90**	
	Total			**1992.90**	
	Say			**1993.00**	**$10m^2$**
7	Back filling the available earth during the course of construction including consolidation, etc. complete.				
	Rate for $10m^3$				
	Conveying the available earth-Head Load 100m	10	71	710.00	
	Consolidating the available earth-unskilled labour	0.7	377	263.90	
				973.90	
	Say			**974**	**$10m^3$**

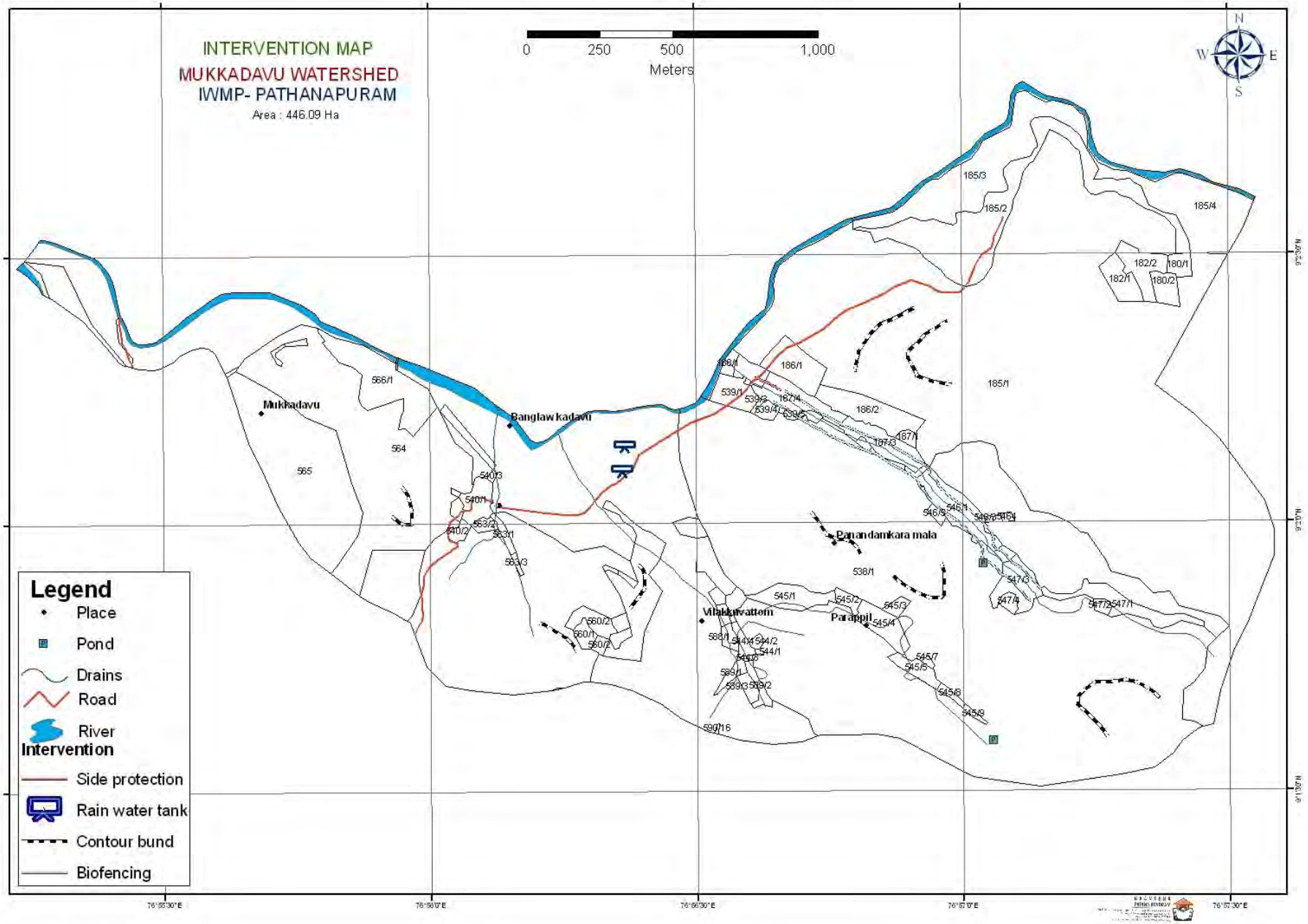


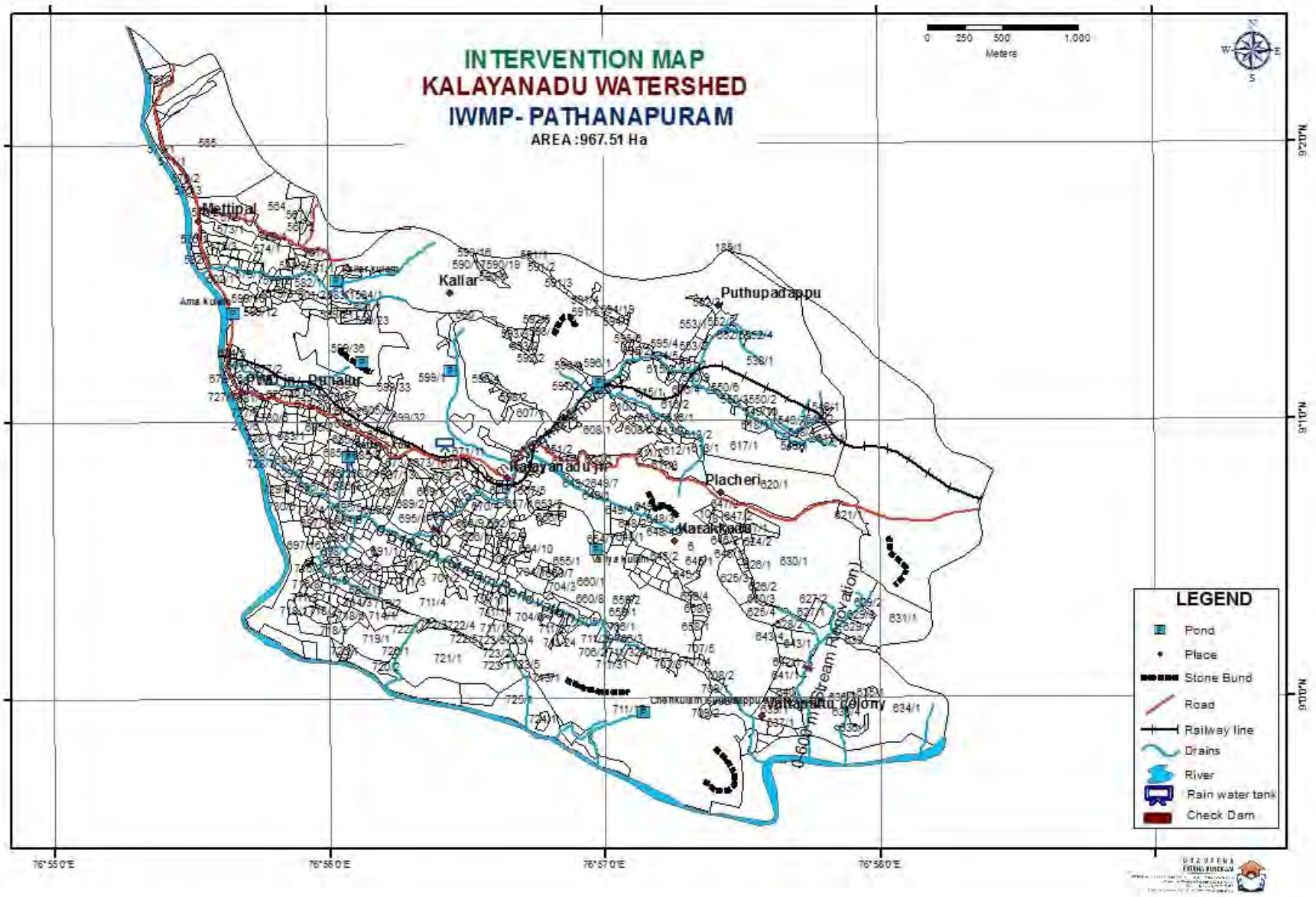
LANDUSE MAP
PATHANAPURAM BLOCK
KOLLAM DISTRICT
AREA : 6174 ha
0 0.5 1 2
Kilometers
LEGEND
Pond
Place
Road
Drains
River
Watershed Boundary
Boundary
BL Built-up Land
BN Banana
CO Coconut
CWL Cultivable Waste Land
Forest
MC Mixed Crops
ML Marshie Land
MT Mixed Trees
P1 Paddy-virippu
P1+P2 Paddy-virippu + mundakan
P2 Paddy-mundakan
PB Paddy Converted Banana
PBL Paddy converted Built-up Land
PCO Paddy converted Coconut
PCWL Paddy Cultivable Waste Land
PMC Paddy converted Mixed Crops
PR Paddy converted Rubber
PT Paddy converted Topiaco
Palm
PLC Plantation Cashew
PLR Plantation Rubber
QL Quarry - Clay
QR Quarry - Rock
Rock
Teak
TU Tuber Crops
WL Waste Land
7k11a
7k12a
7k13a
7k42a
7k43a
7k41a
7k15a
Forest
Punalur
76°52'0"E
76°54'0"E
76°56'0"E
76°58'0"E

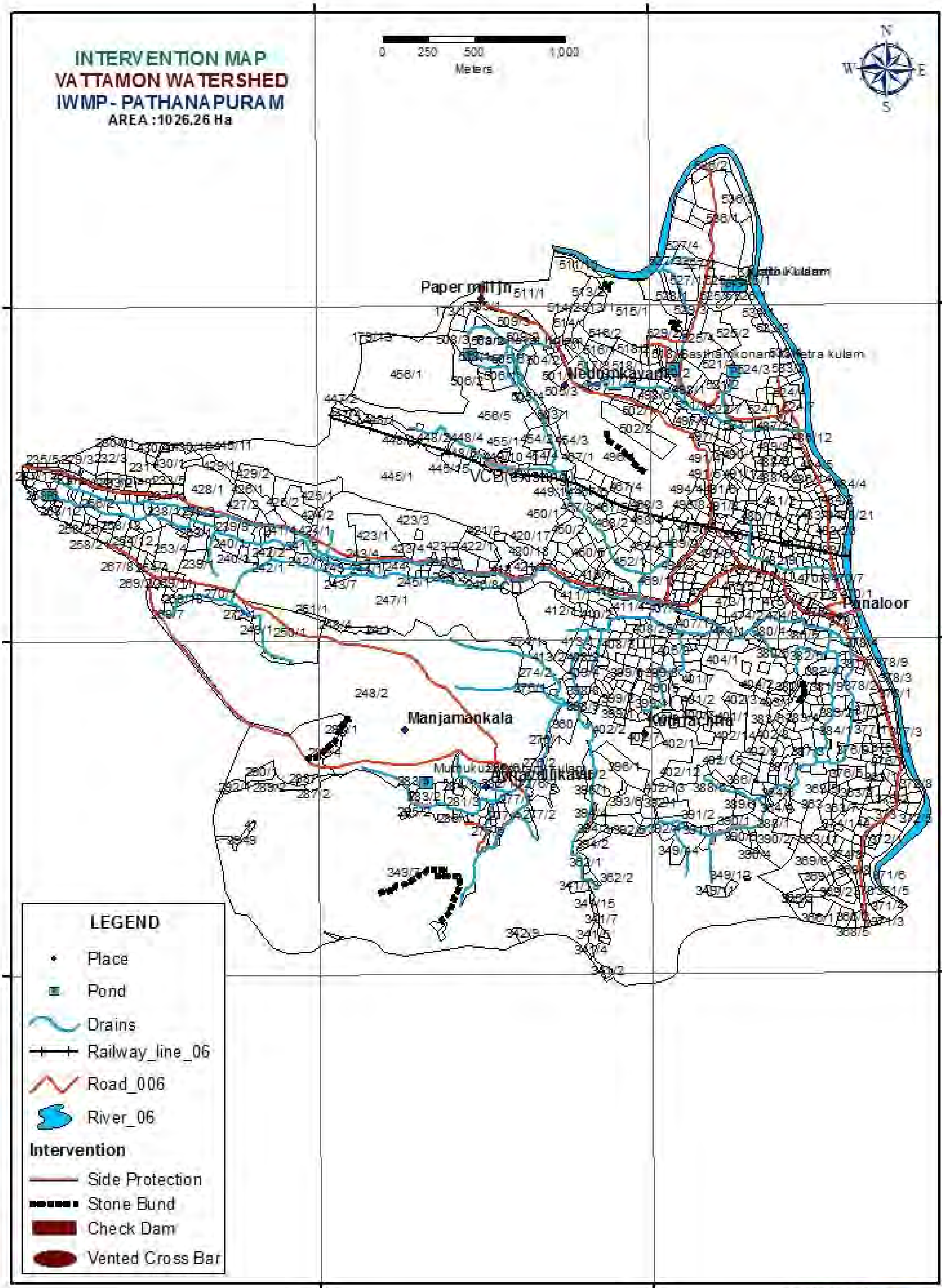

SOILS
PATHANAPURAM WATERSHED
0 0.5 1 2
Kilometers
N
S
E
W
K32
7k 12a
7k 11a
K35
7k 13a
7k 42a
K09
7K14j
K12
7k 43a
7k 41a
7k 15a
K12
LEGEND
River
K 09
K 12
K 35
K 32
Sorce : Kerala State Landuse Board
Prepared:
9°7'30"N
9°5'0"N
9°2'30"N
9°0'0"N
8°57'30"N
76°52'30"E
76°55'0"E
76°57'30"E


INTERVENTION MAP
KADAKKAMON WATERSHED
IWMP-PATHANAPURAM
Area : 576.82 Ha
0 250 500 1,000
Meters
Legend
Pond
River
Road
Drains
Intervention
Side Protection
Gully Plugging
Check Dam (existing)
Rain water harvesting
Check Dam
V C B
V C B (existing)
Contour bund

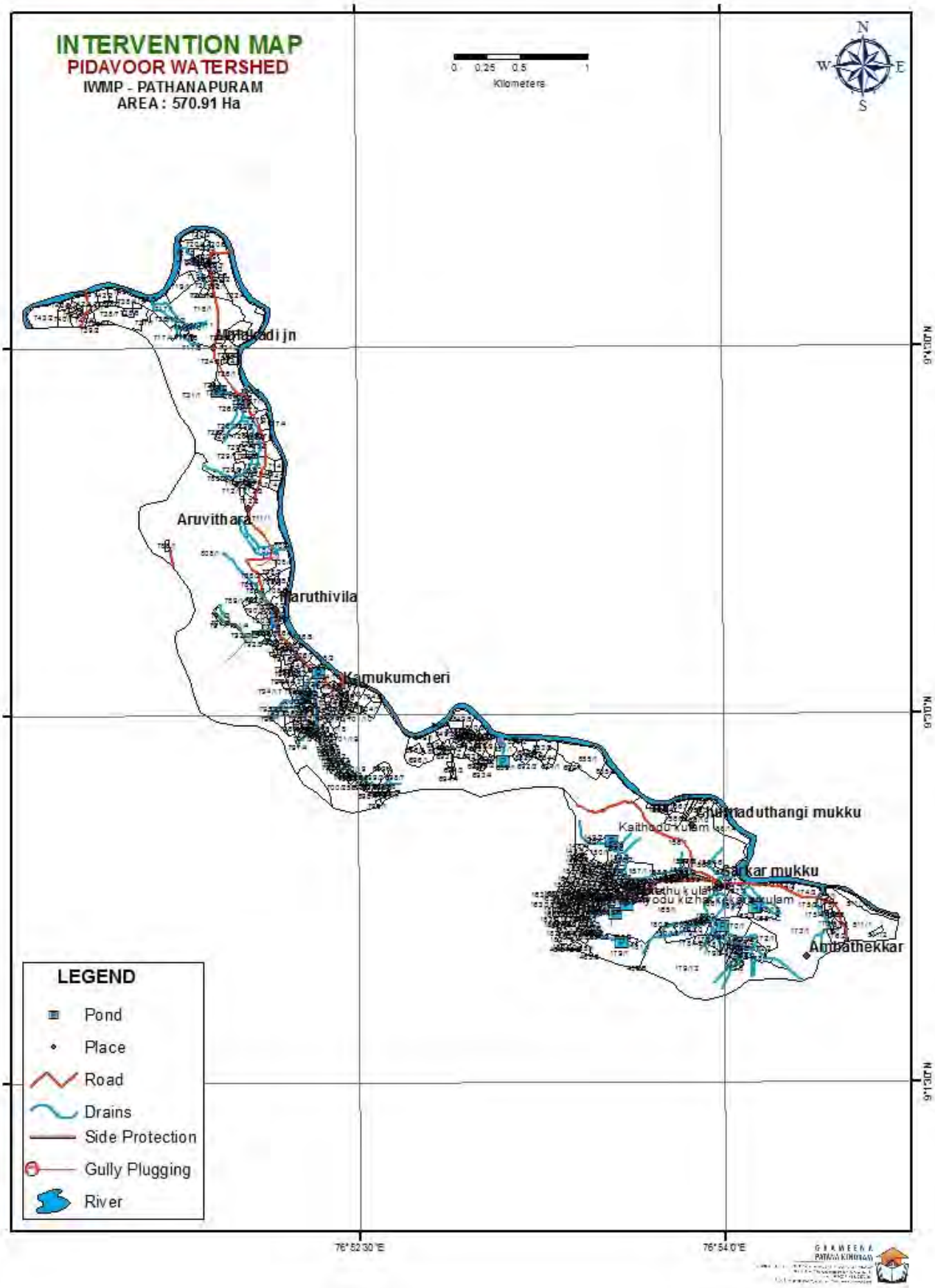

INTERVENTION MAP
PIRAVANTHOOR WATERSHED
IWMP- PATHANAPURAM W/S
AREA : 1083.54 Ha
0 250 500 1,000
Meters
N
W
E
S
Anakulam
Poovannadimoodu
Alimukk
Vettithitta
Paimanth
Kottara
CD
CD
Elikattur
LEGEND
Place
Pond
Drains
Road
River
Intervention
Side Protection
Gully Plugging
Pond Formation
Stone Bund
76°52'0"E
76°53'0"E
76°54'0"E
76°55'0"E
76°56'0"E
9°1'0"N
9°0'0"N
8°59'0"N

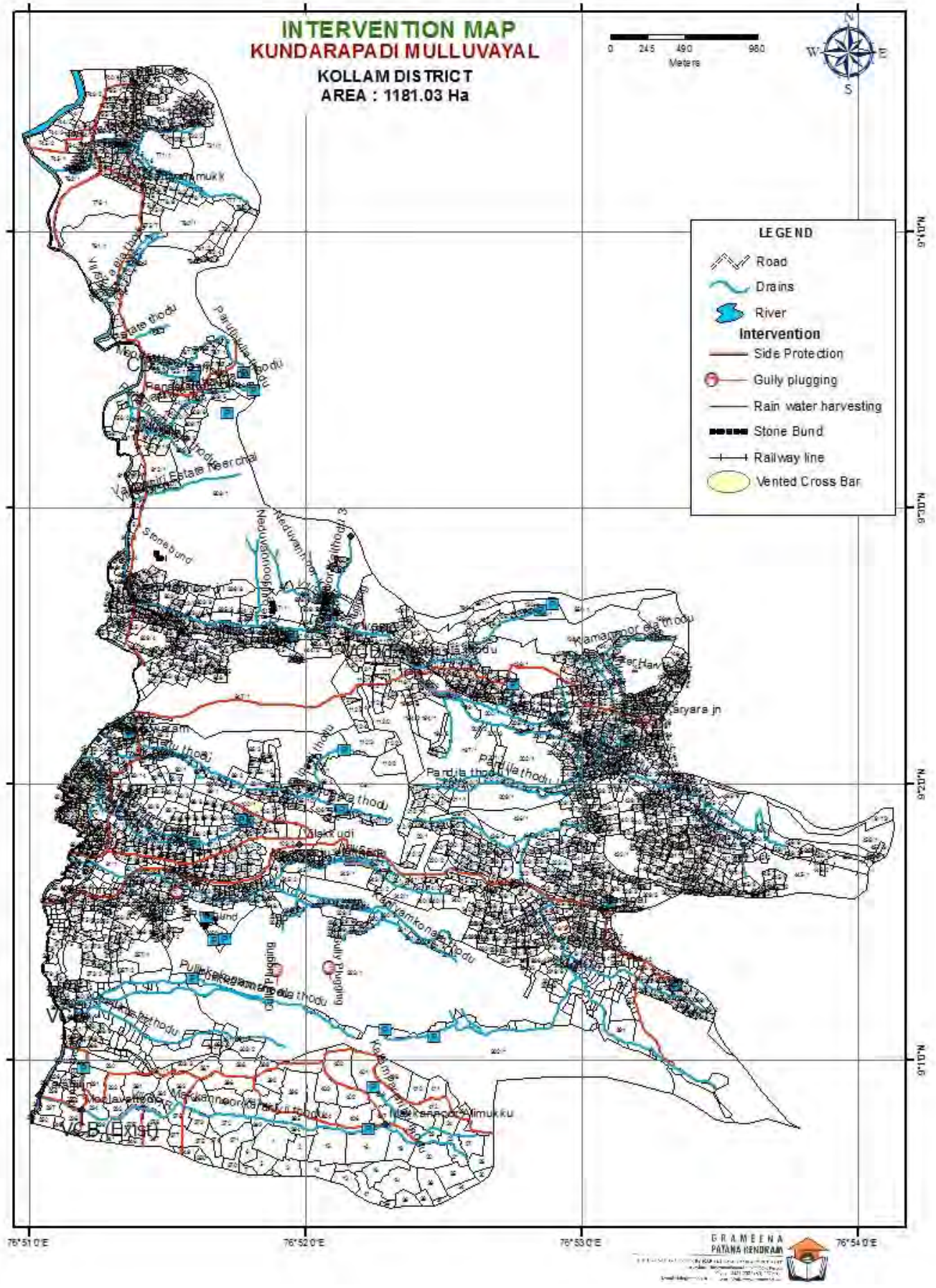

INTERVENTION MAP
MUKKADAVU WATERSHED
IWMP- PATHANAPURAM
Area : 446.09 Ha
0 250 500 1,000
Meters
N
W
E
S
Mukkadavu
Banglawkadavu
Panandamkara mala
Vilakkuvattom
Parappil
Legend
Place
Pond
Drains
Road
River
Intervention
Side protection
Rain water tank
Contour bund
Biofencing


INTERVENTION MAP
KALAYANADU WATERSHED
IWMP- PATHANAPURAM
AREA :967.51 Ha
0 250 500 1,000
Meters
N
S
E
W
Mettipal
Kallar
Puthupadappu
Kalayanadu
Placheri
Marakkoda
Pathanapuram Colony
LEGEND
Pond
Place
Stone Bund
Road
Railway line
Drains
River
Rain water tank
Check Dam
76°55'0"E
76°56'0"E
76°57'0"E
76°58'0"E
9°2'0"N
9°1'0"N
9°0'0"N



INTERVENTION MAP
VATTAMON WATERSHED
IWMP- PATHANAPURAM
AREA :1026.26 Ha
0 250 500 1,000
Meters
N
S
W
E
LEGEND
Place
Pond
Drains
Railway_line_06
Road_006
River_06
Intervention
Side Protection
Stone Bund
Check Dam
Vented Cross Bar
Paper mill jn
Manjamankala
Punaloor
76°54'0"E
76°55'0"E
9°2'0"N
9°1'0"N
9°0'0"N
GRAMEENA
PATANA KENDRAM


INTERVENTION MAP
PIDAVOOR WATERSHED
IWMP - PATHANAPURAM
AREA : 570.91 Ha
0 0.25 0.5 1
Kilometers
N
W
E
S
Aruvithara
Maruthivila
Kamukumcheri
Kaithodu Kulam
Ambathekkar
LEGEND
Pond
Place
Road
Drains
Side Protection
Gully Plugging
River
76°52'30"E
76°54'0"E


INTERVENTION MAP
KUNDARAPADI MULLUVAYAL
KOLLAM DISTRICT
AREA : 1181.03 Ha
0 245 490 980
Meters
N
S
E
W
LEGEND
Road
Drains
River
Intervention
Side Protection
Gully plugging
Rain water harvesting
Stone Bund
Railway line
Vented Cross Bar
VCB (Exist)
Stone bund
Gully plugging
76°51'0"E
76°52'0"E
76°53'0"E
76°54'0"E
9°11'0"N
9°10'0"N
9°9'0"N
9°8'0"N
GRAMEENA PATANA KENDRAM