Integrated Watershed Management Programme (IWMP)
Detailed Project Report

IWMP-V-2011-12

In Karadka Block Panchayath
Kasaragod District
Kerala State

SLNA: Commissionerate of Rural Development, GoK
PIA: Karadka Block Panchayat

TSO: CRD, Nileshwaram

PART- I

1. Introduction

1.1 Project Background:

The Department of Land Resources Development under the Ministry of Rural Development , Government of India had implemented 4 watershed programmes viz. Integrated Wastelands Development Programme (IWDP), Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and 'Hariyali' till 1st April 2008. Since then, these 4 programmes have been brought under a comprehensive programme named Integrated Watershed Management Programme (IWMP) to be implemented under Common Guidelines on Watershed Development, 2008.

1.2 Need and Scope for Watershed Management:

A Watershed is a geo-hydrologic unit or piece of land that drains in to a common point/outlet. Watersheds are natural units for planning and implementation of developmental activities, ensuring integration and sustainability.

Since soil and water are basic resources that directly influence the development, the concept of soil and water resources development on a watershed basis has gained importance. An important feature of sustainable development is development without damaging the resource base. This is best possible in a watershed based development approach. So, watersheds are considered as the ideal units for sustainable development.

Through Watershed projects, we ultimately aim at influencing human behaviors and generating positive changes in the process of peoples' interaction with the natural resources in the watershed. If desired positive attitude is not developed among the community/people, the objectives of the watershed projects cannot be attained. All watershed projects calls for active and productive involvement of the inhabitant of the watershed.

1.3 . Main objectives and salient features of IWMP including organizational set up:

1.3.1. Objectives

The main objectives of the IWMP are to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The project visualize a four fold outcomes

a) Prevention of soil run-off
b) Regeneration of natural vegetation
c) Rain water harvesting

d) Recharging of the ground water table.

This enables multi-cropping and the introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area through a participatory approach.

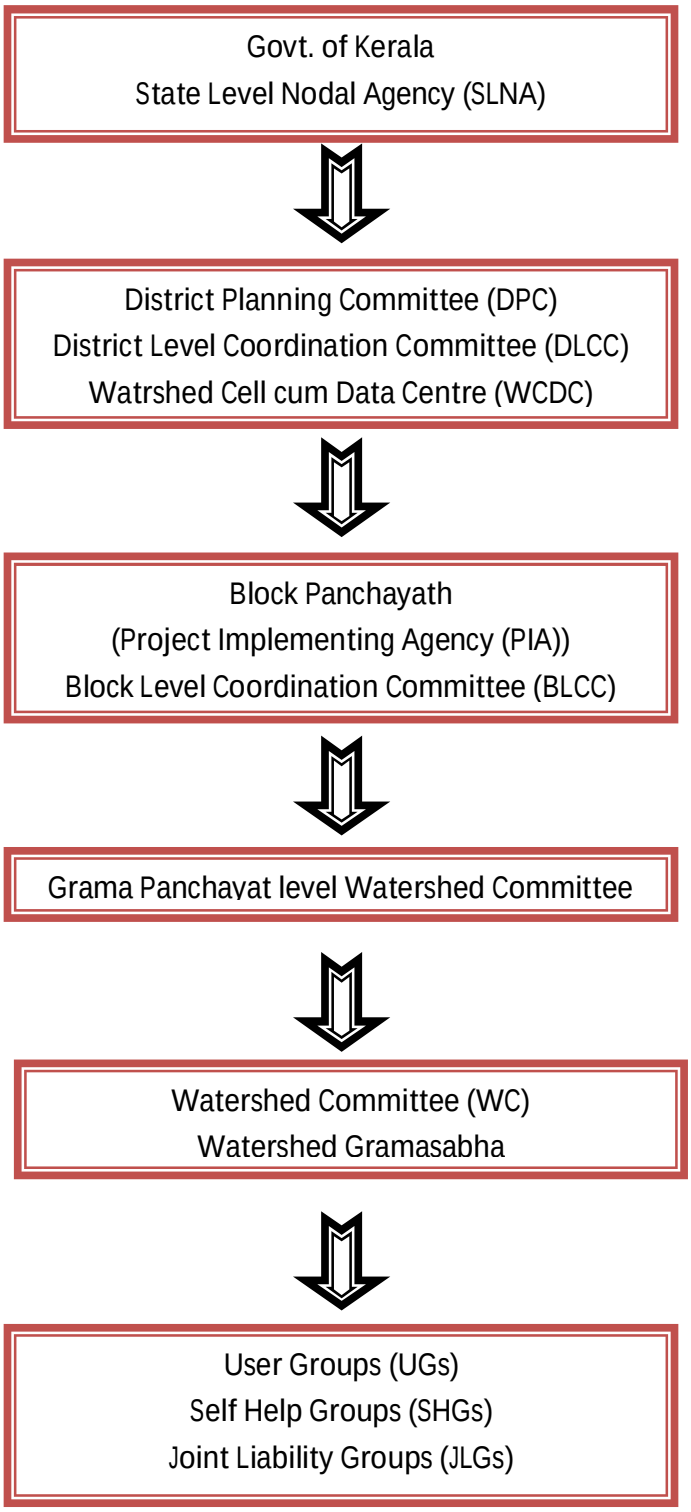
1.3.2. Salient features of IWMP:

- Setting up of Dedicated Institutions with multi-disciplinary experts. The institutions are
  - At State level - State level Nodal Agency (SLNA)
  - At District level - Watershed Cell cum Data Centre (WCDC)
  - Project level - Project Implementing Agency (PIA)
  - At Village level – Watershed Committee (WC)
- Cluster approach in selection and preparation of projects
- Enhanced Cost Norms from Rs. 6000 per ha to Rs.12, 000/ha. in plains; Rs.15,000/ ha in difficulty/hilly areas
- Uniform funding pattern of 90:10 between Centre & State
- Project period is 5 to 7 years
- Scientific planning of the projects by using IT, remote sensing techniques, GIS facilities for planning and monitoring & evaluation
- Earmarking of project funds for DPR preparation (1%), Entry point activities (4%), Capacity building (5%), Monitoring (1%) and Evaluation (1%)
- Introduction of new livelihood component with earmarking of 9% of the project fund and production system and micro enterprises with 10% of the fund.
- Delegation of power of sanction of projects to States.

1.3.3 Detailed Operational Guidelines:

The Local Self Government Department, Government of Kerala has issued Detailed Operational Guidelines (GO No. 105/2011 L.S.G.D dated 14/06/2011 and GO No.240/2012 L.S.G.D dated 22/09/2012) for the effective implementation of IWMP in the state. Corrigendum to the guidelines is issued by the Government. Operational Guidelines explains the process of planning and implementation of IWMP projects, in detail.

1.3.4 Organisational set up



1.3.5. Funding pattern:

Since the project area is plain, per hector cost of the project is Rs.12000.

Table 1

SL No	Components	%
1	**Administration**	**10**
2	**Monitoring**	**1**
3	**Evaluation**	**1**
4	**Preparatory phase**	
4.1	*Entry point activities*	*4*
4.2	*Institution & Capacity building*	*5*
4.3	*Detailed Project Report*	*1*
5	**Watershed Works phase**	
5.1	*Watershed Development Works*	*56*
5.2	*Livelihood activities*	*9*
5.3	*Production system & Micro Enterprises*	*10*
5.4	**Consolidation phase**	**3**
	Grand Total	**100**

1.3.6 Methodology adopted in Detailed Project Report Preparation:

1.3.6.1. Watershed area delineation in accordance with PPR

To delineate the watershed boundary, a multidisciplinary team along with the elected representatives of the Block panchayat as well as Gramapanchayat and farmers had visited the watershed area. The team learned the watershed boundary and its basic characteristic features. Watershed atlas was used to identify the micro watersheds.

1.3.6.2 Secondary Data Collection

Secondary data in the areas of basic infrastructure, agricultural crops, weather data, etc were collected and analysed for project purpose.

1.3.6.3 Participatory Plot wise Net Plan survey, Soil survey studies and Socio-Economic Survey

Plot wise net plan exercise was conducted to collect data related to the characteristic features of the soil (soil type, series, depth, texture class, etc), land use pattern, existing treatment measures and proposed treatment plan. Details of socio-economic status of each family also were collected using the format.

1.3.6.4 Participatory Rural Appraisal (PRA) and Livelihood Planning

PRA was conducted in each micro watershed to know the qualitative information, which is very essential to know the community perception on the problems, potentials/resources and proposing solutions. Area Mapping to have a spatial understanding, seasonality diagrams to know the length of water availability from water bodies and related problems, Historical time lines to learn the changes brought about in development scenario, Pair wise & matrix ranking and scoring which is also a PRA tool to plan the livelihoods, etc were conducted. Watershed committee leaders, Community members and Elected Representatives took part in PRA and livelihood planning.

1.3.6.5 Drainage line survey

To know the drainage character towards proposing drainage line treatment measures, we have conducted drainage line survey. A multi disciplinary team along with the community members surveyed the drainages.

1.3.6.6 Computerization of net plan, socio- economic survey details, and preparation of thematic maps in GIS.

The net plan for the treatment of the watershed, socio-economic survey details of the family, etc as per field survey were computerized and maps such as soil depth, type, slope, land capability classification, contour, drainage, etc are prepared.

1.3.6.7 Micro watershed level and Block Panchayat level presentation of DPR

The draft of the DPR was presented at Micro watershed level as well as the Block Panchayat level to have their final commends.

1.3.6.8 Final preparation of the DPR and submission

Final copy with net plan was submitted to the Block Panchayat for necessary approval

CHAPTER -1

GENERAL DESCRIPTION OF THE PROJECT AREA

2.1 Kasaragod District

Kasaragod is northern most district of Kerala. The district is marked off from the adjoining areas outside the state by the Western Ghats which run parallel to the sea and form a continuous wall on the eastern side. The Ghats dominate the topography. The coastline is fringed with low cliffs alternating with stretches of sand. A few miles to the interior the scene changes and the sand level rises towards the barrier of Ghats and transforms into low red laterite hills interspersed with paddy fields and coconut gardens.

2.2 Karadka Block Panchayat

Karadka Block Panchayat is a newly constituted Block Panchayat formed bifurcating Kasaragod and Manjeshwaram Block Panchayats vide Government Order (P) No. 139/2010/LSGD dated, 02/07/2010. There are 7 Grama Panchayats viz. Karadka, Delampadi, Bedadka, Kuttikkol, Kumbadaje, Bellur and Muliyar in Karadka Block Panchayat. The Block Panchayats has 13 Constituencies (Divisions). Details of the Constituencies and Members representing are given below

Table 1

Constituency No	Code	Name of the representative	Designation
B14147008	Kuttikol	Shri. B M Pradeep	President
B14147009	Bedakam	Smt. M Mini	Vice President
B14147006	Adoor	Shri. C K Kumaran	Chairman(Development Standing Committee)
B14147005	Delampady	Adv A P Usha	Chairperson (welfare standing committee)
B14147010	Kundamkuzhi	Smt. P. Omana	Chairperson (Health – Education Standing Committee)
B14147001	Kumbadaje	Smt. Shantha Kumari	Member
B14147002	Movvar	Shri. B.Chandrashekara	Member
B14147003	Bellur	Smt. Usha	Member
B14147004	Adhur	Smt.Renukadevi K	Member
B14147007	Bandadukka	Shri. O V Vijayan	Member
B14147011	Perladukka	Smt. Susheela.C	Member
B14147012	Muliyar	Shri. M. Kunhambu Nambiar	Member
B14147013	Karadukka	Shri. K.S. Lakshmana	Member

Table 2. Administrative details of the Watershed area

Villages covered	Bedadka, Munnad, Kolathur, Muliyar
Grama Panchayaths	Bedadka and Muliyar
Block	Karadka
Taluk	Kasaragod
District	Kasaragod

Table 3. Criteria and Weightage of the project as per PPR

* Weightage under the criteria developed by DoLR													
i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	Total
8	3	0	10	3	0	15	7	5	0	5	15	0	71

* { i - Poverty index (% of poor to population), ii- % of SC/ ST population, iii-Actual wages, iv- % of small and marginal farmers, v- Ground water status, vi- Moisture index/ DPAP/ DDP Block, vii- Area under rain-fed agriculture, viii- Drinking water, ix- Degraded land, x- Productivity potential of the land, xi- Contiguity to another watershed that has already been developed/ treated, xii- Cluster approach in the plains (more than one contiguous micro-watersheds in the project) and xiii- Cluster approach in the hills (more than one contiguous micro-watersheds in the project) }

The project has a total treatable area of 5700 Ha which spread over in Bedadka (Major share) and Muliyar Grama panchayats. The watershed is a IVth order watershed. Per hector cost for the treatment of the watershed is Rs.12000/-. Total project cost comes to Rs.68400000/-

Table 4 Financial outlay of the project

Sl No	Component	% of Allocation	Amount
1	Watershed Development works	56	38304000
2	Production System & Micro Enterprises	10	6840000
3	Livelihood Activities	9	6156000
4	Entry Point Activities	4	2736000
5	Administration cost	10	6840000
6	Training & Capacity Building	5	3420000
7	DPR Preparation	1	684000
8	Monitoring	1	684000
9	Evaluation	1	684000
10	Consolidation phase	3	2052000
	Total	**100**	**68400000**

2.3. Topography, Physiography, relief and drainage

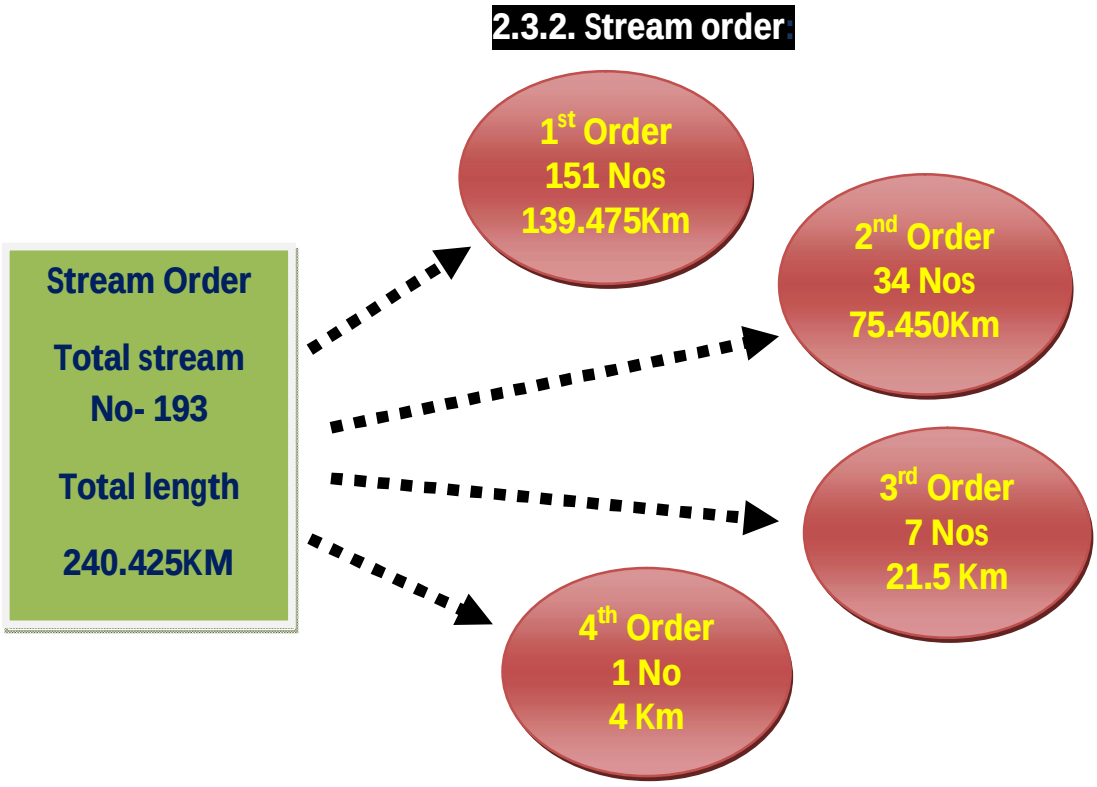
2.3.1. Geomorphology:

Physiographically, the watershed area can be divided into the midlands and the midupland regions. The midland region with altitude ranging from 10 to 100 msl. The midland and hill ranges of the watershed present a rugged and rolling topography with hills and valleys. The hills are mostly laterite and the valley is covered by valley fill deposits.

Table 5 River basin, Elevation, etc

1	River basin	Chandragiri
2	Latitude	12° 25′ 35″ N & 12° 30′ 10″N
3	Longitude	75° 4′ 45″E & 75° 12′ 35″E
4	Highest elevation	288 Mtr
5	Lowest elevation	10Mtr
6	Height difference	278 Mtr
7	Watershed order	IV

2.3.2. Stream order



2.4. Climate

Malapuram Agro-climatic zone covers the entire project area.

2.4.1 Rainfall

The area has a tropical monsoon climate with two rainy seasons, the south weste monsoon from June to September and the north east monsoon from October to November. December to April is generally dry, with summer shower occurring in May.

Table 6 Average rainfall for the last 10 years - source: CPCRI, Kasaragod

	Year										
Months	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	***2013**
January	0	0	0	0	0	0	0	13	0	0	0
February	0	0	10.2	0	0.1	7.6	0	0	0	0	149.6
March	10.6	0	0	0	0	332	29.8	0	0	0	10.6
April	0	3	52.2	3	15.2	101.2	11	58.6	147	67	28.8
May	0	698.6	0	726.8	220.8	60.4	207	48.1	87.8	31.8	137.7
June	1199	662.2	875.9	850.8	1068	974	590	1070	957.2	934.6	1332.4
July	1005	509.2	648.8	741	637.8	628.4	1206	1384	1101	539.2	910.6
August	497	439.6	345.6	448.6	781.8	554.4	365	662.7	829.8	1025	411.8
September	158	147.6	314.2	531.2	670.6	317.4	376	427.6	617.2	361.7	256.0
October	135	179.4	148.4	264.8	163	131.4	93.8	236.7	192.4	104.1	179.6
November	42.2	129.6	20.7	135.8	26	78.8	353	337.6	166.2	79	48
December	0	0	6.8	0	0	23.6	10.4	26.6	0.6	0	-
Total	**3046**	**2769.2**	**2423**	**3702**	**3584**	**3209.2**	**3242**	**4265**	**4099**	**3142**	**3465.1**
Average Rainfall/ day	8.34	7.5868	6.638	10.14	9.818	8.7923	8.88	11.68	11.23	8.609	10.50

***** 2013 data till November only

Table 7. Weather data for the last 11 years

Year	Rain fall (mm)	Temperature in ºC		Humidity (%)		Evaporation (mm)
		Max	Min	FN	AN	
2003	3046	38	16.5	98	8	1358.1
2004	2769	37.5	16.2	98	18	1247.2
2005	2423	35.9	16.6	98	10.4	1366.4
2006	3702	36.2	16.1	98	17	1355.8
2007	3584	36.5	16.6	98	30	1157.7
2008	3209	38	2.4	98	35	1165.4
2009	3242	35.8	17	98	22	1121.4
2010	4265	35	18.5	98	6.7	1115.6
2011	4099	36.5	16.1	98	28	1077.6
2012	3142	35.3	17.1	98	28	1108.2
*2013	3465	36.3	14.6	94	27	1018.5

***2013 data till November only

During the period of 2003- 2012, the project area receives an average annual rainfall of 2790 mm. Highest was in 2010 with an average rainfall of 4265 mm and lowest was in 2005 with an average rainfall of 2423 mm. The major source of rainfall is southwest monsoon from June to September which contributes nearly 85.3% of the total rainfall of the year. The northeast monsoon contributes nearly 8.9% and balance of 5.8% is received during the month of January to May as summer showers.

2.4.2 Temperature

The temperature is more during the months of March to May and is less during December and January. The average monthly maximum temperature ranges from 29.1 to 32.9 ^{0}C and minimum temperature ranges from 19.7 to 24.1 ^{0}C.

Maximum temperature recorded for a day for the last 11 years is 38 ^{0}C on 7th May 2003 and Minimum temperature recorded for a day for the last 11 years is 16.1 ^{0}C on 2nd November May 2006

Table 8 Details of Month wise average Temparature data for last 11 years (Temperature in ^{0}C)

Years & Months		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
January	Max	32.34	31.95	31.45	32.40	32.31	32.15	33.07	32.04	30.80	31.29	31.92
	Min	21.19	19.58	20.20	20.21	19.67	19.52	19.78	23.24	19.01	20.45	21.52
February	Max	32.49	32.53	31.96	33.12	32.05	31.18	32.81	32.34	32.25	32.23	32.00
	Min	22.85	20.28	20.35	26.78	20.65	20.48	21.40	21.10	20.11	21.07	23.01
March	Max	33.15	32.92	32.37	31.57	32.51	31.75	33.61	33.29	32.46	31.93	32.64
	Min	24.23	23.26	22.25	22.64	29.50	22.10	23.53	23.87	22.82	23.12	24.28
April	Max	33.99	33.86	33.27	32.91	33.89	32.43	34.13	34.00	32.74	32.89	32.67
	Min	25.32	24.16	23.77	24.43	24.88	23.98	25.36	24.30	23.92	24.39	24.78
May	Max	34.06	30.63	33.81	30.91	33.11	32.52	33.15	33.71	32.88	32.26	31.63

	Min	25.99	22.74	24.43	24.26	24.17	23.31	24.12	24.70	24.10	24.70	25.97
June	Max	30.39	29.33	30.19	29.83	29.71	29.90	30.23	30.10	29.68	28.52	28.86
	Min	23.39	22.50	22.60	22.85	22.81	22.28	22.43	22.16	23.08	22.64	23.58
July	Max	28.46	28.50	28.65	29.58	28.79	29.13	28.36	27.77	27.83	28.85	28.64
	Min	22.70	21.80	21.78	22.69	22.71	21.62	22.22	21.42	21.99	22.69	24.71
August	Max	29.60	28.56	29.12	29.24	28.23	28.71	29.31	27.73	28.11	28.15	-
	Min	22.94	21.55	21.48	21.52	21.91	21.94	22.69	21.58	21.95	22.33	-
September	Max	30.16	29.95	28.93	29.06	29.13	30.36	29.20	29.68	29.11	38.54	-
	Min	22.28	21.70	21.50	21.47	22.36	22.21	22.49	21.90	21.92	22.46	-
October	Max	30.95	31.49	30.68	30.39	30.67	31.85	30.57	30.41	31.03	31.42	-
	Min	22.72	21.55	21.57	20.96	22.14	22.44	21.97	22.96	22.09	23.18	-
November	Max	33.58	32.84	32.22	31.38	33.05	33.11	31.73	30.84	32.23	31.43	-
	Min	22.02	20.77	21.19	20.76	20.64	21.51	22.09	22.30	21.99	22.12	-
Decemebr	Max	33.01	33.31	32.02	33.28	32.91	33.45	32.99	31.45	32.57	32.85	-
	Min	19.04	18.68	20.93	19.42	20.98	20.76	21.78	21.19	20.77	21.87	-

***** 2013 data till July only

2.4.3 Relative Humidity

Relative humidity is more during morning hours and is less during evening hours. During the morning hours it ranges from 81 to 98% and during evening hours it ranges from 54 to 89%.

2.5. Geology

Laterite is widespread in its distribution. The laterite is generally underlain by thick lithomargic clay which is the preliminary lateritisation front. The thickness of lithomargic clay varies from about 0.5 m to 5.0 m at places. Laterite is more ferruginous and porous in some parts.

2.6. Hydrogeology

Laterite, weathered and jointed crystalline, valley fills and alluvium acts as the dominant unconfined aquifer of the area. Deep seated fractured crystalline acts as the semi confined aquifer of the area. Laterite is the most wide spread and extensively developed aquifer in the project area. It widely varies in its physio-chemical characteristics.

Due to its porous nature the dug wells tapping laterite get recharged fast and also the water escapes as sub-surface flow and water level falls quite fast especially in wells located on topographic highs and hill slopes

The depth to water table tapping this aquifer ranges 8 to 13 mts subject to geology and geomorphology. The wells in valley fill aquifers are observed to be recuperating to the static water level within 24 hours. Laterite and weathered crystallines are also acting as the productive unconfined aquifer of the area. Most of the wells tapping the weathered and jointed crystalline aquifer dry up during summer.

In the area, groundwater occurs under water table condition in the shallow weathered hard rock, lithomarge, and valley fill and river alluvium aquifers. In the deep seated fractured crystalline aquifer, ground water occurs under semi confined and confined conditions. Dug up wells in the area have a depth range of 3 to 8 mtrs along valley and 10 to 21 mtrs along the hillocks. Depth to water

table from bottom level of source along valley is 1 to 2 mtrs and 0.21 to 1 mtrs along elevated upland during April-May.

Status of Ground Water Table (Data from Observation open well)

Year of Reference: 2012 (source – VWC Pandikkandam)

Table 9. Water table in meters from bottom point of the well at Ridge Portion of the Watershed

Month	Survey No						
	222/4	43	24/3AIK	135	24/3a	24/3ak	24/3
January	1	1.78	0.65	2.75	1.18	1.17	2.64
February	0.84	1.7	0.63	2.24	1.06	1.03	0.83
March	0.75	1.2	0.55	1.65	0.84	0.97	0.78
April	0.7	1.8	0.49	1.33	0.78	0.67	0.7
May	0.65	1.7	0.5	1.25	0.75	0.56	0.59
November	2.1	2.5	1.09	3.25	1.58	1.78	2.8
December	1.88	2.25	1	2.97	1.5	1.71	2.72

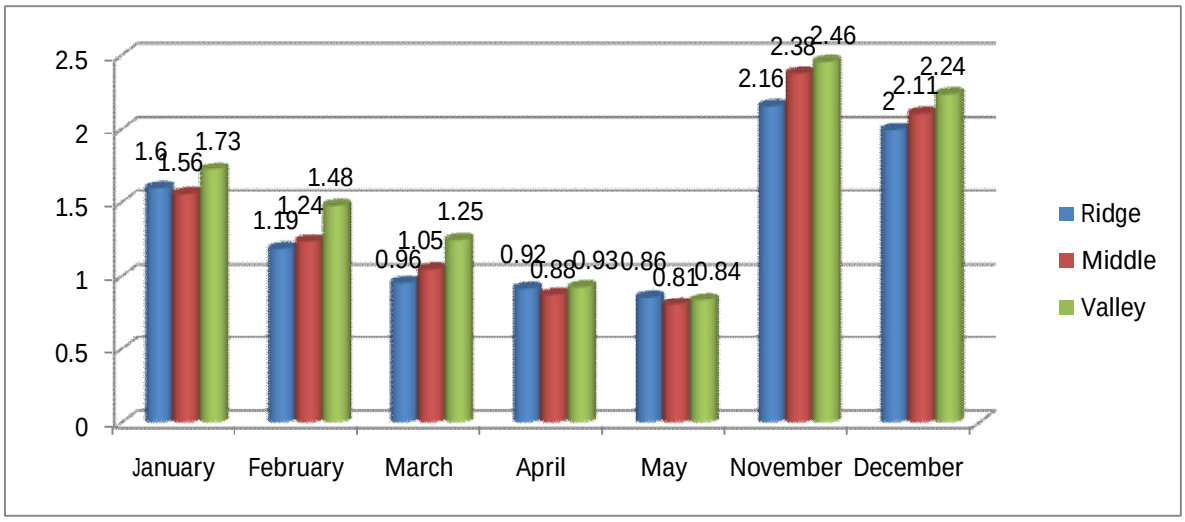
Table 10 Water table in meters from bottom point of the well at Middle portion of the Watershed

Month	Survey No						
	227	45/1a	24/3AIK	103	24/3ak	24/3	233/2
January	1.81	1.42	0.57	2.52	1.5	1.36	1.76
February	1.58	1.3	0.47	2.25	1.02	1.37	0.66
March	1.31	1.14	0.47	1.77	0.9	1.2	0.56
April	1.01	1.18	0.45	1.23	0.9	0.9	0.48
May	0.94	0.95	0.47	1.07	0.8	0.85	0.56
November	2.31	2.04	1.07	3.07	1.36	2.15	4.66
December	2.17	1.9	1.02	2.87	1.28	2	3.56

Table 11 Water table in meters from bottom point of the well at Valley portion of the Watershed

Month	Survey No					
	227	45	24/3AIK	101	24/3ak	24/3ak
January	2	1.28	1.82	1.9	1.5	1.85
February	1.64	1.13	1.93	1.3	1.4	1.5
March	1.2	1.03	1.89	1.07	1	1.3
April	1	0.58	1.5	0.5	0.7	1.3
May	1.2	0.58	1	0.5	0.72	1.02
November	2.86	2.08	2.55	2.45	2.04	2.76
December	2.59	1.88	2.3	2.3	1.86	2.5

Status of Ground Water Table (Reference Year-2012) - Graphical representation
In meters from bottom point of the well



Most of the areas in Bedadka, Kolathur and Muliyar villages are water scarce during summer

2.7 Socio economic details

2.7.1 Demography and socio economic status of the families

Table 12

Total No. of households/ families	Total Population	Average family size
3840	15993	4.16

Table 13. Category of the families:

Category of Families				Total	Population		APL	BPL
SC	**ST**	**OBC**	**General**		**Male**	**Female**		
82	319	1657	1782	3840	8073	7920	2666	1174

2.7.2 Profile of the families:

Table 14 Age wise grouping

Age group											
0 to 05		06 to 12		13 to 18		19 to 40		41 to 60		Above 60	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
434	396	809	791	988	1095	2853	2802	2179	2087	803	858

Table 15 Education

Literate/read & write only		**Primary**		**Upper Primary**		**Secondary School**		**Senior Secondary**		**Graduate &Above**		**Diploma**		**B Tech**		**Nursing**	
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1340	1180	1131	1109	1368	1336	1969	2031	1255	1192	843	903	111	158	16	16	0	103

Table 16. Income Source of the Families

Agriculture wage labour		Non Agriculture wage labour		Agriculture		Govt. Service		Business		Studying		Others		Unemployed	
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1029	**760**	**1669**	**1479**	**1256**	**1146**	**124**	**48**	**0**	**0**	**1733**	**2235**	**1441**	**1308**	**754**	**1051**

Table 17 Annual Income of the Families (No. of families)

Below 24000	24000 - 40000	40000 - 60000	60000 - 80000	80000 - 100000	100000 - 120000	Above 120000
1666	1098	544	269	156	83	24

Table 18 Savings

Institution/No.of families						
Bank/Cooperative societies	Post office	Kudumba sree	Self Help Group	Kury (Local chit funds)	Chit funds (Registered)	LIC
1693	539	2006	960	613	120	1190

2.8. Institutions & Others (Source: PRA & Socio-Economic survey)

Table 19

Sl No	Institutions	Nos	Sl No	Institutions	Nos
A	Govt. Institutions		**D**	**Financial Institutions**	
1	Village Office	3	24	Co.Op Bank	1
2	Post Office	5	25	Dist Co.Op Bank	2
3	Police Station	1	26	Farmer's Bank	3
4	Primary Health Centre	5	27	Agricultural Improvement Bank	1
5	Community Health Centre	2	28	Agricultural Development Bank	1
6	Agriculture Office	2	29	Vanitha Bank	2
7	Veterinary Hospital	3	30	Co.Op.Society	4
8	Forest Camp Shed	1	31	North Malabar Gramin Bank	1
9	Central Water Commission Office	1	32	FAMCO	1
10	Panchayath Office	1	**E**	**Worship Centers**	
11	Ayurveda Hospital	1	33	Madrasa	2
B	Educational Institutes		34	Temples	65
12	Anganwady	27	35	Mosque	12
13	MGLC	2	36	Church	1
14	LP School	4	37	Sacred Groves	58
15	UP School	2	**F**	**Recreation Centers**	
16	High School	1	38	Clubs	42
17	Higher Secondary School	3	39	Community Hall	11
18	Colleges	3	40	Farmers Club	1
19	Co. Op Training Centre	1	41	Reading Room	13

C	Colonies				
21	SC Colony	6			
22	ST Colony	25			
23	Housing Colony	1			
SlNo	**Institutions**	**Nos**	**SlNo**	**Institutions**	**Nos**
G	Farms & Marketing Centers		**I**	**Others Institutions**	
42	Poultry Farm	7	58	Ration Shop	7
43	Backyard Poultry Farm	636	59	Micro Enterprises	17
44	Goat Farm	75	60	Bus stand	4
45	Milk Societies	4	61	Bridge	39
46	Market	10	62	Culvert	58
47	Dairy farm	1	63	Transformer	36
H	Drinking Waters Schemes & Water source		64	Dinesh Beedi centre	1
48	Rajeev Gandhi Drinking Water Supply Scheme	14	65	Granite / Laterite Quarry	15
49	RWH Tank	72	66	Rubber Grower's Sangham	5
50	NABARD Water Supply Scheme	1	67	Co.Op.Clinic	1
51	VCB	15	68	Nalikera Uthpadaka Sangham	8
52	Check dam	7	69	Padasekhara Samithi	7
53	Pallam	12	70	Party Office	1
54	Public Pond	24	71	Kanfed Society	1
55	Public Well	27	72	Farmers Sangham	1
56	Public Bore well	39			
57	Madakkam	10			

2.9. Water scarce areas

Thoroth, Varakkad, Thorkulam, Bedakam, Kanhirathumkal, Gandhinagar, Valiyapara, Muchurulam, Vavadukkam Colony, Kolathungatu Colony, Chedimotta, Karamala, Kuttyanam Colony, Cheripadi, Parathode, Thattummal, Kalikadavu Kakottama, Peringanam Colony, Jayapuram Colony, Kuthirakallu Colony, Jayapuram Meethe Colony, Ethara Anganwady, Poliyamkunnu Kadakayam, UnappamKallu, Kundunchi School, Vattamthatta – Elamba, Kizhakkemoola, Parakadavu, Payangad, Kundunchi Adukkam, Chirakkal, Mullamkod, Panniyadi – Vellarikaya, Perumarathingal, Puliyarkallu, Maruthamkara, Naranthakuzhi, Chembakkad, Pola, Mannadukkam, Kappanakkal, Dodduvayal, Bathakumiri, Kundiyodi, Karandool, Ammamkode, Panniyadi, Bedikikandam, Karakunnu, Kurichinadukkam, Thonikadavu, Karakkayadukkam Colony, Karakkayadukkam, Bavikarayadukkam, Adummal, Aramanapadi, Kuttyanam, Manhandukkam, Kumbalampara, Eyyalla, Cheyithotti, Koma, Allappamkodu, Kuppanganam, Nedumbayal, Kundamkuzhi, Bedira Thazhe, Kayattiyadukkam, Koppalamkayam, Cherappara, Balanadukkam, Nelliyadukkam, SC Colony Payam, Koliyadukkam, Beettiyadukkam, Harijan Colony Kizhakekara, SC Colony Korathikundu, ST Colony, Chembilamkai

Table 20 Land holding pattern

Sl No	Land holding class	Households		Land held	
		Number	% of Total	Ha	% of Total
1	0 - 0.0202 ha (0- 5 cent)	168	4.38	2.53	0.05
2	0.0202 - 0.2023 ha (5-50 cent)	1071	27.88	358.12	6.44
3	0.2023 - 1 ha (50 - 250 cent)	1840	47.92	2150.23	38.65
4	1 - 2 ha (250- 500 cent)	545	14.19	1794.53	32.26
5	Above 2 ha (Above 500 cent)	216	5.63	1257.89	22.61
	Total	**3840**	**100**	**5563.3**	**100**
Average gross land holding per Household = 1.45 Ha					

Table 21 Agriculture and present land use (In Ha)

Public Land	**437**
Forest Land	318
Govt/ Revenue /Panchayath land	119
Sub Total	**437**
Privately owned land	**5581**
Cropped area	5129.99
Rain fed Area	5129.99
Fallow Land(Cultivable waste)	85.05
Waste Land (Uncultivable waste)	365.96
Sub Total	**5581**
Total	**6018**

Table 22 Major Agricultural Crops

Sl No	Major crops	Area in Ha	Productivity(Kg/Ha)
1	Coconut	1803	7334
2	Arecanut	473.30	1856
3	Rubber	2639.94	1236
4	Cashew	183	992
5	Paddy	21.25	2544
6	Pepper	9.5	292

2.10 Gross Demestic Product (GDP)

Particulars			**Amount (in Lakh)**
Average amount spent Rs 55/day/ beneficiary **C= Rs 55 X 15993X 365 days**			3210.5950
Average Investment made in the watershed area			800.5
Details of Production excess			
	Export	Import	
Agriculture	8380.654		
Allied sector	461.83		
Food items		2864.48	
Agriculture inputs		1693.23	
Total	8842.484	4557.71	
I=			4284.774
G=			200
Gross Domostic Product (GDP)			
C=			**3210.5950**
I=			**800.5**
G=			**200**
(X-M)=			**4284.774**
GDP			**8495.869**

Table 23. Use of water sources by families

Source							
Public Well	Bore Well	Ponds	Surangham	Open Well	River	Madakkam	Pipeline
424	336	946	366	680	13	1	28

Table 24. Details of Water bodies

No.of water bodies					
Public Well	Bore Well	Ponds	Surangham	Open Well	Madakkam
161	336	946	366	680	1

Table 25. Animal husbandry and Dairying- Live stock resources

Category of Livestock					
Indigenous cow	Cross bred cow	Goat	Chicks	Rabbit	Buffalos
799	538	574	1909	20	3

2.11 Soils (source: Plot level net plan survey, PRA and Soil Survey Department data)

2.11.1 Soil series:

Table 26 Major soil series identified in the watershed area

Sl No	Soil series	Area in Ha	% of Area
1	Arathil	2271.76	37.75
2	Meeyanganam	1059.19	17.60
3	Payalam	55.18	0.92
4	Thekkila	15.40	0.26
5	Muttathy	19.30	0.32
6	Edanad	115.80	1.92
7	Kolathur	655.15	10.89
8	Kidur	293.67	4.88
9	Perumbale	16.29	0.27
10	Miscellaneous	970.29	16.12
11	Rocky area(Laterate)	545.96	9.07
	Total	**6018**	**100**

Table 27 Occurrence of the soil series:

Soil series	Occurrence
Arathil	Strongly sloping to very steeply sloping side slopes of low hills
Edanad	Gently sloping foot hills of low hills and mounts
Kolathur	Gently to moderately sloping flat low hill tops
Muttathy	Very gently to gently sloping fields
Meeyanganam	Moderately sloping to very steeply sloping side slopes of low hills
Payalam	Moderately steep to very steep side slopes of hills in upland
Thekkila	Very gently to gently sloping lands along stream banks
Kidur	Strongly sloping to very steep side slopes of low hills
Perumbale	Gently to moderately sloping midlands
Miscellenious	Gently to moderately sloping wet lands

Table 28 Soil texture

Sl No	Soil texture	Area in Ha	% of Area
1	Clay loam	260.11	4.32
2	Gravelly clay loam	2952.41	49.06
3	Clay	759.79	12.63
4	Gravelly clay	1499.72	24.92
5	Rocky area(Laterate)	545.96	9.07
	Total	**6018**	**100.00**

Table 29 Soil depth

Sl No	Soil depth in CM	Area in Ha	% of Area
1	Shallow (25-50)	272.32	4.53
2	Moderately shallow (50-75)	320.43	5.32
3	Moderately deep (75-100)	137.93	2.29
4	Deep (100-150)	1275.91	21.20
5	Very deep (>150)	3465.46	57.58
6	Rocky Area(Laterate)	545.96	9.07
	Total	**6018**	**100**

Table 30 Slope grade

Sl No	Slope grade	Area in Ha	% of Area
1	B- Very gently sloppy (1-3 %)	275.07	4.57
2	C- Gently sloppy (3-5%)	1340.88	22.28
3	D- Moderately sloppy (5-10%)	176.28	2.93
4	E -Strongly sloppy (10-15 %)	436.94	7.26
5	F Moderately steep (15-25%)	1979.15	32.89
6	G- Steep Slope – (25-33%)	821.87	13.66
7	H- Very steep – (33-50%)	441.84	7.34
8	Rocky area (Laterate)	545.96	9.07
	Total	**6018**	**100**

Table 31 Erosion class

Sl No	Erosion class	Area in Ha	% of Area
1	Slight erosion	1200.52	19.95
2	Moderate erosion	3678.17	61.12
3	Severe erosion	593.39	9.86
4	Rocky area (Laterate)	545.96	9.07
Total		**6018**	**100**

Table 32 LCC Land Capability Classification (LCC):

Sl No	LCC	Area in Ha	% of Area
1	II	275.07	4.57
2	III	1120.29	18.62
3	IV	2812.96	46.74
4	VI	1263.72	21.00
5	V (Rocky area (Laterate))	545.96	9.07
	Total	**6018**	**100**

2.12 Problems

2.12.1. Soil related

- Soil ersion

The undulating topography of the area and absence of soil and water conservation measures implemented are the major reasons for soil erosion. Due to these causes, during rainy period, the area experiences excessive soil erosion, especially top soil

erosion. The area experiences severe, moderate and slight erosions. The erosion carries the fertile soil which finally makes the soil unproductive.

- Loss of soil nutrients

  The excessive soil erosion carries the fertile soil causing loss of soil nutrients.

2.12.2 Drainage systems

- Since scientific soil and water conservation measures in a watershed approach was not implemented in the area as well as drainage lines, high speed of run off water with soil is observed and it has finally resulted in to silt deposit, sliding of drainage line/stream banks and water overflow.
- Due to absence of conservation measures, the length of water availability in streams is only up to Mid April.

2.12.3 Water sector

- Turbulence, high presence of iron and salinity are some of the major problems in water sector
- Water table depletion

  Water table depletion is observed in almost all the water bodies since February month onwards. The water table becomes very low and not sufficient even to meet the drinking water purpose in the month of May especially in hill slopes. This situation is mainly due to lack of initiatives for implementing scientific soil and water conservation measures.

Low water level in river in the month of August 2013 - A scene from Karicheri area of Chandragiri River

- Contamination of water bodies

  Water bodies are contaminated due to unscientific use of chemical pesticides, dumping of wastes (from markets, plastic carry bags and bottles) and over flow water during rainy season. High presence of e-coli is observed in most of the open wells and ponds.

- Uncontrolled use of water

  Industrial units, commercial ventures, families, institutions, markets, etc use water without any control. Common use of water by families is domestic use, cleaning of vehicles, family level functions and for irrigation. The uncontrolled use leads to over extraction of water from water bodies ultimately resulting in to unfavorable water level fluctuation.

2.12.4 Agriculture sector

- Unscientific land use pattern/unscientific cultivation practices

  Scientific land use pattern is not adopted for farming and other activities in watersheds. No system of land use planning is in existence. Conservation of basic resources is not taken care of while using land for various activities. Land capability classification is least

considered for cultivation practices. Mono cropping, especially of cash crop is widely followed by the farmers.

Soil nutrient analysis is not become part of agri-management plan. Soil nutrient management is not systematically undertaken by the farmers. The practice of on farm recycling is not seriously taken up by the farmers.

- Unscientific irrigation practices

  Irrigation of crop is one of the major uses of water. Scientific technologies and methods are now available for reduced/regulated use of water for crop irrigation. For eg drip and sprinkler irrigation methods. But due to some stigma, majority of the farmers prefer conventional methods of irrigation ie. using hose, causing excess use of water. Farmers generally use water over and above the actual need of the crop in times of water availability and will cut down the quantity of water drastically or even stop irrigation during water scarcity. Both of the practice is not good either for the health or production capacity of the crops.

- Dearth of agricultural wage labour and high wage rate.

  Wage labour in farming sector is given least importance in the job market. Mostly aged persons are remained as agricultural wage laboures. They also are not exclusively for agricultural wage labour as they will go non- agriculture job also. All this has created a situation of near non availability of sufficient number of agricultural wage labours to undertake timely activities. Farmers are struggling to find out labours during agriculture season. Dearth of labours has compelled the farmers either to reduce the area under cultivation or to skip some crucial agricultural practices such as tilling and fertilization. The prevailing wage rate is also high.

- Inadequacy of seedlings/seeds and high external dependency

  In olden times, farmers produce seedlings /procure seeds. But with change in agricultural practices the system of seed production is got changed and seed collection is not being practiced by many of the farmers. They mainly depend to the local Krishibhavan and private seed vendors for seeds. The Government agencies often fail to meet the huge demand for the seeds, especially vegetable seeds. In such cases, the farmers collect entire seeds from way side vendors remitting higher price for which no quality is guaranteed. Insufficiency of quality seed is a serious problem faced by the farmers. Availability of seeds in time is also an area of concern.

- Low price to the agriculture produces considering the cost of production

  Farmers depend to market for almost all the inputs for cultivation. They have to pay substantial amount for the inputs. But the price of the produces is susceptible to fluctuation which in normal case is unfavorable to the farmers. There is no system of

farmers developed so far (eg.Producer company) for direct marketing of the produces to provide good margin to the farmers on sale of produces.

2.12.5 Bio- diversity degradation

The watershed area has rich biodiversity. But over the years due to unfavorable changes in human intervention in the areas of livelihood, agricultural, infrastructure, etc the rich bio-diversity is degrading.

2.9.6 Socio-economic and health

- Unscientific waste management practices

  Large quantity of waste is produced in the villages (at households, markets, institutions, etc) which are dumped mainly in inhabited areas, public areas and near to water bodies. No waste management practices are being systematically adopted at households, public places, markets and offices. It is simply deposited without segregating in to degradable and non degradable. These wastes when put in to fire produce harmful gases causing health hazards and increase atmospheric temperature. The waste, if not managed contaminate water bodies which cause water bone diseases.

- Shortage of sanitary latrine especially in SC/ST colonies

  Even after implementing a number of schemes, the need for sanitary latrine is not yet addressed fully. There are colonies where sufficient sanitary latrines are not constructed.

- Financial indiscipline in families

  The consumerist behavior of the community has bagged a major share of the family income for luxuries and extravaganza expenses. For majority cases, the crop loan taken is not used exclusively for crop improvement. Diversion of the use has resulted in to non repayment of loans.

- Water born diseases , especially in SC/ST colonies

  Data available with the heath centres shows that occurrence of contagious disease in monsoon period and water scarce period is on the increase over the years. Major reasons for this are contamination of drinking water source and waste deposit.

All the above problems are to be addressed through integrated approach. Convergence of schemes of developmental agencies in watershed basis is the best option in this regard.

Table 33 -Micro Watershed details

Sl No	Name of Micro WS	Code No	Area in Ha		Grama Panchayath	Wards Covered	Village
			Total	Effective			
1	Vavadukkam	40C12a	680	648	Bedadka	3,6,8,11,12 &13	Munnad & Bedakam
2	Chedimotta	40C13a	204	188	Bedadka	11	Munnad
3	Cheripadi	40C13b	400	379	Bedadka	11	Munnad

4	Peringanam	40C13c	398	371	Bedadka	8,9 &12	Munnad
5	Kuthirakkallu	40C13d	110	103	Bedadka	11	Munnad
6	Kundoochi	40C5as	145	132	Bedadka	6&7	Munnad & Bedakam
7	Mullangod	40C5ax	307	284	Bedadka	6 & 8	Bedakam
8	Aricheppu	40C5aw	474	453	Bedadka	6,8 &12	Munnad
9	Thonikkadavu	40C5ay	587	567	Bedadka	4,5,&6	Bedakam
10	Pandikandam	40C5az	931	891	Bedadka	2,3 &12	Kolathur
11	Thonippallam	40C5ba	231	215	Bedadka	1&2	Kolathur
12	Munamb	40C5bb	231	210	Bedadka	1&2	Kolathur
13	Payatiyal	40C6a	371	352	Bedadka	1&2	Kolathur
14	Kollarangode	40C9a	585	561	Bedadka	3,15 & 16	Bedakam
15	Erinhippuzha	40C5d	364	346	Muliyar	8&9	Muliyar
	Total		**6018**	**5700**			

CHAPTER – 2
INSTITUTION BUILDING & PROJECT MANAGEMENT

3.1 .1 State Level Nodal Agency (SLNA)

Government of Kerala had created a State Level Nodal Agency (SLNA) for IWMP for the state with Agriculture Production Commissioner as Chairman, Principal Secretary, Local Self Government Department as Co-Chairman and the Rural Development Commissioner as Chief Executive Officer. SLNA has a Technical Support Unit (TSU) to help the activities at State level.

Details of SLNA

Chairman	Co-Chairman	Chief Executive Officer		SLNA Contact Ph. No./ Fax/ E-mail
Designation	Designation	Designation	Date of Appointment	0471 2314526 0471 2313634
Agriculture Production Commissioner	Principal Secretary, LSGD	Commissioner for Rural Development	G.O (MS) 258/2008/LSGD dated 18-8-2008	

3.1.2 District Planning Committee

As per the recent amendment in the Common Guidelines, 2008, the WCDC (Details of WCDC is given below) will function in close coordination with the District Planning Committee (DPC). District Collector/CEO, District Panchayat may be the chairman of WCDC and a District Officer of the Department, in which WCDC has been located, may be called the Project Manager for WCDC. The District Collector/CEO, DP will have role in securing coordination and convergence along with periodical review of the programme.

3.1.3 District Level Coordination Committee (DLCC)

The responsibility of planning and implementation of IWMP at District level, DLCC was constituted with District Panchayat President as Chairman, District Collector as Member Secretary, Project Director (PD), Poverty Alleviation Unit (PAU formerly DRDA) as Convener and Principal Agriculture Officer as Technical Coordinator. To accord final approval of the projects within the district, facilitate convergence of schemes and monitoring of the projects are the major responsibilities of DLCC. There is Watershed Cell cum Data Centre (WCDC) constituted to help the DLCC to perform its responsibilities.

3.1.4 Project Implementing Agency (PIA)

Concerned Block Panchayat that hold major share of the Project area will be the PIA. Karadka Block Panchayat is the PIA for this Project. PIA will constitute a Project Level IWMP Coordination committee for timely implementation and arranging for administrative and technical support services to the project.

For a proper coordination of the IWMP activities, a Block Level Coordination Committee (BLCC) is formed.

To assist the Block Panchayat in the implementation of the project, the service of WDT is envisaged. This is a multidisciplinary team with Agriculture, Engineering and social mobilization Background. Following are the members of the WDT constituted at Block level

Table 34

SL No	Designation	Name	Qualification	Contact Number
1	Block Development Officer	V. Sukesh Kumar	-	9496753621
2	Assistant Director, Agriculture	Ajitha.S	-	9446564101
3	Joint BDO (EGS) BPO I/C	Sugunan .B.T	-	9447395027
4	Extension Officer (ww)	Noothana Kumari. K	-	9895215463
5	Engineer	Anjali.T.Sashidaran	Diploma in Civil Engineering	9497697540
6	Social Mobilizer	Balaraman.N	MSW(IT , EDP Trainer)	9048291098
7	Data Entry Operator	Anitha.K	BCom with PGDCA	9946320118

3.1. 5 Technical Support Organisation (TSOs)

The Local Self Government (Rural Development) Department, Govt. of Kerala has empanelled competent NGOs who have experience in planning and implementation of Watershed Project as TSOs for IWMP in the state vide Order No. 17237/R&I 5/2010/CRD dated 10/01/2010. PIAs are empowered to appoint the TSOs for preparing the DPR.

Karadka Block Panchayat vide its resolution No.67/12 Dated 20/04/2012 selected and appointed Centre for Research and Development (CRD), Nileshwaram as TSO from the list of empanelled organizations approved by the Government for the IWMP projects.

3.1.6 Grama Panchayat level Watershed Committee

The responsibility of direct monitoring of the implementation of watershed project activities belongs to the concerned Grama Panchayats. A Grama Panchayat level Watershed Committee will be formed to ensure timely implementation and monitoring of the project activities.

This Committee will have Grama Panchayat President as Chairman/Chairperson, Agricultural Officer as technical Coordinator and the Grama Panchayat Secretary as Member Secretary. Agencies for DPR preparation, Concurrent Monitoring, Evaluation and Documentation and the Conveners of Project Monitoring Committee, Vigilance Committee and Social Audit Committee are the invitees to this committee.

If a watershed falls in more than one Grama Panchayat, seperate Committees for each Grama Panchayat has to be constituted.

3.1.7 Watershed Committee (WC)

WC has pivotal role in the implementation process of the IWMP. Gramasabhas constituted the WC. As per the Operational Guidelines, The committee will have minimum ten members. Of which 6 members should be from SHG/UG, SC, ST, women and landless. President of the Gramapanchayat will be the Chairman and concerned Village Extension Officer will be the Convener/Secretary for WC.

Table 35 - Details of the WC formed

Sl no	Micro Watershed	Total members	Male	Female
1	Mullangod	12	8	4
2	Vavadukkam	13	10	3
3	Pandikandam	19	13	6
4	Kunduchi	13	8	5
5	Kuthirakallu	11	9	2
6	Peringanam	10	6	4
7	Chedimotta	11	9	2
8	Kollarangod	11	6	5
9	Cheripadi	13	10	3
10	Aricheppu	13	9	4
11	Thonikadavu	13	7	6
12	Thonippallam	21	15	6
13	Payatiyal	21	15	6
14	Munambu	21	16	5
15	Erinhipuzha	20	15	5

3.1.8 Watershed Gramasabha

Members of the family residing in the watershed area forms the Watershed Gramasabha. Gramasabha meeting can be convened to fianlise the annual action plans, selecting beneficiaries as per priority list, evaluating the project implementation and Social Audit. Concerned ward members are responsible to convene the Gramasabha.

Table 36 - Details of Gramasabha conducted for discussing and approving the Final action plan

Sl no	Micro Watersheds	Date of Gramasabha	No. of Total Participants	Male	Female	Venue
1	Mullangod	7/8/2013	54	28	26	Anganvadi, Chedimota
2	Vavadukkam	7/8/2013	63	26	37	Bedadka G P Hall,Bedakam
3	Pandikandam	9/8/2013	54	25	29	Samsarika Nilayam, Kundamkuzhy
4	Kunduchi	7/8/13	58	40	18	Rubber Producers Cooperative society Office building, Kunduchi

5	Kuthirakallu	8/8/2013	31	13	18	Yuvadhara club, Cheripadi
6	Peringanam	9/8/2013	63	39	24	patanakendram, Pallathingal
7	Chedimotta	8/8/2013	51	32	19	Yuvadhara club, Cheripadi
8	Kollarangod	9/8/2013	55	38	17	Samskarika nilayam, Kundamkuzy
9	Cheripadi	15/8/2013	53	26	27	Yuvadhara club, Cheripadi
10	Aricheppu	10/08/2013	78	47	31	Deekshana Academy Munnad
11	Thonikkadavu	8/8/2013	70	38	32	Samskarika nilayam, Kundamkuzy
12	Thonippallam	8/8/2013	52	14	38	GLP school,Kallali
13	Payatiyal	8/8/2013	45	15	30	GLP school,Kallali
14	Munambu	8/8/2013	44	20	24	GLP school,Kallali
15	Erinhipuzha	18/8/2013	62	43	19	GUP School, Kanathur

3.1.9 User Groups (UGs) and Self Help Groups (SHGs) and Joint Liability Groups (JLGs)

User Groups are to be formed by including those who have own land in the watershed and are directly benefited out of the project activities. UGs are to be formed by the WC. Resource use Agreement has to be executed between WC and UG.

SHGs are to be formed by the WC with the assistance from WDT by including small and marginal farmers, landless, agriculture wage labours, women and SC/ST people.

JLG is an informal group comprising 4 to 10 individuals who come together mainly for starting a livelihood activity on individual basis through group mechanism against mutual guarantee. This is a best way to access bank loans for productive purposes. The JLG approach will help build mutual trust and confidence among the members and between financial institutions and the group. These groups (SHGs & JLGs) may be provided with Revolving Fund after grading.

Table 37 - Details of Existing SHGs in watershed area

Sl no	Micro Watersheds	Total No. of SHGs	Category of SHGs				
			GL	SC	ST	PH	MIN
1	Mullangod	24	19	0	4	1	0
2	Vavadukkam	55	55	-	-	-	-
3	Pandikandam	38	35	-	3	-	-
4	Kunduchi	21	21	-	-	-	-
5	Kuthirakallu	0	0	-	-	-	-
6	Peringanam	25	25	-	-	-	-
7	Chedimotta	1	1	-	-	-	-
8	Kollarangod	23	23	-	-	-	-
9	Cheripadi	27	27	-	-	-	-
10	Aricheppu	22	21	-	-	1	-
11	Thonikkadavu	22	22	-	-	-	-

12	Thonippallam	14	13	-	-	1	-
13	Payatiyal	9	9	-	-	-	-
14	Munambu	6	6	-	-	-	-
15	Erinhipuzha	15	15	-	-	-	-
	Total	**302**	**292**	**0**	**7**	**3**	**0**

3.2 Goals and objectives of the proposed project

3.2.1 Project Goal

The ultimate goal of the project is to generate sustainable development through management of natural resource base, agricultural production and livelihoods with increased people participation and application of appropriate technology.

3.2.2 Project objectives

- To conserve the natural resource base of the Watershed
- To Promote in-situ soil and water conservation measures
- To augment the ground water table on a sustained manner
- To Improve the soil health
- To improve production and productivity of agriculture crops and income from farming
- To improve the living standard of the watershed community
- To bring about effective people participation at all stages of implementation of IWMP, viz. planning, implementation, monitoring , evaluation, and post project maintenance
- To improve the possibilities for convergence of various schemes so as to enhance the effectiveness of the schemes
- To strengthen the community based organizations like watershed committees, user groups, Self Help Groups, watershed gramasabha etc, through appropriate capacity building processes and skill improvement
- To evolve location specific natural resource management linked livelihood support systems
- To take up effective IEC activities through leaflets, pamphlets, booklets, and publications under training component

3.3 Phasing of the Project

Phases	Duration
Preparatory phase	1 Year
Watershed Work Phase	2 - 3 Years
Consolidation Phase	1 Year

CHAPTER- 3

IEC & CAPACITY BUILDING PLAN

Wide letter No.12255/SLNA-01/12/CRD dated 12/07/2012, SLNA has prepared a capacity building strategy at community level, which will be implemented by the PIA with the help of TSO and at institutional level which will be implemented by SLNA.

As per the guidelines of IWMP, the total amount to be used for the Capacity Building component is 5% of the total project. Here, in this project, 5% comes to Rs. 3420000. Of which maximum 3 % amount ie Rs. 2052000 will be utilized for the trainings at Community level.

As part of the DPR process, we have discussed about the capacity building activities with the stakeholders and have arrived at a Capacity Building Training and Exposure plan for the community. It includes all the trainings suggested by SNLA, with slight modifications by incorporating some of the trainings such as watershed exposure programmes implemented in nearby areas. All these training programmes are non residential. The coverage of the plan is given below.

4.1 Coverage of the plan

Programme	Target group	Duration	No. of participants / batch	No. of Batches
Empowering people's representatives for IWMP and watershed exposure	Members of DP,BP and GP	2 days	30	2
Awareness programme cum exposure on watershed management with special reference to IWMP	Watershed community	1 day	50-60	10
Concept of watershed management, roles and responsibilities and watershed exposure	Watershed committees	2 days	30	7
Impacts of watershed management projects	Members of DP,BP and GP	2 days	30	2
Impacts of watershed management projects	Watershed committees	2 days	30	7
Impacts of watershed management projects	SHG/User group representatives	1 day	30	14
Financial management and Accounts keeping	Watershed committees	1 day	30	2
Training on leadership development,	Watershed	1 day	30	2

organizing meetings and communication methods & skills	committees			
Training on leadership development, organizing meetings and communication methods & skills	Select SHG/UG leaders	1 day	30	4
Training on process documentation	Watershed committees	1 day	30	2
Training programmes for the beneficiaries/ SHG members on the activities under production system and micro enterprises (Vegetable Cultivation, Banana Cultivation, Fodder grass cultivation, Tuber crop cultivation, Tailoring machine, etc and livelihood support systems (Goat rearing, Cow rearing, Back Yard Poultry, etc)	Persons in SHGs engaged in PSM&ME and LSS	1 day for all categories except tailoring. For Tailoring beneficiaries 3 days will be taken as it is skill up gradation training	10-25	20
Planning and implementation of projects related to creation of common assets	UGs	1 day	60 (2-3 persons from each UG)	2
Training on agriculture nursery management	Select SHG members	3 days	15	2
Training on maintenance practices of assets created under watershed project	Watershed committees	1 day	30	2
Training on maintenance practices of assets created under watershed project	UGs	1 day	2-3 persons from each UG	1
Training on exit strategy	Watershed committees	1 day	30	2
Sustainable agriculture practices	Select farmers	2 days	35	4

Note: BLCC will prepare detailed schedule/content for the above training programmes. Budget will be as per the budget approved by SLNA.

Information Education and Communication activities (IEC) proposed under Training programme

1. Environment awareness Kalajadha: This will be performed at schools and major locations in the watershed area. Total 20 programmes will be conducted (on an average 4 performance a day). The schools and locations will be finalized by the BLCC

2. Preparing brochure (3 fold) on watershed management concepts and treatment measures with photographs- 2000 copies in multi color

3. Preparing a CD on watershed management concepts, methods, principles and techniques. About 200 copies of the CD will be prepared and distributed to schools, watershed committees, SHGs, UGs, etc

4. Wall writing of watershed concepts in common places

5. Observing important days such World Environment Day, Water Day, Earth Day, etc

6. Printing of calendar with messages and photographs of watershed and environment development

7. Developing a Model/Demonstration plot by implementing major watershed treatment measures for educating and motivating the farmers/ working plot demonstration. A plot that fulfills the basic characteristic features of the watershed will be selected for this.

4.2. Year wise plan

Programme	Year
Awareness programme cum exposure on watershed management with special reference to IWMP	Ist year
Concept of watershed management, roles and responsibilities and watershed exposure	Ist year
Empowering people's representatives for IWMP and watershed exposure	Ist year
Financial management and Accounts keeping	Ist year
Impacts of watershed management projects	Ist year
Training on leadership development, organizing meetings and communication methods & skills	Ist year
Training on leadership development, organizing meetings and communication methods & skills	Ist year
Planning and implementation of projects related to creation of common assets	Ist year
Training on process documentation	Ist year
Developing a model/demonstration plot	Ist year
Awareness programme on production system and micro enterprises and livelihood support systems	IInd year
Planning and implementation of projects related to creation of common assets	IInd year
Training on agriculture nursery management	IInd year
Training on maintenance practices of assets created under watershed project	IInd year
Training on maintenance practices of assets created under watershed project	IInd year
Sustainable agriculture practices	IInd year
Training on exit strategy	IIIrd year

CHAPTER- 4

CONVERGENCE PLAN

5.1 Scope for convergence

The project has convergence plan. Through the participatory net planning approach adopted in DPR preparation, almost all the developmental needs of the community are identified. The project funding is limited to Rs.12000/Ha area. But this amount alone is not sufficient to meet the activities proposed for the development of the area. So, we have separated the activities for IWMP which suit to its basic principles and activities to be covered in convergence with other ongoing programmes such as MGNREGS, Agriculture Department Schemes, Dairy Development, Fisheries, programmes of PRIs, etc. Separate meetings to arrive at specific plan for convergence have to be conducted in the course of implementation of the project.

Watershed Development Works (NRM related activities) have convergence with MGNREGS and Well construction works & RWH Tank construction with PRI schemes, Crop cultivation activities, composting, bio gas, agriculture equipments & tools, Sprayers with Agriculture Department schemes, Fodder Grass cultivation with Dairy Development Department and Fish culture with Fisheries Department. Details of the activities with target are given in watershed wise convergence plan.

PIA will hold meetings of these departments and banks during implementation phase and prepare an action plan for time bound implementation o the activities converged with their schemes.

Table-38 Proposed IWMP Activities and Convergence Plan

Sl No	Activity	Unit	IWMP								MGNREGP								PRIs & Other Departments							
			1st Year		2nd Year		3rd Year		4th Year		1st Year		2nd Year		3rd Year		4th Year		1st Year		2nd Year		3rd Year		4th Year	
			Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount	Target	Amount
I	**Land Development**																									
a	**Horticulture**																									
a1	*Agro Horticulture*	*No*	550	41250	8650	648720	8200	615020	3166	237475	0	0	0	0	0	0	0	0	23250	1743750	17750	1331250	21250	1593750	12000	900000
b	**Aforestation**																									
b1	*Agro forestry*	*No*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31000	310000	31000	310000	28000	280000	23500	235000
c	**Others**																									
c1	*Live fencing*	*Rm*	5000	90000	23750	427500	23017	414306	13525	243450	34500	621000	48750	877500	52000	936000	40750	733500	0	0	0	0	0	0	0	0
c2	*Mulching*	*Ha*	0	0	0	0	0	0	0	0	315	3150000	359	3590000	355	3550000	265	2650000	0	0	0	0	0	0	0	0
II	**Soil& Moisture Conservation**																									
a	**Contour Bunding**																									
a1	*Earthen Bund*	*Rm*	10000	540580	38036	2056158	27146	1467390	7095	383502	28500	1540654	30250	1635257	42200	2281248	30700	1659583	0	0	0	0	0	0	0	0
a2	*Stone Bund*	*M2*	2063	296082	26136	3750969	18359	2635078	1489	213720	21500	3085680	24150	3466008	20700	2970864	19250	2762760	85400	12256608	80000	11481600	79000	11338080	77569	11132703
a3	*Field Bund*	*Rm*	0	0	0	0	0	0	0	0	25910	1400643	27860	1506055	31000	1675798	20150	1089266	0	0	0	0	0	0	0	0
b	**Straggered Trenching**																									
b1	*Contour Trench*	*Rm*	0	0	200	10812	0	0	0	0	20000	1081160	23300	1259551	23000	1243334	27550	1489298	0	0	0	0	0	0	0	0
b2	*Centri Petal Terracing*	*No*	0	0	13385	1581705	9157	1082100	500	59085	24400	2883348	25834	3052804	19050	2251139	37034	4376308	0	0	0	0	0	0	0	0
b3	*Rain Water Percolation Pit*	*No*	1000	146610	1041	152621	0	0	0	0	20050	2939531	31150	4566902	12800	1876611	27200	3987792	0	0	0	0	0	0	0	0
b4	*Arecanut Basin*	*No*	0	0	16524	247860	13757	206355	5500	82500	31795	476925	37907	568605	37530	562950	24287	364305	0	0	0	0	0	0	0	0
b5	*Coconut Husk Pit*	*No*	0	0	0	0	100	22200	0	0	15200	3379264	15050	3345916	24570	5462402	8300	1845256	0	0	0	0	0	0	0	0
c	**Bench Terracing**																									
c1	*Bench Terracing*	*Cum*	2000	412800	15789	3258747	12866	2655494	3159	652065	27260	5626464	31075	6413880	47160	9733824	13325	2750280	0	0	0	0	0	0	0	0
D	**Others**																									
d1	*Tilling of ariculture land*	*Ha*	0	0	5	312500	5	312500	0	0	221	13812500	241	15062500	250	15625000	162	10125000	0	0	0	0	0	0	0	0
III	**Vegetative & Engineering Structures**																									
a	**Loose Boulder check dams**																									
a1	*Brush wood check dam*	*No*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*500*	*250000*	*473*	*236500*	*210*	*105000*	*134*	*67000*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
a2	*Gully Plugging*	*No*	5	16880	0	0	0	0	0	0	710	2353160	634	2109724	621	2074596	225	759600	0	0	0	0	0	0	0	0
a3	*Loose Boulder check dams*	*No*	62	310000	10	50000	0	0	0	0	402	2010000	431	2155000	533	2665000	298	1490000	0	0	0	0	0	0	0	0
a4	*Loose Boulder check dam with wing Wall*	*No*	0	0	16	320000	0	0	0	0	0	0	0	0	0	0	0	0	392	7840000	345	6900000	190	3800000	115	2300000
IV	**Water Harvesting Structures**																									
a	**Farm Pond**																									
a1	*Farm Pond*	*No*	9	90000	13	130000	0	0	0	0	95	1700000	102	2145000	153	2280000	100	1375000	0	0	0	0	0	0	0	0
a2	*Pond Construction*	*No*	2	170000	1	85000	0	0	0	0	12	890000	8	550000	8	550000	14	995000	12	1020000	21	1785000	23	1955000	0	0
a3	*Pond Renovation*	*No*	10	100000	25	250000	25	250000	10	100000	143	1365000	142	1387500	153	1530000	130	1300000	0	0	0	0	0	0	0	0
a4	*Open Well Construction*	*No*	0	0	11	880000	14	1120000	2	160000	0	0	0	0	0	0	0	0	6	485000	30	2405000	31	2480000	18	1465000
a5	*Pond deepening & Di-silting*	*No*	0	0	0	0	0	0	0	0	35	1750000	61	3050000	58	2900000	63	3150000	0	0	0	0	0	0	0	0
b	**Percolation Tanks**																									
b1	*Madakkam*	*No*	0	0	3	30000	0	0	0	0	139	1390000	147	1470000	158	1580000	130	1300000	0	0	0	0	0	0	0	0
c	**Check dams**																									
c1	*Vented Cross Bar(VCB)at Cheripadi*	*No*	0	0	0	0	2	1280240	0	0	0	0	0	0	0	0	0	0	2	1280240	0	0	13	8321560	0	0

d	**Ground Water Recharge Structures**																									
d1	*Ground Water Recharge Structures*	*No*	0	0	0	0	0	0	0	0	284	3408000	199	2388000	188	2256000	273	3276000	0	0	0	0	0	0	0	0
e	**Others**																									
e1	*Rain Water Harvesting Tank*	*No*	0	0	12	630000	1	45000	0	0	0	0	0	0	0	0	0	0	20	900000	23	1035000	32	1440000	0	0
e2	*Geo Tex for stream bank/bund protection*	*M2*	0	0	0	0	0	0	0	0	7970	797000	10235	1023500	9930	993000	12945	1294500	0	0	0	0	0	0	0	0
d3	*Diversion Canal*	*No*	0	0	0	0	1	500000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V	**Drainage line Treatment**																									
a	**Side Wall protection**																									
a1	*Steam bank protection using vegetative measures*	*Rm*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*14100*	*352500*	*13580*	*339500*	*11100*	*277500*	*13350*	*333750*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
a2	*Di-silting of Drainge line*	*Cum*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*18720*	*3863808*	*18000*	*3715200*	*16980*	*3504672*	*19740*	*4074336*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
a3	*Stream bank protection wall*	*Rm*	0	0	0	0	1136	3246512	1149	3283214	0	0	0	0	0	0	0	0	17650	50462377	18300	52320764	15540	44429764	20960	59925860
	Total			**2214202**		**14822592**		**15852195**		**5415011**		**60126637**		**65914902**		**68884938**		**53248534**		**76297975**		**77568614**		**75638154**		**75958563**
1	*Coconut Climber*	No	0	0	6	21000	2	7000	0	0	0	0	0	0	0	0	0	0	18	63000	30	105000	53	185500	0	0
2	*Vermi composting*	No	0	0	14	140000	0	0	0	0	0	0	0	0	0	0	0	0	136	1360000	201	2010000	149	1490000	128	1280000
3	*Compost Pit*	No	0	0	4	18000	0	0	0	0	491	2262000	494	2245500	508	2316000	484	2253000	0	0	0	0	0	0	0	0
4	*Biogas Plant*	No	0	0	6	90000	17	255000	0	0	0	0	0	0	0	0	0	0	130	1950000	132	1980000	137	2055000	70	1050000
5	*Pump set for irrigation*	No	0	0	48	480000	47	100000	0	0	0	0	0	0	0	0	0	0	70	700000	63	630000	82	820000	35	350000
6	*Springler*	No	0	0	25	87500	17	59500	0	0	0	0	0	0	0	0	0	0	165	587500	150	535000	210	750000	0	0
7	*Bush Cutter*	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	425000	26	650000	29	725000	0	0
8	*Mist blower(Long Srayer)*	No	0	0	2	80000	2	80000	0	0	0	0	0	0	0	0	0	0	7	280000	25	1000000	16	640000	0	0
9	*Fodder Grass Cultivation*	Ha	0	0	0	0	5.7037	171281	1.18	35400	0	0	0	0	0	0	0	0	25	750000	29.5	885000	25	750000	10	300000
10	*Vegetable Cultivation*	Ha	0	0	13.1633	987248	6.136	460585	0	0	0	0	0	0	0	0	0	0	30	2250000	26	1950000	27	2025000	21	1575000
11	*Tuber crops Cultivation*	Ha	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.5	2752750	4.75	2377375	6.05	3028025	5.4	2702700
12	*Banana Cultivation*	Ha	0	0	10.482	1572431	3.38	507289	0	0	0	0	0	0	0	0	0	0	17.5	2625000	14.5	2175000	16	2400000	11.5	1725000
13	*Betel vine Cultivation*	Ha	0	0	0	0	0.581	322346	0	0	0	0	0	0	0	0	0	0	2.7	1498500	2.2	1221000	2.8	1554000	0	0
14	*Pineapple cultivation*	Ha	0	0	0	0	1.1202	214515		0	0	0	0	0	0	0	0	0	5.1	976140	4.5	861300	3.3	631620	0	0
15	*Paddy Cultivation*	Ha	0	0	16.907	253600	14.657	219805	0	0	0	0	0	0	0	0	0	0	5	75000	8	120000	3	45000	3	45000
16	*Peppar cuttings*	No	0	0	12000	120000	13750	137500	5000	50000	0	0	0	0	0	0	0	0	31750	317500	26150	261500				
	Total			**0**		**3949779**		**3229821**		**85400**		**2262000**		**2245500**		**2316000**		**2253000**		**16610390**		**16761175**		**17099145**		**9027700**
	Grand Total			**2214202**		**18772371**		**19082016**		**5500411**		**62388637**		**68160402**		**71200938**		**55501534**		**92908365**		**94329789**		**92737299**		**84986263**

CHAPTER- 5

Entry Point Activities

IWMP project calls for higher level pro-active participation of various stakeholders, especially watershed community right from the beginning phase of the project. For implementation of the project activities, the community needs knowledge and skills. For this, at the planning phase itself, the community has to be provided with an opportunity to familiarize the activities that are similar to the watershed activities to be implemented. This is possible by implementing activities that address the immediate common needs of the community. These activities are termed as EPAs. With the implementation of the EPAs the project will have trust of the community and there by their continued participation.

6.1 Activities Proposed

Table 39 Entry Point activities

Sl.No	Name of Activity	Location	Ward	Nos	Amount
1	Well Recharge	All Watershed	1,2,3,4,5,6,7,8,9,11,12 ,13, 15,16&17	135	1620000
2	Pallam	Mannadkkam	8	1	168000
3	Road Side foresting	Kanhirathinkal-Vavadukam	12,11	1	88500
4	Check dam/VCB	Koodala-Muchirikulam-Kundanam (Erinhipuzha WS)	9	1	332500
5	Rain water harvesting	Erinhipuzha	8	1	50000
6	Vegetable seeds distribution	All Watershed	1,2,3,4,5,6,7,8,9,11,12 ,13, 15,16&17	4000	100000
7	Fruits tree distribution	All Watershed	1,2,3,4,5,6,7,8,9,11,12 ,13, 15,16&17	3500	175000
8	Pond Renovation	Gandhinager	13	1	202000
Total Amount					**2736000**

CHAPTER- 6
Watershed Development Works (WDW)
(Natural Resource Management (NRM)

In Watershed Development Works various activities for Natural Recourse Management (NRM) are planned. Natural Resources are used by all living organisms for their survival. Natural Resource base include soil, air, water, sun light, bio mass and so on.

In the project, to conserve the resource base, especially soil, water and bio mass various site specific treatment measures such as Contour bunds, Staggered trenching, Bench terracing, Farm ponds, Loose boulder check dams, Water harvesting structures , Planting of horticulture seedlings , Live fencing , etc area are proposed.

Propose Treatment Measures

A) <u>Land Development</u>

1) Horti Culture
    a) Agro horticulture (Seedlings of Mango, Jack, Gooseberry, Guava, Chikku, etc. Local as well as grafted variety will be planted)
2) Others
    a) Live Fencing (Hibiscus, Vetiver,Pineapple, Glyricida, Mehandi, Adalodakam, etc)

B) <u>Soil& Moisture Conservation</u>

1) Contour Bunding
    a) Earthen Bund
    b) Stone Pitched Bund
2) Contour Trench
3) Water Percolation Pit
4) Centre Petal Terracing
5) Husk Pit
6) Arecanut Basin
7) Bench Terracing
8) Tilling of Agriculture land

C) <u>Vegetative & Engineering Structures</u>

1) Check dams
    a) Gully Plugging
    b) Loose boulder check dam
    c) Loose boulder check dam with wing wall
    d) VCB at Cheripadi & Thonikkadavu
2) Others
    a) Stream bank Protection Wall

D) <u>Water Harvesting Structures (New created)</u>

1) Pond
    a) FarmPond
    b) Pond construction
    c) Madakkam
    d) Open Well construction

E) Others

a) Rain Water Harvesting Tank
b) Diversion Canal

F) <u>Water Harvesting Structures (Renovated)</u>

Farm Pond Renovation

Table 40 Proposed Treatment Measures

	Name of Activity	Unit	Target	Total Amount	IWMP Grant	**WDF (10% for general category and 5% for SC/ST)**
I	**Land Development**					
a	Horticulture	Ha	4.11	1542465	1542465	*115685*
b	Others	Ha	108.82	1175256	*1175256*	*88144*
II	**Soil& Moisture Conservation**					
a	Contour Bunding	Ha	217.21	11343478	11343478	*850761*
b	Trenching	Ha	101.94	3591848	3591848	*269389*
c	Bench Terracing	Ha	67.63	6979107	6979107	*523433*
d	Others	Ha	10	625000	625000	*46875*
III	**Vegetative & Engineering Structures**					
a	Loose Boulder check dams	Cum	527.961	696880	696880	*0*
IV	**Water Harvesting Structures**					
a	Farm Pond	No	122	3335000	3335000	*69000*
b	Percolation Tanks	No	3	30000	30000	*2250*
c	Check dams	No	2	1280240	1280240	*0*
d	Others	Nos	14	1175000	1175000	*0*
V	**Drainage line Treatment**					
a	Side Wall protection	Cum	4567.76	6529725	6529725	*0*
	Grand Total			**38304000**	**38304000**	**1965537**

Table 41 Sub activity wise treatment Measures

Sl No	Name of Activity	Unit	Unit cost	Target	Total Amount	IWMP Grant	WDF (10% for general category and 5% for SC/ST)
I	**Land Development**						
a	**Horticulture**	**Ha**		**4.11**	**1542465**	**1542465**	***115685***
a1	*Agro Horticulture*	*No*	*75*	*20566*	*1542465*	*1542465*	*115685*
b	**Others**	**Ha**		**108.82**	**1175256**	***1175256***	***88144***
b1	*Live fencing*	*Rm*	*18*	*65292*	*1175256*	*1175256*	*88144*
II	**Soil& Moisture Conservation**						
a	**Contour Bunding**	**Ha**		**217.21**	**11343478**	**11343478**	***850761***
a1	*Earthen Bund*	*Rm*	*54.058*	*82275*	*4447630*	*4447630*	*333572*
a2	*Stone Bund*	*M2*	*143.52*	*48048*	*6895849*	*6895849*	*517189*
b	**Trenching**	**Ha**		**101.94**	**3591848**	**3591848**	***269389***
b1	*Contour Trench*	*Rm*	*54.058*	*200*	*10812*	*10812*	*811*
b2	*Centri Petal Terracing*	*No*	*118.17*	*23042*	*2722889*	*2722889*	*204217*
b3	*Rain Water Percolation Pit*	*No*	*146.61*	*2041*	*299231*	*299231*	*22442*
b4	*Arecanut Basin*	*No*	*15*	*35781*	*536716*	*536716*	*40254*
b5	*Coconut Husk Pit*	*No*	*222.32*	*100*	*22200*	*22200*	*1665*
c	**Bench Terracing**	**Ha**		**67.63**	**6979107**	**6979107**	***523433***
c1	*Bench Terracing*	*Cum*	*206.4*	*33814*	*6979107*	*6979107*	*523433*
D	**Others**	**Ha**		**10**	**625000**	**625000**	***46875***
a	*Tilling of agriculture land*	*Ha*	*62500*	*10*	*625000*	*625000*	*46875*
III	**Vegetative & Engineering Structures**						
a	**Loose Boulder check dams**	**Cum**		**527.961**	**696880**	**696880**	*0*
a1	*Gully Plugging*	*No*	*3376*	*5*	*16880*	*16880*	*0*
a2	*Loose Boulder check dams*	*No*	*5000*	*72*	*360000*	*360000*	*0*
a3	*Loose Boulder check dam with wing Wall*	*No*	*20000*	*16*	*320000*	*320000*	*0*

Sl No	Name of Activity	Unit	Unit cost	Target	Total Amount	IWMP Grant	WDF (10% for general category and 5% for SC/ST)
IV	**Water Harvesting Structures**						
a	**Pond**	**No**		**122**	**3335000**	**3335000**	*69000*
a1	*Farm Pond Construction*	*No*	*10000*	*22*	*220000*	*220000*	*16500*
a2	*Pond Construction*	*No*	*85000*	*3*	*255000*	*255000*	*0*
a3	*Pond Renovation*	*No*	*10000*	*70*	*700000*	*700000*	*52500*
a4	*Open Well Construction*	*No*	*80000*	*27*	*2160000*	*2160000*	*0*
b	**Percolation Tanks**	**No**		**3**	**30000**	**30000**	***2250***
b1	*Madakkam Construction*	*No*	*10000*	*3*	*30000*	*30000*	*2250*
c	**Check dams**	**No**		**2**	**1280240**	**1280240**	*0*
c1	*Vented Cross Bar(VCB)at Cheripadi*	*No*	*400000*	*1*	*400000*	*400000*	*0*
c2	*Vented Cross Bar(VCB)at Thonikkadavu*	*No*	*880240*	*1*	*880240*	*880240*	*0*
d	**Others**	**Nos**		**14**	**1175000**	**1175000**	*0*
d1	*Rain Water Harvesting Tank(10000Ltr)*	*No*	*45000*	*11*	*495000*	*495000*	*0*
d2	*Rain Water Harvesting Tank(20000Ltr)*	*No*	*90000*	*2*	*180000*	*180000*	*0*
d3	*Diversion Canal*	*No*	*500000*	*1*	*500000*	*500000*	*0*
V	**Drainage line Treatment**						
a	**Side Wall protection**	**Cum**		**4567.76**	**6529725**	**6529725**	*0*
a1	*Stream bank protection wall*	*Rm*	*2859.05*	*2284*	*6529725*	*6529725*	*0*
	Grand Total				**38304000**	**38304000**	**1965537**

Table 42 Summary of Activities Proposed - Micro Watershed wise

Sl No	Activities	Unit	Target (Qty)	Kundoochi	Mullangod	Vavadukkam	Aricheppu	Munambu	Thonoppalam	Chedimotta	Payattiyal	Peringanam	Erinhipuzha	Kollaramkode	Cheripady	Pandikkandam	Kuthirakkallu	Thonikkadavu
1	Earthen Bund	Rm	82275	2000	5994	19625	-	7514	7410	3114	3537	9938	-	12970	5550	-	925	3700
2	Live Fencing	Rm	65292	250	2980	-	22745	-	5537	-	3500	-	-	2500	-	16670	-	11110
3	Centri Petal Terracing	No	23042	585	999	-	5077	2115	-	-	2500	300	1850	2000	-	4231	-	3385
4	Arecanut Basin	No	35781	600		-	6738	5000	-	-	2500	724	2219	3000	-	-	-	15000
5	Tilling of Agriculture land	Ha	10										10					
6	Bench Terracing	CuM	33814	410	499	5211	1738	969	2160	-	2500	2261	-	4500	-	10659	-	2907
7	Contour Trench	Rm	200	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Stone Bund	M2	48048	563	2989	7742	5574	1394	3475	2090	3500	6638	-	7324	2578	2438	348	1394
9	Coconut Husk Pit	No	100	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Rain Water Percolation Pit	No	2041	-	-	-	-	-	-	-	-	41	2000	-	-	-	-	-
11	Farm Pond	No	22	-	-	-	15	-	-	5	-	-	-	-	-	-	2	-
12	Pond Construction	No	3	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-
13	Pond Renovation	No	70	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-
14	Madakkam	No	3	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
15	Agro Horticulture	No	20566	-	540	960	-	-	-	-	1000	-	-	1500	800	13166	-	2600
16	RWH Tank (10000Ltr)	No	11	-	3	3	1	-	-	-	1	1	-	-	-	-	-	2
17	RWH Tank (20000Ltr)		2		-	-	-	-	-	-	-	-	2	-	-	-	-	-
18	Open Well	No	27	1	5	5	1	1	-	2	1	-	-	-	5	-	2	4
19	Diversion Canal	No	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-

Sl No	Activities	Unit	Target (Qty)	Kundoochi	Mullangod	Vavadukkam	Aricheppu	Munambu	Thonoppalam	Chedimotta	Payattiyal	Peringanam	Erinhipuzha	Kollaramkode	Cheripady	Pandikkandam	Kuthirakkallu	Thonikkadavu
20	Gully plugging	No	5	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-
21	Loose Boulder Check Dam- II	No	72	-	-	-	-	-	-	-	12	-	25	30	-	-	5	-
22	Loose Boulder Check Dam with wing Wall	No	16	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-
23	Stream bank protection wall	Rm	2284	128	66	175	175	70	-	175	175	154	175	175	175	332	135	175
24	VCB at Cheripadi	No	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
25	VCB at Thonikkadavu	No	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

7.1 Activities proposed:

7.1.1 .1Area treatment measures for soil and water management:

Based on soil survey study, land capability classification and PRA, management practices for soil and water conservation for the area are planned. The interventions include engineering as well as agronomic measures. Details of common activities are given below

7.1.2 Stone pitched contour bunds

These are the structural barriers constructed along the contours at specific vertical intervals. Scientifically inclined construction of stone pitched contour bunds would either prevent or slow down the surface run off of rain water that in turn would create condition for enhancing the recharge of ground water and retention of soil moisture by preventing soil erosion. The construction of Contour bunds would ensure moisture regime conservation and fertile top soil protection that would eventually lead to increased plant growth and re-vegetation. These are necessary requirement for increasing water infiltration capacity of the soil.

7.1.3 Earthen bund and Bench Terracing

Earthen bund.

These are the low cost earthen barriers/structures to prevent soil erosion, where the percentage of slope is less than 15% and sufficient quantity of stones for constructing contour bunds are not available in the locality. For strengthening/reinforcing the bunds suitable plants will be planted.

Bench Terracing

These are a series of level strips running across the slope at vertical intervals, supported by steep banks. This structure would help reduce runoff velocity and allow water to infiltrate and there by to conserve moisture. This also helps the farmer to use land for cropping activities

7.1.4 Rain Water Percolation Pit, Contour Trench and Centri-petal terracing, Arecanut basin, etc

These are earthen dug up structures with different cross sections constructed in suitable areas to collect more quantity of run off water and to protect soil. To protect the earthen bunds which will be formed out of the excavated soil, the farmers will be advised to do vegetative reinforcement.

7.1.5 Farm Pond, Pond & well construction and renovation of pond

A percolation pond is an earthen structure with varied size constructed to harvest and impounds the runoff from the catchments for a longer time, to facilitate vertical and lateral percolation of impounded water into the soil substrata, thereby recharging groundwater storage in the zone of influence of the pond.

There are ponds constructed by the farmers in the watershed area. Due to improper maintenance, silt deposit in these ponds mounted and hence these ponds fail to collect water in accordance with its actual size when it was constructed. If the silt is removed and the side walls of the ponds are maintained, these would act as a good water collection structures. So, under the project desilting and maintenance work of the side wall of the ponds are proposed.

7.1.6 Roof Top Rain Water Harvesting Tanks

These are systems to collect rain water directly from the roof top during rainy season through channels and a filtering unit in to a Fero-cement tank constructed near to the house/building. The water collected in the tank will be used during dry spell.

7.1.7 Open Well construction

Open dug up wells are proposed in acute drinking water scarce area to provide water for drinking as well as for cultivation of vegetable crops. Since the water available from wells is surface water, there is no problem of ground water exploitation.

7.1.8 Agro Horticulture and Agro Forestry

These are agronomic interventions in watershed to protect soil through its root system and ensure food security, increase vegetation, etc. Need based and site specific agro horti & forestry saplings will be planted.

7.1.9 Live fencing

Fencing is usually done to demarcate boundary using stone, soil and tree planting. In watershed, we promote living fencing. It is a row of plants. The live fence will serve as a soil & water conservation measure apart from contributing to demarcate boundaries and to keep away livestock and wild animals from crops. It can produce fruit, fodder, fuel wood, etc and green leaves for preparing bio fertilisers.

7.1.10 Water Recharging System

Water from roof tops is normally allowed by the people to simply flow which cause soil erosion and wastage of water. Water from roof top could be effectively used for recharging of water bodies, especially open wells. The water from roof top through a channel will be collected to a pit constructed near to the well. These pits are partially filled with pebbles, rubbles, husk, etc will function as a filter mechanism. From the pit, the water will be allowed to go the well. Through this, the rain water is collected to recharge the well.

7.1.11 Husk pit

Husk pits are effective soil moisture conservation measures which will in turn help alleviate drought effects. Coconut husks will be buried in the pits construed in the farm field. Husk contains potash. Husk acts like a sponge and can absorb and retain water about six times their own weight, which will be conserved for dry periods. Husks break down slowly. Thus its moisture conservation ability will be available for a period of about 3 to 4 years. Husks improve the soil structure, adding organic matter to the soil, when it decomposes.

7.1.12 Retaining wall

Retaining walls are stabilizing structures constructed along drainage lines (streams) to prevent sliding and erosion. Here in the project, retaining walls will be constructed as a drainage line treatment measures using stones.

7.1.13. 'Madakka' construction

'MADAKKA' are earthen pond having side walls reinforced with mud. It is a traditional practice in the watershed area to collect the water from sources/drainages at hill slopes, through gravity force. It can also be constructed to collect discharge water from the SURANGA (horizontally dug up tunnels). The water collected in Madakka will function as a percolation structure and provide water to the vegetable farmer for irrigation.

7.1.14 Rain Water Harvesting Tank

If rain water is stored during rainy period, it can be used for drinking and other household purposes during water scarce period. To avoid contamination, rain water has to be collected from roof tops (houses or other buildings). The water will be collected though PVC channels and stored in a tank constructed using ferocement.

7.1.15. Diversion canal

In watersheds, we have to increase the time of run off water in streams. For this, constructing diversion canal is the best option. The excess water in streams will be diverted through the canals constructed. This will increase the scope for infiltration and help reduce velocity of water in streams. Here, it is aimed to supply water for paddy cultivation.

7.1.16 Loose boulder check dams

Series of loose boulder check dams are constructed across the stream at different intervals to check the flow of water to keep soil moisture through infiltration. Check dam construction comes only after implementing almost all the area treatment measures. If not, the high runoff water will damage the check dams.

7.1.17 Vented Cross Bars

Vented Cross Bars are proposed in the project across the main stream at paddy cultivated areas. This structure will help store water for irrigation. The stored water will allow infiltration and there by keep soil moisture and increase water table in ponds and open wells.

CHAPTER- 7

PRODUCTION SYSTEM & MICRO ENTERPRISES

Crop production and productivity are important aspects in watersheds as far as the food need of the community and economic revenue of the farmers are considered. To address these two aspects, activities that encourage production and productivity become parts and parcel of the watershed project. IWMP set apart a portion of its fund exclusively for PSM&ME.

Major activities proposed under PSM&ME are Vegetable cultivation, Banana cultivation, Fodder grass cultivation, Betel vine cultivation, Paddy cultivation and Pineapple cultivation. These activities will directly address the production of the crops in watershed. To address the productivity issue the project will have Vermi- composting units, Compost pits and bio gas plants. This will help the farmers to follow organic cultivation practices in watersheds.

Apart from the above activities, 8 coconut climbing machine, 95 pump sets to marginal farmers , 42 Springler and 4 mist blower are also proposed under PSM&ME.

Table 43 - Proposed Activities

Sl No	Activities	Unit	Unit Cost	Total	Total Cost	IWMP Grant	WDF contribution
1	Vegetable Cultivation	Ha	75000	19.44	1457832	1457832	218675
2	Banana Cultivation	Ha	150000	13.80	2069719	2069719	310458
3	Fodder Grass Cultivation	Ha	30000	6.89	206682	206682	31002
4	Betel vine Cultivation	Ha	555000	0.58	322347	322347	48352
5	Pineapple Cultivation	Ha	191400	1.12	214515	214515	32177
6	Paddy Cultivation	Ha	15000	31.56	473405	473405	71011
7	Pepper cuttings	No	10	30750	307500	307500	46125
8	Vermi Composting	No	10000	14	140000	140000	21000
9	Biogas Plant	No	15000	23	345000	345000	51750
10	Compost Pit	No	4500	4	18000	18000	2700
11	Pump set to marginal farmers for Irrigation	No	10000	95	950000	950000	142500
12	Sprinkler	No	3500	42	147000	147000	22050
13	Long Sprayer	No	40000	4	160000	160000	24000
14	Coconut Climbing Machine	No	3500	8	28000	28000	4200
	Total				**6840000**	**6840000**	**1026000**

Table 44 Summary of Activities- Micro Watershed wise

Sl No	Activities	Unit	Total	Kundoochi	Mullangod	Vavadukkam	Aricheppu	Munambu	Thonoppalam	Chedimotta	Payattiyal	Peringanam	Erinhipuzha	Kollaramkode	Cheripady	Pandikkandam	Kuthirakkallu	Thonikkadavu
1	Vegetable Cultivation	Ha	19.44	0.2833	0.2667	3.55	3.33	0.8267	0.8	0.667	1	1.5	1.036	1.33	0.9707	1.3371	0.40	2
2	Banana Cultivation	Ha	13.80	0.40	0.2	1.44	0.67	0.6667	0.79	0.547	0.99	1.7	1	1.17	0.6667	2.1267	0.1667	1.333
3	Fodder Grass Cultivation	Ha	6.89	0.405	0.6667	-	0.1867	-	0.8	0.33	0.4047	0.08	0.4	0.1	0.50	-	0.33	2.68
4	Betel vine Cultivation	Ha	0.58	-	0.0825	-	-	-	0.1	0.027	-	-	0.1	0.037	0.0541	0.1802	-	-
5	Pineapple Cultivation	Ha	1.12	-	0.1045	-	-	-	-	-	0.4	0.315	-	0.04	-	0.2612	-	-
6	Paddy Cultivation	Ha	31.56	-	0.6667	1.33	-	-	-	-	1	-	3	-	6.6667	6.66	2.24	10
7	Pepper cuttings	No	30750	-	-	-	-	-	-	-	-	-	5750	-	-	25000	-	-
8	Vermi Composting	No	14	-	2	2	7	-	-	-	3	-	-	-	-	-	-	-
9	Biogas Plant	No	23	-	-	2	-	6	-	-	1	1	-	3	-	10	-	-
10	Compost Pit	No	4	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-
11	Pump Set for irrigation	No	95	2	18	23	10	-	-	2	5	-	-	18	5	-	2	10
12	Springler	No	42	-	-	-	-	-	-	-	-	-	-	42	-	-	-	-
13	Long Sprayer	No	4	1	-	-	-	-	-	1	-	-	-	-	2	-	-	-
14	Coconut Climbing Machine	No	8	-	-	-	-	-	-	1	-	-	5	-	2	-	-	-

8.1 Details of Activities proposed:

8.1.1 Vegetable cultivation

The state is dependent to other states for meeting the home demand for vegetables. Those who cultivate vegetables have received encouraging production. The common items cultivated are Okra, amaranth, bitter gourd, brinjal, chilly, pumpkin, cucumber and snake gourd. Normally people in these areas cultivate a mix of vegetables.

8.1.2 Betel vine cultivation

Betel vine can be cultivated in the uplands as well as in wetlands. The crop grows best on well-drained fertile soils. Waterlogged, saline and alkali soils are unsuitable for its cultivation. The crop also comes up very well in lateritic soils. The project area satisfies all the atmospheric and land conditions essential for the cultivation of betel vine cultivation. So, the betel vine cultivation is proposed

8.1.3 Pineapple cultivation

Pineapple is a tropical fruit having juiciness, vibrant tropical flavor and immense health benefits. Pineapple contains considerable calcium, potassium, fiber, and vitamin C. It is low in fat and cholesterol. It is also a good source of vitamin B1, vitamin B6, copper and dietary fiber. Pineapple is a digestive aid and a natural Anti-Inflammatory fruit. All these merits of pineapple provide greater scope for cultivation of the crop.

8.1.4 Banana cultivation

Banana cultivation is being practiced in the watersheds area as there is high market demand. The crop prefers tropical humid lowlands. April-May is the season for rain fed crops and August-September is the season for irrigated crop. The planting season can be adjusted depending to the local condition. Common varieties cultivated are Nendran (clones), Robusta, Poovan, Palayankodan and Njalipoovan. Under the project we propose Banana cultivation.

8.1.5 Fodder grass cultivation

Cultivation of suitable varieties of fodder grass on contour bunds, open areas, non arable areas, etc is proposed to increase the fodder availability in the watershed.

8.1.6 Coconut climber

Physical hardship is high in manual coconut climbing and it is dangerous also. Coconut climber is developed as a devise to ease coconut climbing. So, under the project coconut climber is proposed for the potential beneficiaries.

8.1.7 Pump set to marginal farmers for irrigation

Electrical Pump sets are widely used for irrigating the crops with the electrification of the area. Government has exempted crop irrigation from paying electricity charges. Proper irrigation will improve crop health and thus yield good production. So, as a measure to ease the irrigation practice, pump sets are proposed.

8.1.8 Sprayer

Sprayers are proposed for organic pesticide application in farm fields.

8.1.9 Vermi Composting

Vermi-biotechnology is a simple, eco- friendly, socially acceptable and economically viable technology to manage the organic waste resources on low capital input basis. It will help to convert wastes into fertilizers. Application of vermi compost will make soils healthy and thereby to have more crop production. Farmers can earn additional income by selling of it.

8.1.10 Bio gas

Biogas is generated when organic matter such as domestic food and garden waste is buried and compressed in a dark oxygen free environment. Biogas typically refers to a gas produced by the biological breakdown of organic matter in the absence of oxygen. Biogas originates from biogenic material and is a type of bio fuel. The slurry produced in Bio gas plant are good manure for crops.

8.1.11 Paddy cultivation

Paddy lands conserve water during rain. Rice is one of the important food items of Kerala community. Unfortunately, the area under paddy cultivation in Kerala has witnessed a steady decline since 1980. There is urgent need to expand paddy cultivation in Kerala to ensure food security. As a promotional step, paddy cultivation is proposed in the project.

8.1.12 Pepper cuttings

Pepper cultivation was one of the major intercrop in the watershed area. But over the years due to shift in cultivation practice, the area under pepper cultivation has drastically reduced. Under the project, pepper cultivation as inter crop is proposed.

8.1.13. Compost pits

Composting through compost pits is an easy method. Household wastes and farm wastes create serious sanitation problems if not managed properly. These wastes could be managed through Compost pits. We only need to dig a pit in a suitable location and to throw the degradable wastes in to it. The pit needs to be covered using local materials. Through anaerobic decomposition, the wastes will be converted to compost which can be used as organic fertiliser to agricultural crops. Hence there are two outcomes first one is managing the waste and second is producing composts.

8.1.14. Sprinklers

Crop irrigation needs high amount of water. Since the practice cause ground water extraction, the quantity should be reduced using scientific irrigation methods. Sprinkler irrigation is a good method to ensure judicious use of water. It is a method of spraying water in to the air to irrigate entire soil surface using less quantity of water. Water is distributed through a net work of pipes usually by pumping. Sprinklers also help the farmer to ensure all crops irrigated.

CHAPTER- 8

LIVELIHOOD ACTIVITIES

9.1 Context:

One of the important aims of the watershed management programme is livelihood security of the watershed community. One of the unique features of IWMP is the planning and implementation of livelihood activities. 9% of the total project cost is earmarked to assist the livelihood activities. Livelihood programme is visualized to maximize the utilization of potential generated by watershed activities and creation of sustainable livelihoods and enhanced incomes for households within the watershed area.

'Livelihood' generally deals with people, their resources and what they do with the resources. Livelihoods essentially revolve around resources such as soil/land, crops/plants, seed/seedlings, labour, energy, knowledge, cattle, money, social relationships, and so on. Livelihood can be viewed in the light of changing environmental, political, economic and socio-cultural circumstances.

9.1.1 Guiding Principles of Livelihood programme in IWMP

a. Enhance livelihood opportunities for the poor through investment into asset creation and improvement in productivity and income.
b. Improve access of the marginalized communities, including SC/ST, landless/assetless people, women, etc., to the benefits.
c. Select the beneficiaries in a transparent manner.
d.

9.1.2 Methodology followed to Plan the livelihood programme

i. Presentation of the concept of livelihood: The concept of livelihood security of families in watershed area was presented and discussed in the watershed community meetings. It provided the community awareness on the details of the livelihood programme under IWMP.
ii. Participatory Livelihood Planning (PLP): Participatory Livelihood Planning was conducted in each Micro Watershed with the participation of the families. Social and Resource Map were prepared to know the present livelihood activities, resource base, livelihood capitals of the watershed and the scope for new livelihood activities. To know the present flow pattern of the resource of the village, Resource Inflow and Outflow tool was used. It has helped the community to internalise the present gap in income to meet the day to day need of the families and an understanding on mobilising the required contribution of the family to implement the livelihood activities. Pair wise and Matrix Ranking and Scoring tool was used to prioritise the livelihood activities. It has helped the community to know the scope and risks of the activities and to select the viable livelihood activities for IWMP. Livelihood experts were also consulted at various stages of planning. The result frame work of the livelihood programme was also planned in the community meeting.

9.1.3 Mode of implementation

The livelihood action plan will be implemented either through the existing or new Self Help Groups (SHGs)/the Joint Liability Groups (JLGs) in the watershed area. The Federation of these groups also will be considered for implementation. However financial support to enterprising individuals could also be considered subject to a maximum of 10% of the funds under the livelihood component.

i. SHGs/JLGs selected for implementing livelihood action plan will be homogeneous in-terms of their existing livelihood capitals, common interest and need.
ii. SHGs can undertake any permissible activity jointly as a group or the group may decide to support individual(s) for the activities under the umbrella of the main SHG. In case of individual support under the SHGs, the individuals will be accountable to the main SHG for finances and performance.
iii. The financial support to enterprising individuals who prepare and submit a viable livelihood proposal, may be considered by Watershed Cell cum Data Centre (WCDC) on the recommendation of the Watershed Committee (WC). The plan has to be approved by the WCDC before extending financial support.

9.1.4 Eligibility for availing the funds under the Livelihood Component

i. The beneficiaries should be poor/marginalized communities, including SC/ST, landless/asset less people, women, etc.
ii. It will be ensured that the selected SHG/JLG does not have more than one member from a household.
iii. Priority may be given to women SHGs.

9.1.5 Procedure of release and administration:

i. This earmarked amount shall be taken out of the total project fund as a grant to WC in its bank account, which in turn will be used to provide financial assistance, (seed money for revolving fund to SHGs/JLGs and a grant -in -aid for enterprising SHGs/ JLGs or its federations to undertake major livelihood activities).
ii. At least 70% of this livelihood fund will be used to support revolving fund for SHGs and a maximum of 30% for supporting grant–in–aid to enterprising SHGs/ SHG federations.

9.1.6 Seed Money for Revolving Fund:

a. Seed money for SHGs/JLGs

i. Each SHG/JLG shall make an application for financial assistance to the WC. WC in its regular meeting will consider these applications and pass resolution regarding its approval of financial assistance to SHGs/JLGs based on merit of the case. The representatives of applicant SHGs/JLGs may also be present in such meetings of the WC. The resolution will clearly rank the approved cases, based on the priorities and preferences, so that the support may be extended to all the eligible SHGs/JLGs in order of ranking.

ii. The initial amount up to Rs. 25,000 may be given as seed money to SHG/JLGs as the revolving fund after their proposed activity(s) has been approved by the WC in its meeting and included in the resolution.
iii. The SHGs/JLGs will return the seed money on monthly basis and that could be reinvested in the same or other SHGs/JLGs as per the resolution passed in the meeting of WC. The amount and number of monthly installments may be decided by WC based on the type of activity, capacity of the group and their savings. The amount may be returned in a maximum of 18 months.
iv. The payment will be made by cheque after the respective SHG/JLG has opened a joint bank account with two signatories from the SHG/JLG members.
v. The SHGs/JLGs may use the amount for a combined activity and/ or shall provide the above amount to the concerned members as individual loan against a specific activity for improving income. In case of individual support under the SHGs/JLGs, the individual will be accountable to the main SHGs/JLGs for finances and performance.

9.1.7 Funding for Major Livelihood activities:

i. The funding for major livelihood activities will enable the enterprising SHGs/ JLG/SHG federations (with at least 5 enterprising SHGs) to avail a composite loan for undertaking major livelihood activities or to expand/upscale activities as recommended by the WC and approved by WCDC in consultation with line departments and bank.
ii. For such activities, a composite loan (grant in aid and bank loan) can be availed depending upon the type of activity. The grant -in-aid will be 50 % of the cost of the activity or Rs. 2.00 lakh whichever is less. However, grant in aid shall not exceed 30 % of the livelihood component (i.e. 9% of the total project cost) of the project.
iii. SLNA may issue detailed modalities for payment of grant-in-aid for funding major livelihood activities.

9.1.8 Capacity Building for Beneficiaries

The capacity building of the livelihood beneficiaries will be covered under the Training plan of IWMP. The expenditure for the training for livelihood component will be met from the fund earmarked for institution and capacity building.

Table 45- Details of Livelihood activities

Sl No	Activity	Unit cost	Target	Amount	Fund sharing	
					IWMP	Own/Bank
1	Cow Rearing	30000	114	3420000	2847500	572500
2	Goat Rearing	24000	50	1200000	1067440	132560
3	Poultry	6000	140	840000	670800	169200
4	Beekeeping	11750	41	481750	338040	143710
5	Buffalo Rearing	30000	4	120000	100000	20000
6	Rabbit Rearing	10000	1	10000	10000	-
7	Agricultural nursery	50000	4	200000	84320	115680
8	Tailoring Machine	6000	207	1242000	1037900	204100
	Total			**7513750**	**6156000**	**1357750**

Other proposed activities:

Fashion designing, Garment making unit
Furniture shop, Beauty parlor
Grocery shop, Ice cream parlor, Copra Dryer
Hire goods shop, Tuition centre, Imitation gold making unit

9.2. Major livelihood activities

9.2.1 Goat Rearing

Goat rearing is a profitable livelihood activity. It is affordable to the poor families because it needs low capital investment and provides quick return, simple shed is enough to house the goats, goat has high prolific rate, not a seasonal activity but year round activity, milk has high nutrient value and has good demand, meat is lean and has good market price, easy to manage even by women and the goat can be sold at any time.

Suitable breed

The major breed in Kerala belongs to Malabari breed as it is well adapted to the agro-climatic conditions of the State. Malabari Goat is in white, brown and black colors. Kidding size is 2-3 kids. Buck weighs about 40-50 kgs and does weighs about 30 kgs

9.2.2 Cow Rearing

Dairying is found to be viable livelihood option for all sections of the society. Since milk has got good demand from households and markets, dairying would be a profitable activity for families. Hybrid varieties are needed to undertake dairying as a livelihood option. Sunandini variety is suitable for the Kasaragod climatic condition. Scientific rearing practice should be followed. A scientific cattle shed has to be constructed and maintained properly by the families.

9.2.3 Poultry rearing

Poultry are economic converters of home grown food into both eggs and meat. Poultry manure (droppings) is also a very valuable source of plant nutrients. Eggs have a high protein, nutritious food with very little waste. The suitable variety for Kerala climate is Gramasree. In addition to eggs, the farmer will get poultry dropping, which is a quality organic fertilizer. Other advantages include:

- Availability of fresh eggs ,
- Recycling of household wastes/scraps
- Protein enriched food

9.2.4 Tailoring machine

There are people in the watershed area who have knowledge and skill in tailoring but are not productively used for income generation as they do not possess tailoring machine due to their

financial inability to purchase it. To help such persons to make use of their skill in tailoring, tailoring machines are proposed.

9.2.5 Beekeeping

Bee-keeping (Apiculture) is being done by farmers as a source of additional income. Rubber and coconut farmers can place beehives in farms and gain a good return from it without any risk. *Apis Cerana* is the most suitable species in Kerala by bee farmers as it produces 7kg to 10kg of honey on an average. In addition to this, honeybees help pollinating process in flowers and plants, a process that sustains vegetation. Coconut, cardamom, cashew, mango, guava, rubber and vegetables are the major crops pollinated by honeybees

9.2.6 Buffalo rearing

Buffalo rearing is highly valuable especially for the purposes of meat and milk. They provide dung also. Buffaloes are useful for the purpose of ploughing. Buffalo milk is good in quality as compared to any other domestic animal. Buffalo rearing is considered to be cheap and economically profitable.

9.2.7 Rabbit rearing

Rabbit is an economic activity that could be opted by the families in watersheds. Rabbit meat has got good market demand as it is rich in protein and is very low in fat and cholesterol. Rabbits are easy to raise. Rabbits have a high reproduction rate.

9.2.8 Agricultural Nursery

Agriculture seedlings have high demand in watersheds. Farmers need it in high quality, at fare price, in sufficient quantity on time. To satisfy these aspects, it is better to have agricultural nurseries in watersheds. The unit will supply planting materials to the farmers as well as income to the farmers who manage the nursery.

CHAPTER- 9

ANNUAL ACTION PLAN (AAP)

Annual Action Plans are the break up of the project components/activities in year wise format. This indicates the activities in the mandatory components to be carried in a particular year of the project.

The plan has major components and the activities in head wise. It is prepared in the mandatory AAP format. Major heads are Land Development, Soil & Moisture Conservation, Vegetative & Engineering Structures, Water Harvesting Structures, Percolation Tanks, Ground Water Recharging System and Others.

For making it user friendly, we have given a consolidation of the AAP with WDF contribution of the families. It follows sub activity wise consolidation and year wise action plan with quantity and target. Plan contains activities in natural Resource Management (NRM), Production System Management & Micro Enterprises (PSM&ME) and Livelihood.

Watershed Development Works (Natural Resource Management)

Table -46 Year wise Action Plan

Sl No	Activity	Unit	Target	Amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
I	**Land Development**											
a	Horticulture	Ha	4.11	1542465	0.11	41250	1.73	648750	1.64	615000	0.63	237465
b	Others	Ha	108.82	1175256	8.33	90000	39.58	427500	38.36	414306	22.54	243450
II	**Soil& Moisture Conservation**					0		0		0		0
a	Contour Bunding	Ha	217.21	11343478	20.11	836662	106.95	5807189	75.84	4102342	14.31	597286
b	Straggered Trenching	Ha	101.94	3591848	1.67	146610	51.92	1992998	38.36	1310638	10.00	141602
c	Bench Terracing	Ha	67.63	6979107	4.00	412800	31.58	3258850	25.73	2655542	6.32	651915
D	**Others**	**Ha**	**10**	**625000**	**0**	**0**	**5**	**312500**	**5**	**312500**	0	0
III	**Vegetative & Engineering Structures**					0		0		0	0	0
a	Loose Boulder check dams	Cum	527.961	696880	380.359	326880	147.602	370000	0	0	0	0
IV	**Water Harvesting Structures**					0		0		0	0	0
a	Farm Pond	No	122	3335000	21	360000	50	1345000	39	1370000	12	260000
b	Percolation Tanks	No	3	30000	0	0	3	30000	0	0	0	0
c	Check dams	No	2	1280240	0	0	0	0	2	1280240	0	0
d	Others	Nos	14	1175000	10	450000	3	225000	1	500000	0	0
V	**Drainage line Treatment**					0		0		0	0	0
a	Side Wall protection	Cum	4567.76	6529725	0	0	0	0	2272	3247881	2295.76	3281844
	Grand Total			**38304000**		**2664202**		**14417786**		**15808449**		**5413563**

Watershed Development Works (Natural Resource Management)

Table 47- Sub Activity wise Annual Action plan

Sl No	Activity	Unit	Target	Amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
I	**Land Development**											
a	**Horticulture**	**Ha**	**4.11**	**1542465**	**0.11**	41250	**1.73**	648750	**1.64**	615000	**0.63**	237465
a1	*Agro Horticulture*	*No*	*20566*	*1542465*	550	41250	8650	648750	8200	615000	3166	237465
b	**Others**	**Ha**	**108.82**	**1175256**	**8.33**	90000	**39.58**	427500	**38.36**	414306	**22.54**	243450
b1	*Live fencing*	*Rm*	*65292*	*1175256*	5000	90000	23750	427500	23017	414306	13525	243450
II	**Soil& Moisture Conservation**											
a	**Contour Bunding**	**Ha**	**217.21**	**11343478**	**20.11**	**836662**	**106.95**	**5807189**	**75.84**	**4102342**	**14.31**	**597286**
a1	*Earthen Bund*	*Rm*	*82275*	*4447630*	10000	540580	38036	2056150	27146	1467458	7093	383441
a2	*Stone Bund*	*M2*	*48048*	*6895849*	2063	296082	26136	3751039	18359	2634884	1490	213845
b	**Straggered Trenching**	**Ha**	**101.94**	**3591848**	**1.67**	**146610**	**51.92**	**1992998**	**38.36**	**1310638**	**10.00**	**141602**
b1	*Contour Trench*	*Rm*	*200*	*10812*	0	0	200	10812	0	0	0	0
b2	*Centri Petal Terracing*	*No*	*23042*	*2722889*	0	0	13385	1581705	9157	1082083	500	59101
b3	*Rain Water Percolation Pit*	*No*	*2041*	*299231*	1000	146610	1041	152621	0	0	0	0
b4	*Arecanut Basin*	*No*	*35781*	*536716*	0	0	16524	247860	13757	206355	5500	82501
b5	*Coconut Husk Pit*	*No*	*100*	*22200*	0	0	0	0	100	22200	0	0
c	**Bench Terracing**	**Ha**	**67.63**	**6979107**	**4.00**	**412800**	**31.58**	**3258850**	**25.73**	**2655542**	**6.32**	**651915**
c1	*Bench Terracing*	*Cum*	*33814*	*6979107*	2000	412800	15789	3258850	12866	2655542	3159	651915
D	**Others**	**Ha**	**10**	**625000**	**0**	**0**	**5**	**312500**	**5**	**312500**	0	0
a	*Tilling of ariculture land*	*Ha*	*10*	*625000*	0	0	5	312500	5	312500	0	0

Sl No	Activity	Unit	Target	Amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
III	**Vegetative & Engineering Structures**											
a	**Loose Boulder check dams**	**Cum**	**527.961**	**696880**	**380.359**	**326880**	**147.602**	**370000**	**0**	**0**	**0**	**0**
a1	*Gully Plugging*	*No*	*5*	*16880*	5	16880	0	0	0	0	0	0
a2	*Loose Boulder check dams*	*No*	*72*	*360000*	62	310000	10	50000	0	0	0	0
a3	*Loose Boulder check dam with wing Wall*	*No*	*16*	*320000*	0	0	16	320000	0	0	0	0
IV	**Water Harvesting Structures**							0		0	0	0
a	**Farm Pond**	**No**	**122**	**3335000**	**21**	**360000**	**50**	**1345000**	**39**	**1370000**	**12**	**260000**
a1	*Farm Pond construction*	*No*	*22*	*220000*	9	90000	13	130000	0	0	0	0
a2	*Pond Construction*	*No*	*3*	*255000*	2	170000	1	85000	0	0	0	0
a3	*Pond Renovation*	*No*	*70*	*700000*	10	100000	25	250000	25	250000	10	100000
a4	*Open Well Construction*	*No*	*27*	*2160000*	0	0	11	880000	14	1120000	2	160000
b	**Percolation Tanks**	**No**	**3**	**30000**	**0**	**0**	**3**	**30000**	**0**	**0**	**0**	**0**
b1	*Madakkam construction*	*No*	*3*	*30000*	0	0	3	30000	0	0	0	0
c	**Check dams**	**No**	**2**	**1280240**	**0**	**0**	**0**	**0**	**2**	**1280240**	**0**	**0**
c1	*Vented Cross Bar(VCB)at Cheripadi*	*No*	*1*	*400000*	0	0	0	0	1	400000	0	0
c2	*Vented Cross Bar(VCB)at Thonikkadavu*	*No*	*1*	*880240*	0	0	0	0	1	880240	0	0
d	**Others**	**Nos**	**14**	**1175000**	**10**	**450000**	**3**	**225000**	**1**	**500000**	**0**	**0**
d1	*Rain Water Harvesting Tank(10000Ltr)*	*No*	*11*	*495000*	10	450000	1	45000	0	0	0	0
d2	*Rain Water Harvesting Tank(20000Ltr)*	*No*	*2*	*180000*	0	0	2	180000	0	0	0	0
d3	*Diversion Canal*	*No*	*1*	*500000*	0	0	0	0	1	500000	0	0
V	**Drainage line Treatment**					0		0		0	0	0
a	**Side Wall protection**	**Cum**	**4567.76**	**6529725**	**0**	**0**	**0**	**0**	**2272**	**3247881**	**2295.76**	**3281844**
a1	*Stream bank protection wall*	*Rm*	*2284*	*6529725*	0	0	0	0	1136	3247881	1148	3281844
	Grand Total			**38304000**		**2664202**		**14417786**		**15808449**		**5413563**

Table 48 Production System & Micro Enterprises

Sl No	Activity	Unit	Target	Total amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
1	Coconut Climber	No	8	28000	0	0	6	21000	2	7000	0	0
2	Vermi composting	No	14	140000	0	0	14	140000	0	0	0	0
3	Compost Pit	No	4	18000	0	0	4	18000	0	0	0	0
4	Biogas Plant	No	23	345000	0	0	6	90000	17	255000	0	0
5	Pump set to marginal farmers for Irrigation	No	95	950000	0	0	48	480000	47	470000	0	0
6	Springler	No	42	147000	0	0	25	87500	17	59500	0	0
7	Mist blower(Long Srayer)	No	4	160000	0	0	2	80000	2	80000	0	0
8	Fodder Grass Cultivation	Ha	6.8837	206681	0	0	0	0	5.7037	171281	1.18	35400
9	Vegetable Cultivation	Ha	19.2993	1447833	0	0	13.1633	987248	6.136	460585	0	0
10	Banana Cultivation	Ha	13.862	2079720	0	0	10.482	1572431	3.38	507289	0	0
11	Betel vine Cultivation	Ha	0.581	322346	0	0	0	0	0.581	322346	0	0
12	Pineapple cultivation	Ha	1.1202	214515	0	0	0	0	1.1202	214515		0
13	Paddy Cultivation	Ha	31.564	473405	0	0	16.907	253600	14.657	219805	0	0
14	Peppar cuttings	No	30750	307500	0	0	12000	120000	13750	137500	5000	50000
		Total		**6840000**		**0**		**3849779**		**2904821**		**85400**

Table 49 Livelihood Programme

Sl No	Activity	Amount	Year-1	Year-2	Year-3	Year-4
1	Cow Rearing	2847500	0	0	1423750	1423750
2	Goat Rearing	1067440	0	0	533720	533720
3	Poultry	670800	0	0	335400	335400
4	Beekeeping	338040	0	0	169020	169020
5	Buffalo Rearing	100000	0	0	50000	50000
6	Rabbit Rearing	10000	0	0	10000	0
7	Agricultural nursery	84320	0	0	84320	0
8	Tailoring Machine	1037900	0	0	518950	518950
	Total	**6156000**	**0**	**0**	**3125160**	**3030840**

PART- II

CHAPTER- 11

EXPECTED RESULTS OF THE PROJECT

10.1.1 Major Components/ activities and outputs

Table 50

No	Major Components/ activities	Outputs
1	EPA	• Various EPAs proposed as per quantity are implemented (15 Wells are recharged, 1 Pallam is renovated to store more quantity of water, 4000 seeds of vegetables are cultivated, 3500 seedlings of fruit trees are planted, school compound repaired and the ground is protected, 2 ponds are renovated and water is stored, 1 Rain water harvesting tanks installed at Anganwadi to provide drinking water to the children, etc). This will invite participation and attention of the community in the project. • Community is motivated to implement the activities
2	NRM/Watershed works /soil & water management interventions	• Various site specific treatment measures for soil, water and biomass conservation as per the quality and design mentioned in the project are implemented (82275 RM of earthen bund, 65292 RM of live fencing, 23042 Nos of CPT, 35781 Nos of arecanut basins, 2041 Nos of rain water percolation pits, 33814 CuM of bench terracing, 200 RM of CT, 48048 M2 of SB, 100 Nos of husk pit, 2041 Nos of WPP, 22 farm ponds, 3 pond construction, 70 pond renovation, 13 RWH Tanks, 27 Open wells, 3 Madakkam, 20566 Nos seedlings of agro-horti crops, 13 RWH tanks, 1 diversion canal, 72 Nos of LBCD, 16 Nos of LBCD with wing wall, 2284 RM of stream bank protection wall and 2 VCB at Cheripadi & Thonokadavu, 1 diversion canals at Cheripadi , 5 Nos gully plugs are constructed and 10 Ha agriculture land is tilled). • The treatment measures implemented will start collecting rain water, arresting soil erosion, etc.
3	Production system & micro enterprises	• Activities as per the action plan are implemented (Vegetable cultivation in 19.30 Ha, banana cultivation in 13.80 Ha, fodder grass cultivation in 6.89 Ha, betel vine cultivation in 0.58 Ha, pineapple cultivation in 1.12 Ha, paddy cultivation in 31.56 Ha, planting 30750 pepper cuttings, 14 vermi compost units, 23 bio gas plants, 4 compost pits, 20 pump sets, 42 sprinkler irrigation system, 32 bush cutter, 3 long sprayers and 8 coconut climbing machine) • About 194 tone vegetables, 448 MT banana, 1371 MT fodder grass, 48.8 tone pineapple, etc will be produced additionally • 1680 kg compost will be produced from the units started

4	Livelihood activities	• Livelihood activities mentioned in the project are implemented (cow rearing, goat rearing, back yard poultry units, beekeeping, buffalo rearing, agricultural nursery, rabbit rearing, fashion designing & readymade garment unit, furniture shop, beauty parlor, grocery shop, ice cream parlor, copra dryer, hire goods shop, tuition centre, and tailoring units). • Increased availability of milk, meat, egg, agricultural seed lings, readymade garments, etc in the watershed • Families earn income to meet their livelihood expenses
5	Community Organizations	• Various Community structures such as 15 Watershed Committee, number of SHG, User groups, etc are formed. • 15 Watershed Committee will be registered under societies registration act for the successful undertaking of the project activities and its objectives. • The structures formed will elicit participation of the community in the planning and implementation of the IMWP
6	Participatory Micro planning for DPR	• Present status of the area, base line data and bench marks of the situation, potentials and limitations are generated • Analysis of the problems and preparation of action strategies and plans. • Net plans and farm plans for the watershed is prepared
7	Capacity building/skill building of the Community based organizations, farmers ,the officials, and people's representatives	• Trainings to various stakeholders as per the project is imparted • Community acquire knowledge and skill on the aspects of the trainings (such as watershed concepts, systematic agricultural practices, managing the projects, accounting practices, impacts of the watershed projects, etc)

10.1.2 Expected Outcomes

Table 51

No	Major Components/ activities	Outcomes
1	EPA	• Ground water table in 15 wells will be increased by 0.5-1 mtr • The renovated pallm will help improving water table in wells nearby it • More quantity of vegetable production in the village • Fruit trees will help producing at least 500 tones of fruits, additionally. • The renovated pond will help percolating more quantity of water • 150000 litres of water collected in RWH tanks are used by the users of the institutions where the tanks are constructed

		• Immediate needs of the watershed communities are met • Community accepted the project and they took part in the project productively by attending meetings, contributing their share/Shramadhan, etc
2	NRM/Watershed works /soil & water management interventions	• Increased ground water table by 0.5 – 1 Mtr • Substantial improvement in crop production, agricultural income and living standards • Reduction in soil and nutrient loss • Drainage systems are protected • Drinking water availability throughout the year from the water bodies to most of the members of the community • Biodiversity is protected • About 200 Ha area is expected to be put under multi cropping by the farmers as they will be motivated to do so.
3	Production system & micro enterprises	• About 400 families in the SHGs/other groups will get additional economic income from the units started (on an average Rs. 1000/month/family who have benefited out of the project) • Production sector will get new boost in the watershed with the newly started units • Women earn economic income • Reduction in poverty rate (Out of the total 1419 BPL families , at least by 25% will become APL) • Time of women will be productively utilized for generating economic income • Improvement in saving habit • Beneficiaries could save money
4	Livelihood activities	
5	Community Organizations	• Micro level community organsiation are strengthened • Community, PRIs and officials will learn & develop the skills in analyzing the situations , micro planning, participatory monitoring , process documentation, etc that help to improve the efficiency and effectiveness of the projects and programmes • Community mobilize themselves for the success of the project and O&M of the assets and results generated • Best practices and norms for using water, soil and other natural resource are developed by the community. • Development of positive mind set among different stakeholders and their willingness to accept a facilitating role • Good governance, Improved coordination and cooperation among various stakeholders and convergence of schemes • Increased people participation in developmental activities
6	Capacity building/skill building of the Community based organizations, farmers ,the officials, and people's representatives	

10.1.3 Expected Impacts

Table 52

Goal	Impacts
The ultimate goal of the project is to generate sustainable development through management of natural resource base, agricultural production and livelihoods with increased people participation and application of appropriate technology.	• Ground water level is augmented sustainably • Sustained availability of drinking water • Favourable stream flow characteristics • Healthy soil /Soil productivity • Agricultural production and productivity is improved • Progress in Dairy and Animal husbandry • Non conventional source of energy is promoted • Proper marketing system is developed • Sustained and productive People participation in developmental programmes • Capacity building of the community to plan and manage developmental programmes • Community will exercise pro active control on the developmental projects and programmes which will in turn generate good governance and proper service delivery. • The learning and success of the project will contribute to policy and advocacy level.

10.2 Cost Benefit analysis

This project ultimately aims at improving the economic/living standards of the community by improving the production and productivity of agricultural crops through implementation of scientific soil and water conservation measures in a watershed approach. Various interventions which are site specific are planned in NRM, Production System & Micro enterprises and Livelihood Support Systems. To evoke participation of the community, right from the beginning of the project through addressing immediate needs of the community, entry point activities are also planned. All these activities involve use of financial resources.

The project is planned based on filed level problems such as water scarcity, soil erosion, crop loss, low production/productivity, etc which affect the income level of the watershed community that ultimately affect their living standard. Through implementation of the project measures, these problems will be addressed in a systematic manner there by to improve the economic scenario of the village. The watershed project will conserve soil, water and water which are the basic resource base. Hence the cost involved in the project is justified and beneficial.

10.3 Watershed Development Fund (WDF)

As per the operational guidelines of IWMP, the community is responsible to contribute to the watershed development fund. It is minimum 10% of the cost of the NRM works implemented on private land. In case of SC/ST, small and marginal farmers it is limited to 5%. It can be in the form of cash during the time of execution of works or through kind (Voluntary labour). An equal amount will be deposited from the project to WDF account. User charges and other contributions can also be pooled to the WDF account.

For other cost intensive farming system based livelihood activities/interventions such as aquaculture, horticulture, agro-forestry, animal husbandry, etc on private land directly benefiting the individual farmers, the contribution of farmers will be 20% for general category and 10% for SC/ST families. This amount also will go to WDF

A separate bank account for WDF has to be opened and maintained by the watershed committee. After completion of phase II, at least 50% of the WDF funds shall be reserved for maintenance of assets created on community land for common use under the project. Works taken up on private land shall not be eligible for repair/maintenance out of this fund. The remaining fund may be used as a revolving fund to advance loans to the villagers of the project area who have contributed to the fund.

10.4 Exit protocol

Exit protocol aims at operation and management of the assets created and continuity of the project results with the withdrawal of the PIA from the project. It is the responsibility of the watershed committee to ensure maintenance of assets created, collection of community contribution and utilization of watershed development fund under the guidance of the Gramapanchayat. Following pre-conditions are to be met before the PIA exit the project

a) Completion of entire phases of the project achieving the targets of the project adhere to the desired quality
b) Preparing and experimenting a strategy for equal distribution of the project results
c) Preparing plan for operation and maintenance of the assets generated in the project, especially common assets
d) Ensure that the community is capacitated and resourceful to manage the project results
e) Project completing reports are prepared with documentary evidence on the measures/components implemented, process followed, the specific impacts/success stories of the project.
f) Efforts for up scaling the experiences, learning, results , etc in the areas of soil & water conservation, agriculture, etc of the project
g) Collection of user charges for common property treatment
h) Strategy for judicious use of natural resource base

i) Continued involvement of the Grama Panchayats for continued governance of the project and addressing the future problems in the project area in association with the watershed committees
j) The community is capable willing to think, plan and work beyond the project limit

10.5 Conclusion

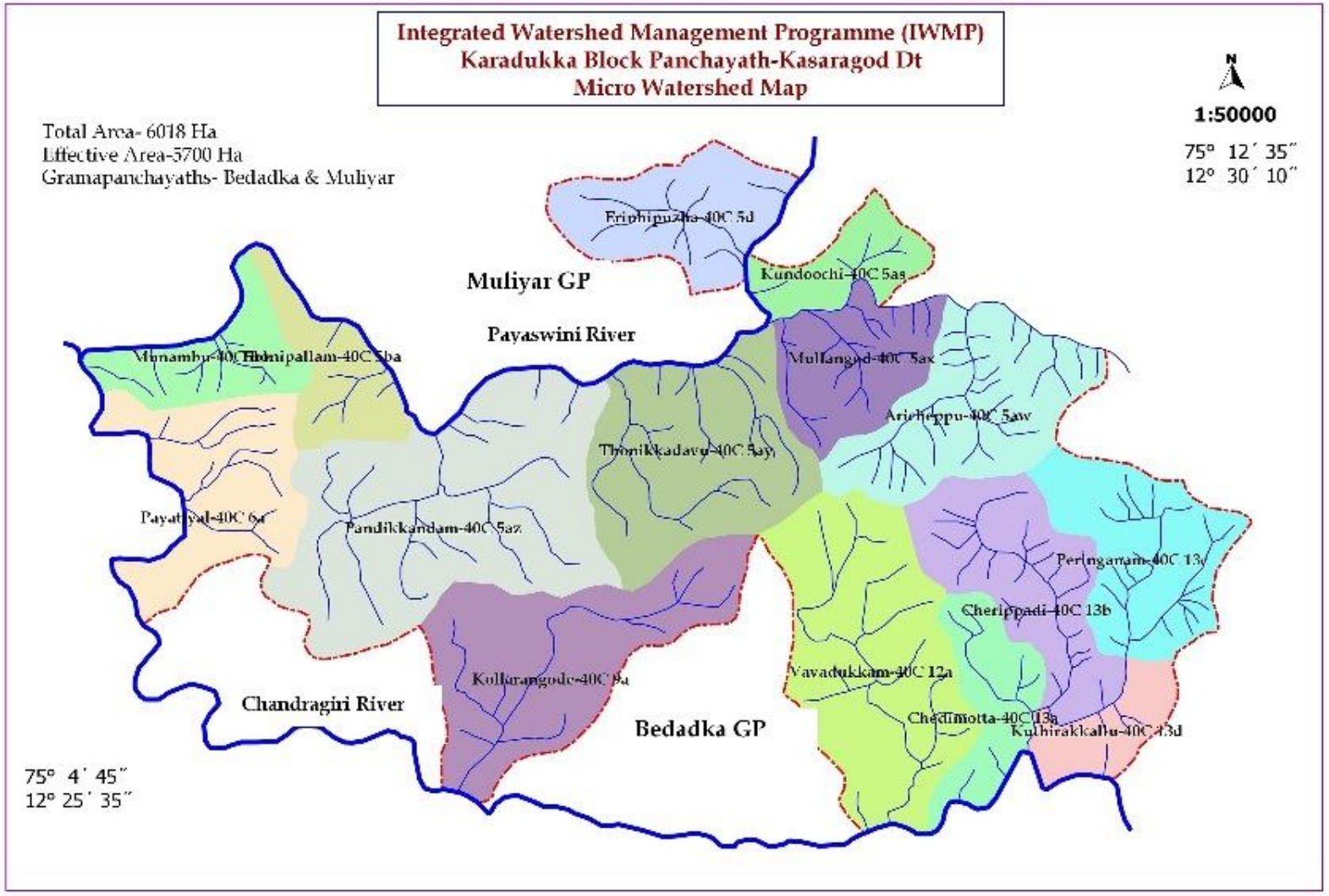
This DPR is prepared following a participatory approach in which the contributions of various stakeholders such as watershed community, elected representatives of the District Panchayat, Block Panchayat & Gramapanchayat, District Poverty Alleviation Unit, WCDC, Officials of Block & Grama Panchayats, NGOs are taken care of.

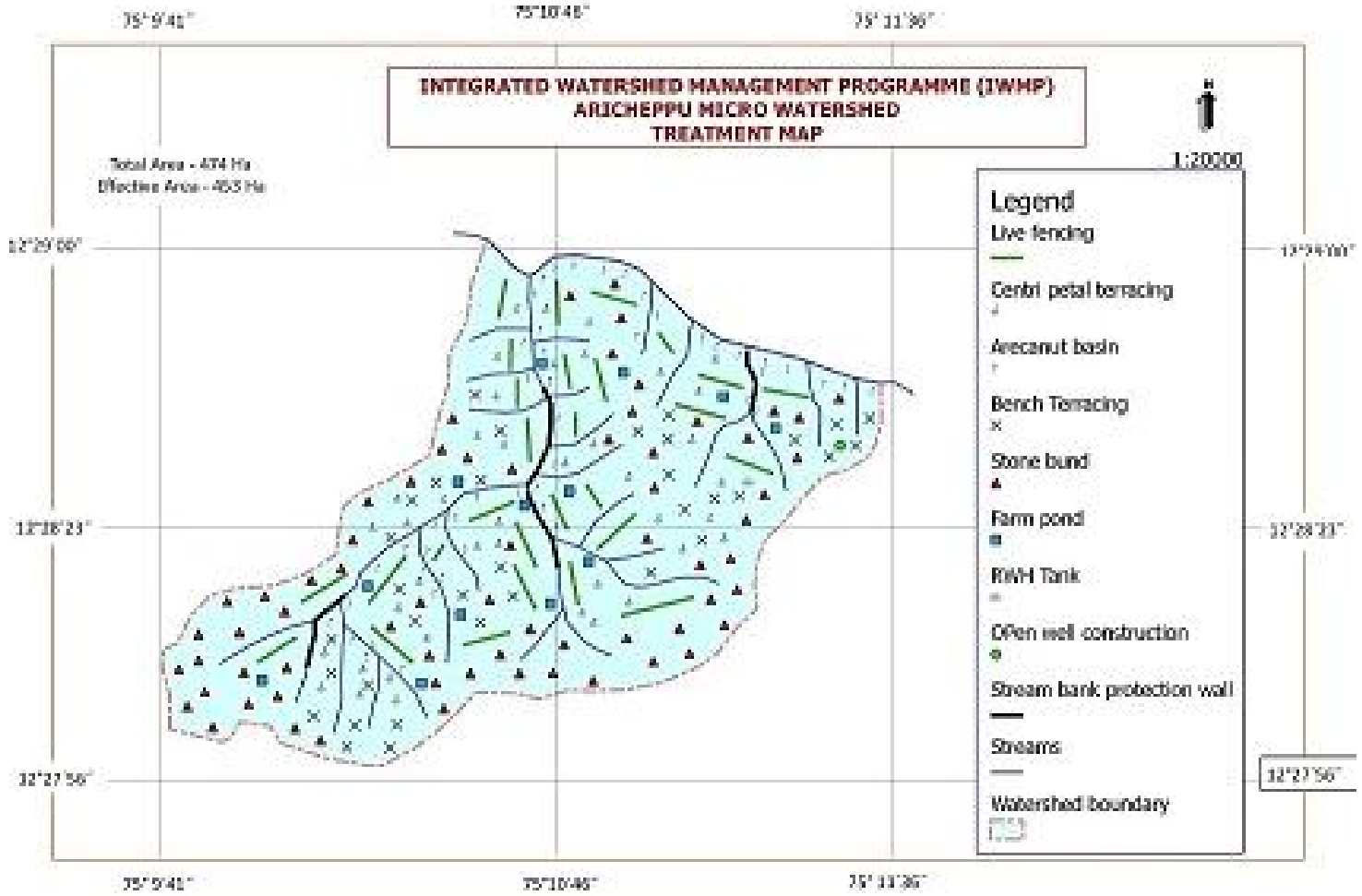
The major project components are EPA, NRM, PSM & ME, LSS and Capacity Building activities. Project aims at the integrated development of the area through implementing activities in these components. The project will follow a participatory approach in its entire life cycle.

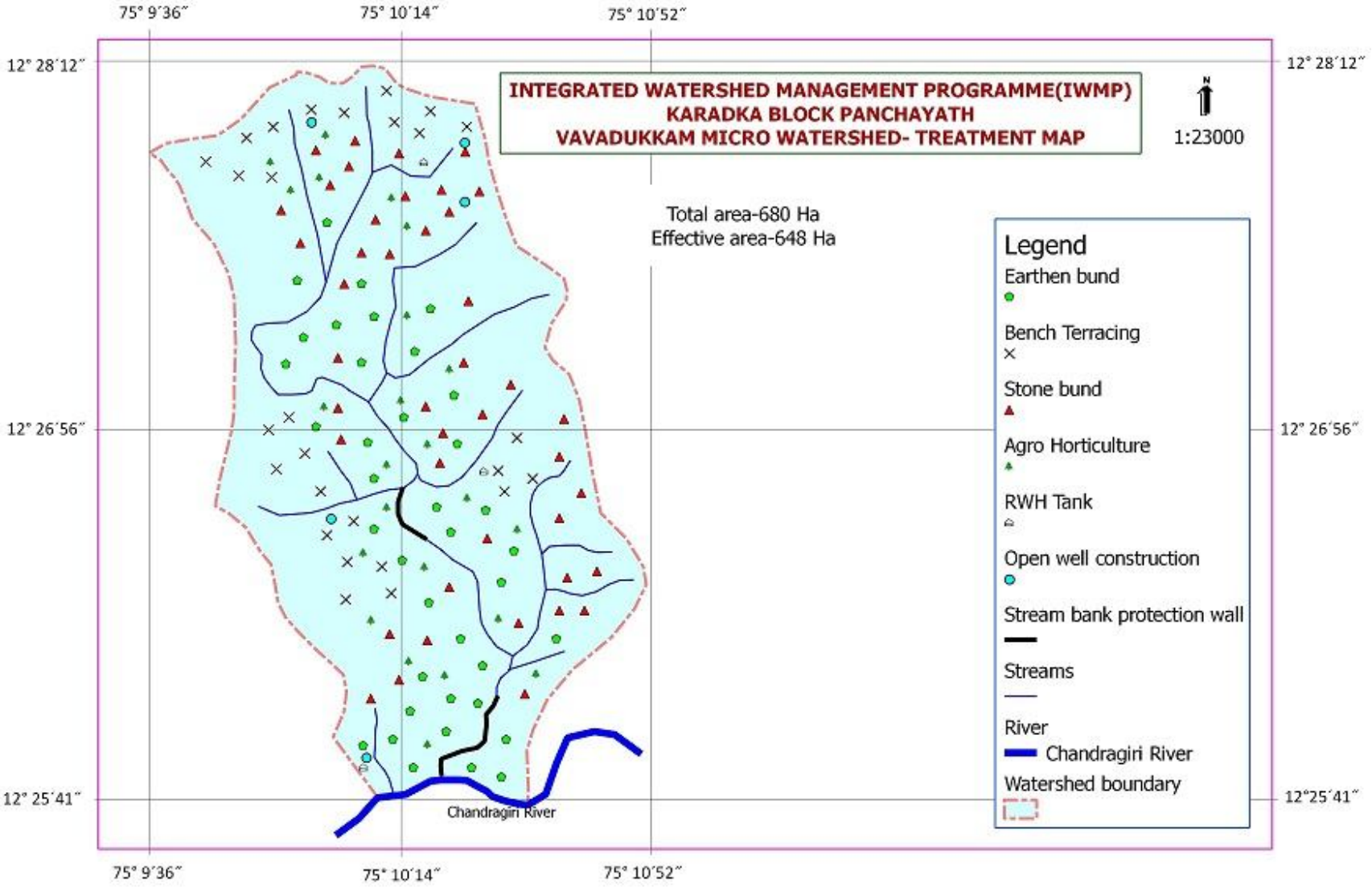
Proper community organization is the base of the project. To do maintenance of the assets generated in the project, WDF is visualized.

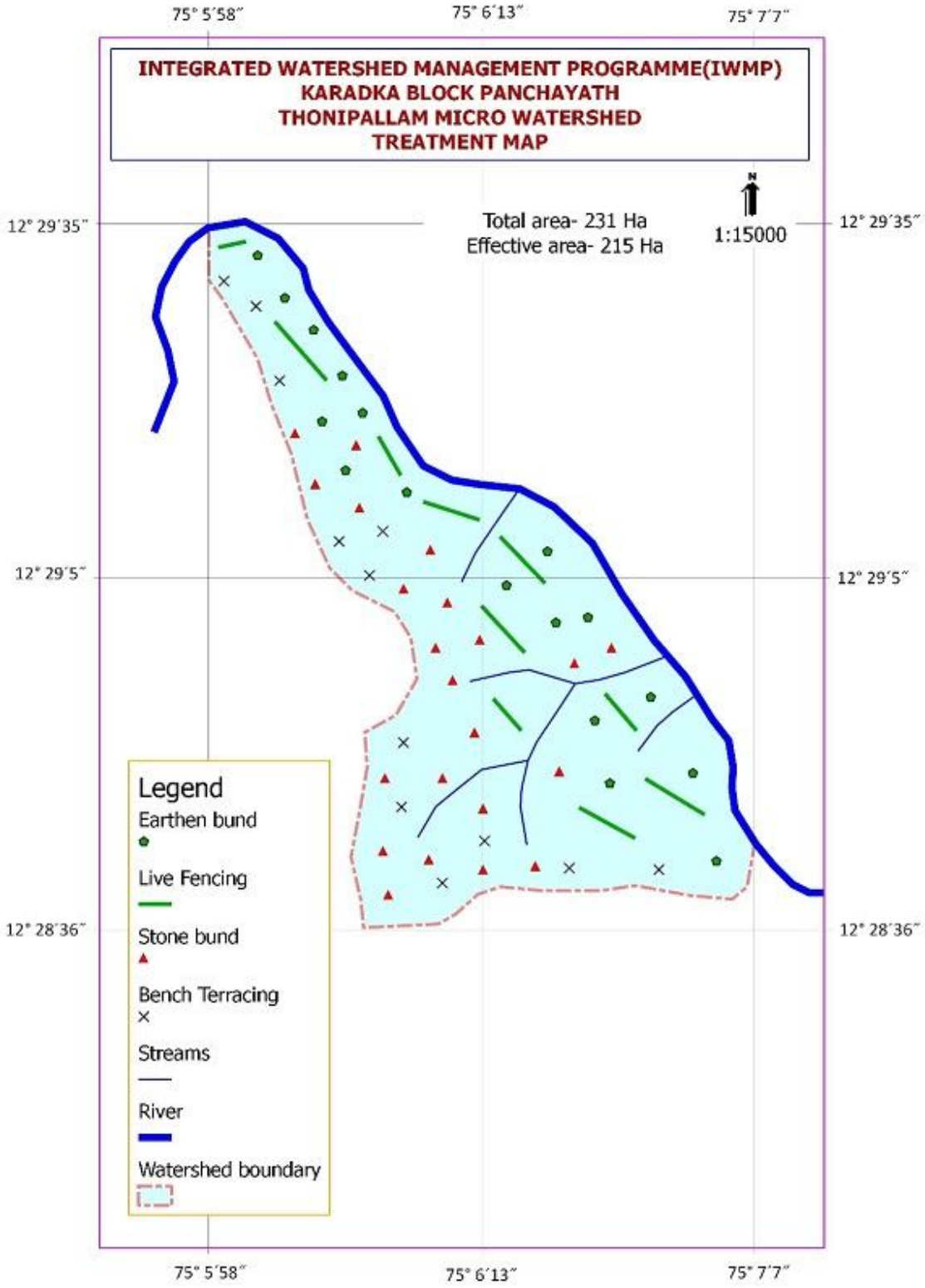
A time bound implementation of the activities up keeping the project objectives and technical parameters would produce the intended results and it will develop as a model one in watershed development project.

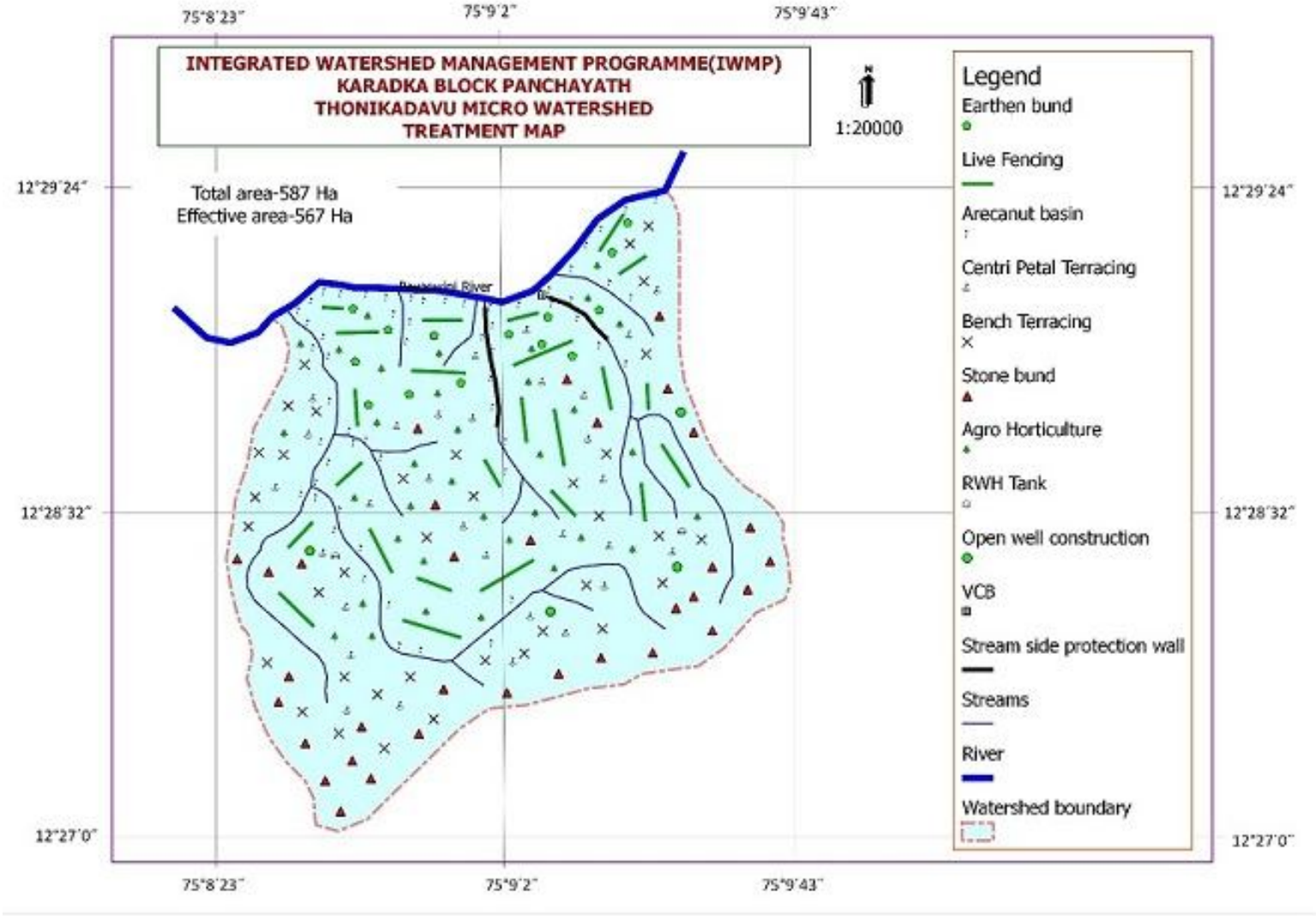
Maps

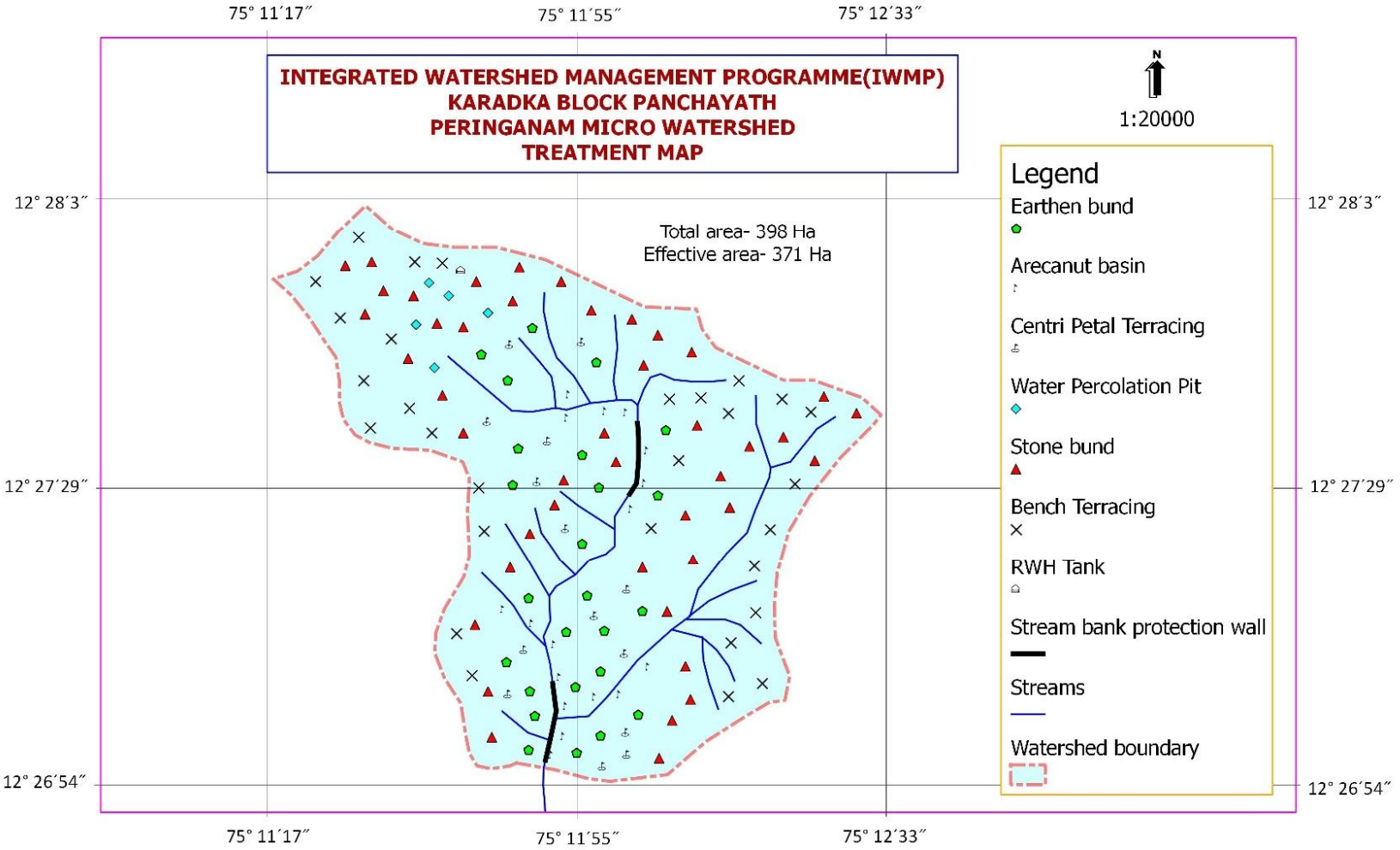

Integrated Watershed Management Programme (IWMP)
Karadukka Block Panchayath-Kasaragod Dt
Micro Watershed Map
Total Area- 6018 Ha
Effective Area-5700 Ha
Gramapanchayaths- Bedadka & Muliyar
N
1:50000
75° 12´ 35˝
12° 30´ 10˝
Muliyar GP
Payaswini River
Chandragiri River
Bedadka GP
75° 4´ 45˝
12° 25´ 35˝
Eriphipuzha-40C 5d
Kundoochi-40C 5as
Mullangod-40C 5ax
Arichappu-40C 5aw
Thonikkadavu-40C 5ay
Pandikkandam-40C 5az
Kollarangode-40C 9a
Vavadukkam-40C 12a
Cheriyadi-40C 13b
Chedimotta-40C 13a
Kulhirakkallu-40C 13d

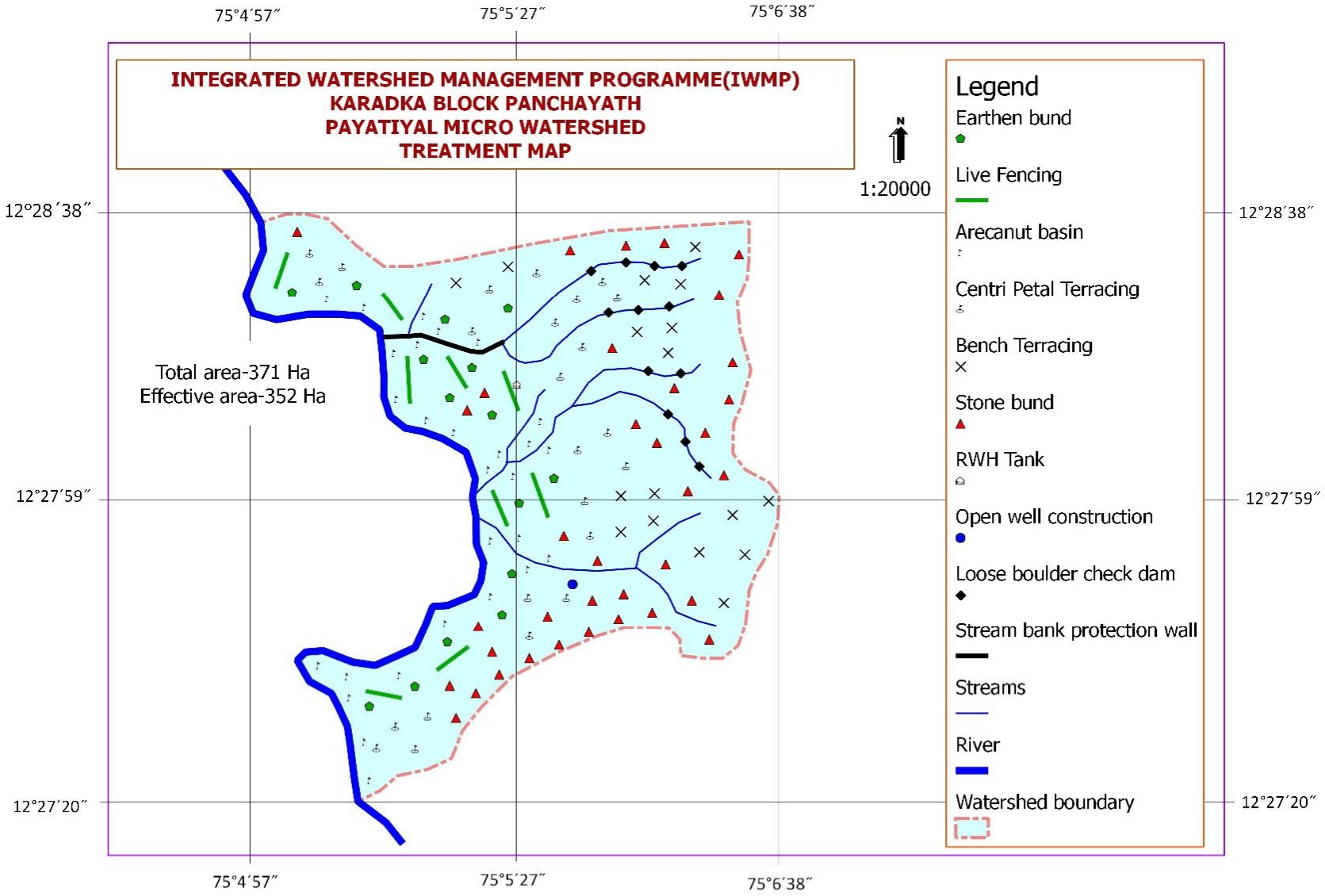

INTEGRATED WATERSHED MANAGEMENT PROGRAMME (IWMP)
ARICHEPPU MICRO WATERSHED
TREATMENT MAP
Total Area - 474 Ha
Effective Area - 465 Ha
1:20000
Legend
Live fencing
Centri petal terracing
Arecanut basin
Bench Terracing
Stone bund
Farm pond
RWH Tank
OPen well construction
Stream bank protection wall
Streams
Watershed boundary
75°9'41"
75°10'48"
75°11'56"
12°29'05"
12°28'23"
12°27'56"

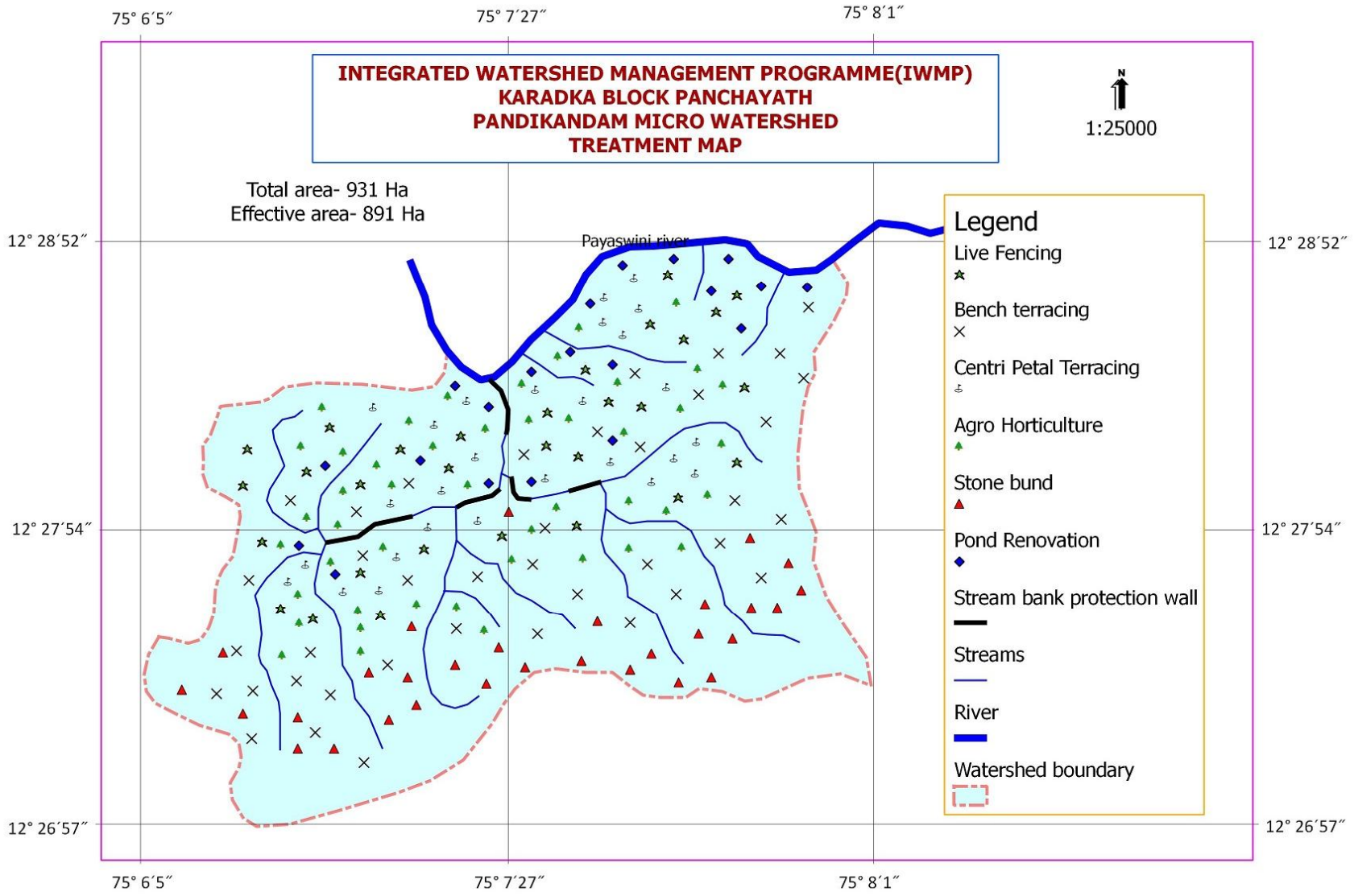

INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
VAVADUKKAM MICRO WATERSHED- TREATMENT MAP
1:23000
Total area-680 Ha
Effective area-648 Ha
Legend
Earthen bund
Bench Terracing
Stone bund
Agro Horticulture
RWH Tank
Open well construction
Stream bank protection wall
Streams
River
Chandragiri River
Watershed boundary
Chandragiri River
75° 9´36˝
75° 10´14˝
75° 10´52˝
12° 28´12˝
12° 26´56˝
12° 25´41˝

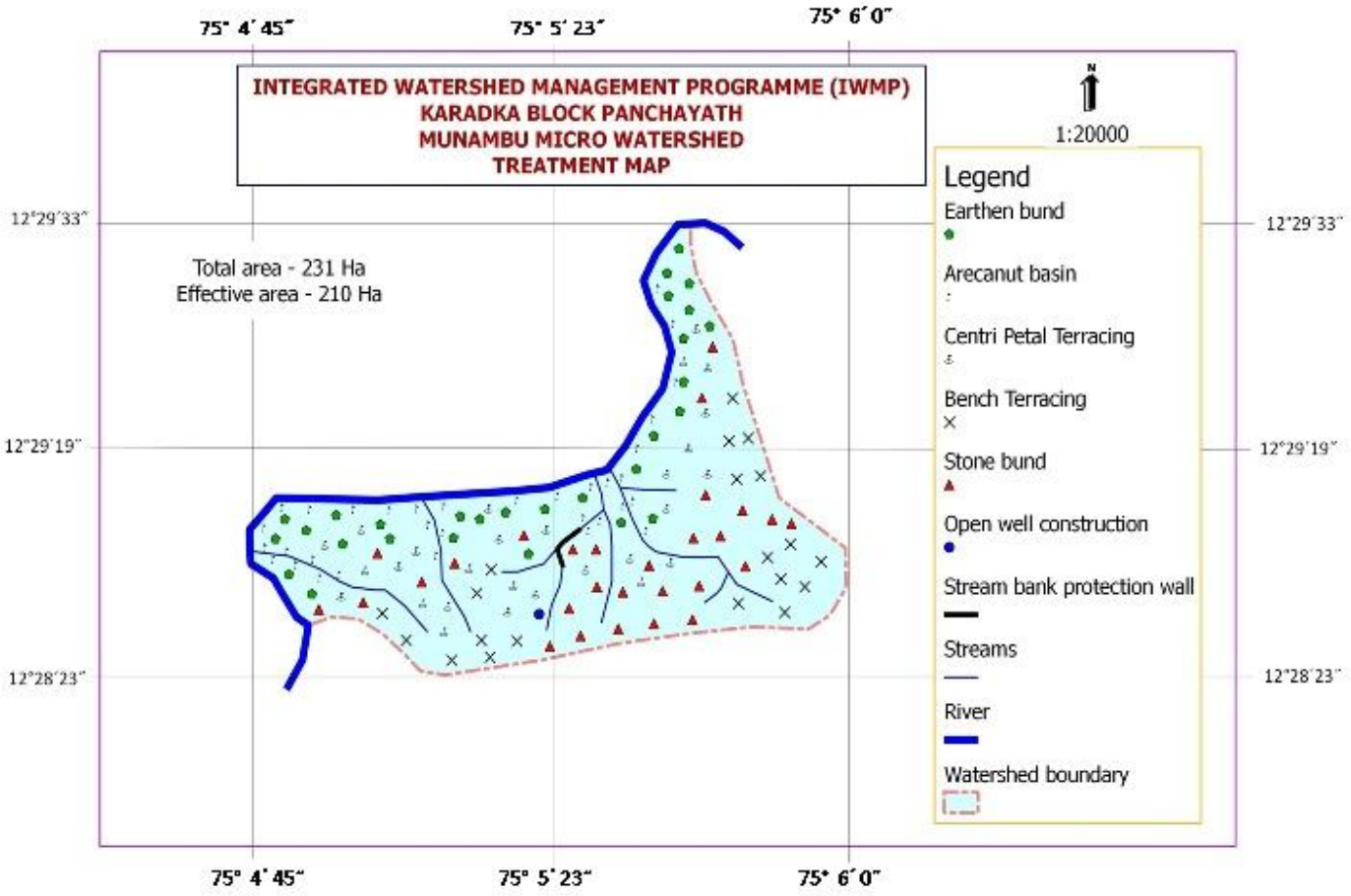

INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
THONIPALLAM MICRO WATERSHED
TREATMENT MAP
Total area- 231 Ha
Effective area- 215 Ha
1:15000
N
75° 5′58″
75° 6′13″
75° 7′7″
12° 29′35″
12° 29′5″
12° 28′36″
Legend
Earthen bund
Live Fencing
Stone bund
Bench Terracing
Streams
River
Watershed boundary

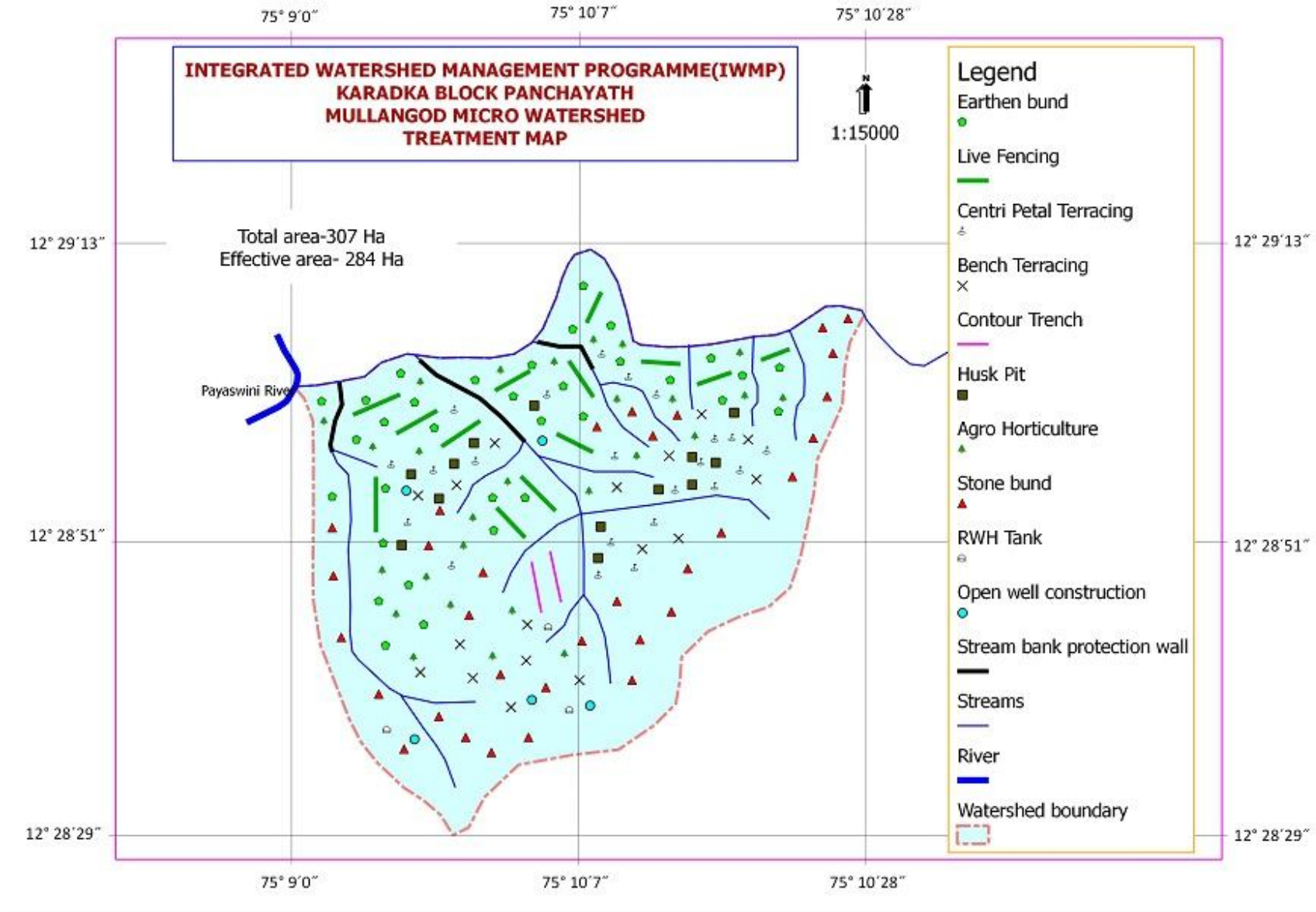

INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
THONIKADAVU MICRO WATERSHED
TREATMENT MAP
1:20000
Total area-587 Ha
Effective area-567 Ha
75°8'23"
75°9'2"
75°9'43"
12°29'24"
12°28'32"
12°27'0"
Legend
Earthen bund
Live Fencing
Arecanut basin
Centri Petal Terracing
Bench Terracing
Stone bund
Agro Horticulture
RWH Tank
Open well construction
VCB
Stream side protection wall
Streams
River
Watershed boundary

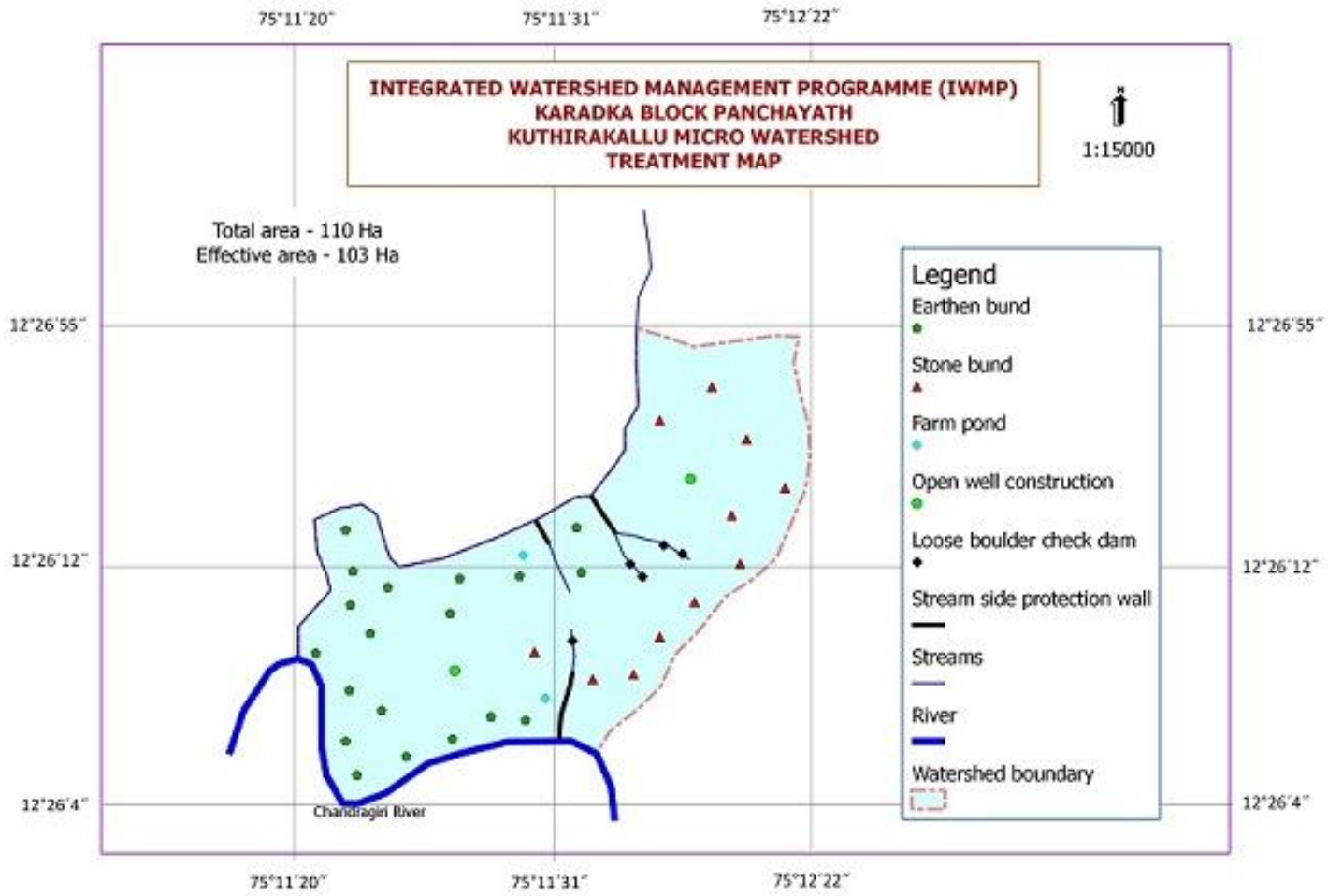

INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
PERINGANAM MICRO WATERSHED
TREATMENT MAP
75° 11′17″
75° 11′55″
75° 12′33″
12° 28′3″
12° 27′29″
12° 26′54″
Total area- 398 Ha
Effective area- 371 Ha
N
1:20000
Legend
Earthen bund
Arecanut basin
Centri Petal Terracing
Water Percolation Pit
Stone bund
Bench Terracing
RWH Tank
Stream bank protection wall
Streams
Watershed boundary

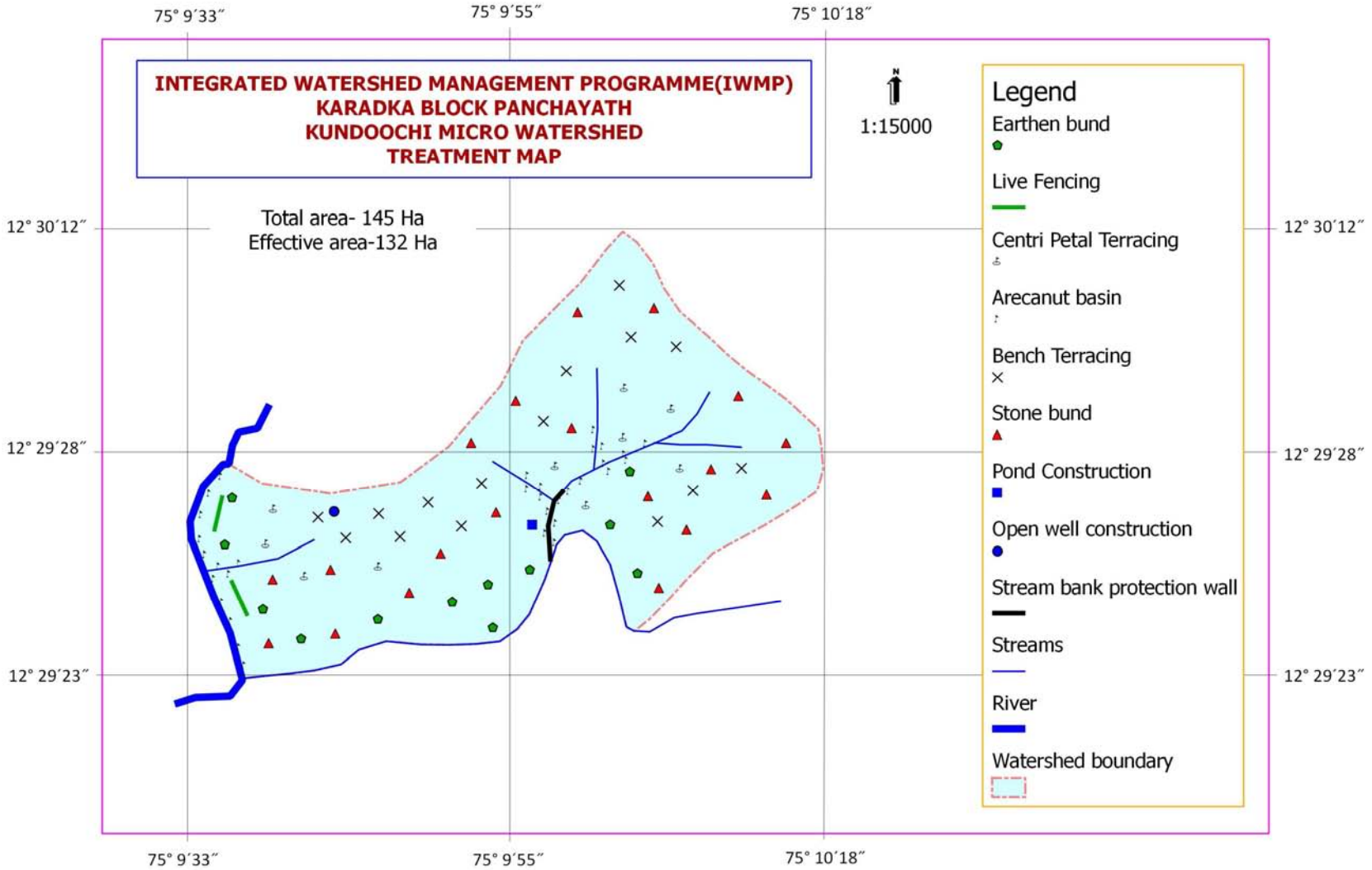

INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
PAYATIYAL MICRO WATERSHED
TREATMENT MAP
1:20000
N
Total area-371 Ha
Effective area-352 Ha
75°4′57″
75°5′27″
75°6′38″
12°28′38″
12°27′59″
12°27′20″
Legend
Earthen bund
Live Fencing
Arecanut basin
Centri Petal Terracing
Bench Terracing
Stone bund
RWH Tank
Open well construction
Loose boulder check dam
Stream bank protection wall
Streams
River
Watershed boundary

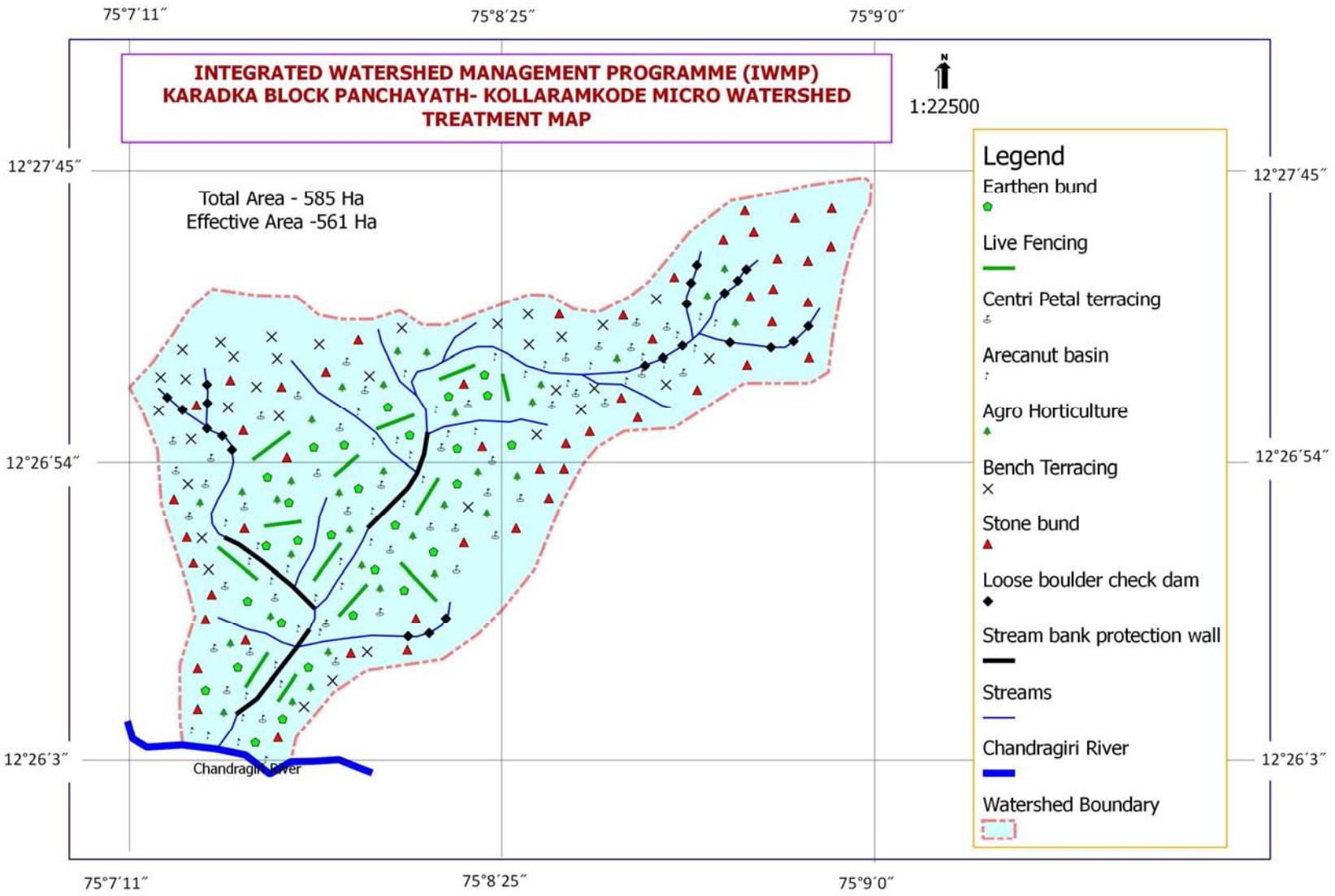

INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
PANDIKANDAM MICRO WATERSHED
TREATMENT MAP
1:25000
Total area- 931 Ha
Effective area- 891 Ha
Payaswini river
75° 6′5″
75° 7′27″
75° 8′1″
12° 28′52″
12° 27′54″
12° 26′57″
Legend
Live Fencing
Bench terracing
Centri Petal Terracing
Agro Horticulture
Stone bund
Pond Renovation
Stream bank protection wall
Streams
River
Watershed boundary

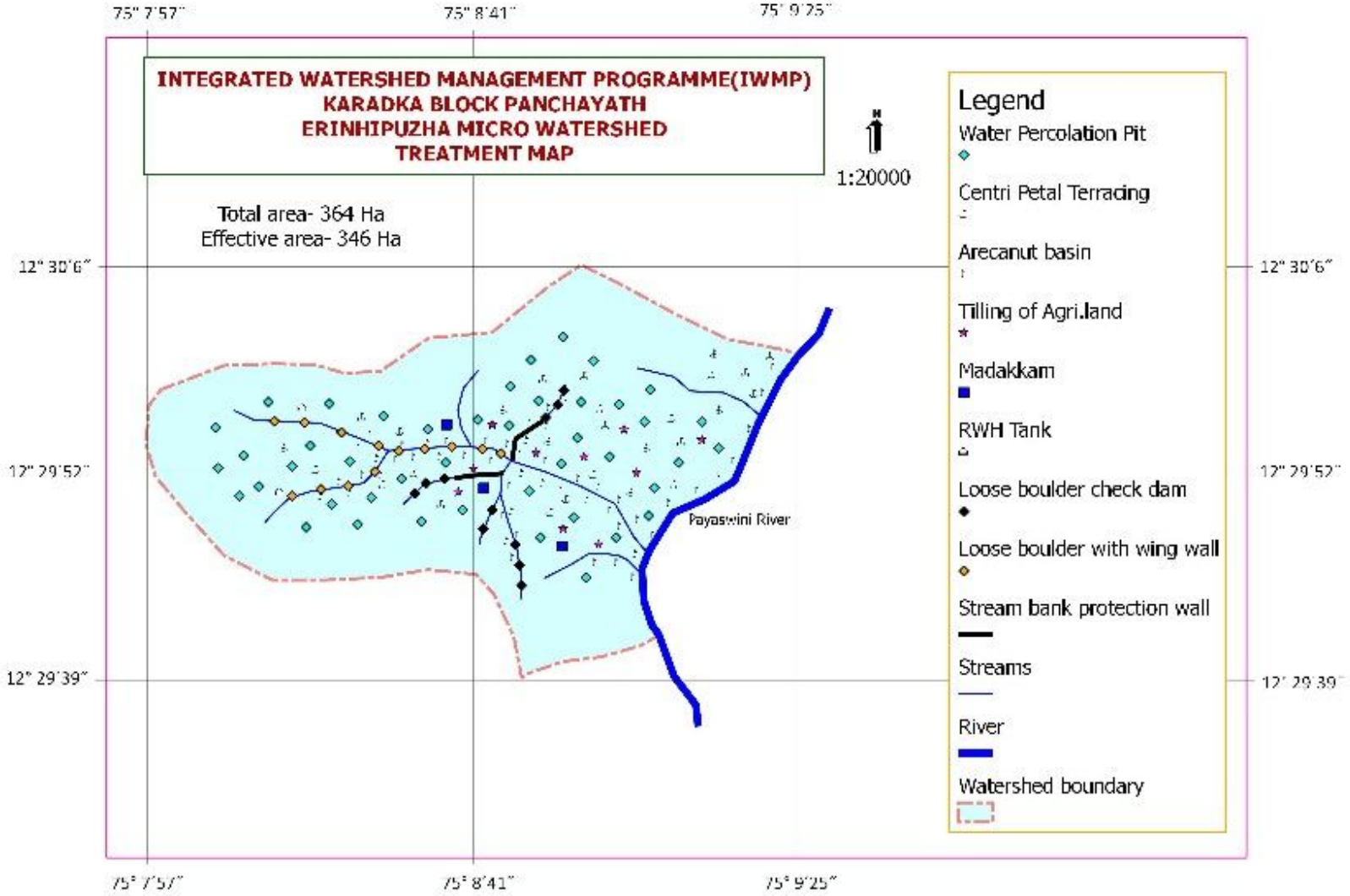

75° 4´45"
75° 5´23"
75° 6´0"
INTEGRATED WATERSHED MANAGEMENT PROGRAMME (IWMP)
KARADKA BLOCK PANCHAYATH
MUNAMBU MICRO WATERSHED
TREATMENT MAP
N
1:20000
12°29´33"
12°29´19"
12°28´23"
Total area - 231 Ha
Effective area - 210 Ha
Legend
Earthen bund
Arecanut basin
Centri Petal Terracing
Bench Terracing
Stone bund
Open well construction
Stream bank protection wall
Streams
River
Watershed boundary

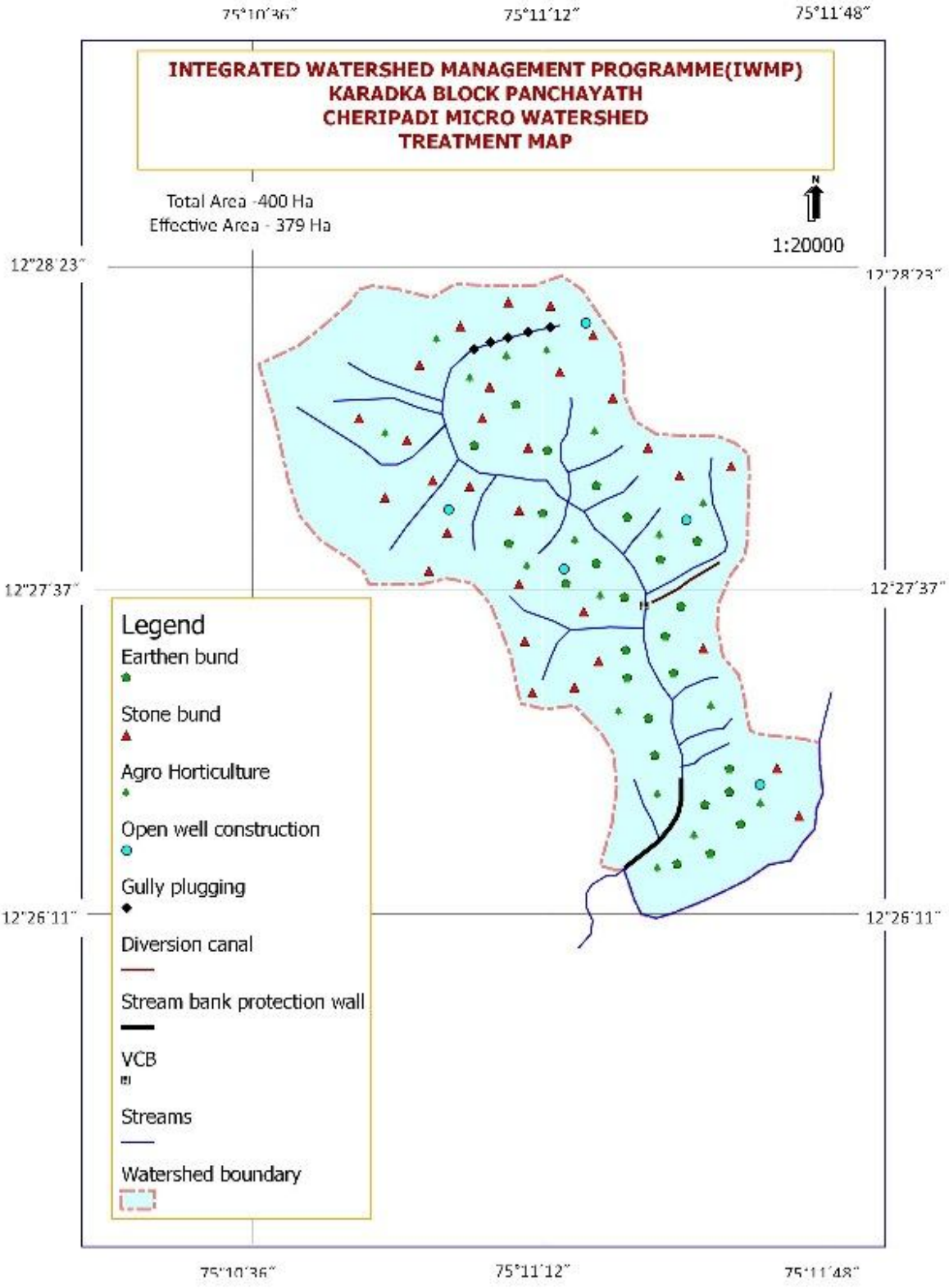

INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
MULLANGOD MICRO WATERSHED
TREATMENT MAP
1:15000
Total area-307 Ha
Effective area- 284 Ha
Payaswini River
75° 9'0"
75° 10'7"
75° 10'28"
12° 29'13"
12° 28'51"
12° 28'29"
Legend
Earthen bund
Live Fencing
Centri Petal Terracing
Bench Terracing
Contour Trench
Husk Pit
Agro Horticulture
Stone bund
RWH Tank
Open well construction
Stream bank protection wall
Streams
River
Watershed boundary

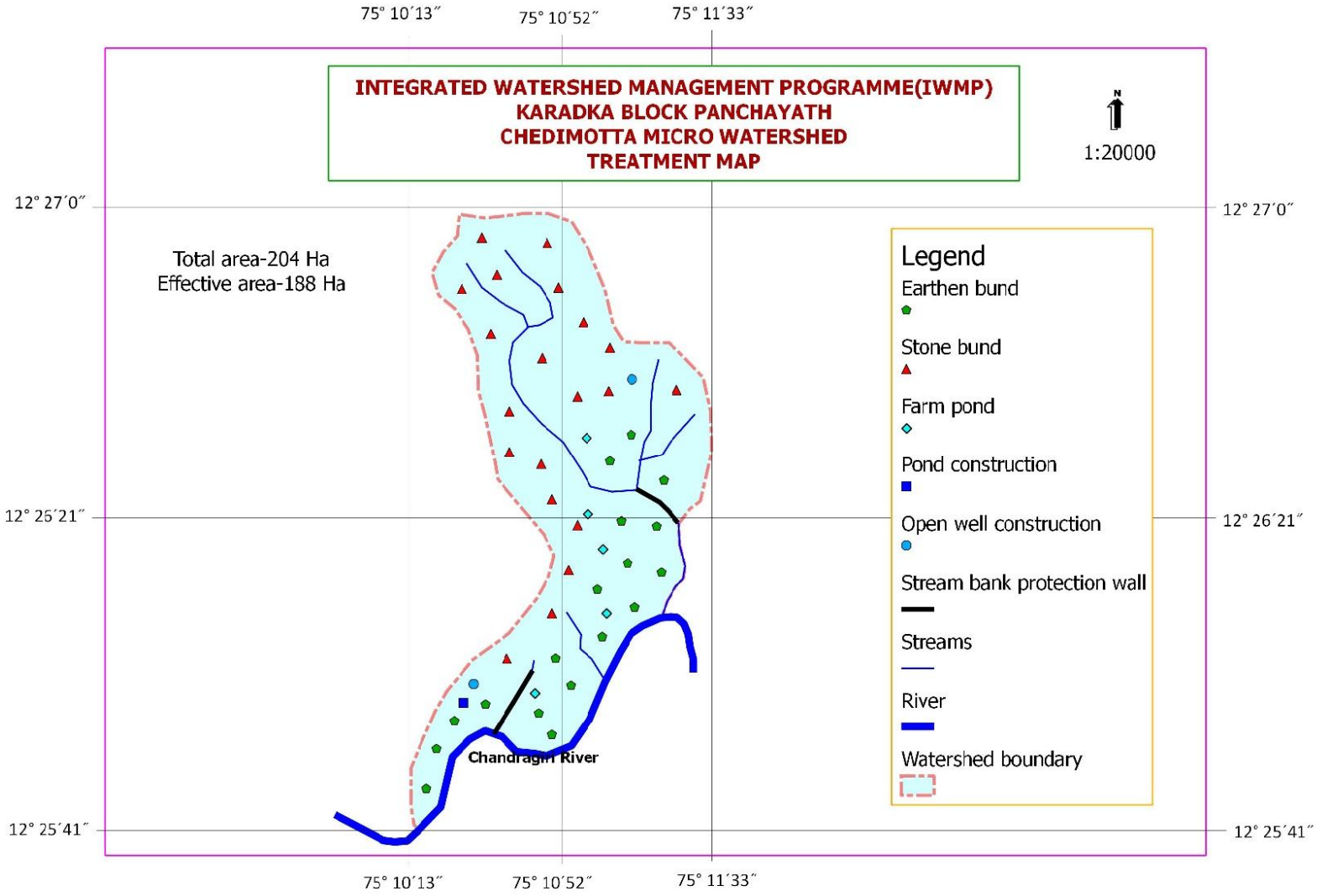

INTEGRATED WATERSHED MANAGEMENT PROGRAMME (IWMP)
KARADKA BLOCK PANCHAYATH
KUTHIRAKALLU MICRO WATERSHED
TREATMENT MAP
1:15000
Total area - 110 Ha
Effective area - 103 Ha
Legend
Earthen bund
Stone bund
Farm pond
Open well construction
Loose boulder check dam
Stream side protection wall
Streams
River
Watershed boundary
Chandragiri River
75°11'20"
75°11'31"
75°12'22"
12°26'55"
12°26'12"
12°26'4"


INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
KUNDOOCHI MICRO WATERSHED
TREATMENT MAP
Total area- 145 Ha
Effective area-132 Ha
1:15000
Legend
Earthen bund
Live Fencing
Centri Petal Terracing
Arecanut basin
Bench Terracing
Stone bund
Pond Construction
Open well construction
Stream bank protection wall
Streams
River
Watershed boundary
75° 9′33″
75° 9′55″
75° 10′18″
12° 30′12″
12° 29′28″
12° 29′23″


INTEGRATED WATERSHED MANAGEMENT PROGRAMME (IWMP)
KARADKA BLOCK PANCHAYATH- KOLLARAMKODE MICRO WATERSHED
TREATMENT MAP
N
1:22500
75°7′11″
75°8′25″
75°9′0″
12°27′45″
12°26′54″
12°26′3″
Total Area - 585 Ha
Effective Area -561 Ha
Chandragiri River
Legend
Earthen bund
Live Fencing
Centri Petal terracing
Arecanut basin
Agro Horticulture
Bench Terracing
Stone bund
Loose boulder check dam
Stream bank protection wall
Streams
Chandragiri River
Watershed Boundary


INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
ERINHIPUZHA MICRO WATERSHED
TREATMENT MAP
Total area- 364 Ha
Effective area- 346 Ha
1:20000
Payaswini River
Legend
Water Percolation Pit
Centri Petal Terracing
Arecanut basin
Tilling of Agri.land
Madakkam
RWH Tank
Loose boulder check dam
Loose boulder with wing wall
Stream bank protection wall
Streams
River
Watershed boundary
75° 7'57"
75° 8'41"
75° 9'25"
12° 30'6"
12° 29'52"
12° 29'39"


75°10'36"
75°11'12"
75°11'48"
INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
CHERIPADI MICRO WATERSHED
TREATMENT MAP
Total Area -400 Ha
Effective Area - 379 Ha
N
1:20000
12°28'23"
12°27'37"
12°26'11"
Legend
Earthen bund
Stone bund
Agro Horticulture
Open well construction
Gully plugging
Diversion canal
Stream bank protection wall
VCB
Streams
Watershed boundary


INTEGRATED WATERSHED MANAGEMENT PROGRAMME(IWMP)
KARADKA BLOCK PANCHAYATH
CHEDIMOTTA MICRO WATERSHED
TREATMENT MAP
1:20000
Total area-204 Ha
Effective area-188 Ha
Legend
Earthen bund
Stone bund
Farm pond
Pond construction
Open well construction
Stream bank protection wall
Streams
River
Watershed boundary
Chandragiri River
75° 10´13″
75° 10´52″
75° 11´33″
12° 27´0″
12° 25´21″
12° 26´21″
12° 25´41″