

# Integrated Watershed Management Programme (IWMP)

## Detailed Project Report IWMP-IV-2010-11



PIA: Parappa Block Panchayat  
Kasaragod DT, Kerala

TSO: Centre for Research and  
Development (CRD),  
Nileshwaram

# **Integrated Watershed Management Programme (IWMP) Detailed Project Report**



## **IWMP-IV-2010-11**

**In Parappa Block Panchayath  
Kasaragod District  
Kerala State**

**SLNA: Commissionerate of Rural Development, GoK**

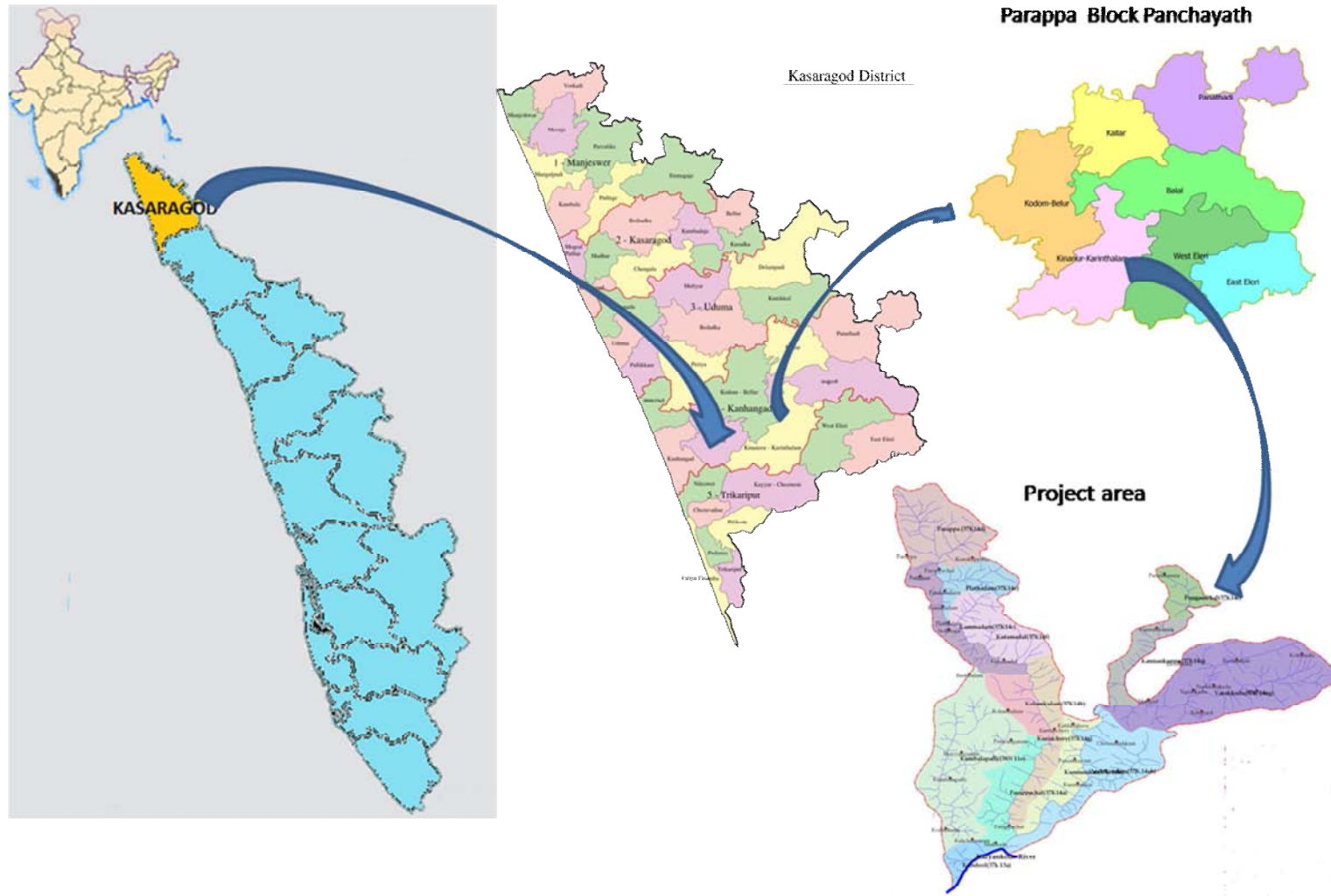
**PIA: Parappa Block Panchayat**

**TSO: CRD, Nileschwaram**

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# IWMP IV –Parappa Block Panchayath – Location Map



# **PART- I**

# 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 1<sup>st</sup> 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 into 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 fourfold outcomes

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

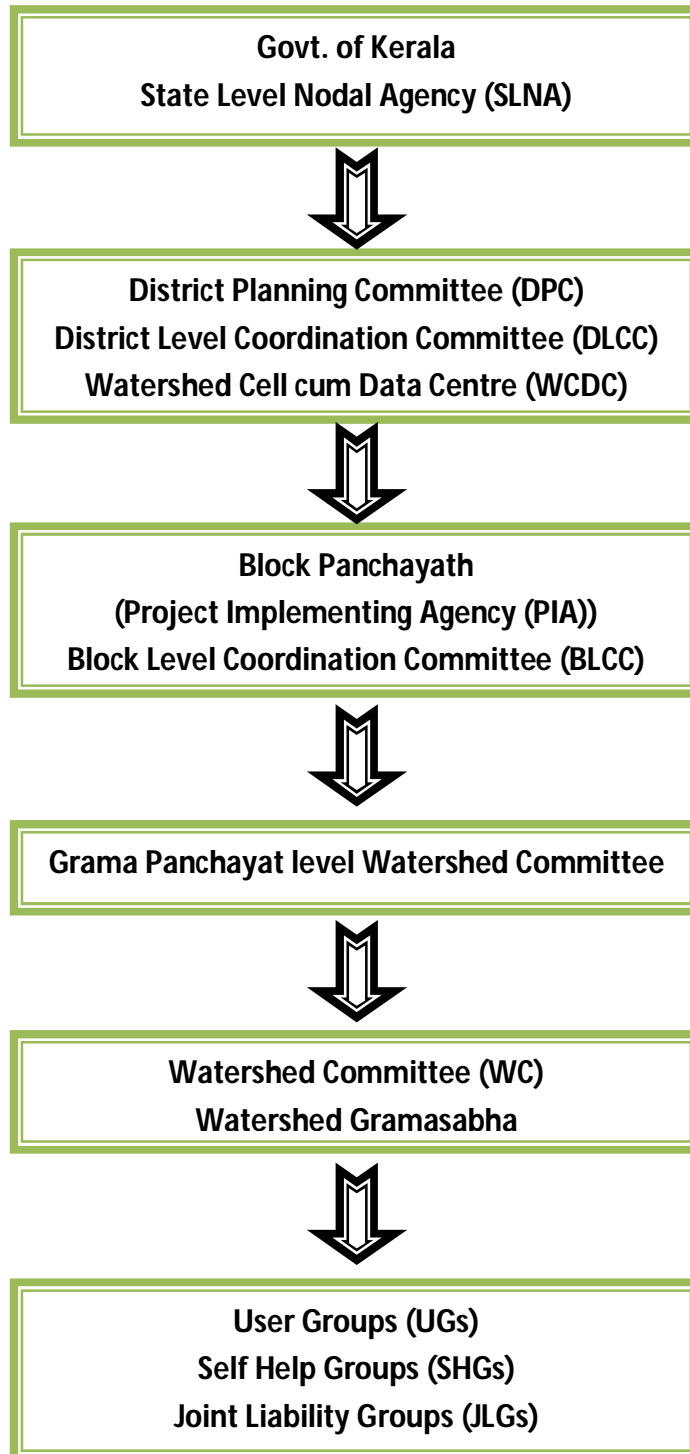
### **1.3.2. Salient features of IWMP:**

- Setting up of Dedicated Institutions with multi-disciplinary experts at State level - State level Nodal Agency (SLNA), District level - Watershed Cell cum Data Centre (WCDC), Project level - Project Implementing Agency (PIA) and 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 hilly terrain, per hector cost of the project is Rs.15000.

SL No	Components	%
<b>1</b>	<b>Administration</b>	<b>10</b>
1.1	<i>Documentation</i>	0.33
1.2	<i>Administration</i>	9.67
<b>2</b>	<b>Monitoring</b>	<b>1</b>
<b>3</b>	<b>Evaluation</b>	<b>1</b>
<b>4</b>	<b>Preparatory phase</b>	<b>10</b>
4.1	<i>Entry point activities</i>	4
4.2	<i>Institution &amp; Capacity building</i>	5
4.3	<i>Detailed Project Report</i>	1
<b>8</b>	<b>Watershed Works phase</b>	<b>75</b>
8.1	<i>Watershed Development Works</i>	56
8.2	<i>Livelihood activities</i>	9
8.3	<i>Production system &amp; Micro Enterprises</i>	10
8.4	<b>Consolidation phase</b>	<b>3</b>
	<b>Grant total</b>	<b>100</b>

### 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 and farmers has visited the watershed area. The team learned the watershed boundary and its basic characteristic features. Watershed atlas was used to identify the micro watersheds.



**A Planning meeting with the community**

### **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.



**Training to the net planning survey team**

#### **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.



**Community preparing the map**





**Community members discussing the problems after preparing the map**



**Livelihood planning meeting in groups**

#### **1.3.6.5 Identification of Entry Point Activities**

Entry point activities for the project were identified through the Micro Watershed Gramasabha.

#### **1.3.6.6 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 has surveyed the drainages.

#### **1.3.6.7 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.

#### **1.3.6.8 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.

#### **1.3.6.9 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 Parappa Block Panchayat

Parappa Block Panchayat is a new Block Panchayat formed bifurcating Kanhangad and Nileshwaram Block Panchayats vide Government Order (P) No. 139/2010/ILSGD dated, 02/07/2010. Total there are 7 Grama Panchayats viz. Balal, Kallar, Panathadi, Kodom-Belur, Kinanoor-Karinthalam, West – Eleri and East – Eleri under the jurisdiction of the Block. The Block Panchayats has 14 Block Constituencies (Divisions). They are-

**Table -1**

Sl No	Code	Name
1	B14151001	KODOM
2	B14151002	KALLAR
3	B14151003	PANATHADY
4	B14151004	PANATHUR
5	B14151005	MALOM
6	B14151006	KOTTAMALA
7	B14151007	CHITTARIKKAL
8	B14151008	KAMBALLUR
9	B14151009	ELERI
10	B14151010	PARAPPA
11	B14151011	KINANOOR
12	B14151012	BALAL
13	B14151013	KALICHANADUKKAM
14	B14151014	BELUR

**Table 2. Administrative details of the Watershed area**

Villages covered	West Eleri, Beemanadi, Karinthalam & Balal
Grama Panchayaths	West Eleri, Kinanoor-Karinthalam & Balal
Block	Parappa
Taluk	Hosdurg
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
7	3	0	10	1	0	15	7	5	0	8	0	15	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 area of 5410 Ha which spread over in Kinanoor –Karinthalam, West – Eleri Peria and Balal (Parts of Parakkadavu Micro Watershed) Grama Panchayats. The watershed is a IVth order watershed. Per hectore cost for the treatment of the watershed is Rs.15000/-. Total project cost comes to Rs. **76995000/-**

**Table 4 Financial outlay of the project**

SI No	Component	% of Allocation	Amount
1	Watershed Development works	56	43117200
2	Production System & Micro Enterprises	10	7699500
3	Livelihood Activities	9	6929550
4	Entry Point Activities	4	3079800
5	Administration cost	10	7699500
6	Training & Capacity Building	5	3849750
7	DPR Preparation	1	769950
8	Monitoring	1	769950
9	Evaluation	1	769950
10	Consolidation phase	3	2309850
	<b>Total</b>	<b>100</b>	<b>76995000</b>

## 2.3. Physiography, relief and drainage

### 2.3.1. Geomorphology:

Physiographically the watershed area can be divided into the midlands, midupland and the upland regions. The midland region is 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**

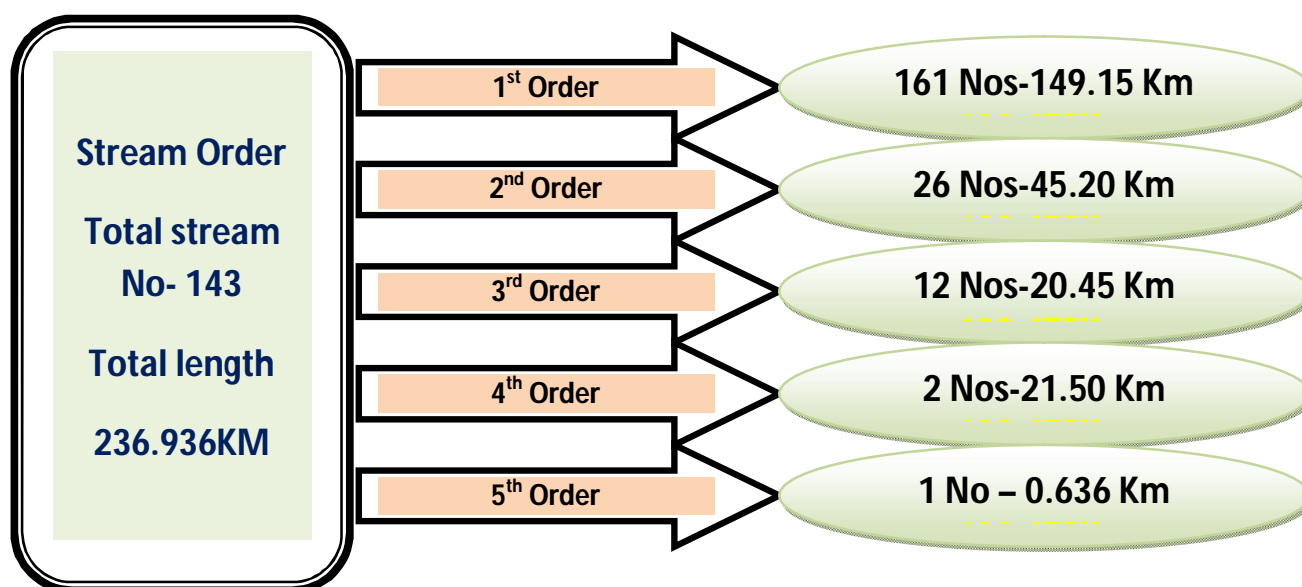
1	River basin	Karyankode & Nileswaram
2	Latitude	12° 16' 5" & 12° 23' 20"
3	Longitude	75° 14' 30" & 75° 21' 7"
4	Highest elevation	608 Mtr
5	Lowest elevation	20 Mtr
6	Height difference	588 Mtr
7	Watershed order	IV

### Main locations of the Watershed Area

Birikulam, Kolamkulam, Kumbalapalli, Kozhithatta, Periyanganam, Kannamkunnu, Parappa, Prathiba Nagar, Panniyerinha Kolly, Plachikallu, Kuppamadu, Thumba, Veetiyodi, Mundathadam, Eramkunnu, Vattipunna, Patlam, Thoovakunnu, Melothumkunnu, Kundukochi, Kammadam, Cheetta, Patlam – Parakadavu Kalikkadavu, etc are the main locations of the watershed

**2.3.2. Stream order:** The watershed has a total drainage length of 236.936 KM. This is Vth order watershed.

**Table 6 Order wise number of streams**





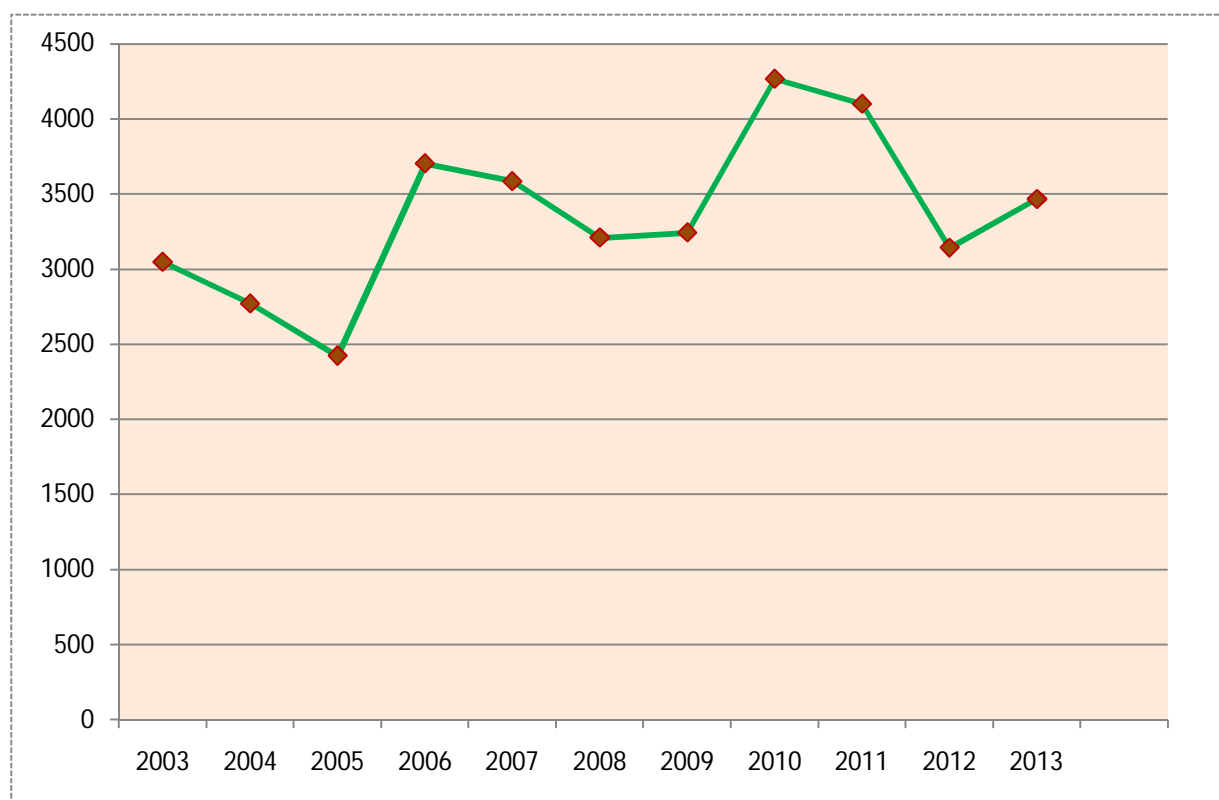
The area has a tropical monsoon climate with two rainy seasons, the south west monsoon from June to September and the north east monsoon from October to November. December to April is generally dry, with some summer showers occurring in May.

**Table 7 Average rainfall for the last 11 years - source: CPCRI, Kasaragod**

Months	Year										
	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	-
<b>Total</b>	<b>3046</b>	<b>2769.2</b>	<b>2423</b>	<b>3702</b>	<b>3584</b>	<b>3209.2</b>	<b>3242</b>	<b>4265</b>	<b>4099</b>	<b>3142</b>	<b>3465.1</b>
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

**Rain fall data- graphical representation**



**Table 8. Weather data for the last 11 years**

Year	Rain fall (mm)	Temperature in °C		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.

#### 2.4.1 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 °C and minimum temperature ranges from 19.7 to 24.1 °C.

Maximum temperature recorded for a day for the last 11 years is 38 °C on 7<sup>th</sup> May 2003 and Minimum temperature recorded for a day for the last 11 years is 16.1 °C on 2<sup>nd</sup> November May 2006

**Table -9 Details of Month wise average Temperature data for last 11 years (Temperature in °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

#### 2.4.2 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 tapings 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.

**Table 10. Water table in meters from bottom point of the well at Ridge Portion of the Watershed**

Month	Survey No				
	55/1	605/4	91	41/1	613
January	1.20	1.42	0.85	2.45	1.05
February	1.05	1.30	0.65	2.20	0.95
March	0.90	1.00	0.60	1.70	0.87
April	0.87	0.80	0.45	1.30	0.69
May	0.58	0.40	0.50	1.10	0.69
November	2.20	2.00	1.25	2.85	1.59
December	1.60	1.60	1.10	2.60	1.45

**Table 11. Water table in meters from bottom point of the well at Middle portion of the Watershed**

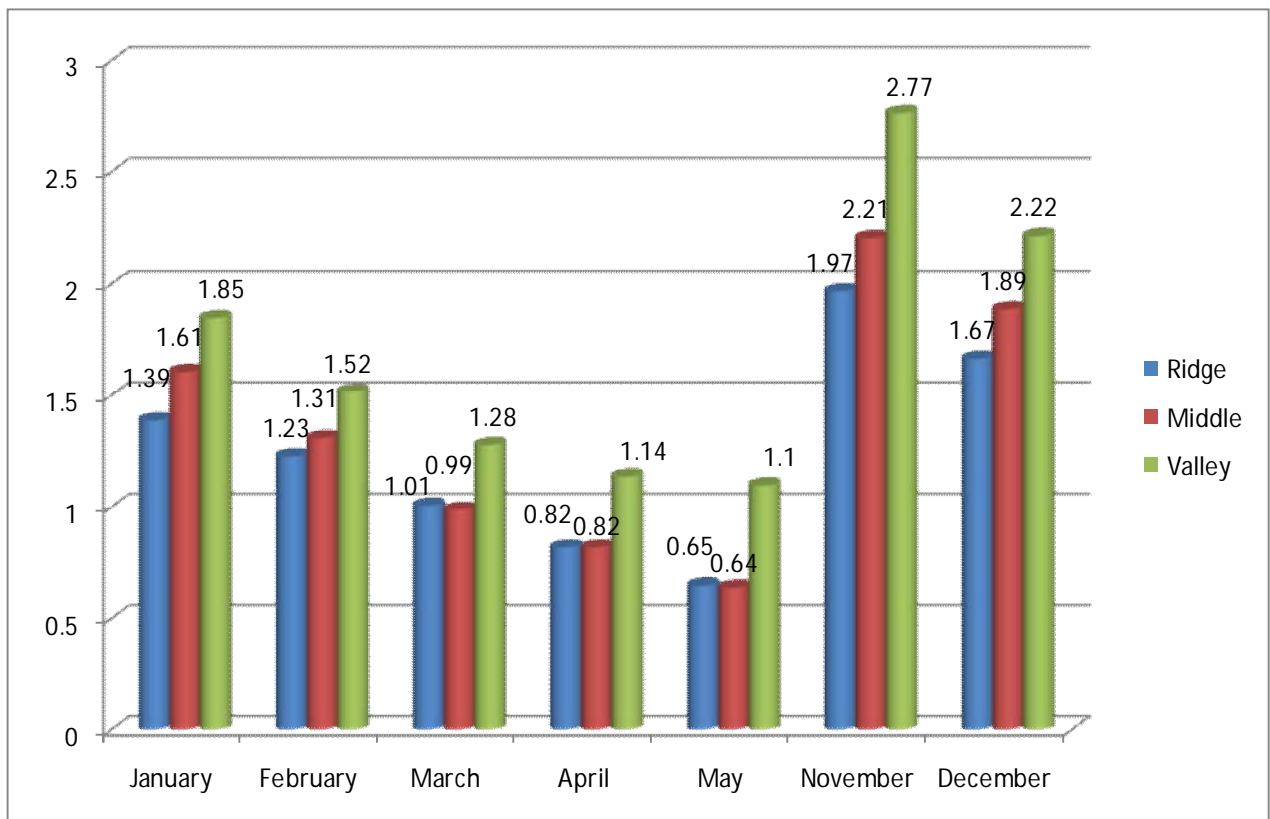
Month	Survey No				
	621/20	93	55/1	602	605/1
January	1.45	1.50	1.00	2.65	1.45
February	1.20	1.30	0.82	2.10	1.16
March	1.05	1.06	0.69	1.25	0.94
April	0.90	0.83	0.52	1.13	0.71
May	0.60	0.49	0.45	1.00	0.68
November	2.55	1.95	1.50	2.90	2.15
December	1.75	1.70	1.25	2.75	2.00

**Table 12. Water table in meters from bottom point of the well at Valley portion of the Watershed**

Month	Survey No				
	620	84	602	41/b	55/1
January	1.98	1.65	1.48	2.45	1.68
February	1.43	1.50	1.24	2.00	1.42
March	1.12	1.28	1.06	1.70	1.26
April	1.00	1.25	1.00	1.43	1.05
May	0.95	1.22	0.96	1.40	1.00
November	3.00	2.80	2.60	3.00	2.45
December	2.45	2.10	1.95	2.65	1.98

**Status of Ground Water Table (Reference Year-2012) - Graphical representation**

**In meters from bottom point of the well**



Source NABARD Watershed Project

## 2.7 Socio economic details (Source: PRA & Socio-Economic survey)

### 2.7.1 Demography and socio economic status of the families - Table 13

Total No. of households/ families	Total Population	Average family size
3789	14368	3.76

**Table 14. Category of the families:**

Category of Families				Total	Population		APL	BPL
SC	ST	OBC	General		Male	Female		
52	311	1668	1788	3789	7350	7018	2400	1419

### 2.7.2 Profile of the families:

**Table 15. 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
342	260	670	603	749	803	2677	2375	2060	2041	752	836

**Table 16. Education**

Literate/read & write only		Primary		Upper Primary		Secondary School		Senior Secondary		Graduate & Above		Diploma		B Tech		Nursing	
Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem
654	829	873	850	1166	1125	2646	2339	1215	1047	578	656	130	146	15	22	0	76

**Table 17. Income Source of the Families**

Agriculture wage labour		Non Agriculture wage labour		Agriculture		Govt. Service		Others		Studying		Unemployed	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1356	1136	1464	847	1718	897	167	76	932	630	958	1480	1323	1384

**Table 18. Annual Income of the Families**

No. of families							Total
Below 24000	24000 to 40000	40000 to 60000	60000 to 80000	80000 to 100000	100000 to 120000	Above 120000	
1540	980	446	326	212	137	37	3678

**Table 19. Savings**

Institution/No. of families						
Bank/Cooperative societies	Post office	Kudumbasree	Self Help Group	Kury (Local chit funds)	Chit funds (Registered)	LIC
1142	317	1297	586	314	77	515

**Table 20. Status of Registration & Job days of Families under MGNREGS**

No. of families Registered	No. of job days in 2010-2011 for the families					
	Below 20	21 - 40	41 - 60	61 - 80	81-99	100
1454	401	302	311	253	150	37

**2.7.3 Institutions & Others****Table 21.**

SI No	Institutions	Nos	SI No	Institutions	Nos
	<b>Govt. Institutions</b>			<b>Educational Institutions</b>	
1	Village office	1	17	Anganvady	17
2	Health Centre	2	18	Nursery school	1
3	Ayurvedha Dispensary/Hospital	2	19	LP School	1
4	Family welfare sub centre	1	20	UP School	4
5	Post office	5	21	Higher secondary School	4
6	ICDS centre	1	22	MGLC	1
	<b>Financial Institutions</b>		23	Continuing Education Centre	1
7	Kerala Gramin Bank	2		<b>Colonies</b>	
8	Vijaya bank	1	24	ST colony	27
9	Co operative Bank	3	25	SC colony	8
10	Vanitha Bank	1	26	IHDP colony	2
11	SC/ST Society	1			
	<b>Worship centers</b>			<b>Agri culture Samithies</b>	
12	Temple	34	27	Paddy grower's samithi	3
13	Mosque	04	28	Coconut producers samithi	4
14	Church	14	29	Rubber producers samithi	2
15	Sacred Groves	13	30	Farmers club	1
16	Convent	1	31	Ksheerolpadaka sangham	3

SI No	Institutions	Nos	SI No	Institutions	Nos
	<b>Others</b>			<b>Others</b>	
32	Recreation centre, Reading rooms & Clubs	30	36	Vented Cross Bar (VCB)/Check dam	20
33	Milk society	2	37	Market facilities	8
34	Drinking water supply scheme	21	38	Tailoring training centre	1
35	Khadi centre	3	39	Bag making unit	1

**Table 22. Land holding pattern**

SI No	Land holding class	Households		Land held	
		Number	% of Total	Ha	% of Total
1	0 - 0.0202 ha (0- 5 cent)	94	2.46	1.79	0.03
2	0.0202 - 0.2023 ha (5-50 cent)	621	16.26	121.50	2.36
3	0.2023 - 1 ha (50 - 250 cent)	1875	49.10	1869.92	36.30
4	1 - 2 ha (250- 500 cent)	1082	28.33	2160.01	41.93
5	Above 2 ha (Above 500 cent)	147	3.85	998.32	19.38
<b>Total</b>		<b>3819</b>	<b>100.00</b>	<b>5151.55</b>	<b>100.00</b>

Average gross land holding per Household = 1.35

**Table 23. Agriculture and present land use (Area in Ha)**

<b>Public Land</b>	<b>319.45</b>
Forest Land	291
Govt./ Revenue /Panchayath land	28.45
<b>Sub Total</b>	<b>319.45</b>
<b>Privately owned land</b>	<b>5151.55</b>
Cropped area (under rainfed)	5075.83
Fallow Land(Cultivable waste)	28.72
Waste Land (Uncultivable waste)	47
<b>Sub Total</b>	<b>5151.55</b>
<b>Total</b>	<b>5471.00</b>

**Table 24. Major Agricultural Crops**

SI No	Major crops	Area in Ha	Productivity(Kg/Ha)
1	Coconut	1684.10	7334
2	Areca nut	411.42	1856
3	Rubber	3035.67	1236
4	Cashew	233.78	992
5	Paddy- First crop	28.04	2544



## 2.8 Gross Demestic Product (GDP)

Particulars			Amount (in Lakh)
Average amount spent Rs 58/day/ beneficiary C= Rs 58 X 14368X 365 days			3041.7056
Average Investment made in the watershed area			1000.005
Details of Production excess			
	Export	Import	
Agriculture sector	9209.51		
Allied sector	513.15		
Food & Other items		2728.08	
Agriculture inputs		1539.3	
Total	9722.66	4267.38	5455.28
I=			5455.28
G=			180.05
<b>Gross Demostic production</b>			
C=			3041.7056
I=			1000.005
G=			180.05
(X-M)=			5455.28
GDP (C+I+G+(X-M)=			9677.0406

**Table 25. Details of Water bodies**

No. of water bodies					
Public Well	Bore Well	Ponds	Surangham	Open Well	Pipe Line
426	310	425	43	1017	249

**Table 26. Animal husbandry and Dairying- Live stock resources**

Category of Livestock						Total
Indigenous cow	Cross bred cow	Goat	Chicks	Rabbit	Pigs	
378	552	661	1867	649	25	4132

## 2.9 Community organizations (Existing)

- No of SHGs/UGs : 14 UGs under the project and 170 groups of Kudumbasrees
- People registered under MGNREGS : 732
- No of federations of SHGs: Not formed yet. Federation will be formed during the course of the implementation of the project
- Self employment ventures: There are self employment ventures in the areas of animal husbandry and agriculture under the aegis of the Kudumbasree and SHGs in the project area. Apart from that following micro enterprises are functioning in the project area.

## 2.10 Soils (source: Plot level netplan survey, PRA and Soil Survey Department data)

### 2.10.1 Soil series:

**Table 27. Major soil series identified in the watershed area**

SI No	Soil series	Area in Ha	% of Area
1	Arathil	505.04	9.23
2	Edanad	369.63	6.76
3	Kolathur	211.15	3.86
4	Muthathy	5.78	0.11
5	Meeyanganam	1715.93	31.36
6	Payalam	2305.94	42.15
7	Thekkila	42.56	0.78
8	Miscellenious	314.97	5.76
<b>Total</b>		<b>5471</b>	<b>100.00</b>

**Table 28. 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
Miscellenious	-

**Table 29. Soil texture**

SI No	Soil texture	Area in Ha	% of Area
1	Clay	111.72	2.04
2	Clay loam	2605.6	47.63
3	Gravelly clay loam	2753.68	50.33
<b>Total</b>		<b>5471</b>	<b>100.00</b>

**Table 30. Soil depth**

SI No	Soil depth in CM	Area in Ha	% of Area
1	Shallow (25-50)	82.07	1.50
2	Moderately shallow (50-75)	124.09	2.27
3	Moderately deep (75-100)	121.1	2.21
4	Deep (100-150)	2020.12	36.92
5	Very deep (>150)	3123.62	57.09
<b>Total</b>		<b>5471</b>	<b>100.00</b>

**Table 31. Slope grade**

SI No	Slope grade	Area in Ha	% of Area
1	B- Very gently sloppy (1-3 %)	105.386	1.93
2	C- Gently sloppy (3-5%)	469.99	8.59
3	D- Moderately sloppy (5-10%)	379.489	6.94
4	E -Strongly sloppy (10-15 %)	578.555	10.57
5	F Moderately steep (15-25%)	1315	24.04
6	G- Steep Slope – (25-33%)	1468.959	26.85
7	H- Very steep – (33-50%)	1153.621	21.09
<b>Total</b>		<b>5471</b>	<b>100.00</b>

**Table 32. Erosion class**

SI No	Erosion class	Area in Ha	% of Area
1	Slight erosion	519.99	9.50
2	Moderate erosion	4854.213	88.73
3	Severe erosion	96.797	1.77
<b>Total</b>		<b>5471</b>	<b>100.00</b>

**Table 33. LCC**

SI No	LCC	Area in Ha	% of Area
1	II	166.652	3.05
2	III	748.457	13.68
3	IV	1824.505	33.35
4	VI	2731.386	49.92
<b>Total</b>		<b>5471</b>	<b>100.00</b>

## **2.10.2.1 Problems**

### **2.10.2.1.1 Water sector**

- Ground water depletion

Water table depletion is observed in almost all the water bodies since February onwards. The water table depletes and sufficient water not available even to meet the drinking water needs in the month of May especially in hill slopes. This situation is mainly due to lack of initiatives for adopting scientific soil and water conservation measures. Lack of structures to harvest/recharge water, water together with top soil is lost during rainy period.

Some of the water scarce areas are Kundoor, Thallamkallu, Kolamkulam, Pankayam, Narikkad, Kunnumkai, Koliyad, Chembankunnu , Koovappara, Ettamchitta-Vadakkam Kunnu, Punnakuzhy, Parappachal town, Thumba, Thhovakunu, Plachikallu, Mundathadam, Priyanganam, Mankaithattu, Kumbalapally, Thullamkallu area, etc.

- Water contamination

Water is contaminated due to unscientific use of chemical pesticides to the crops, dumping of wastes (from markets, plastic carry bags and bottles) and over flow water during rainy season.

- Unscientific use of water

Families, institutions, markets, industries, 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. This shows that the community is water illiterate.

### **2.10.2.1.2 Soil related**

- Soil erosion is mainly due to the undulating topography of the area and lack of measures implemented to arrest runoff water. During rainy period, the area experiences excessive soil erosion, especially top soil erosion. The erosion carries the fertile soil. Most effected area is Kanakapalli, Parappachal, Kanakapalli, Parappachal,Thullankallu, Kutamadal,Punnakkunnu, Kottamala, Kavinthala, Periyanganam,Koliyadu etc
- Loss of soil nutrients  
The excessive soil erosion carries the fertile soil causing loss of soil nutrients. This is observed in almost all the locations of the watershed area.

### **2.10.2.1.3 Drainage systems**

- Lack of scientific soil and water conservation measures has resulted into high runoff water that ultimately causes soil erosion. This has finally reached to the streams causing sliding of drainage line due and water over flow.
- Siltation of drainages- The eroded soil is deposited in the streams causing reduced size of the drainage to contain water. Erosion is mainly observed in Ist and IInd second order streams and siltation is seen mainly in IIIrd and IVth order streams

### **2.10.2.1.4 Agriculture**

- Unscientific land use pattern/unscientific cultivation practices  
The land use of the area is not scientific. No integration and conservation of basic resources is ensured 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 (3035.67 Ha is under rubber cultivation and 411.42 Ha is under Arecanut cultivation). Soil nutrient analysis is not become part of agri-management plan. Soil nutrient management is not systematically undertaken by the farmers. The practice of producing bio-fertilizer on farm using farm waste and on farm recycling is also not seriously taken up by the farmers.
- Acute shortage of agricultural wage labour and high wage rate.  
There are 2492 agriculture wage labours in the watersheds area. But they are not exclusively for wage labor in agriculture. Most of them will also go for non-agriculture job as there is high wage rate. Labours demand high wage for agricultural works as in the case of construction sector. Farmers had to pay Rs. 500/wage labour/day. Mainly aged persons are remained as agricultural wage labourers. Wage labour in farming sector is given least importance by the new generation. All this has created a situation of near non availability of sufficient number of agricultural wage labours to undertake farm activities timely. Farmers are struggling to find out labours during peak season. Dearth of labours has compelled the farmers either to reduce the area under cultivation or to skip intercultural operations.
- Price of the agriculture produces is poor when compared to the cost of production  
Farmers depend on 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.

- **Inadequacy of quality seed /dependency for seed**  
In olden time, farmers procure seeds for further use. But now, the system of seed production 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 seed, especially vegetable seed. 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.
- **Unscientific irrigation practices**  
For reduced/regulated water use, technologies like drip and sprinkler are developed and available. But due to some stigma, farmers prefer conventional methods of irrigation, causing excess use of water. Farmers generally use water over and above the actual requirement 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.
- **Indigenous Technical Knowhow (ITK) is not documented/used for crop improvement**  
A number of Indigenous Technical Knowhow (ITK) for farming improvement (In the areas of Nutrient management, Pest & Disease management, etc) is available with farmers at grassroots. But this ITK are not documented systematically and thus are not known to larger farming community

#### **2.10.2.1.5 Environmental**

- **Degradation to bio-diversity**  
The watershed area is rich in 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. This is reflected in near extinction of many of the local variety seeds (Eg: Kayama paddy seed), herbal medicinal plants and degradation of sacred groves which has a crucial role in conserving the eco system.  
**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. Waste management practices are not 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.

- Lack of public toilet system in markets and towns  
This is a crucial environmental, health and social problem. Due to the absence of public toilet system in markets and other public places, open defecation takes place which is a causative factor for communicable diseases.

#### **2.10.2.1.6 Socio-economic and health**

- Shortage of sanitary latrine 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 sanitary latrines in sufficient number are not constructed.
- Financial indiscipline in families  
The consumerist behaviour 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 by developmental agencies with convergence of schemes. Watershed projects as it is a development intervention in natural boundaries are the best option for sustainable development.

**Table 34 –Details of Micro Watersheds coming under the Project Area:-**

<b>SIN o</b>	<b>Watershed</b>	<b>Identification Code</b>	<b>Total Area (Ha)</b>	<b>Effective area (Ha)</b>	<b>River Basin</b>	<b>Village covered</b>	<b>Ward Covered</b>	<b>Grama Panchayath</b>
1	Kumbalapally	38 N11e	1037	1036	Nileswaram	Karinthalam	11,12,13 & 14	Kinanur- Karinthalam
2	Parappa	37K14d	512	282	Karyankode	Parappa	8 & 9	Kinanur-Karinthalam & Balal
3	Kammadam	37K14c	312	312	Karyankode	Parappa	7 & 8	Kinanur-Karinthalam
4	Kolamkulam	37K 14b	180	180	Karyankode	Parappa & Karinthalam	11	Kinanur-Karinthalam
5	Parappachal	37K14a	293	293	Karyankode	Karinthalam	13	Kinanur-Karinthalam
6	Kudoor	37K13a	94	94	Karyankode	Karinthalam	14	Kinanur-Karinthalam
7	Plathadam	37K14e	222	222	Karyankode	Parappa	6	Kinanur-Karinthalam
8	Kutamadal	37K14f	375	330	Karyankode	Parappa	6 & 11	Kinanur-Karinthalam
9	Aralakandam	37K14ah	532	528	Karyankode	Beemanadi	3,13, 15 & 18	West Eleri
10	Varakkadu	37K14ag	1066	1065	Karyankode	West Eleri	3, 11, 12 & 13	West Eleri& East Eleri
11	Kurinchery	37K14g	298	277	Karyankode	Beemanadi	1 & 2	West Eleri
12	Kunnamkai	37K14h	256	256	Karyankode	Beemanadi	1 & 2	West Eleri
13	Pungamchal	37K14r	116	116	Karyankode	West Eleri	6 & 7	West Eleri
14	Kannankunnu	37K14q	178	142	Karyankode	West Eleri	4 & 5	West Eleri
	<b>Total</b>		<b>5471</b>	<b>5133</b>				



## CHAPTER- 2

# Institution Building and Project Management

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

### 3.2 District Planning Committee (DPC)

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.

#### 3.2.1 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.

### **3.3 Project Implementing Agency (PIA)**

Concerned Block Panchayat that hold major share of the Project area will be the PIA. Since Parappa Block Panchayat holds the entire share of the area of this project, Parappa 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.

#### **3.3.1 Watershed Development Team (WDT)**

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.

#### **3.3.2 Technical Support Organisation (TSOs)**

The Local Self Government (RD) 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.

Parappa Block Panchayat vide its resolution No. 8 dated 2<sup>nd</sup> February 2011 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.

### **3.4 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.

### **3.5 Watershed Committee (WC)**

WC has pivotal role in the implementation process of the IWMP. Gramasabha with the technical assistance from WDT will constitute WC. 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.

#### **3.5.1 Watershed Gramasabha**

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

#### **3.5.2 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.

### **3.6 Goals and objectives of the proposed project**

#### **3.6.1 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.

#### **3.6.2 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 Grama sabha 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

### 3.7 Phasing of the Project

<b>Phases</b>	<b>Duration</b>
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. 3849750. Of which maximum 3 % amount ie Rs. 2309850 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 near by 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, organizing meetings and communication methods & skills	Watershed committees	1 day	30	2
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 upgradation 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 colour

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

### Scope for convergence

The project has high scope for convergence. Through the participatory net planning approach adopted in the DPR, almost all the developmental needs of the community are identified. The project funding is limited to Rs.15000/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, SHM, NRLM, Dairy Development, Fisheries, Suchithya Mission, ANERT, etc. Bank credit also to be availed. 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, Well construction works with PRI schemes, Crop cultivation activities, composting, bio gas, agriculture equipments with Agriculture Department schemes, bio gas with Suchithwa Mission schemes, Retaining wall construction with Soil Conservation Department Scheme & NABARD Scheme, Back yard poultry, Goat rearing and Cow rearing with Animal husbandry department schemes. 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 of the activities converged with their schemes.



**Table 35 - Proposed IWMP Activities and Convergence Plan**

SI No	Proposed Activities	Unit	IWMP								MGNREGP								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
<b>I</b>	<b>Land Development</b>																									
<b>a</b>	<b>Horticulture</b>																									
a1	Agro Horticulture	No	0	0	1500	112500	0	0	0	0	150	11250	150	11250	150	11250	0	0	6100	457500	5650	423750	2500	187500	1500	112500
a2	Agro Forestry	No	0	0	1000	10000	0	0	0	0	200	2000	200	2000	200	2000	0	0	6750	67500	5700	57000	6250	62500	5000	50000
<b>b</b>	<b>Others</b>																									
b1	Live fencing	Rm	13033	234594	18033	324594	12357	222426	0	0	21550	387900	29850	537300	34522	621396	19850	357300	0	0	0	0	0	0	0	0
b2	Mulching	Ha	0	0	0	0	0	0	0	0	155	1550000	170	1700000	130	1300000	145	1450000	0	0	0	0	0	0	0	0
<b>II</b>	<b>Soil &amp; Moisture Conservation</b>																									
<b>a</b>	<b>Contour Bunding</b>																									
a1	Earthen Bund	Rm	2800	151362	6250	337863	3793	205039	0	0	9250	500037.1	7300	394625	6450	348674.8	5843	315861	0	0	0	0	0	0	0	0
a2	Stone Pitched Bund	M2	31874	4574586	52055	7470853	34841	4006185	20988	4006335	30230	4338610	33250	4772040	39680	5694874	50600	7262112	25000	3588000	25000	3588000	25000	3588000	37669	5406255
a3	Crescent Bund	M2	0	0	0	0	0	0	0	0	5350	767832	6555	940774	5350	767832	4300	617136	0	0	0	0	0	0	0	0
a4	Field Bund	Rm	0	0	0	0	0	0	0	0	6900	373000.4	9030	488144.1	6100	329753.8	3730	201636.5	0	0	0	0	0	0	0	0
<b>b</b>	<b>Staggered Trenching</b>																									
b1	Contour Trench	Rm	1317	71177	2633	142353	0	0	0	0	4645	251101.1	5697	307969	4145	224071.9	2850	154066	0	0	0	0	0	0	0	0
b2	Rain Water Percolation Pit	No	3455	506527	6324	927140	2455	359916	0	0	8950	1312161	9060	1328289	7060	1035067	6550	960296	0	0	0	0	0	0	0	0
b3	Centri Petal Terracing	No	3293	389171	14481	1711220	0	0	0	0	10030	1185248	11100	1311688	7300	862641	3985	470907	0	0	0	0	0	0	0	0
b4	Areca nut Basin formation	No	0	0	5000	75000	0	0	0	0	11350	170250	8350	125250	10100	151500	3450	51750	0	0	0	0	0	0	0	0
b5	Coconut Husk Pit	No	0	0	3392	754109	2723	605378	0	0	4950	1100484	4425	983766	3205	712535	650	144508	0	0	0	0	0	0	0	0
<b>c</b>	<b>Bench Terracing</b>																									
c1	Bench Terracing	Cum	500	103200	9776	1099992	0	0	0	0	3680	759552	3633	749851.6	2080	429312	1865	384936	0	0	0	0	0	0	0	0
<b>III</b>	<b>Vegetative &amp; Engineering Structures</b>																									
<b>a</b>	<b>Loose boulder check dam</b>																									
a1	Brush wood check dam	No	0	0	0	0	0	0	0	0	471	235500	676	338000	177	88500	15	7500	0	0	0	0	0	0	0	0
a2	Gully Controll Structure	No	0	0	0	0	0	0	0	0	641	1602500	461	1152500	285	712500	76	190000	0	0	0	0	0	0	0	0
a3	Loose boulder check dam	No	100	500000	90	450000	24	120000	0	0	51	255000	48	240000	56	280000	25	125000	364	1820000	408	2040000	163	815000	0	0
a4	Gabion check dam	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	1240000	23	920000	22	880000	12	480000
<b>III</b>	<b>Water Harvesting Structures</b>																									
<b>a</b>	<b>Farm Pond</b>																									
a1	Percolation Pond	No	0	0	10	850000	7	595000	0	0	17	1445000	16	1360000	6	510000	5	425000	0	0	0	0	0	0	0	0
a2	Pond Construction	No	0	0	1	437880	0	0	0	0	2	40000	2	40000	2	40000	3	60000	11	220000	9	180000	1	20000	0	0
a3	Construction of Open Well	No	0	0	10	800000	10	800000	10	800000	0	0	0	0	0	0	0	0	13	1105000	13	1105000	5	425000	5	425000
a4	Deepening & Di-silting of existing pond	No	0	0	0	0	0	0	0	0	57	2850000	59	2950000	39	1950000	10	500000	0	0	0	0	0	0	0	0
<b>b</b>	<b>Percolation Tanks</b>																									
b1	Rain Water Collection Pit	No	0	0	15	52500	20	70000	15	52500	333	1165500	122	427000	57	199500	19	66500	0	0	0	0	0	0	0	0
b2	Madakkam	No	0	0	0	0	0	0	0	0	179	1790000	169	1690000	128	1280000	65	650000	0	0	0	0	0	0	0	0
<b>c</b>	<b>Ground Water Recharging System</b>																									
c1	Ground Water Recharge Structure	No	0	0	75	900000	51	612000	0	0	86	1032000	73	876000	68	816000	55	660000	81	972000	104	1248000	25	300000	15	180000

<b>d</b>	<b>Others</b>																													
d1	Rain Water Harvesting Tank	No	0	0	7	315000	8	360000	0	0	0	0	0	0	0	0	0	12	540000	6	270000	1	45000	0	0					
<b>V</b>	<b>Drainageline Treatment</b>																													
a1	Stream bank protection wall using vegetative measures	Rm	0	0	0	0	0	0	0	500	19805	183625	31575	165275	29860	184000	4250	106250	0	0	0	0	0	0	0					
a2	Di-silting work of drainage line	CuM	0	0	0	0	0	0	0	0	8650	1785360	9750	2012400	8550	1764720	4050	835920	0	0	0	0	0	0	0					
a3	Geo Tex for stream bank/ Earthen bund protecton	M2	0	0	0	0	0	0	0	850	92000	676000	108050	765500	56450	626000	4140	414000	0	0	0	0	0	0	0					
a4	Stream bank protection wall -Using stone	Rm	0	0	53	153822	1369	3965502	1008.5	2882864	500	1429529	500	1429529	500	1429529	500	1430779	8777	25412109	8592	24874555	6953	20129220	5510	15953543				
	<b>Total</b>					<b>6144661</b>		<b>16139869</b>				<b>11493981</b>		<b>7743049</b>		<b>24748251</b>		<b>24453975</b>		<b>20088336</b>		<b>15718297</b>		<b>34897109</b>		<b>34225555</b>		<b>26202220</b>		<b>22444798</b>
<b>VI</b>	<b>Production System &amp; Micro Enterprises</b>																													
1	Coconut Climber	No	0	0	1	3500	0	0	0	0	0	0	0	0	0	0	0	0	24	84000	28	130500	0	0	0	0				
2	Vermi composting	No	0	0	0	0	7	70000	14	140000	0	0	0	0	0	0	0	0	109	1050000	83	790000	92	900000	21	210000				
3	Compost Pit	No	0	0	50	302640	100	604920	61	358440	204	1224000	237	1422000	153	918000	121	726000	0	0	0	0	0	0	0					
4	Biogas Plant	No	0	0	0	0	17	255000	0	0	0	0	0	0	0	0	0	0	91	1315000	68	985000	50	750000	27	405000				
5	Pump set	No	0	0	15	150000	10	100000	0	0	0	0	0	0	0	0	0	0	24	229000	35	333500	12	120000	0	0				
6	Sprayer	No	0	0	5	23250	5	23250	0	0	0	0	0	0	0	0	0	0	32	144000	30	135000	31	139500	4	18000				
7	Bush cutter	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	147000	4	84000	0	0	0	0				
8	Fodder Grass Cultivation	Ha	0	0	9.19	275343	18.37	550685	9.19	275343	0	0	0	0	0	0	0	0	17	510000	15.5	465000	17.5	525000	12.5	375000				
9	Vegetable Cultivation	Ha	0	0	6.22	466262	12.43	932524	6.22	466262	0	0	0	0	0	0	0	0	20.5	1537500	22	1650000	21.5	1612500	15.5	1162500				
10	Tuber crops Cultivation	Ha	0	0	0	0	1.582	791790	0	0	0	0	0	0	0	0	0	0	5.35	2677675	3.55	1726725	5.75	2877875	2.25	1126125				
11	Pineapple Cultivation	Ha	0	0	0	0	0.51	97614	0	0	0	0	0	0	0	0	0	0	2.3	440220	2.2	421080	1	191400	0.5	95700				
12	Banana Cultivation	Ha	0	0	3.04	453169	6.06	906338	3.04	453168	0	0	0	0	0	0	0	0	22.25	3337500	18.8	2812500	16.2	2430000	14.5	2175000				
	<b>Total</b>					<b>0</b>		<b>1674164</b>		<b>4332121</b>		<b>1693213</b>		<b>1224000</b>		<b>1422000</b>		<b>918000</b>		<b>726000</b>		<b>11471895</b>		<b>9533305</b>		<b>9546275</b>		<b>5567325</b>		
	<b>Grand Total</b>					<b>6144661</b>		<b>17814033</b>		<b>15826102</b>		<b>9436262</b>		<b>25972251</b>		<b>25875975</b>		<b>21006336</b>		<b>16444297</b>		<b>46369004</b>		<b>43758860</b>		<b>35748495</b>		<b>28012123</b>		

## **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.

Here, the EPAs proposed are construction of 5 new Ponds at various locations as it will provide the farming community water for irrigating crops during summer, construction of 3 Rain water harvesting tanks at various institutions to provide drinking water to the inmates and others who are availing the service of the centre and construction of retaining walls with check dams along the stream banks to protect drainages.

## 5.1 . Activities Proposed

**Table 36. Entry Point activities**

SI no	Entry Point Activity	Micro Watershed	Gramapanchayath	Amount earmarked
1	Pond Renovation	Kumbalappally	Kinanur-Karinthalam	310000
2	Well Renovation	Parappa	Kinanur –Karinthalam	45000
3	Retaining Wall for stream bank protection & Check dam (85RM)	Kammadam	Kinanur –Karinthalam	244380
4	Pond Renovation	Kolamkulam	Kinanur –Karinthalam	45000
5	Retaining Wall for stream bank protection & Check dam	Parappachal	Kinanur –Karinthalam	286561
6	Retaining Wall for stream bank protection & Check dam	Kundoor	Kinanur –Karinthalam	265000
7	Retaining Wall for stream bank protection & Check dam (105RM)	Aralakkandam	West Eleri	300000
8	Pond Renovation	Varakkadu	West Eleri	100000
9	Loose boulder check dam with wing wall	Kurinchery	West Eleri	200000

<b>Sl no</b>	<b>Entry Point Activity</b>	<b>Micro Watershed</b>	<b>Gramapanchayath</b>	<b>Amount earmarked</b>
10	Retaining Wall for stream bank protection & Check dam	Kunnumkai	West Eleri	233659
11	VCB with Retaining wall	Pungamchal	West Eleri	200000
12	Retaining Wall for stream bank protection & Check dam	Kannankunnu	West Eleri	250200
13	Retaining Wall for stream bank protection & Check dam (105 RM)	Plathadam	Kinanur	300000
14	Retaining Wall for stream bank protection & Check dam (105 RM)	Kottamadal	Kinanur-Karinthalam	300000
	<b>Total</b>			30,79,800

## CHAPTER- 6

# Watershed Development Works (WDW) (Natural Resource Management (NRM))

In Watershed Development Works various activities for Natural Resource 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, Percolation tanks, Ground water recharging systems, Planting of horticulture seedlings , Live fencing , etc area are proposed.

### **6.1. Proposed Treatment Measures**

#### **A ) Land Development**

- 1) Horti Culture
  - a) Agro horticulture (Seedlings of Mango, Jack, Gooseberry, Guava, Chikku, etc. Local as well as grafted variety will be planted)
  - b) Agro Forestry ( Mahagani, Teak, Neem, Vaga, Kanikkonna, Sandal wood, Ashokam, Thanni, Venga, Ungu etc)
- 2) Others
  - a) Live(Vegetative) Fencing (Hibiscus, Vetiver, Pineapple, Glyricida, Mehandi, Adalodakam etc )

#### **B) Soil & Moisture Conservation**

- 1) Contour Bunding
  - a) Earthen Bund
  - b) Stone Pitched Bund

- 2) Contour Trench
- 3) Rain Water Percolation Pit
- 4) Centri -Petal Terracing for coconut palm
- 5) Arecanut basin formation
- 6) Coconut Husk Pit
- 7) Bench Terracing

**C) Vegetative & Engineering Structures**

- 1) Retaining Wall construction using stone for Stream bank protection

**D) Water Harvesting Structures**

- 1) Farm Pond
  - a) Construction of Pond
  - b) Construction of Open Well
- 2) Loose boulder Check dams

**E) Percolation Tanks**

- 1) Rain Water Collection Pit

**F) Ground Water Recharging System**

- 1) Roof top Rain Water Recharging System

**G) Others: Roof top Rain Water Harvesting Tank**

**Table 37. Proposed Treatment Measures**

<b>SI No</b>	<b>Name of Activity</b>	<b>Unit</b>	<b>Target</b>	<b>Amount</b>	<b>IWMP Grant</b>	<b>WDF (10% for general category and 5% for SC/ST)</b>
<b>I</b>	<b>Land Development</b>					
a	Horticulture	Ha	0.5	122500	122500	9188
b	Others	Ha	72.37	781614	781614	58621
<b>II</b>	<b>Soil &amp; Moisture Conservation</b>					
a	Contour Bunding	Ha	254.33	20752223	20752223	1556417
b	Trenching	Ha	75.12	5541990	5541990	415649
c	Bench Terracing	Ha	11.66	1203193	1203193	90239
<b>III</b>	<b>Vegetative &amp; Engineering Structures</b>					
a	Loose Boulder check dams	Cum	772.54	1070000	1070000	0
<b>IV</b>	<b>Water Harvesting Structures</b>					
a	Farm Pond	No	48	4282880	4282880	0
b	Percolation Tanks	No	50	175000	175000	13125
c	Ground Water Recharging System	No	126	1512000	1512000	113400
d	Others	Nos	15	675000	675000	0
<b>V</b>	<b>Drainage line Treatment</b>					
a	Side Wall protection	Cum	4897.29	7000800	7000800	0
	<b>Total</b>			<b>43117200</b>	<b>43117200</b>	<b>2256639</b>



**Table 38. Sub activity wise treatment Measures**

SI No	Name of Activity	Unit	Unit cost	Target	Amount	IWMP Grant	WDF (10% for general category and 5% for SC/ST)
<b>I</b>	<b>Land Development</b>						
<b>a</b>	<b>Horticulture</b>	<b>Ha</b>		<b>0.5</b>	<b>122500</b>	<b>122500</b>	<b>9188</b>
<i>a1</i>	<i>Agro Horticulture</i>	<i>No</i>	<i>95</i>	<i>1500</i>	<i>112500</i>	<i>112500</i>	<i>8438</i>
<i>a2</i>	<i>Agro Forestry</i>	<i>No</i>	<i>10</i>	<i>1000</i>	<i>10000</i>	<i>10000</i>	<i>750</i>
<b>b</b>	<b>Others</b>	<b>Ha</b>		<b>72.37</b>	<b>781614</b>	<b>781614</b>	<b>58621</b>
<i>b1</i>	<i>Live fencing</i>	<i>Rm</i>	<i>18</i>	<i>43423</i>	<i>781614</i>	<i>781614</i>	<i>58621</i>
<b>II</b>	<b>Soil &amp; Moisture Conservation</b>						
<b>a</b>	<b>Contour Bunding</b>	<b>Ha</b>		<b>254.33</b>	<b>20752223</b>	<b>20752223</b>	<b>1556417</b>
<i>a1</i>	<i>Earthen Bund</i>	<i>Rm</i>	<i>54.058</i>	<i>12843</i>	<i>694264</i>	<i>694264</i>	<i>52070</i>
<i>a2</i>	<i>Stone Pitched Bund</i>	<i>M2</i>	<i>143.52</i>	<i>139757</i>	<i>20057959</i>	<i>20057959</i>	<i>1504347</i>
<b>b</b>	<b>Trenching</b>	<b>Ha</b>		<b>75.12</b>	<b>5541990</b>	<b>5541990</b>	<b>415649</b>
<i>b1</i>	<i>Contour Trench</i>	<i>Rm</i>	<i>54.058</i>	<i>3950</i>	<i>213529</i>	<i>213529</i>	<i>16015</i>
<i>b2</i>	<i>Rain Water Percolation Pit</i>	<i>No</i>	<i>146.61</i>	<i>12234</i>	<i>1793583</i>	<i>1793583</i>	<i>134519</i>
<i>b3</i>	<i>Centre Petal Terracing</i>	<i>No</i>	<i>118.17</i>	<i>17774</i>	<i>2100391</i>	<i>2100391</i>	<i>157529</i>
<i>b4</i>	<i>Arecanut Basin</i>	<i>No</i>	<i>15</i>	<i>5000</i>	<i>75000</i>	<i>75000</i>	<i>5625</i>
<i>b5</i>	<i>Coconut Husk Pit</i>	<i>No</i>	<i>222.32</i>	<i>6115</i>	<i>1359487</i>	<i>1359487</i>	<i>101962</i>
<b>c</b>	<b>Bench Terracing</b>	<b>Ha</b>		<b>11.66</b>	<b>1203193</b>	<b>1203193</b>	<b>90239</b>
<i>c1</i>	<i>Bench Terracing</i>	<i>Cum</i>	<i>206.4</i>	<i>5829</i>	<i>1203193</i>	<i>1203193</i>	<i>90239</i>
<b>III</b>	<b>Vegetative &amp; Engineering Structures</b>						
<b>a</b>	<b>Loose Boulder check dams</b>	<b>Cum</b>		<b>772.54</b>	<b>1070000</b>	<b>1070000</b>	<b>0</b>
<i>a1</i>	<i>Loose Boulder check dams</i>	<i>Nos</i>	<i>5000</i>	<i>214</i>	<i>1070000</i>	<i>1070000</i>	<i>0</i>

SI No	Name of Activity	Unit	Unit cost	Target	Amount	IWMP Grant	WDF (10% for general category and 5% for SC/ST)
<b>IV</b>	<b>Water Harvesting Structures</b>						
<b>a</b>	<b>Farm Pond</b>	<b>No</b>		<b>48</b>	<b>4282880</b>	<b>4282880</b>	<b>0</b>
<i>a1</i>	<i>Percolation Pond</i>	<i>No</i>	<i>85000</i>	<i>17</i>	<i>1445000</i>	<i>1445000</i>	<i>0</i>
<i>a2</i>	<i>Pond Construction</i>	<i>N</i>	<i>437880</i>	<i>1</i>	<i>437880</i>	<i>437880</i>	<i>0</i>
<i>a3</i>	<i>Open Well Construction</i>	<i>No</i>	<i>80000</i>	<i>30</i>	<i>2400000</i>	<i>2400000</i>	<i>0</i>
<b>b</b>	<b>Percolation Tanks</b>	<b>No</b>		<b>50</b>	<b>175000</b>	<b>175000</b>	<b>13125</b>
<i>b1</i>	<i>Rain Water Collection Pit</i>		<i>3500</i>	<i>50</i>	<i>175000</i>	<i>175000</i>	<i>13125</i>
<b>c</b>	<b>Ground Water Recharging System</b>	<b>No</b>		<b>126</b>	<b>1512000</b>	<b>1512000</b>	<b>113400</b>
<i>c1</i>	<i>Ground Water Recharge Structures</i>	<i>No</i>	<i>12000</i>	<i>126</i>	<i>1512000</i>	<i>1512000</i>	<i>113400</i>
<b>d</b>	<b>Others</b>	<b>Nos</b>		<b>15</b>	<b>675000</b>	<b>675000</b>	<b>0</b>
<i>d1</i>	<i>Rain Water Harvesting Tank</i>	<i>No</i>	<i>45000</i>	<i>15</i>	<i>675000</i>	<i>675000</i>	<i>0</i>
<b>V</b>	<b>Drainage line Treatment</b>						
<b>a</b>	<b>Side Wall protection</b>	<b>Cum</b>		<b>4897.29</b>	<b>7000800</b>	<b>7000800</b>	<b>0</b>
<i>a1</i>	<i>Stream bank protection wall</i>	<i>Rm</i>	<i>2859.05</i>	<i>2448.65</i>	<i>7000800</i>	<i>7000800</i>	<i>0</i>
	<b>Grand Total</b>				<b>43117200</b>	<b>43117200</b>	<b>2256639</b>

## **6.2 Note on the Activities proposed:**

### **6.2 .1 Area 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

#### **6.2.1.1 Stone pitched contour bunds (Maximum 1 mtr hight)**

These are the structural barriers constructed along the contours at specified vertical intervals where the percentage of slope is above 15%. 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. These are necessary requirement for increasing water infiltration capacity of the soil.

#### **6.2.1.2 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 like fodder, pineapple, etc can be planted.

#### **6.2.1.3 Rain Water collection pit, Water Percolation Pit, Contour Trench and Centri-petal terracing**

These are earthen dug up structures with different cross sections constructed in suitable areas to collect more quantity of runoff 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.

#### **6.2.1.4 Construction of farm Ponds**

Farm 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. Since the watershed area is agriculture predominant, the water stored

in the farm pond could be used for irrigating crops, especially short term crops. There are locations in the area suitable for construction of farm ponds.

#### **6.2.1.5 Roof Top Rain Water Harvesting (RWH) 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 Ferro-cement tank constructed near to the house/building.

Now, in most of the houses of the watershed area, the roof water is simply wasted. If RWH Tanks are constructed to collect and store the rain water, the water could be conserved and the family can use the collected water for drinking purpose during summer period.

#### **6.2.1.6 Open Well construction**

Open dug up wells are proposed in acute drinking water scarce areas to provide water for drinking as well as for cultivation of vegetable crops.

#### **6.2.1.7 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 saplings such as Mango, Jack, Gooseberry, Guava, Chikku, etc. local as well as grafted variety & forestry saplings such as Mahagani, Teak, Neem, Vaga, Kanikkonna, Sandal wood, Ashokam, Thanni, Venga, Ungu etc will be planted.

#### **6.2.1.8 Live fencing**

Fencing is usually done to demarcate boundary using stone, soil and tree planting. Here, we promote live fencing (planting of tree plantings). Live fencing 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 fodder, fuel wood, etc and green leaves for preparing bio fertilizers, medicines, cosmetics, etc.

#### **6.2.1.9 Rain Water Recharging System**

Water from roof tops normally flow away which causes soil erosion and wastage of water. Water from roof top could be effectively used for recharging of ground water. 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 which act as a filter mechanism. From the pit, the

water will be allowed to go to the well/water bodies. Through this, the rain water is collected to recharge the well/water body.

#### **6.2.1.10 Coconut Husk pit**

Husk pits are effective soil moisture conservation measures which will in turn help alleviate drought effects. Coconut husk is available in the watershed area as coconut cultivation is practiced. Coconut husks will be buried in the pits constructed in the farm field. Coconut 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.

#### **6.2.2 . Drainage line treatment measures for soil and water management:**

##### **6.2.2.1 Retaining wall construction for stream bank protection (maximum 2mtr high)**

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

##### **6.2.2.2 Construction of Loose Boulder Check Dams**

Due to topographical features (sloppy area), high velocity of runoff water in the streams has caused destructions to the drainage systems (streams) in the watershed area. The velocity of the runoff water can be reduced /controlled by constructing series of loose boulder check dams across the stream at different intervals following ridge to valley approach. This will also help to keep soil moisture through infiltration. Check dam construction is done only after implementing almost all the area treatment measures. If not, the high runoff water will damage the check dams.

## **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, Tuber crops 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 and bio gas plants. This will help the farmers to follow organic cultivation practices in watersheds.

Apart from the above activities, 1 coconut climbing machine, 25 pump sets and 10 sprayers are also proposed under PSM&ME.

## 7.1 Production System and Micro enterprises

**Table 39. PSM & ME**

SI No	Activities	Unit Measures	Unit cost	Target	Total Amount	IWMP Grant	WDF contribution
1	Coconut Climber	No	3500	1	3500	3500	525
2	Pumpset for irrigation	No	10000	25	250000	250000	37500
3	Sprayer	No	4650	10	46500	46500	6975
4	Vermi composting	No	10000	21	210000	210000	31500
5	Biogas Plant	No	15000	17	255000	255000	38250
6	Vegetable Cultivation	Ha	75000	24.8673	1865048	1865048	279758
7	Banana Cultivation	Ha	150000	12.0845	1812675	1812675	271902
8	Tuber Crops Cultivation	Ha	500500	1.582	791791	791791	118768
9	Fodder Grass Cultivation	Ha	30000	36.7124	1101372	1101372	165206
10	Pineapple Cultivation	Ha	191400	0.51	97614	97614	14642
11	Compost Pit	No	6000	211	1266000	1266000	189900
	<b>Total</b>				<b>7699500</b>	<b>7699500</b>	<b>1154926</b>

## **7.2 Activities Proposed on Production System Management and Micro Enterprises**

### **7.2.1 Vegetable cultivation**

The water village is not self sufficient in vegetable production. The area depends to other places 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.

### **7.2.2 Tuber crop cultivation**

Tuber crops are important staple food crops. These crops produce high level of calories and carbohydrates from a unit area and unit time and they can withstand adverse biotic and abiotic conditions. The major tropical root crops proposed for cultivation under the projects are cassava, sweet potato and yams. Tuber crop cultivation will be undertaken as intercrop.

### **7.2.3 Pine apple cultivation**

Pineapple is a tropical fruit. Pineapple was largely cultivated in the area sometimes back. But due to shift in cropping pattern, the area under cultivation of pineapple reduced drastically. Since the area is suitable for pineapple cultivation, cultivation of this crop is proposed under the project.

Pineapple contains considerable calcium, potassium, fibre, and vitamin C. It is low in fat and cholesterol. It is also a good source of vitamin B1, vitamin B6, copper and dietary fibre. Pineapple is a digestive aid and a natural Anti-Inflammatory fruit. Moreover, the farmers can earn income out of selling pineapple. All these merits of pineapple provide greater scope for cultivation of the crop.

### **7.2.4 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 proposed are Nendran (clones), Robusta, Poovan, Palayankodan and Njalipoovan. The objective of proposing banana cultivation under the project is to increase the area under banana cultivation and thereby to generate more income.

### **7.2.5 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. CO3 is the variety commonly cultivated in the area.



### **7.2.6 Coconut climber**

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

### **7.2.7 Pump set 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.

### **7.2.8 Sprayer**

Sprayers are proposed for organic pesticide application in farm fields.

### **7.2.9 Vermi Composting and compost Pits**

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.

### **7.2.10 Bio gas**

Sanitation issues due to unscientific waste disposal are one of the major concerns in the watershed. There are domestic as well as non domestic sources of waste. The waste could be effectively managed through constructing bio gas tanks.

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.

## CHAPTER- 8

# Livelihood Activities

### 8.1 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.

#### 8.1.1 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.

#### 8.1.2 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.

### **8.1.3 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.

### **8.1.4 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.

### **8.1.5 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.

### **8.1.6 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.

### **8.1.7 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.

### 8.1.8 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 40. Proposed Livelihood Activities**

SI No	Activities	Unit cost	Target	Total Amount	Fund sharing	
					IWMP	Own/Bank
1	Goat Rearing	24000	104	2496000	2065450	430550
2	Cow Rearing	30000	147	4410000	3669800	740200
3	Back Yard Poultry	6000	172	1032000	858300	173700
4	Tailoring Machine	6000	67	402000	336000	66000
	<b>Total</b>			<b>8340000</b>	<b>6929550</b>	<b>1410450</b>

Other proposed activities

Cane product making unit (basket, Chair etc ), Woman managed Agri. Service & Marketing centre, Mechanised Carpentry unit, Honey Beekeeping, Fruit processing unit (Jack Mango, Pineapple etc), Readymade Garment unit, Agriculture/Medicinal plant nursery, Production unit of Artisans'

## 8.2 Major livelihood activities

### 8.2.1 Goat Rearing

Goat rearing is a profitable livelihood activity. The farmers in the watershed area have experience in rearing goats. 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

### **8.2.2 Cow Rearing**

Dairying is found to be viable livelihood option for all sections of the society. The farmers in the watershed area have experience in rearing cows and have expressed interest in starting dairy units as livelihood activity. 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.

### **8.2.3 Back Yard Poultry**

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

## **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.

## 9.1 Watershed Development Works (Natural Resource Management)

Table 41. Year wise Action Plan

SI No	Activity	Unit	Target	Amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
<b>I</b>	<b>Land Development</b>											
a	Horticulture	Ha	0.5	122500	0	0	0.50	122500	0	0	0	0
b	Others	Ha	72.37	781614	21.72	234594	30.06	324594	20.60	222426	0	0
<b>II</b>	<b>Soil &amp; Moisture Conservation</b>											
a	Contour Bunding	Ha	254.33	20752223	57.79	4725948	97.18	7808716	64.39	4211224	34.98	4006335
b	Trenching	Ha	75.12	5541990	13.44	1187450	53.05	3389247	8.63	965294	0	0
c	Bench Terracing	Ha	11.66	1203193	1	103200	10.66	1099992	0	0	0	0
<b>III</b>	<b>Vegetative &amp; Engineering Structures</b>											
a	Loose Boulder check dams	CuM	772.54	1070000	361	500000	324.9	450000	86.64	120000	0	0
<b>IV</b>	<b>Water Harvesting Structures</b>											
a	Farm Pond	No	48	4282880	0	0	21	2087880	17	1395000	10	800000
b	Percolation Tanks	No	50	175000	0	0	15	52500	20	70000	15	52500
c	Ground Water Recharging System	Nos	126	1512000	0	0	75	900000	51	612000	0	0
d	Others	Nos	15	675000	0	0	7	315000	8	360000	0	0
<b>V</b>	<b>Drainage line Treatment</b>											
a	Side Wall protection	Cum	4897.29	7000800	0	0	0	0	2880	4117936	2017	2882864
	<b>Grand Total</b>			<b>43117200</b>		<b>6751192</b>		<b>16550429</b>		<b>12073880</b>		<b>7741699</b>



## 9.2 Watershed Development Works (Natural Resource Management)

Table 42. Sub Activity wise Annual Action plan

SI No	Activity	Unit	Target	Amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
<b>I</b>	<b>Land Development</b>											
<b>a</b>	<b>Horticulture</b>	<b>Ha</b>	<b>0.5</b>	<b>122500</b>	<b>0</b>	<b>0</b>	<b>0.50</b>	<b>122500</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
a1	Agro Horticulture	No	1500	112500	0	0	1500	112500	0	0	0	0
a2	Agro Forestry	No	1000	10000	0	0	1000	10000	0	0	0	0
<b>b</b>	<b>Others</b>	<b>Ha</b>	<b>72.37</b>	<b>781614</b>	<b>21.72</b>	<b>234594</b>	<b>30.06</b>	<b>324594</b>	<b>20.60</b>	<b>222426</b>	<b>0</b>	<b>0</b>
b1	Live fencing	Rm	43423	781614	13033	234594	18033	324594	12357	222426	0	0
<b>II</b>	<b>Soil &amp; Moisture Conservation</b>											
<b>a</b>	<b>Contour Bunding</b>	<b>Ha</b>	<b>254.33</b>	<b>20752223</b>	<b>57.79</b>	<b>4725948</b>	<b>97.18</b>	<b>7808716</b>	<b>64.39</b>	<b>4211224</b>	<b>34.98</b>	<b>4006335</b>
a1	Earthen Bund	Rm	12843	694264	2800	151362	6250	337863	3793	205039	0	0
a2	Stone Pitched Bund	M2	139757	20057959	31874	4574586	52055	7470853	34840	4006185	20988	4006335
<b>b</b>	<b>Trenching</b>	<b>Ha</b>	<b>75.12</b>	<b>5541990</b>	<b>13.44</b>	<b>1187450</b>	<b>53.05</b>	<b>3389247</b>	<b>8.63</b>	<b>965294</b>	<b>0</b>	<b>0</b>
b1	Contour Trench	Rm	3950	213529	1317	71177	2633	142353	0	0	0	0
b2	Rain Water Percolation Pit	No	12234	1793583	3455	506527	6324	927140	2455	359916	0	0
b3	Centre Petal Terracing	No	17774	2100391	3293	609746	14481	1490645	0	0	0	0
b4	Areca nut Basin	No	5000	75000	0	0	5000	75000	0	0	0	0
b5	Coconut Husk Pit	No	6115	1359487	0	0	3392	754109	2723	605378	0	0
<b>c</b>	<b>Bench Terracing</b>	<b>Ha</b>	<b>11.66</b>	<b>1203193</b>	<b>1</b>	<b>103200</b>	<b>10.66</b>	<b>1099992</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
c1	Bench Terracing	CuM	5829	1203193	500	103200	5329	1099992	0	0	0	0
<b>III</b>	<b>Vegetative &amp; Engineering Structures</b>											
<b>a</b>	<b>Loose Boulder check dams</b>	<b>CuM</b>	<b>772.54</b>	<b>1070000</b>	<b>361</b>	<b>500000</b>	<b>324.9</b>	<b>450000</b>	<b>86.64</b>	<b>120000</b>	<b>0</b>	<b>0</b>
a1	Loose Boulder check dams	No	214	1070000	100	500000	90	450000	24	120000	0	0

SI No	Activity	Unit	Target	Amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
<b>IV</b>	<b>Water Harvesting Structures</b>											
<b>a</b>	<b>Farm Pond</b>	<b>No</b>	<b>48</b>	<b>4282880</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>2087880</b>	<b>17</b>	<b>1395000</b>	<b>10</b>	<b>800000</b>
a1	Percolation Pond	No	17	1445000	0	0	10	850000	7	595000	0	0
a2	Pond Construction	No	1	437880	0	0	1	437880	0	0	0	0
a3	Open Well Construction	No	30	2400000	0	0	10	800000	10	800000	10	800000
<b>b</b>	<b>Percolation Tanks</b>	<b>No</b>	<b>50</b>	<b>175000</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>52500</b>	<b>20</b>	<b>70000</b>	<b>15</b>	<b>52500</b>
b1	Rain Water Collection Pit	No	50	175000	0	0	15	52500	20	70000	15	52500
<b>c</b>	<b>Ground Water Recharging System</b>	<b>Nos</b>	<b>126</b>	<b>1512000</b>	<b>0</b>	<b>0</b>	<b>75</b>	<b>900000</b>	<b>51</b>	<b>612000</b>	<b>0</b>	<b>0</b>
c1	Ground Water Recharge Structures	Nos	126	1512000	0	0	75	900000	51	612000	0	0
<b>d</b>	<b>Others</b>	<b>Nos</b>	<b>15</b>	<b>675000</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>315000</b>	<b>8</b>	<b>360000</b>	<b>0</b>	<b>0</b>
d1	Rain Water Harvesting Tank	Nos	15	675000	0	0	7	315000	8	360000	0	0
<b>V</b>	<b>Drainage line Treatment</b>											
<b>a</b>	<b>Side Wall protection</b>	<b>Cum</b>	<b>4897.29</b>	<b>7000800</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2880</b>	<b>4117936</b>	<b>2017</b>	<b>2882864</b>
a1	Stream bank protection wall	Rm	2448.65	7000800	0	0	0	0	1440	4117936	1008.5	2882864
	<b>Grand Total</b>			<b>43117200</b>		<b>6751192</b>		<b>16550429</b>		<b>12073880</b>		<b>7741699</b>

**Table 43. Production System & Micro Enterprises**

SI No	Activities	Unit	Target	Amount	1st Year		2nd Year		3rd Year		4th Year	
					Target	Amount	Target	Amount	Target	Amount	Target	Amount
1	Coconut Climber	No	1	3500	0	0	1	3500	0	0	0	0
2	Pump set	No	25	250000	0	0	15	150000	10	100000	0	0
3	Sprayer	No	10	46500	0	0	5	23250	5	23250	0	0
4	Vermi composting	No	21	210000	0	0	0	0	7	70000	14	140000
5	Biogas Plant	No	17	255000	0	0	0	0	17	255000	0	0
6	Vegetable Cultivation	Ha	24.8673	1865048	0	0	6.22	466262	12.43	932524	6.22	466262
7	Banana Cultivation	Ha	12.0845	1812675	0	0	3.02	453169	6.04	906338	3.02	453169
8	Tuber Crops Cultivation	Ha	1.582	791791	0	0	0	0	1.582	791791	0	0
9	Fodder Grass Cultivation	Ha	36.7124	1101372	0	0	9.18	275343	18.36	550686	9.18	275343
10	Pineapple Cultivation	Ha	0.51	97614	0	0			0.51	97614	0	0
11	Compost Pit	No	211	1266000	0	0	50	300000	100	600000	61	366000
	<b>Total</b>			<b>7699500</b>		<b>0</b>		<b>1671524</b>		<b>4327202</b>		<b>1700774</b>

**Table 44. Livelihood Activities**

I No	Activities	Total Amount	Year wise RFA Amount			
			1st Year	2nd Year	3rd Year	4th Year
1	Goat Rearing	2065450	0	0	1032725	1032725
2	Cow Rearing	3669800	0	0	1834900	1834900
3	Back Yard Poultry	858300	0	0	429150	429150
4	Tailoring Machine	336000	0	0	168000	168000
	<b>Total</b>	<b>6929550</b>	<b>0</b>	<b>0</b>	<b>3464775</b>	<b>3464775</b>

# **PART- II**

## CHAPTER-10

### Expected Result & Consolidation phase

#### 10.1 Expected Results of the project

##### 10.1.1 Major Components/ activities and outputs

No	Major Components/ activities	Outputs
1	EPA	<ul style="list-style-type: none"> <li>• Various EPAs proposed as per quantity are implemented (5 new Ponds are constructed at various locations and water is available for irrigating crops during summer, 3 Rain water harvesting tanks are constructed at various institutions to provide drinking water to the inmates and other users of the centre, Retaining walls with check dams are constructed along the stream banks to protect stream bank, etc). This will invite participation and attention of the community in the project.</li> <li>• Community is motivated to implement the project activities</li> </ul>
2	NRM/Watershed works /soil & water management interventions	<ul style="list-style-type: none"> <li>• Various site specific treatment measures for soil, water and biomass conservation as per the quality and design parameters mentioned in the project are implemented (Contour bunds in 254.33 Ha area, Staggered trenching in 75.12 Ha area, Bench terracing in 11.66 Ha area, 48 Farm ponds, Loose boulder check dams, 50 Percolation tanks, 126 Numbers of Ground water recharging systems, Planting of horticulture seedlings in 0.2702 Ha area, Live fencing in 72.37 Ha area, etc area are constructed).</li> <li>• The treatment measures implemented will start collecting rain water and arresting soil erosion.</li> </ul>
3	Production system & micro enterprises	<ul style="list-style-type: none"> <li>• Activities as per the action plan are implemented (Vegetable cultivation in 24.8673 Ha, banana cultivation in 12.0845 Ha, fodder grass cultivation in 36.7124 Ha, Tuber crops cultivation in 1.582 Ha, pineapple cultivation in 0.51 Ha, are implemented. 1 coconut climbing machine, 25 pump sets, 2 bush cutters, 1 sprayer and 211 tailoring machine are distributed. 21 Vermi-</li> </ul>

		<p>composting units and 17 bio gas plants are constructed)</p> <ul style="list-style-type: none"> <li>• 250 tone vegetables, 392 MT banana, 7300 MT fodder grass, 24 tone tuber crops, 4 tone pineapple will be produced additionally</li> <li>• 5040 kg vermi compost will be produced from the units started</li> </ul>
4	Livelihood activities	<ul style="list-style-type: none"> <li>• Livelihood activities mentioned in the project are implemented (cow rearing, goat rearing, back yard poultry and tailoring units).</li> <li>• Increased availability of milk, meat, etc in the watershed</li> <li>• Families earn income to meet their livelihood expenses</li> </ul>
5	Community Organizations	<ul style="list-style-type: none"> <li>• Various Community structures such as 14 Watershed Committees, number of SHG, User groups, etc are formed.</li> <li>• 14 Watershed Committee will be registered under societies registration act for the successful undertaking of the project activities and its objectives.</li> <li>• The structures formed will elicit participation of the community in the planning and implementation of the IMWP</li> </ul>
6	Participatory Micro planning for DPR	<ul style="list-style-type: none"> <li>• Present status of the area, base line data and bench marks of the situation, potentials and limitations are generated, documented and shared among the stakeholders</li> <li>• Analysis of the problems and preparation of action strategies and plans.</li> <li>• Net plans and farm plans for the watershed is prepared</li> </ul>
7	Capacity building/skill building of the Community based organizations, farmers ,the officials, and people's representatives	<ul style="list-style-type: none"> <li>• A model/demonstration plot will be developed with major watershed treatment measures</li> <li>• Trainings to various stakeholders as per the project is imparted</li> <li>• 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)</li> </ul>

### 10.1.2 Expected Outcomes

No	Major Components/ activities	Outcomes
1	EPA	<ul style="list-style-type: none"> <li>• 7 lakh litres of water stored in ponds are used by the local farmers</li> <li>• 30000 litres of water collected in RWH tanks are used by the users of the institutions where the tanks are constructed</li> <li>• Immediate water needs of the watershed communities are met</li> <li>• Community accepted the project and they took part in the project productively by attending Watershed Committee meetings/Gramasabha meetings/SHG meetings and contributing their share/Shramadhan, etc</li> </ul>
2	NRM/Watershed works /soil & water management interventions	<ul style="list-style-type: none"> <li>• 4.5 crore litres of rain water is conserved in the structures constructed under the project.</li> <li>• Increased ground water table by 0.5 – 1 Mtr</li> <li>• 148.4016 Ha area will be newly put under multi cropping under the project and another 300 Ha area is expected to be put under multi cropping by the farmers as they will be motivated to do so.</li> <li>• Substantial improvement in crop production, agricultural income and living standards</li> <li>• Reduction in soil and nutrient loss</li> <li>• Drainage systems are protected</li> <li>• Drinking water availability throughout the year from the water bodies to most of the members of the community</li> <li>• Biodiversity is protected</li> </ul>
3	Production system & micro enterprises	<ul style="list-style-type: none"> <li>• About 500 families in the SHGs/other groups will get additional economic income from the units started (on an average Rs. 1000/month/family)</li> </ul>
4	Livelihood activities	<ul style="list-style-type: none"> <li>• Production sector will get new boost in the watershed with the newly started units</li> <li>• Women earn economic income</li> <li>• Reduction in poverty rate (Out of the total 1419 BPL families ,</li> </ul>

		<p>atleast by 25% will become APL)</p> <ul style="list-style-type: none"> <li>• Improvement in saving habit</li> </ul>
5	Community Organizations	<ul style="list-style-type: none"> <li>• Micro level community organsiation are strengthened</li> <li>• Community, PRIs and officials will learn &amp; 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</li> <li>• Community mobilize themselves for the success of the project and O&amp;M of the assets and results generated</li> <li>• Best practices and norms for using water, soil and other natural resource are developed by the community.</li> <li>• Development of positive mind set among different stakeholders and their willingness to accept a facilitating role</li> <li>• Good governance, Improved coordination and cooperation among various stakeholders and convergence of schemes</li> <li>• Increased people participation in developmental activities</li> </ul>
6	Capacity building/skill building of the Community based organizations, farmers ,the officials, and people's representatives	

### 10.1.3 Expected Impacts

Goal	Impacts
<p>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.</p>	<ul style="list-style-type: none"> <li>• Ground water level is augmented sustainably</li> <li>• Sustained availability of drinking water</li> <li>• Favourable stream flow characteristics</li> <li>• Healthy soil /Soil productivity</li> <li>• Agricultural production and productivity is improved</li> <li>• Progress in Dairy and Animal husbandry</li> <li>• Non conventional source of energy is promoted</li> <li>• Proper marketing system is developed</li> <li>• Sustained and productive People participation in developmental programmes</li> <li>• Capacity building of the community to plan and manage</li> </ul>



	<p>developmental programmes</p> <ul style="list-style-type: none"> <li>• Community will exercise pro active control on the developmental projects and programmes which will in turn generate good governance and proper service delivery.</li> <li>• The learning and success of the project will contribute to policy and advocacy level.</li> </ul>
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## 10.2. Benefit cost 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 field 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 vegetation 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 (for which detailed unit cost is given) 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 by 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 contributed.

The major project components are EPA, NRM, PSA & 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 implementation phase also. 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

75°14'30"E

75°18'14"E

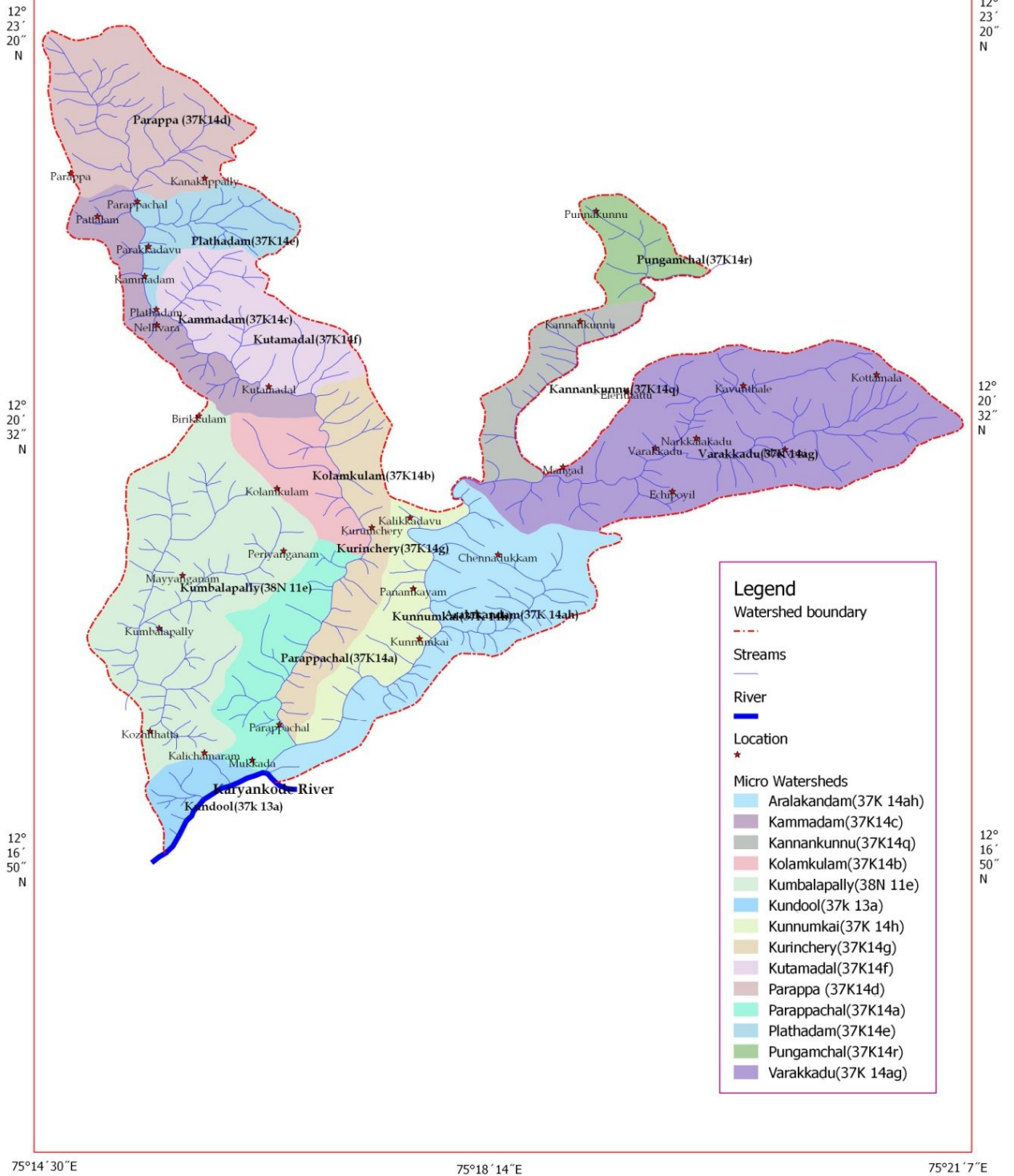
75°21'7"E

**Integrated Watershed Management Programme (IWMP)**  
**Project -IWMP-4**  
**Parappa Block Panchayath**  
**Kasaragod District**



**Micro Watershed Map**

Total Area - 5471 Ha  
 Effective Area - 5133 Ha



75°14'30"E

75°18'14"E

75°21'7"E

75°14'30"E

75°18'14"E

75°21'7"E

**Integrated Watershed Management Programme (IWMP)**  
**Project -IWMP-4**  
**Parappa Block Panchayath**  
**Kasaragod District**



1:45000

**Soil Texture Map**

Total Area - 5471 Ha  
Effective Area - 5133 Ha

12°  
23'  
20" N

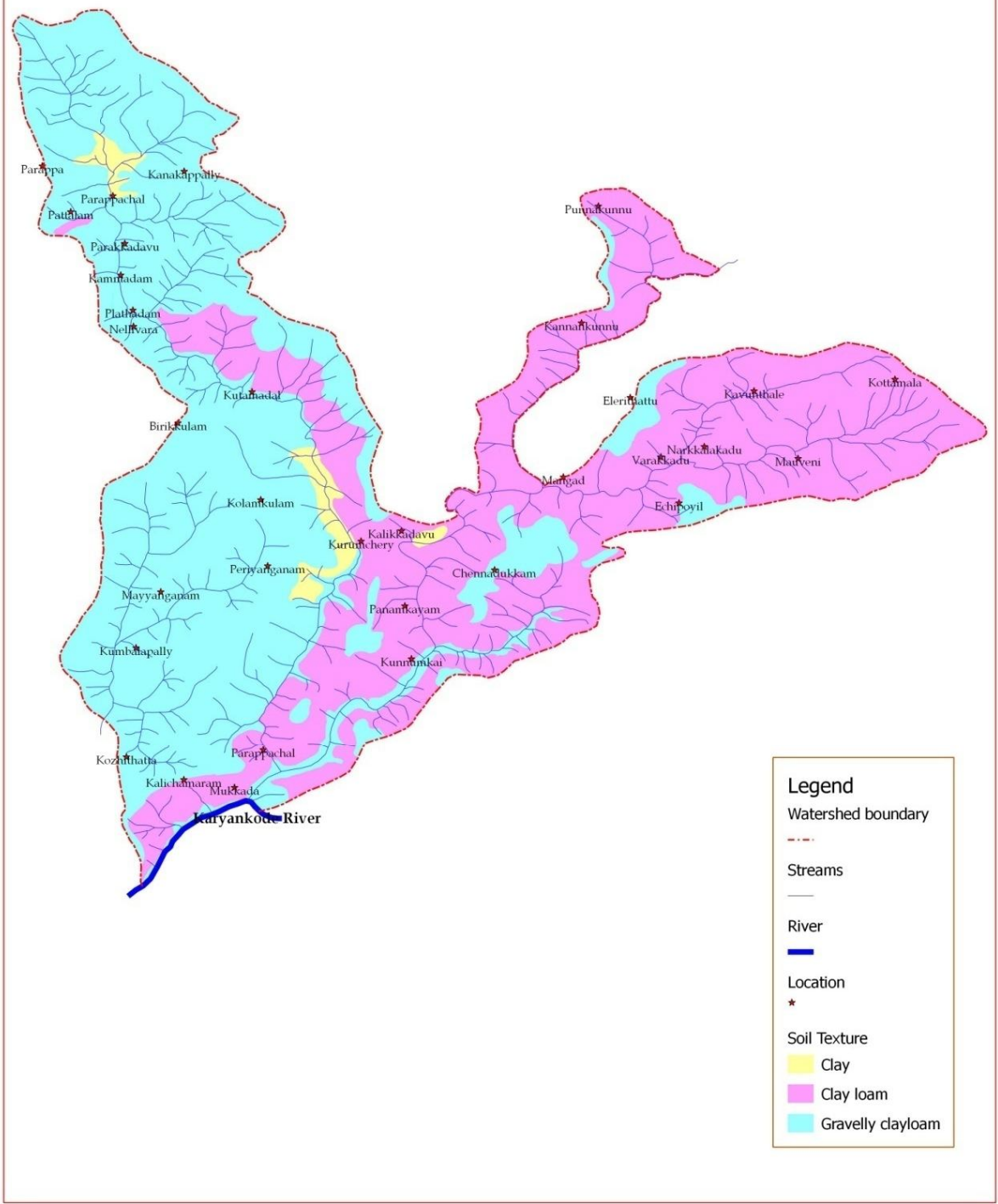
12°  
20'  
32" N

12°  
16'  
50" N

12°  
23'  
20" N

12°  
20'  
32" N

12°  
16'  
50" N



**Legend**

- Watershed boundary
- Streams
- River
- Location
- Soil Texture
  - Clay
  - Clay loam
  - Gravelly clayloam

75°14'30"E

75°18'14"E

75°21'7"E

75°14'30"E

75°18'14"E

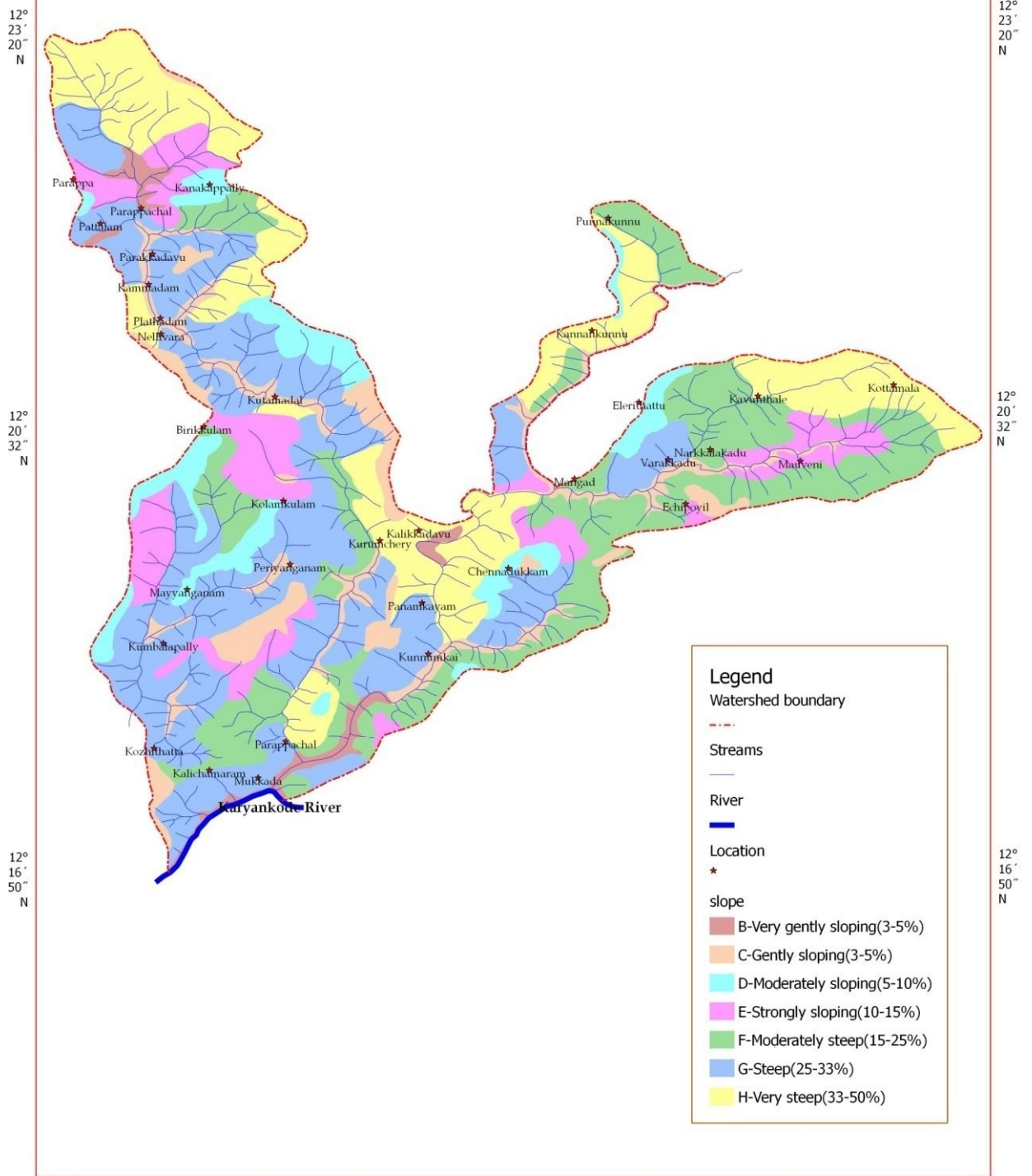
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**Integrated Watershed Management Programme (IWMP)**  
**Project -IWMP-4**  
**Parappa Block Panchayath**  
**Kasaragod District**



**Slope Class Map**

Total Area - 5471 Ha  
 Effective Area - 5133 Ha



**Legend**

- Watershed boundary
- Streams
- River
- Location \*
- slope
  - B-Very gently sloping(3-5%)
  - C-Gently sloping(3-5%)
  - D-Moderately sloping(5-10%)
  - E-Strongly sloping(10-15%)
  - F-Moderately steep(15-25%)
  - G-Steep(25-33%)
  - H-Very steep(33-50%)

75°14'30"E

75°18'14"E

75°21'7"E



75°14'30"E

75°18'14"E

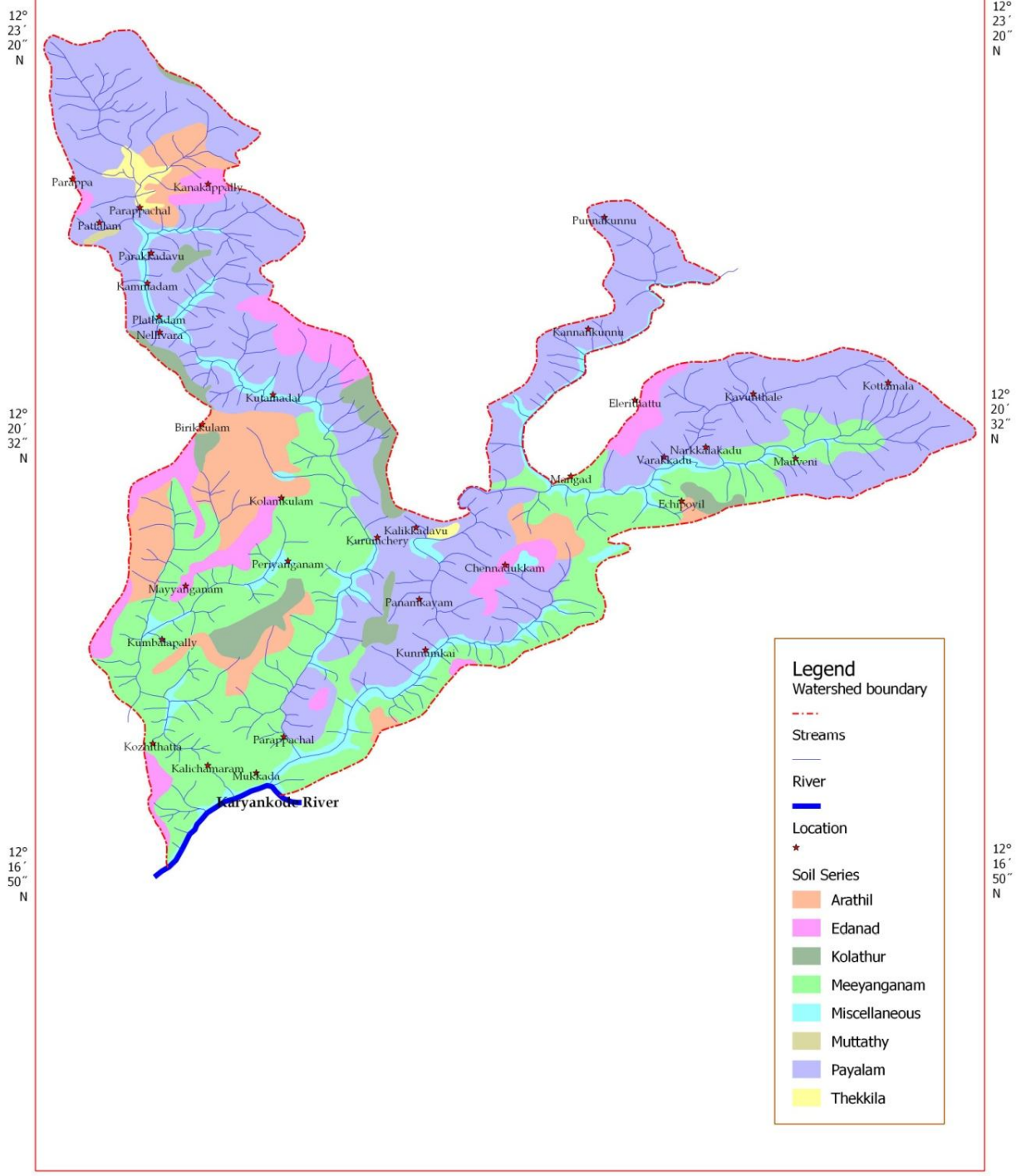
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**Integrated Watershed Management Programme (IWMP)**  
**Project -IWMP-4**  
**Parappa Block Panchayath**  
**Kasaragod District**



**Soil Series Map**

Total Area - 5471 Ha  
 Effective Area - 5133 Ha



**Legend**

- Watershed boundary
- Streams
- River
- Location
- Soil Series
  - Arathil
  - Edanad
  - Kolathur
  - Meeyanganam
  - Miscellaneous
  - Muttathy
  - Payalam
  - Thekkila

75°14'30"E

75°18'14"E

75°21'7"E



75°14'30"E

75°18'14"E

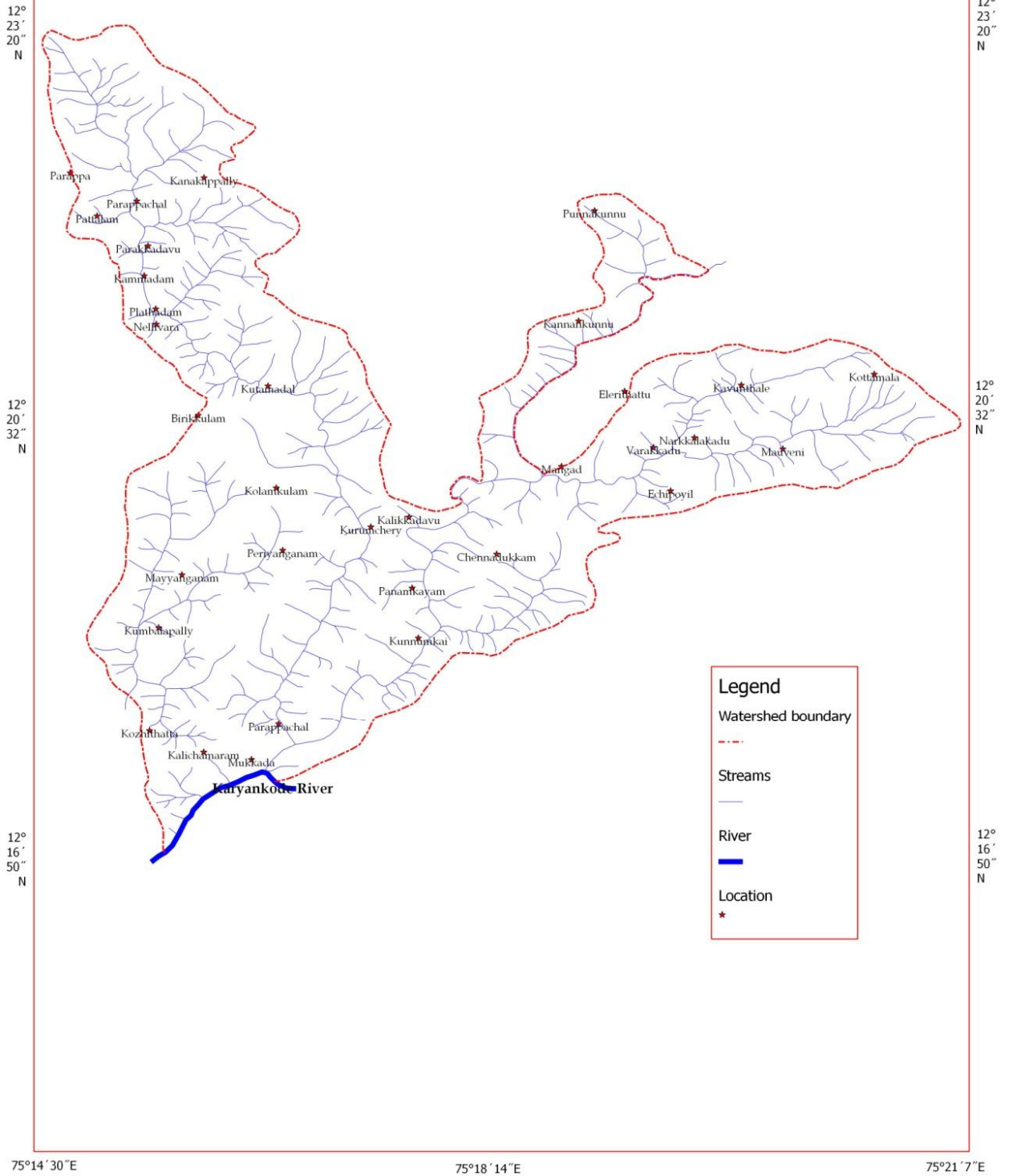
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**Integrated Watershed Management Programme (IWMP)**  
**Project -IWMP-4**  
**Parappa Block Panchayath**  
**Kasaragod District**



**Location Map**

Total Area - 5471 Ha  
 Effective Area - 5133 Ha



**Legend**

- Watershed boundary
- Streams
- River
- Location

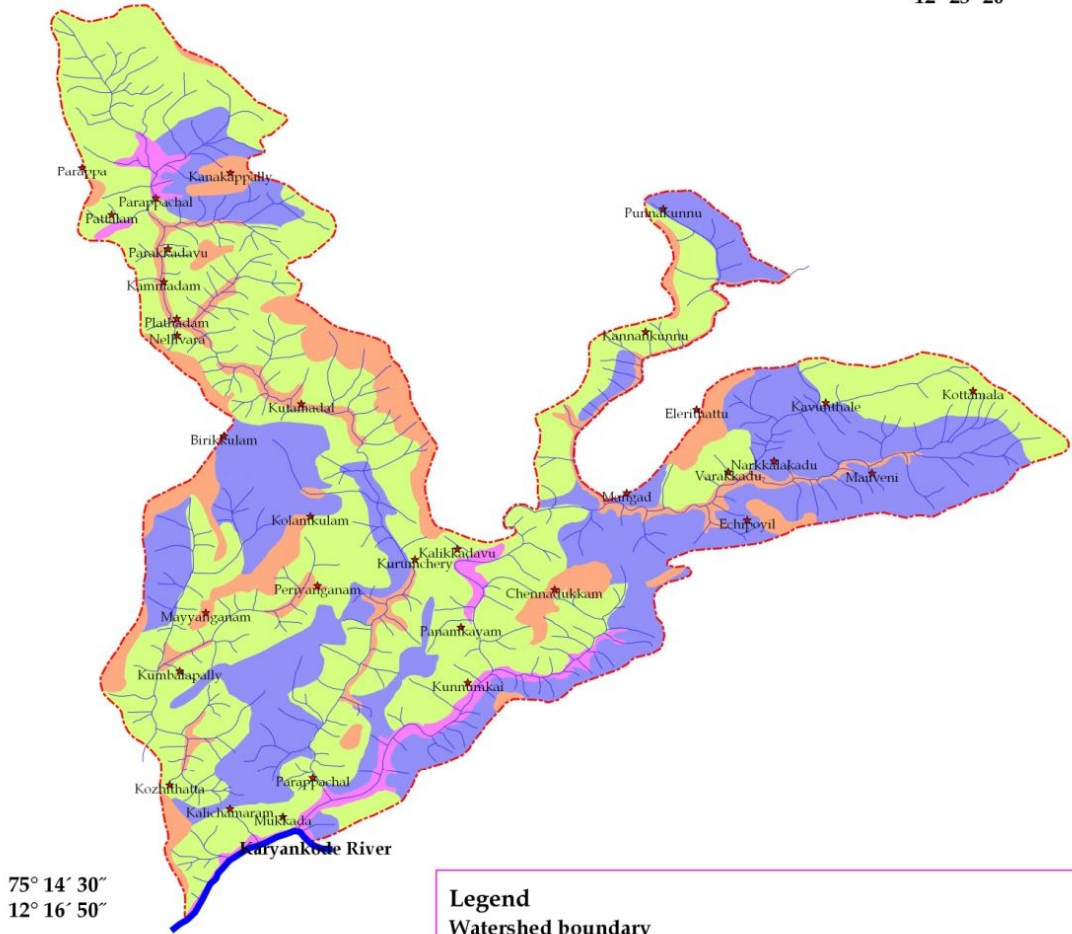
**Integrated Watershed Management Programme (IWMP)  
Project-IWMP-4  
Parappa Block Panchayath  
Kasaragod District**

**Land Capability Class**

N  
1:50000

Total Area-5471 Ha  
Effective Area-5133 Ha

75° 21' 70"  
12° 23' 20"



75° 14' 30"  
12° 16' 50"

**Legend**

- Watershed boundary
- Streams
- River
- Location
- Land capability class
  - II-Good cultivable land
  - III-Moderately good cultivable land
  - IV-Fairly good cultivable land suited for occasional or limited cultivation
  - VI-Well suited for grazing and forestry

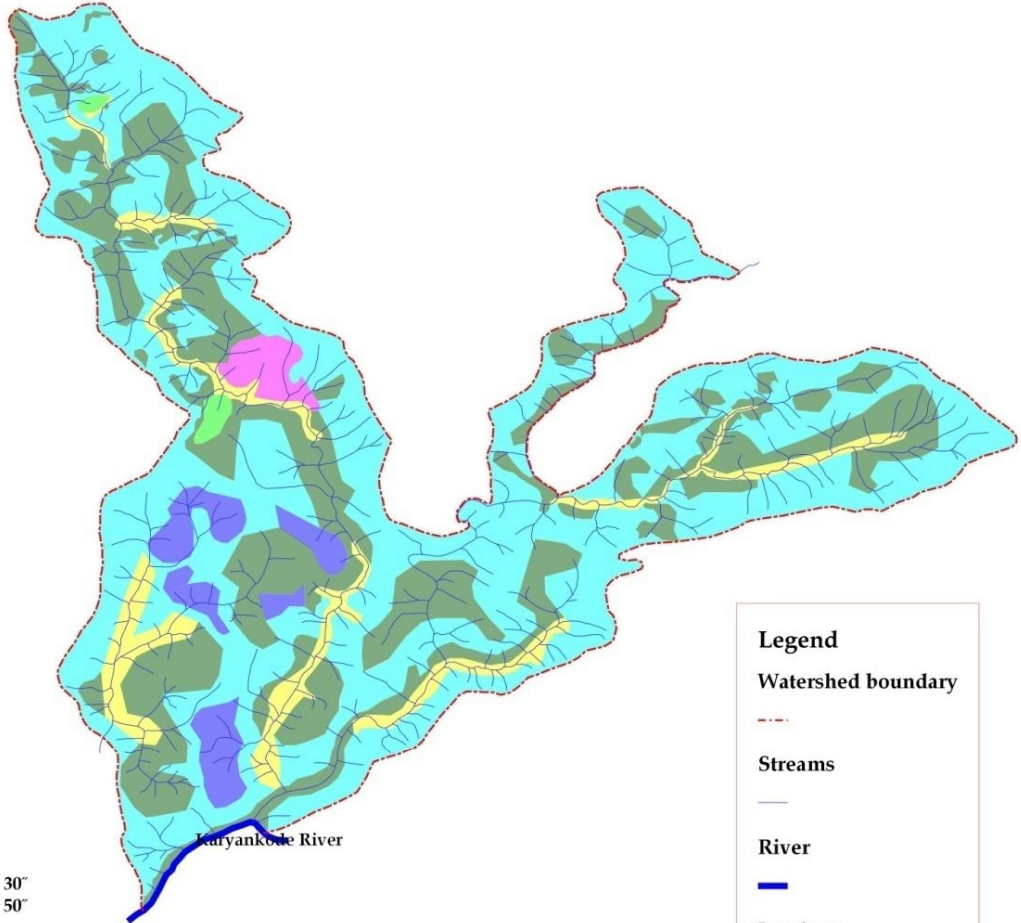
**Integrated Watershed Management Programme(IWMP)  
Project-IWMP-4  
Parappa Block Panchayath  
Kasaragod Dt**

**Land use Map**

Total Area -5471 Ha  
Effective Area-5133 Ha

N  
1:50000

75° 21' 70"  
12° 23' 20"



75° 14' 30"  
12° 16' 50"

**Legend**

Watershed boundary  
---

Streams  
—

River  
—

Land use

- Arecanut
- Cashew
- Coconut
- Paddy
- Reserve forest
- Rubber

75°14'30"E

75°18'14"E

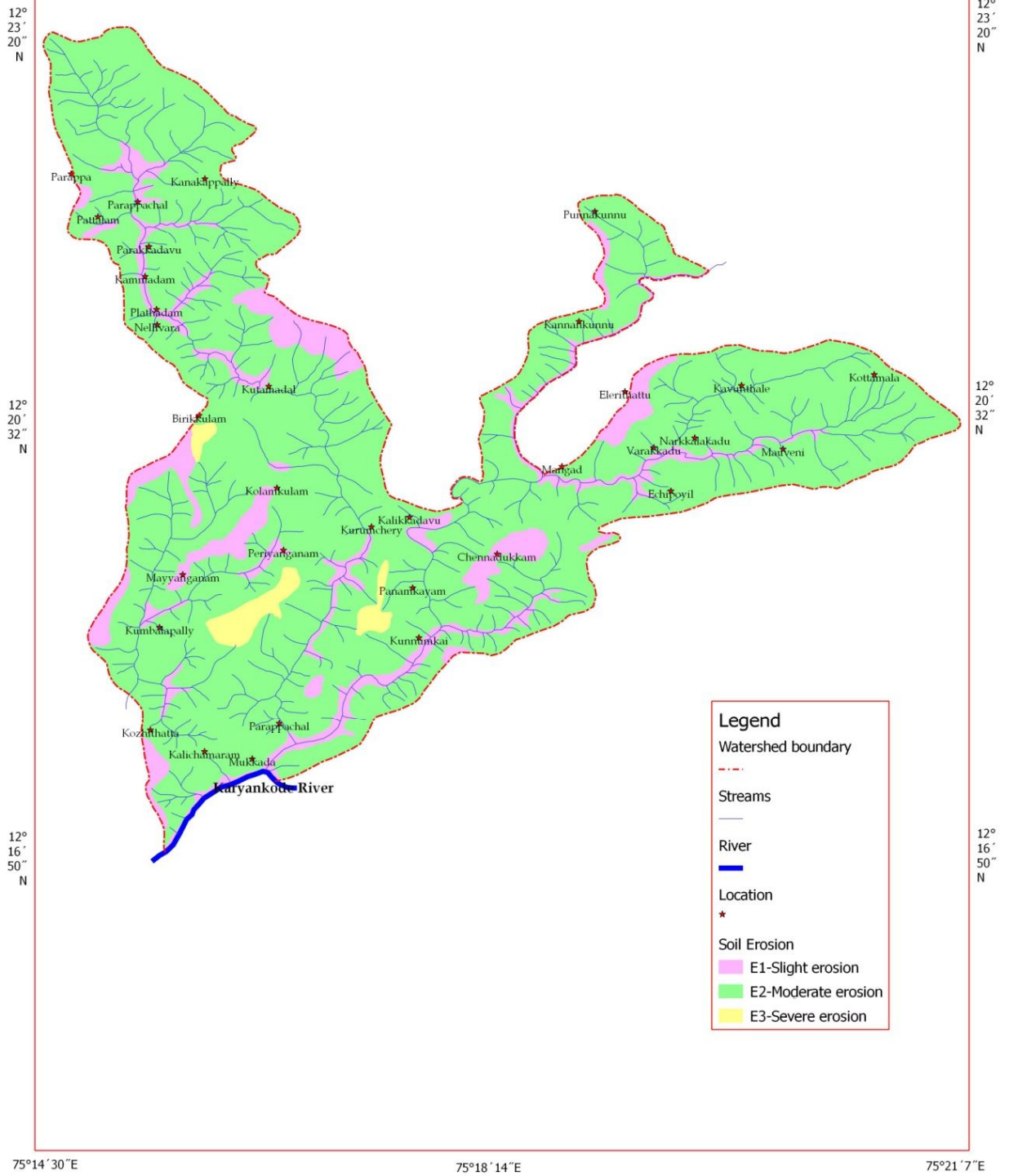
75°21'7"E

**Integrated Watershed Management Programme (IWMP)**  
**Project -IWMP-4**  
**Parappa Block Panchayath**  
**Kasaragod District**



**Soil Erosion Map**

Total Area - 5471 Ha  
 Effective Area - 5133 Ha



75°14'30"E

75°18'14"E

75°21'7"E



75°14'30"E

75°18'14"E

75°21'7"E

**Integrated Watershed Management Programme (IWMP)  
Project -IWMP-4  
Parappa Block Panchayath  
Kasaragod District**



1:45000

**Drainage Map**

Total Area - 5471 Ha  
Effective Area - 5133 Ha

12°  
23'  
20"  
N

12°  
23'  
20"  
N

12°  
20'  
32"  
N

12°  
20'  
32"  
N

12°  
16'  
50"  
N

12°  
16'  
50"  
N

75°14'30"E

75°18'14"E

75°21'7"E

**Legend**

Watershed boundary



Streams



River



Karyankode River

75°14'30"E

75°18'14"E

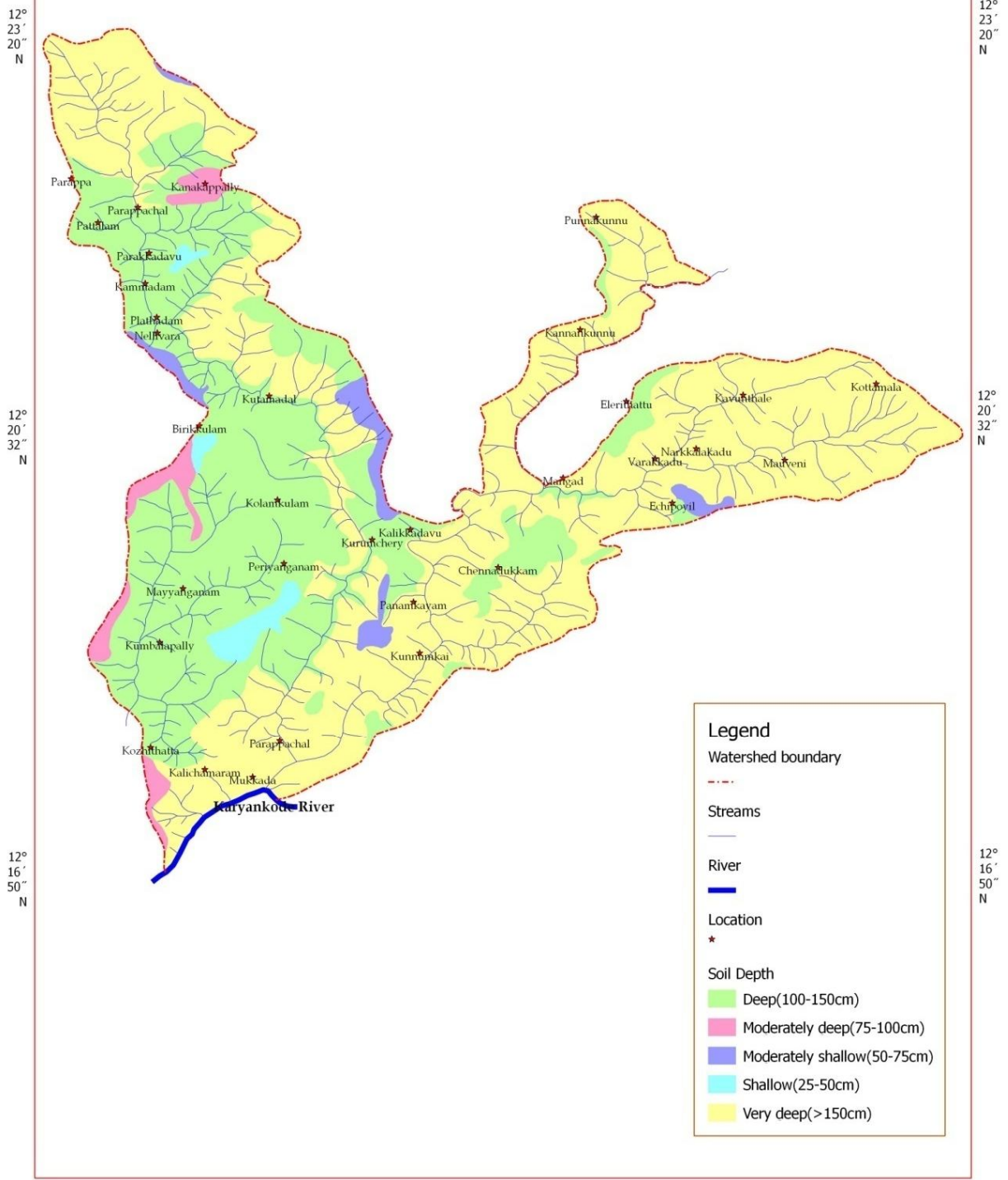
75°21'7"E

**Integrated Watershed Management Programme (IWMP)  
Project -IWMP-4  
Parappa Block Panchayath  
Kasaragod District**



**Soil Depth Map**

Total Area - 5471 Ha  
Effective Area - 5133 Ha



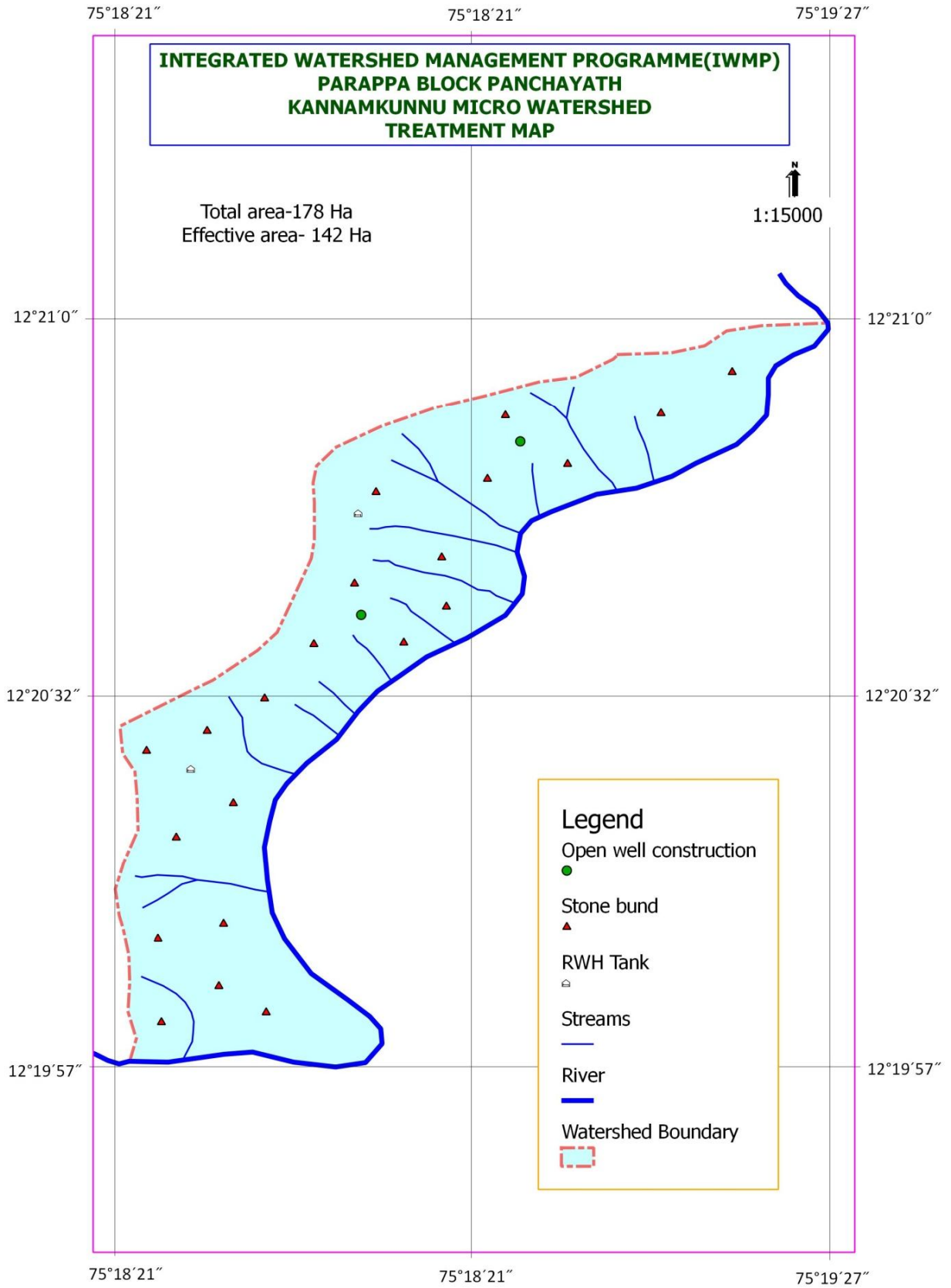
**Legend**

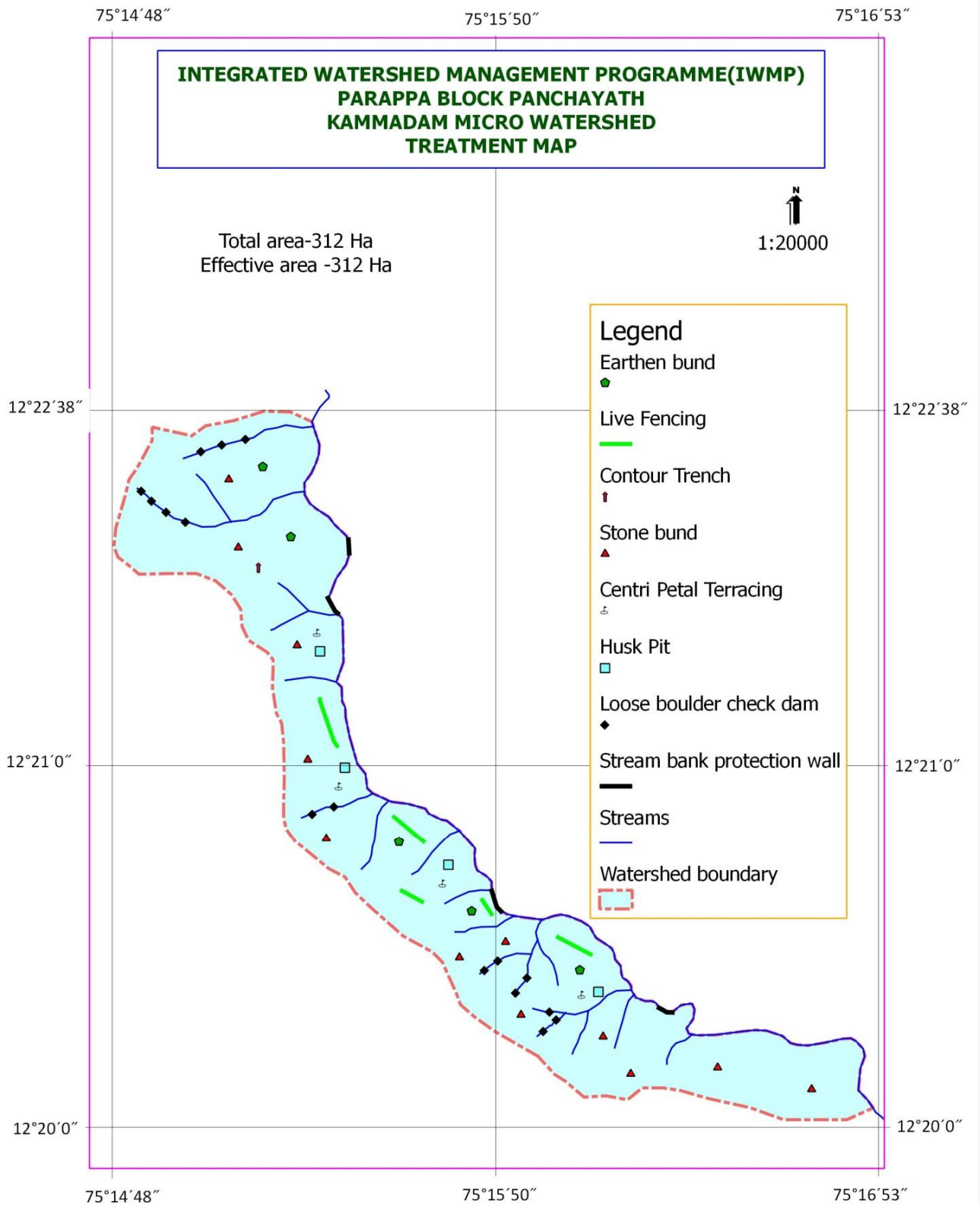
- Watershed boundary
- Streams
- River
- Location \*
- Soil Depth
  - Deep(100-150cm)
  - Moderately deep(75-100cm)
  - Moderately shallow(50-75cm)
  - Shallow(25-50cm)
  - Very deep(>150cm)

75°14'30"E

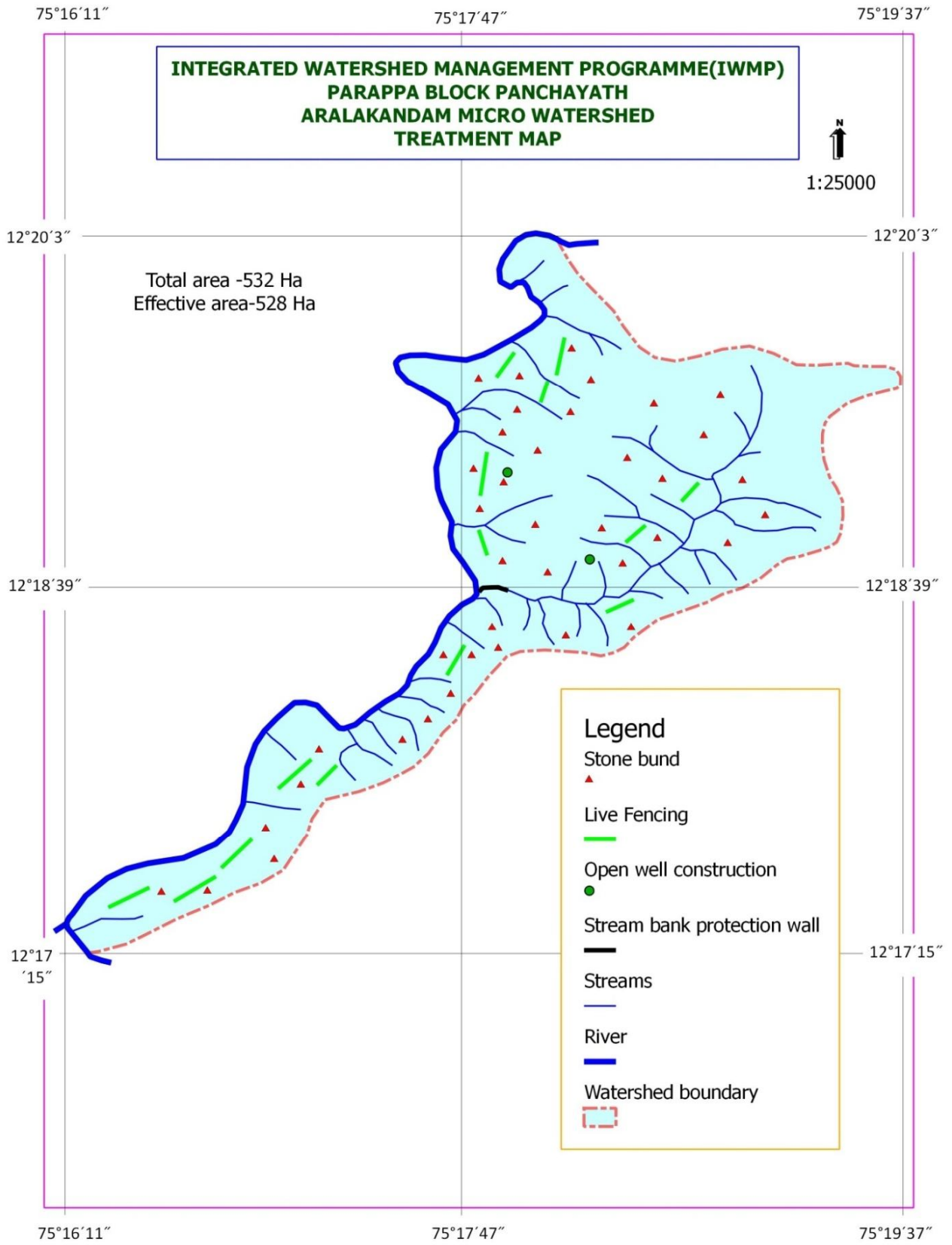
75°18'14"E

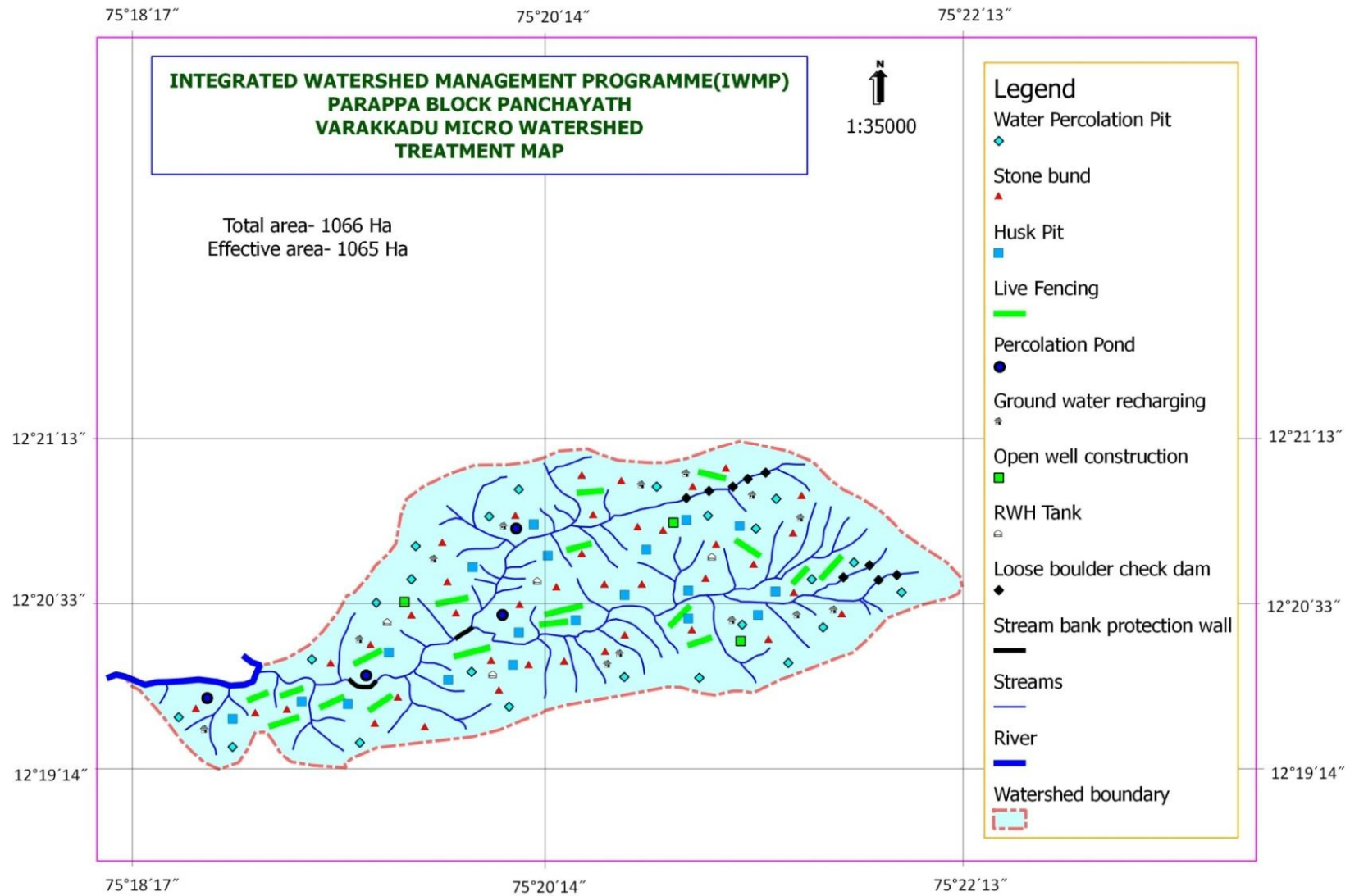
75°21'7"E

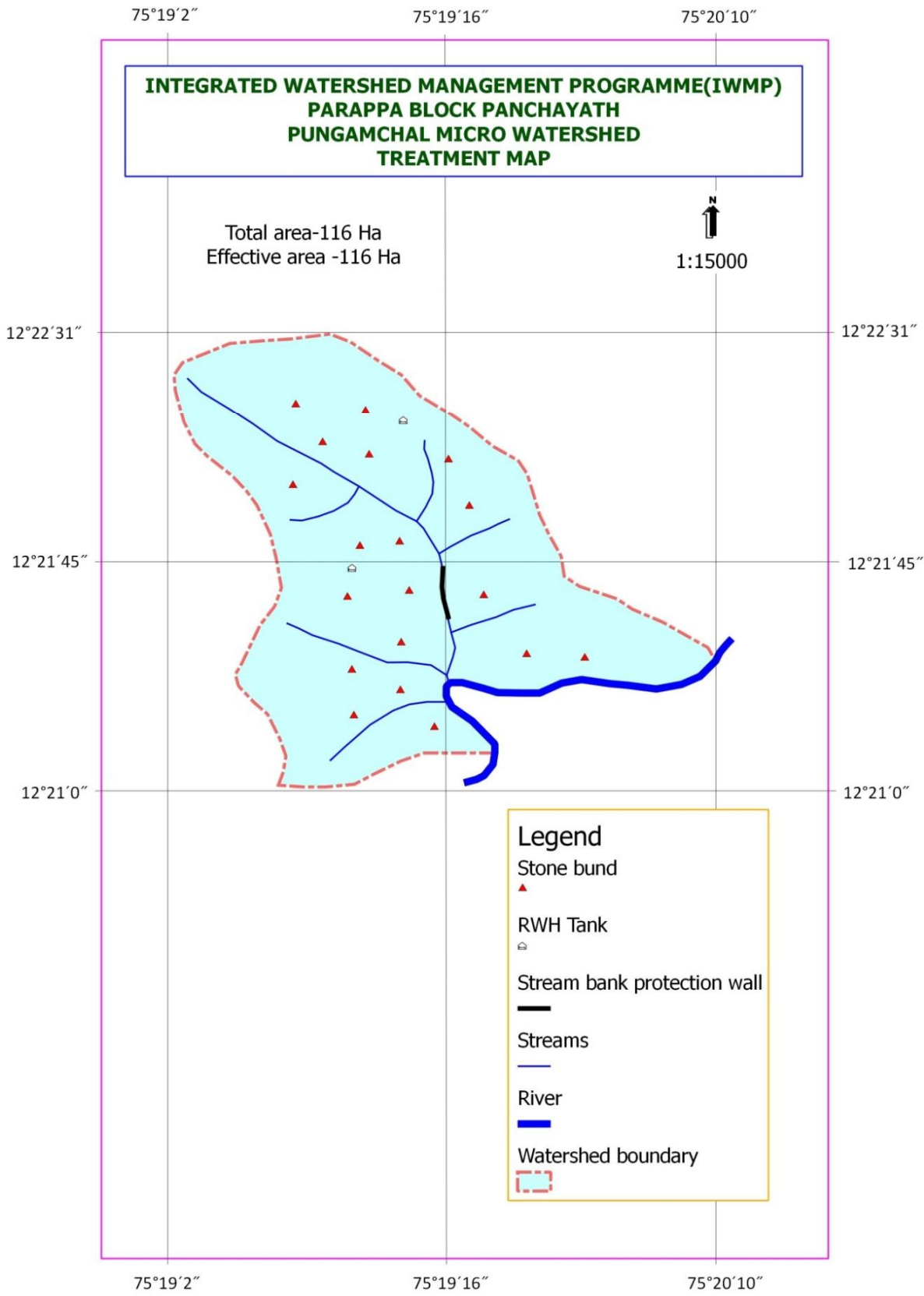


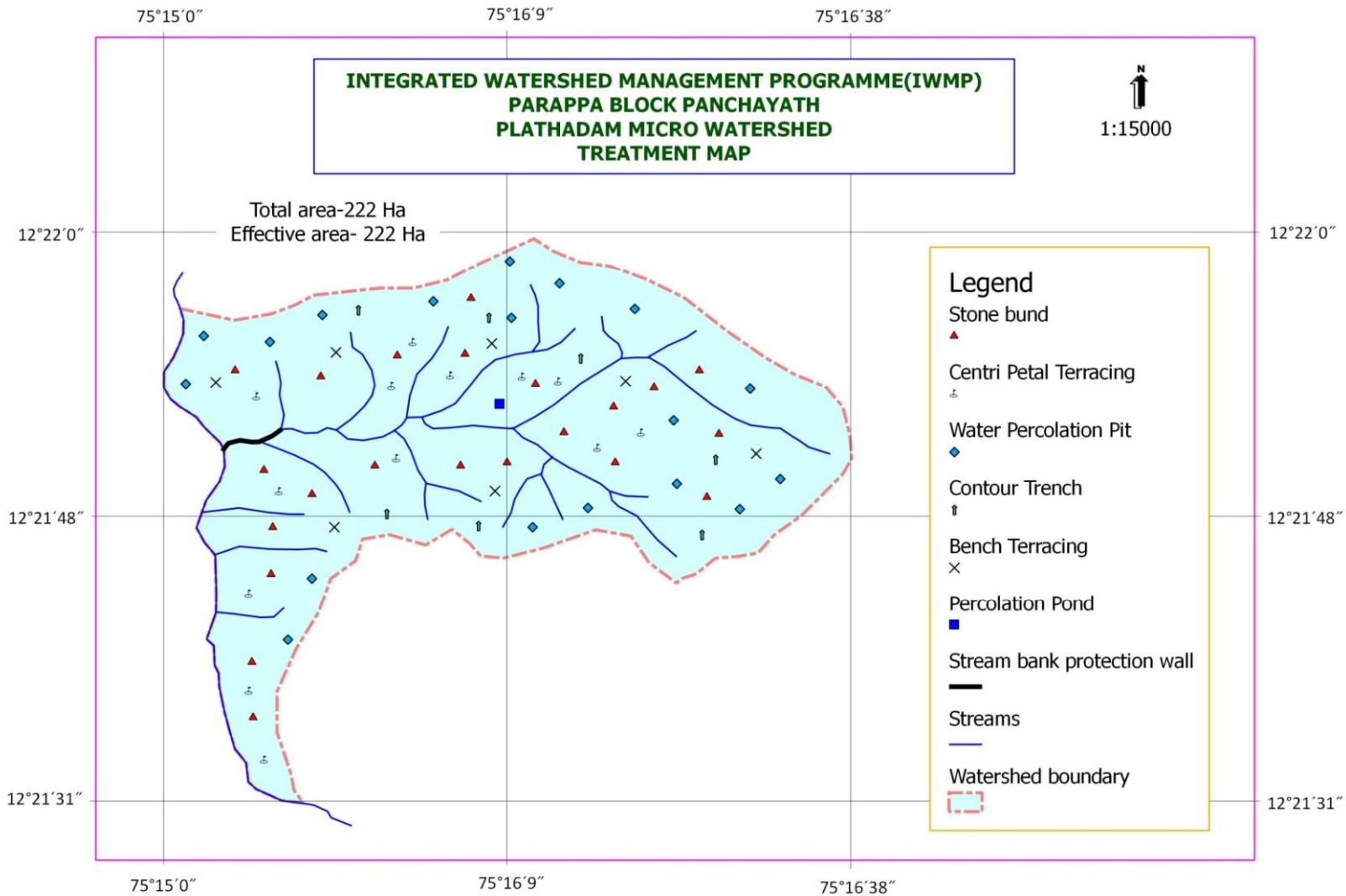


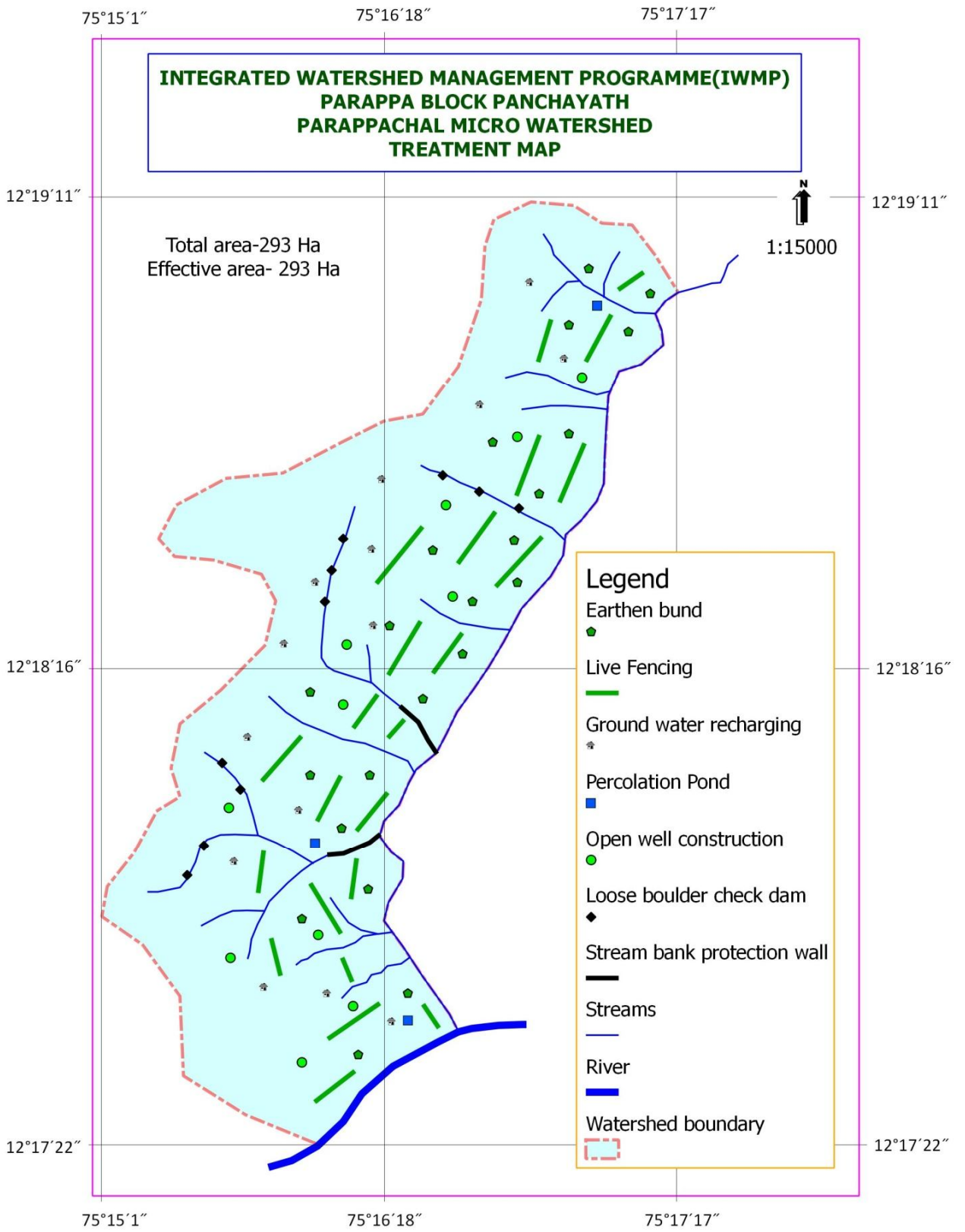


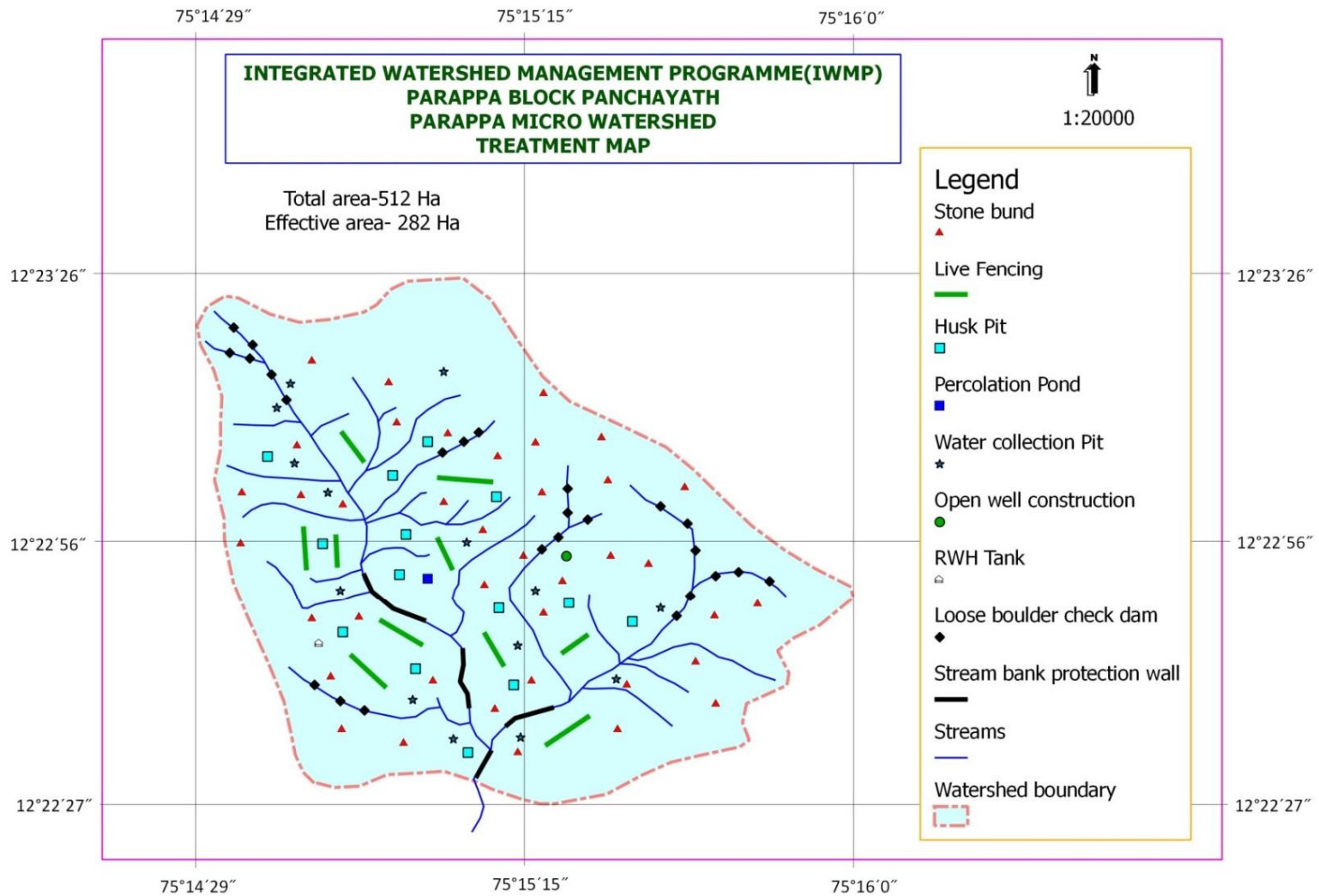




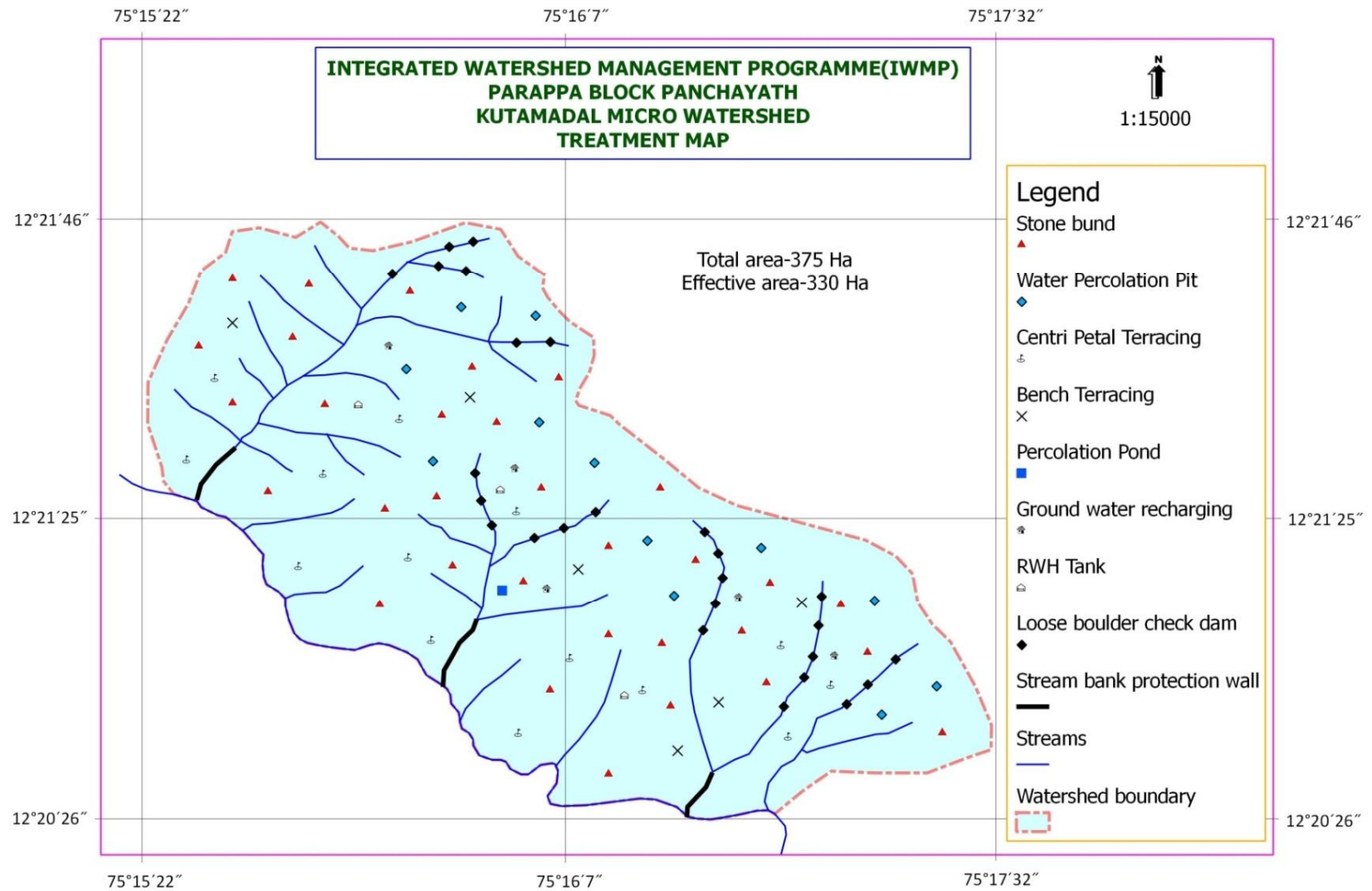


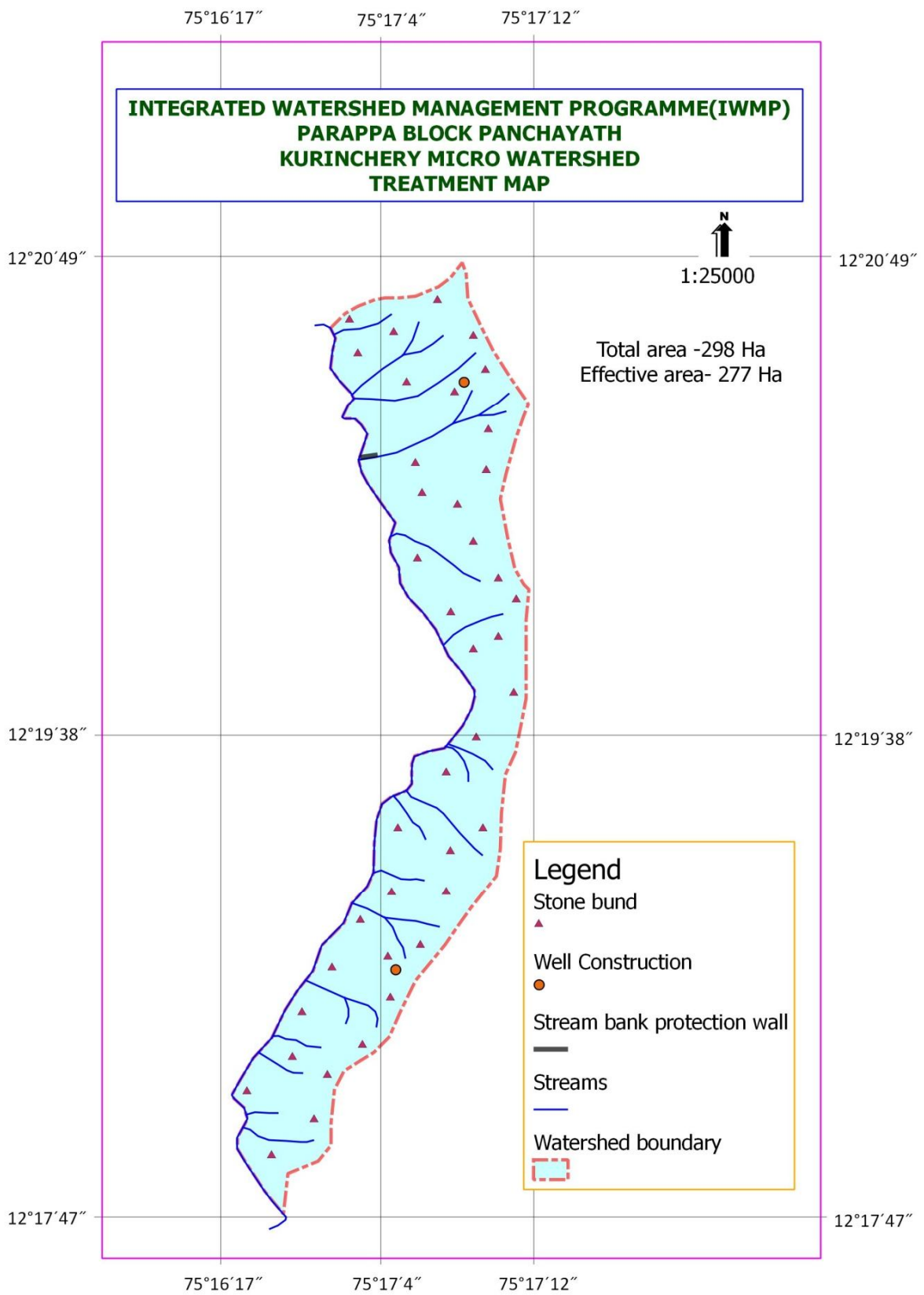




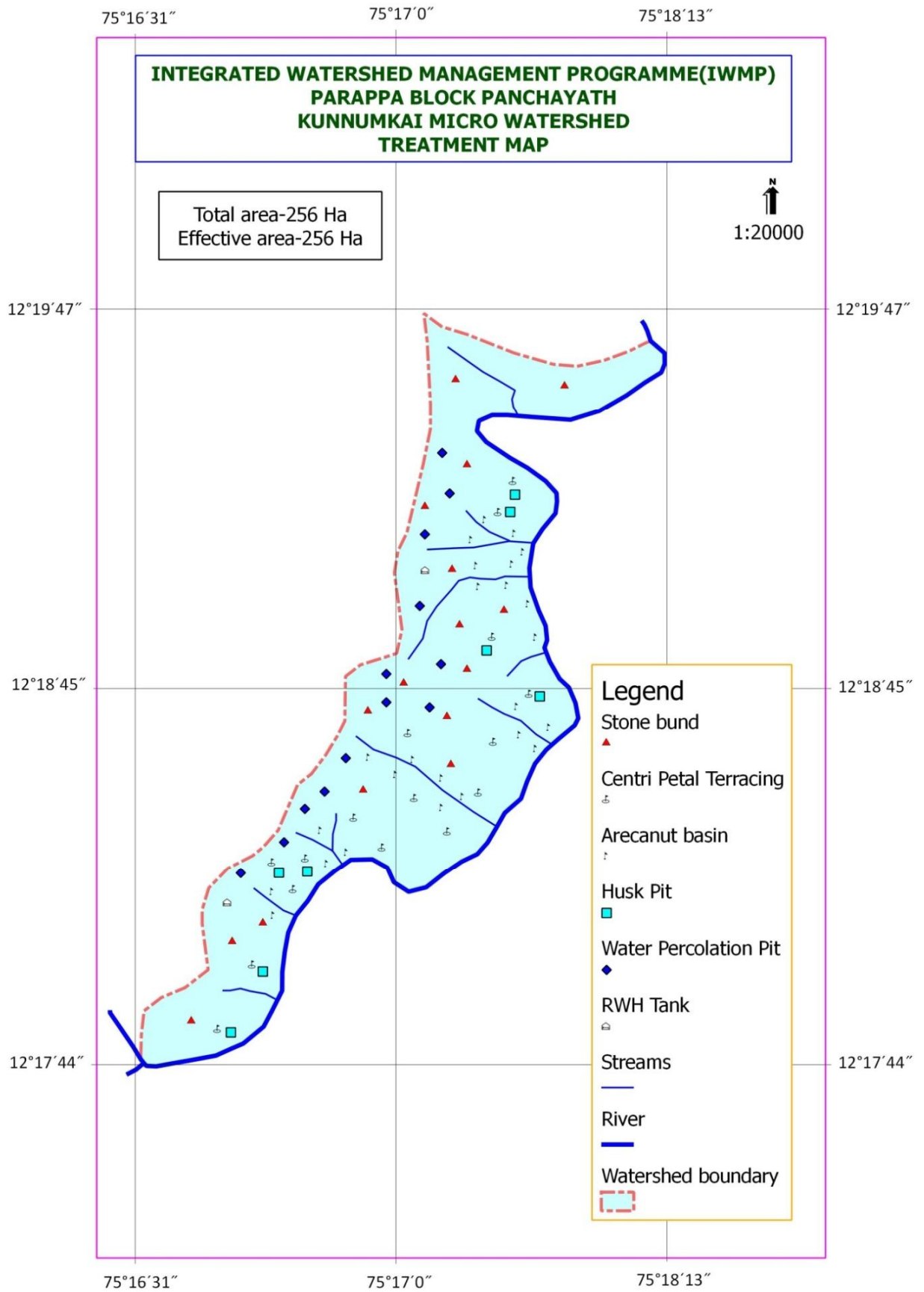


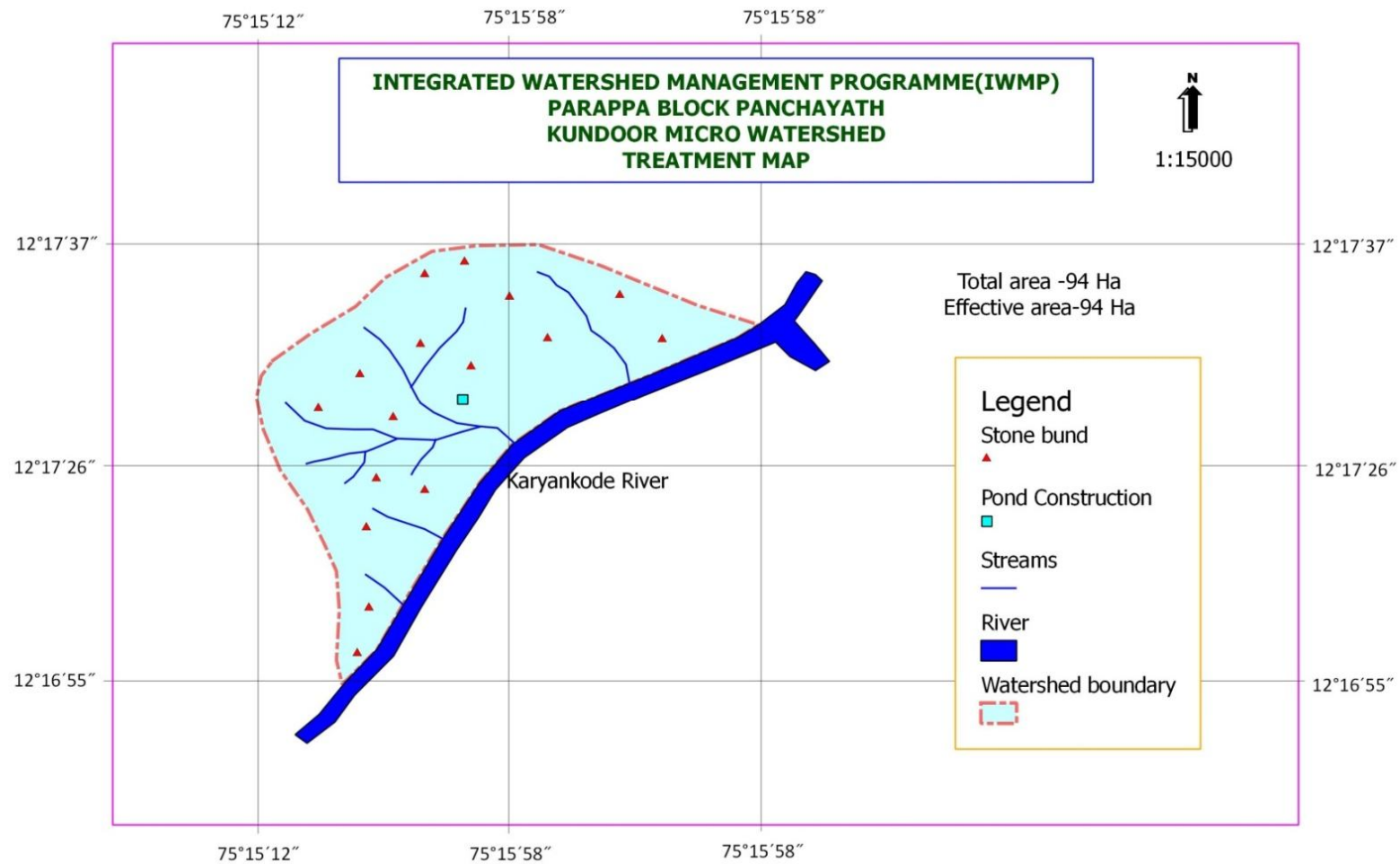


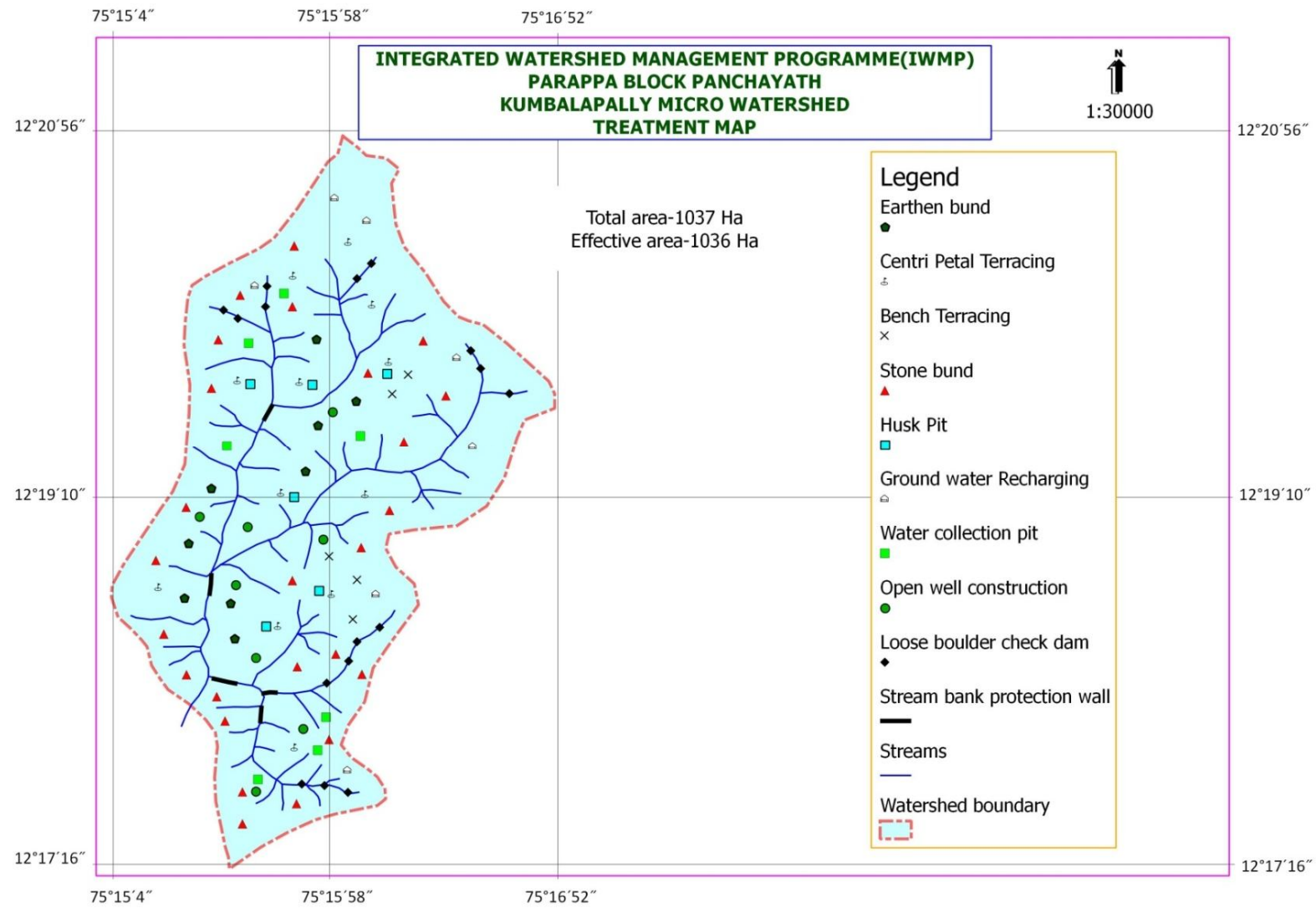


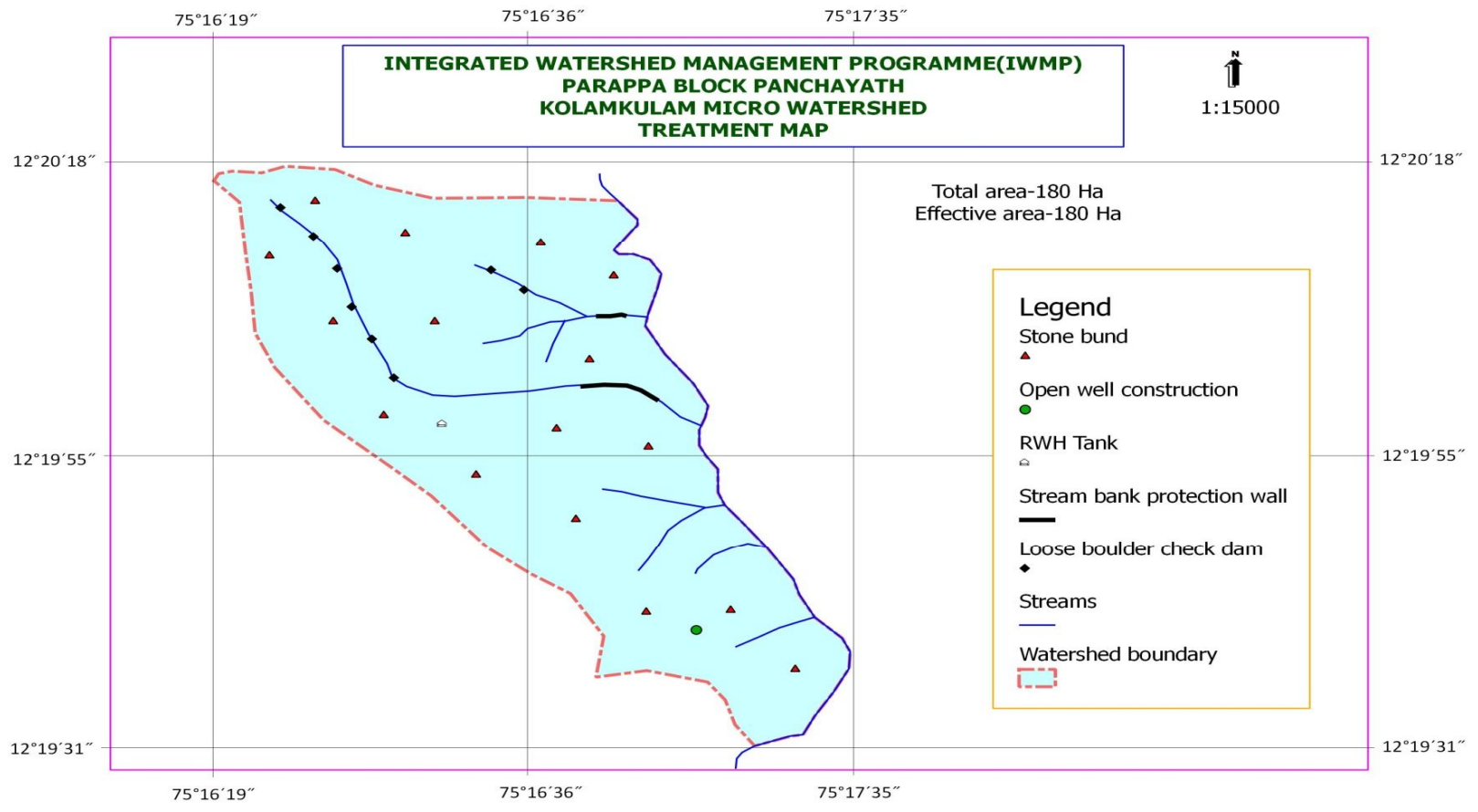










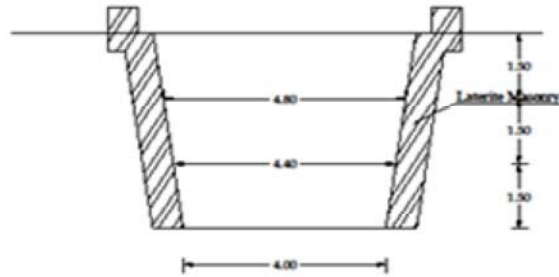


## Detailed Estimate for Proposed EPA Activities

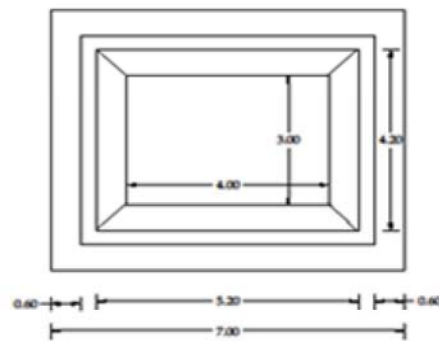
### Proposed Pond (EPA) at Parappachal Micro Watershed (Chenattadi).

Sl. no	Description of work	No	Length	Breadth	Depth/Height	Qty	Rate	Total Amount
1	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.							
	Initial depth	1	(6.40+6.00)/2	(5.40+5.00)/2	1.50	48.36		
								<b>9981.84</b>
								<b>Say 48.36m<sup>3</sup> @ Rs 2064.07/10m<sup>3</sup></b>
2	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50 - 3m including neat banking.							
	First depth	1	(6.00+5.60)/2	(5.00+4.60)/2	1.50	41.76		
								<b>9249.30</b>
								<b>Say 41.76 m<sup>3</sup> @ Rs 2214.87/10m<sup>3</sup></b>
3	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 3m - 4.5m including neat banking.							
	Second depth	1	(5.60+5.2)/2	(4.60+4.2)/2	1.50	35.64		
								<b>8431.25</b>
								<b>Say 35.64 m<sup>3</sup> @ Rs 2365.67/10m<sup>3</sup></b>
4	Bailing out of water using 5HP engine and pumpset including conveyance to site and erection of fuel lubricating oil etc ( Deduct for each not working hours @ Rs 53.47/h)							
								<b>6974.35</b>
								<b>Say 5 days @ Rs 1394.87/day</b>
8	Laterite masonry in cement mortar 1:6 including cost of all materials, labour charges etc completed							
	For foundation and superstructure							
		2	(6.40+6.00)/2	0.60	1.50	11.16		
		2	(4.20+3.80)/2	0.60	1.50	7.20		
		2	(6.00+5.60)/2	0.60	1.50	10.44		
		2	(3.80+3.40)/2	0.60	1.50	6.48		
		2	(5.60+5.20)/2	0.60	1.50	9.72		
		2	(3.40+3.00)/2	0.60	1.50	5.76		
	Parapet	1	22.40	0.60	1.50	20.16		
								<b>70.92</b>
								<b>Say 70.92m<sup>3</sup> @ Rs.3427.23/m<sup>3</sup></b>
								<b>243059.15</b>
9	Plastering with cement mortar 1:3 mix 12mm thick floated hard and truvelled smooth including, labour charge, conveyance etc completed							
	Parapet outside	1	26.00		0.60	15.60		
	Parapet inside	1	21.20		0.60	12.72		
	Top portion	1	30.40	0.60		18.24		
								<b>46.56</b>
								<b>Say 46.56 m<sup>2</sup> @ Rs.1904.00/10m<sup>2</sup></b>
								<b>8865.02</b>
								<b>Grand Total 286561</b>

**Drawing of the proposed pond -  
Parappachal micro watershed  
(Chenattadl)**



**Cross section**



**Plan**

**Proposed Pond (EPA) at Kundoor Micro Watershed (Mukkada).**

Sl no	Description of work	No	Length	Breadth	Depth/Height	Qty	Rate	Amount
	Pond Renovation	1	7.00	4.00	7.20	1.50		
1	Increasing the size of the pond for enhancing the storage capacity. Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.							

Initial depth	1	8.20	0.60	7.60	1.50	7.38	
	1	16.20	0.60		1.50	14.58	
				Total		21.96	
				<b>Say 21.96 @ Rs2064.07 /10m3</b>			<b>4532.70</b>
2	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.						
First depth	1	8.20	0.60	7.40	1.50	7.38	
	1	16.20	0.60		1.50	14.58	
				Total		21.96	
				<b>Say 21.96 @ Rs 2214.87 /10m3</b>			<b>4863.85</b>
	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.						
Second Depth	1	8.2	0.6		1.5	7.38	
						<b>7.38</b>	
				<b>Say 7.38 @ Rs2365.67 /10m3</b>			<b>1745.86</b>
	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.						
third Depth	1	8.2	0.6		1.5	7.38	
						<b>7.38</b>	
				<b>Say 7.38 @ Rs 2516.47 /10m3</b>			<b>1857.15</b>
	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.						
Fourth Depth	1	8.2	0.6		1.5	7.38	
						<b>7.38</b>	
				<b>Say 7.38 @ Rs 2667.27 /10m3</b>			<b>1968.45</b>
	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.						
Fifth Depth	1	8.2	0.6		1.5	7.38	
						<b>7.38</b>	
				<b>Say 7.38 @ Rs 2818.07 /10m3</b>			<b>2079.74</b>
3	Bailing out of water using 5HP engine and pump set including conveyance to site and erroction of fuel lubricatig oil etc ( Deduct for each not working hours @ Rs 53.47/h						
				<b>Say 3days @ Rs 1118.37/day</b>			<b>3355.11</b>
4	Cement concrete 1:4:8 using 20mm thick (normal size) broken stone for re-inforced concrete work						
Top	4	8.20	0.60		0.15	2.95	
	1	16.20	0.60		0.15	1.46	
						4.41	
				<b>Say 4.41 m3 @ Rs 5746 /m3</b>			<b>25339.86</b>
5	Laterite masonry in cement mortar 1:6 including cost of all materials labour charges etc						

completed

For foundation & Superstructure

1	8.20	0.60	7.40	36.40
1	16.20	0.60	2.85	27.70
Total				64.10

**Say 64.10 m3 @ Rs 3427.23/m3**

**219692.30**

- 6 Plastering with cement mortar 1:3 mix 12mm thick floated hard and truvelled smooth including, labour charge, convynce etc completed

Parapet inside	1	8.20	1.00	8.20
	1	16.20	1.00	16.20
				24.40

**Total**

**Say 24.40 m2 @ Rs 1904.00/10m2**

**4645.76**

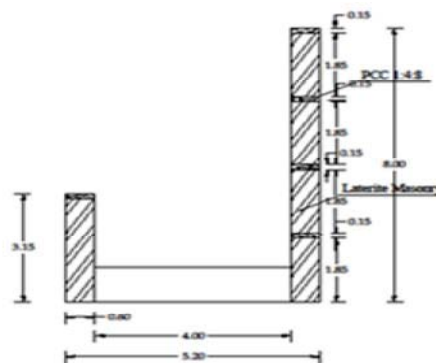
Unfor seen Item

**2570.42**

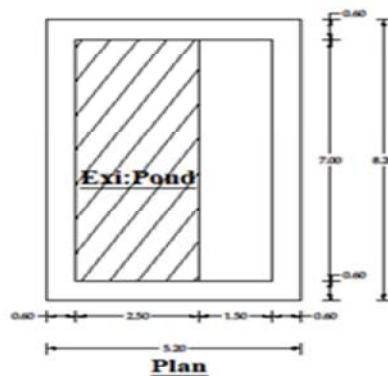
**Grand Total**

**265000.00**

**Drawing of the pond rennovation at Kudoor Micro watershed (Mukkada)**



**Cross section**



**Plan**



### **Proposed Pond (EPA) at Kumbalapalli Micro Watershed (Periyanganam).**

Sl no	Description of work	No	Length	Breadth	Depth/Height	Qty	Rate	Amount	
	Pond Renovation	1	8.00	7.20	7.20	4.50			
1	Increasing the size of the pond for enhancing the storage capacity. Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.								
	First depth	1	8.40	7.60	7.60	0.80	51.07		
					Total		51.07		
			<b>Say 51.07 @ Rs2214.87 /10m3</b>						<b>11311.34</b>
2	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.								
	second depth	1	8.20	7.40	7.40	1.50	91.02		
					Total		91.02		
			<b>Say 91.02 @ Rs 2365.67 /10m3</b>						<b>21532.33</b>
3	Bailing out of water using 5HP engine and pumpset including conveyance to site and erroction of fuel lubricatig oil etc ( Deduct for each not working hours @ Rs 53.47/h								
			<b>Say 3days @ Rs 1118.37/day</b>						<b>3355.11</b>
4	Cement concrete 1:4:8 using 20mm thick (normal size) broken stone for re-inforced concrete work								
	Top	1	32.00	0.40		0.10	1.28		
		1	31.20	0.40		0.10	6.06		
		1	30.40	0.40		0.10	1.21		
		1	8.40	0.40		0.10	0.33		
							8.88		
			<b>Say 8.88 m3 @ Rs 5746 /m3</b>						<b>51024.48</b>
5	Laterite masonry in cement mortar 1:6 including cost of all materials labour charges etc completed For foundation & Superstructure								
		1	32.00	0.40		1.40	17.92		
		1	31.20	0.40		1.40	17.47		
		1	30.40	0.40	1.40	1.40	17.02		
	Parapet	1	25.20	0.20		0.60	3.02		
	Parapet	1	8.40	0.40		1.00	3.36		
	Parapet	1	8.80	0.20		0.90	1.58		
			Total				60.38		
			<b>Say 60.38 m3 @ Rs 3427.23/m3</b>						<b>206949.86</b>
6	Plastering with cement mortar 1:3 mix 12mm thick floated hard and truwelled smooth including, labour charge, conveyance etc completed								
	Parapet inside	1	24.40			0.60	14.64		
		1	7.60			1.10	8.36		
		1	8.00			0.90	7.20		

Parapet outside	1	25.60		0.60	15.36
Top portion	1	24.80	0.20	0.20	4.96
<b>Total</b>					<b>50.52</b>

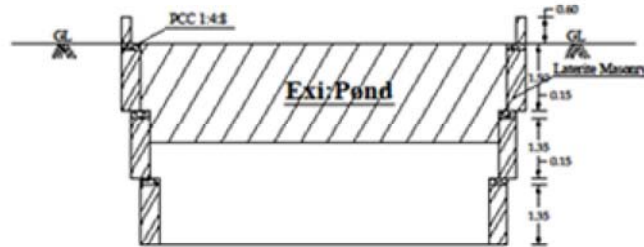
Say 50.52 m2 @ Rs 1904.00/10m2

Unfoseen Item

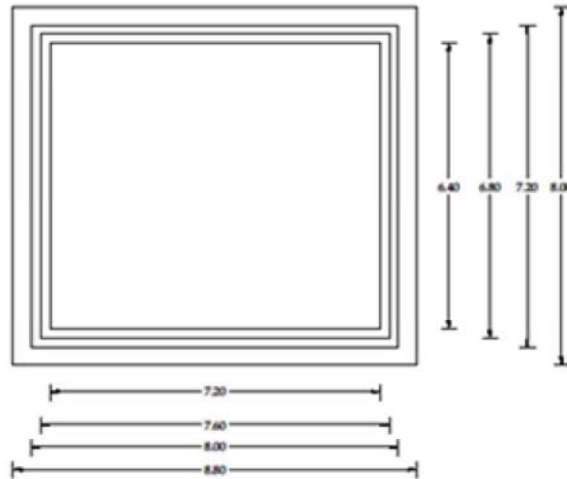
**Grand Total**

**9619.01**  
**6207.88**  
**310000.00**

**Drawing of the pond rennovation at  
Kumbalapalli Micro watershed  
(Periyanganam)**



**Cross section**



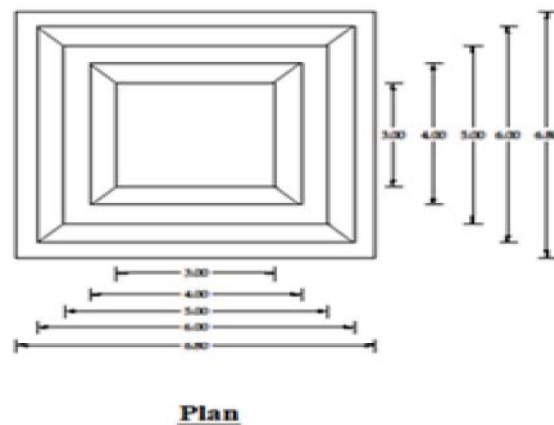
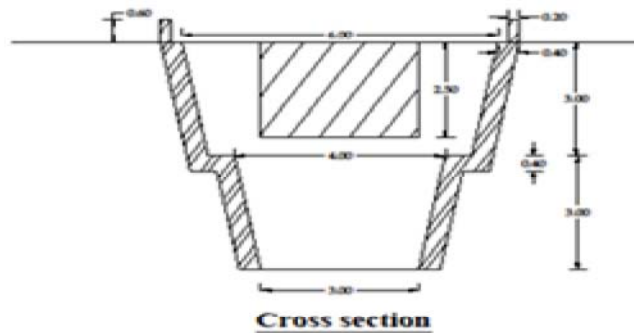
**Plan**

## Proposed Pond (EPA) at Varakkad Micro Watershed (Near Ayyappa Temple-Mouveni)

Sl no	Description of work	No	Length	Breadth	Depth/Height	Qty	Rate	Total Amount
1	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.							
	Initial depth	1	(6.80+6.30)/2	(6.80+6.30)/2	1.50	64.35		
	Deduct		3.00	3.00	1.50	13.50		
						50.85		
	<b>Say 50.85 m3 @ Rs 2064.07/10m3</b>							<b>13283.06</b>
2	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50 - 3m including neat banking.							
	First depth	1	(6.30+5.80)/2	(6.30+5.80)/2	1.50	54.90		
	Deduct	1	3.00	3.00	1.00	8.00		
						46.90		
	<b>Say 46.90 m3 @ Rs 2214.87/10m3</b>							<b>12160.47</b>
3	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 3m - 4.5m including neat banking.							
	Second depth	1	(5.80+5.68)/2	(5.80+5.68)/2	0.40	13.18		
								<b>3117.73</b>
	<b>Say 13.18 m3 @ Rs 2365.67/10m3</b>							<b>3117.73</b>
4	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 3m - 4.5m including neat banking.							
	Second depth	1	(5.68+4.30)/2	(5.68+4.30)/2	1.50	37.35		
								<b>8835.81</b>
	<b>Say 37.35 m3 @ Rs 2365.67/10m3</b>							<b>8835.81</b>
5	Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 3m - 4.5m including neat banking.							
	Third depth	1	(4.30+3.80)/2	(4.30+3.80)/2	1.50	24.60		
								<b>6191.46</b>
	<b>Say 24.60 m3 @ Rs 2516.47/10m3</b>							<b>6191.46</b>
6	Bailing out of water using 5HP engine and pumpset including conveyance to site and erroction of fuel lubricatig oil etc ( Deduct for each not working hours @ Rs 53.47/h)							
								<b>6974.35</b>
	<b>Say 5 days @ Rs 1394.87/day</b>							<b>6974.35</b>
7	Laterite masonry in cement mortar 1:6 including cost of all materials, labour charges etc completed For foundation and superstructure							
		4	(6.40+5.90)/2	0.40	1.50	14.76		
		4	(5.90+5.40)/2	0.40	1.50	13.56		
		4	(5.80+5.68)/2	0.40	1.50	13.78		
		4	(5.68+4.30)/2	0.40	1.50	11.98		
		4	(4.30+3.80)/2	0.40	1.50	9.72		
	Parapet	1	25.00	0.20	0.60	3.00		

		<b>Total</b>		<b>66.79</b>	
		<b>Say 66.79m<sup>3</sup> @ Rs.3427.23/m<sup>3</sup></b>			<b>228911.55</b>
8	Plastering with cement mortar 1:3 mix 12mm thick floated hard and truvelled smooth including, labour charge, convyce etc completed				
Parapet outside	1	27.20		0.60	16.32
Parapet inside	1	26.40		0.60	15.84
Top portion	1	26.80	0.60		16.08
		<b>Total</b>		<b>48.24</b>	
	<b>Say 48.24 m<sup>2</sup> @ Rs.1904.00/10m<sup>2</sup></b>				<b>9184.90</b>
	<b>Grand Total</b>				<b>288659.32</b>

**Drawing of the pond rennovation at  
Varakkad Micro Watershed  
(Mouveni)**



## Retaining wall (Type -1)

Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking etc complete

$$\text{Side Cutting} \quad 1 \times 1.00 \times (0.10+0.80)/2 \times 1.25 = 0.56$$

$$\text{Side Cutting} \quad 1 \times 1.00 \times (0.10+1.20)/2 \times 1.25 = 0.81$$

$$\text{Foundation} \quad 1 \times 1.00 \times 1.30 \times 0.60 = \underline{0.78}$$

$$= 2.15$$

**Say 2.15 m<sup>3</sup> @ Rs 2064.07/10m<sup>3</sup>**

**443.77**

Laterite Stone Masonry for foundation and super structure

$$\text{Foundation} \quad 1 \times 1.00 \times 1.00 \times 0.60 = 0.78$$

$$\text{Super Structure} \quad 1 \times 1.00 \times (0.50+0.80) / 2 \times 1.25 = 0.81$$

$$\text{Super Structure} \quad 1 \times 1.00 \times (0.90+1.20) / 2 \times 1.25 = \underline{1.31}$$

$$2.90$$

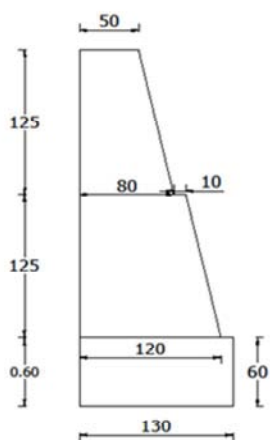
**Say 2.90 m<sup>3</sup> @ Rs 1264.40 /m<sup>3</sup>**

**3666.76**

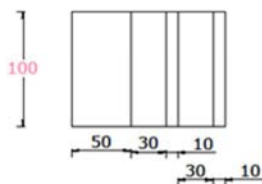
**Total**

**4110.53**

Retaining Wall



SECTION



PLAN

## Retaining wall ( Type 2)

Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking etc complete

$$\text{Side Cutting } 1 \times 1.00 \times (0.10+0.90)/2 \times 2.00 = 1.00$$

$$\text{Foundation } 1 \times 1.00 \times 1.00 \times 0.60 = \underline{0.60}$$

$$= 1.6$$

**Say 1.60 m3 @ Rs 2064.07/10m3**

**330.25**

Laterite Stone Masonry for foundation and super structure

$$\text{Foundation } 1 \times 1.00 \times 1.00 \times 0.60 = 0.60$$

$$\text{Super Structure } 1 \times 1.00 \times (0.50+0.90) / 2 \times 2.00 = \underline{1.40}$$

$$= 2.00$$

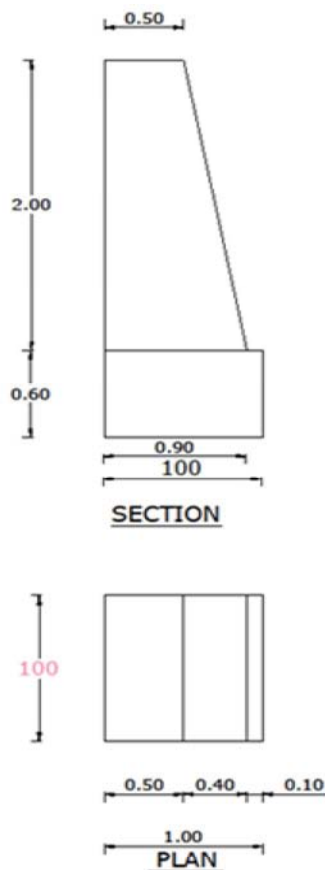
**Say 2.00 m3 @ Rs 1264.40 /m3**

**2528.80**

**Total**

**2859.05**

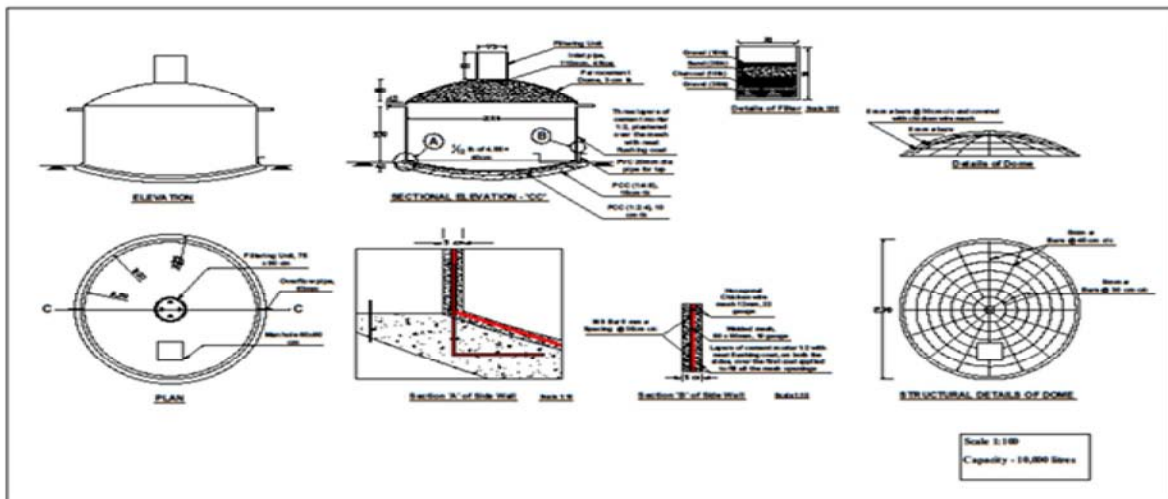
### Retaining Wall



**ROOF WATER HARVESTING STRUCTURE (Ferro-Cement Tank) 10000 Ltr  
Capacity (Ayurveda Hospital Parappa)**

SI No	Description of work	No	Length	Width	Height	Quantity	Amount
1	Earth work excavation in hard soil and depositing bank with initial lead and lift up to 50 m and lift up to 1.50m including all cost of labour charges etc complete.						
	Base of tank	1	3.14x1.575 <sup>2</sup>		0.40	3.42	
	<b>Total</b>					<b>3.42</b>	
	<b>Say 3.42 m<sup>3</sup> @ Rs.2064.07/10m<sup>3</sup></b>						<b>705.80</b>
2	Cement concrete 1:2:4 using 20mm normal size broken stone for the concrete work of base of the tank including all cost of materials conveyance and all labour charges etc complete.						
	foundation footing	1	3.14x1.45 <sup>2</sup>		0.10	0.66	
	<b>Total</b>					<b>0.66m<sup>3</sup></b>	
	<b>Say 660dm<sup>3</sup> @ Rs 64.68/10dm<sup>3</sup></b>						<b>4268.88</b>
3	Cement concrete 1:4:8 using 20mm normal size broken stone for the concrete work of base of the tank including all cost of materials conveyance and all labour charges etc complete.						
	Base of tank	1	3.14x1.45 <sup>2</sup>		0.15	0.99	
	<b>Total</b>					<b>0.99</b>	
	<b>Say 0.99m<sup>3</sup> @ Rs.5746/m<sup>3</sup></b>						<b>5690.13</b>
4	Providing welded mesh in 50x50mm, 10 gauge allorund in the structure, including all cost of materials conveyance and all labour charges etc complete.						
	Alround wall	1	3.14x3.15		1.50	14.83	
	for dome	1	3.14x1.45 <sup>2</sup>		1.10	7.26	
	<b>Total</b>					<b>22.09</b>	
	<b>Say 22.09 m<sup>2</sup> @ Rs.217 /m<sup>2</sup></b>						<b>4793.53</b>
5	Providing and fixing 22gauge checken mesh 2 layers to the entire area of the structure including all cost of materials conveyance and all labour charges etc complete.						
	bottem	1	3.14x2.90		1.10	10.01	
	Wall alround	2	3.14x3.15		1.50	29.67	
	for dome	2	3.14x2.90		1.10	20.03	
	Filter side wall	2	2x3.14x0.60		0.75	5.65	
	cover	2	3.14x0.80		0.30	1.50	
	<b>Total</b>					<b>66.86</b>	
	Deduct centre potrion	1	3.14*.6 <sup>2</sup> /4			0.28	
	<b>Total</b>					<b>66.58</b>	
	<b>Say 66.58 m<sup>2</sup> @ Rs.37/m<sup>2</sup></b>						<b>2463.46</b>
6	Platering with cement mortar 1:3 mix two coat over the entire surface area of the structure , including all cost of materials conveyance and all labour charges etc complete.						
	bottem	1	3.14x1.45 <sup>2</sup>		1.10	7.26	
	side	2	2x3.14x1.45		1.50	27.31	
	for dome	2	3.14x2.90		1.10	20.03	
	Filter side wall	2	2x3.14x0.60		0.75	2.82	
	cover	2	3.14x0.80 <sup>2</sup> /4		0.37	0.37	
	<b>Total</b>					<b>57.79</b>	

		<b>Say 57.79 m<sup>2</sup> @ Rs- 1622.47/10m<sup>2</sup></b>	<b>9376.25</b>
7	Finishing with a neat cement flushing over the plastered surface area including all cost of materials conveyance and all labour charges etc complete.		
	bottem	1      3.14x1.45 <sup>2</sup>	1.10      7.26      7.262035
	side	2      2x3.14x1.45	1.50      27.31      27.318
	for dome	2      3.14x2.30 <sup>2</sup>	1.10      36.54      36.54332
	<b>Total</b>		<b>71.11</b>
		<b>Say 71.11 m<sup>2</sup> @ Rs 327.89/10m<sup>2</sup></b>	<b>2331.63</b>
8	Applying white cement two over the platered surface area including all cost of materials conveyance and all labour charges etc complete.		
	the Quantity same as item no: 5		84.19m <sup>2</sup>
		<b>Say 57.79 m<sup>2</sup> @ Rs 104.44/10m<sup>2</sup></b>	<b>603.56</b>
9	Charges required for installing the pre-cast ferro cement water filter device in position and filling the some with gravel, charcoal and river sand at required height including all charges.		
	<b>LS</b>		<b>1500.00</b>
10	Providing and fixing of best qality 110mm PVC high density plastic half round gutters for collecting rain water with suitable clamps at 1m interval,including supporting adjustable brackets, elbows,stopend etc complete and all labour charges requered for Average length35		
		<b>Say 30 Rm @ Rs.299/m</b>	<b>10465.00</b>
11	Supplying and fixing high density first quality 63mm dia 6 kgf PVC pipes from the roof out let to the Ferrocement tank filter including all charges for fixing in position.		
	Average length		30
		<b>Say 30 Rm @ Rs.72/m</b>	<b>2520.00</b>
	<b>Unforseen item if any</b>		<b>281.76</b>
	<b>TOTAL AMOUNT</b>		<b>45000.00</b>





## DETAILED ESTIMATE FOR PROPOSED NRM ACTIVITIES

### **LIVE FENCING( OBSERVATION DATA)**

SI No.	Description of Work	Qty	Rate	Amount
1	3 Nos of green cutting of glyricedia, muringa or any other easily available vegetative cuttings 1m length having approximate 3 to 7cm dia required to plant at a spacing of 20cm between to two cuttings including conveyance from source to site Green cutting LS	3 nos	3.00/E	9.00
2	Reapers required for cross fencing for stabilization of plants LS	2 nos	1.5/Rm	3.00
3	Cuttings LS	.03kg	30/kg	0.90
4	Coir yarn for tying reapers and planted cuttings Cuttings LS Labour charges for planting the cuttings at a depth of 20cm and filling the holder with earth completing and cross tying the green cutting etc complete. LS	0.04	127.5/kg	5.1
	<b>Total</b>			<b>18</b>

**Rounded Rs: 18/Rm**

This is to Certified that the Observed Data given above is less than that of the prevailing Rate

### **CENTRI PETEL TERRACING**

Earth work excavation in ordinary soil and depositing on bank with initial lead and and lift for forming the circular trench.

$$1 \times 3.14 \times 1.50 \times 1.50 \times 0.15 = 1.059$$

$$\text{Say } 1.05\text{M}^3 @ \text{Rs.}1115.92/10\text{M}^3 = 118.17$$

## **HUSK PIT**

Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking etc complete.

$$2.00 \times 0.80 \times 0.50 = 0.80$$

$$\text{Say } 0.80 \text{ m}^3 \text{ @ Rs } 2064.07/10\text{m}^3 = 165.12$$

Cost of 30 Nos of husk for packing in the pit

$$\text{Say } 30 \text{ nos @ Rs; } 0.65/ \text{ Each} = 19.50$$

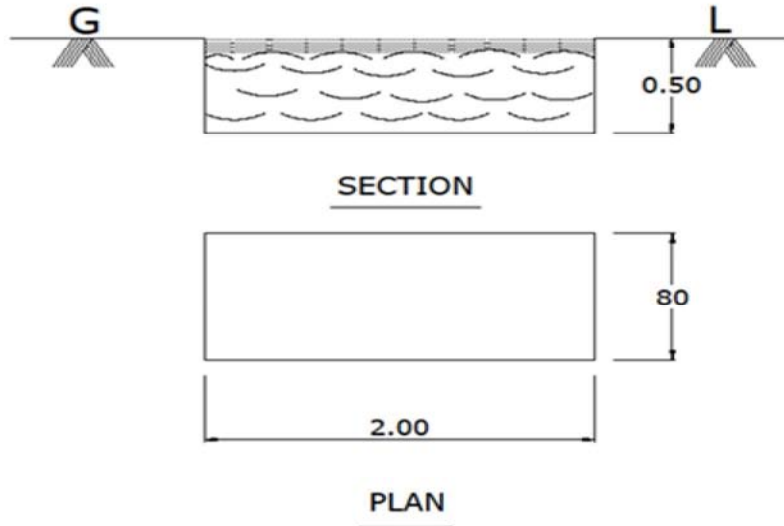
Labour charges for packing the husk and filling the earth on the top portion of the husk packing with an average thickness of 10 cm

$$\text{Say } 0.10 \text{ Man @ Rs; } 377/\text{Each} = 37.70$$

$$\text{Total} = 222.32$$

Observation Data given above is less than that of the prevailing Rate

### HUSK PIT

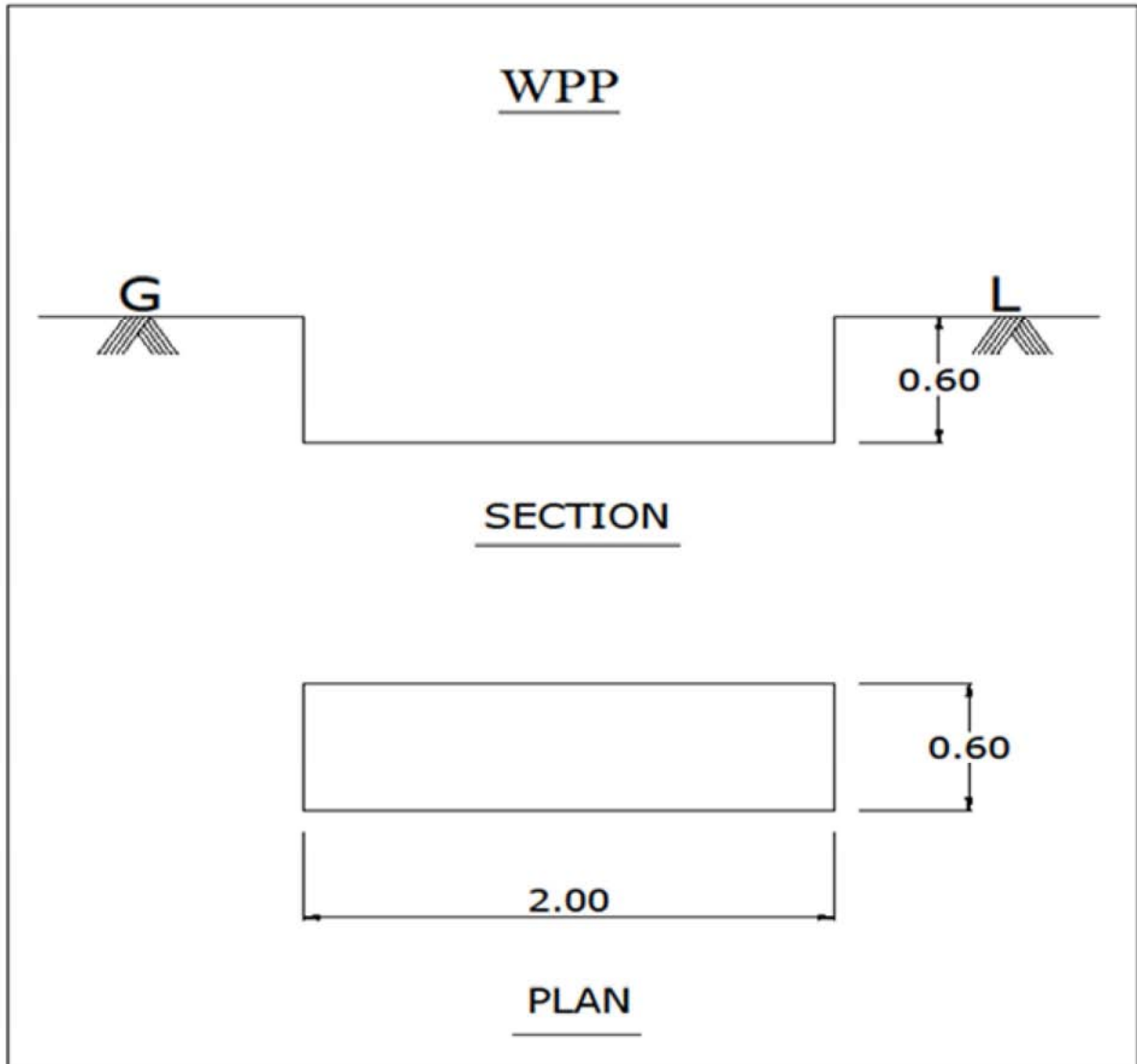


### WATER PERCOLATION PIT (WPP)

Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking etc complete.

$$2.00 \times 0.60 \times 0.60 = 0.72$$

$$\text{Say } 0.72 \text{ m}^3 \text{ @ Rs } 2064.07/10\text{m}^3 = 148.61 / \text{No}$$



### **EARTHEN BUND (EB)**

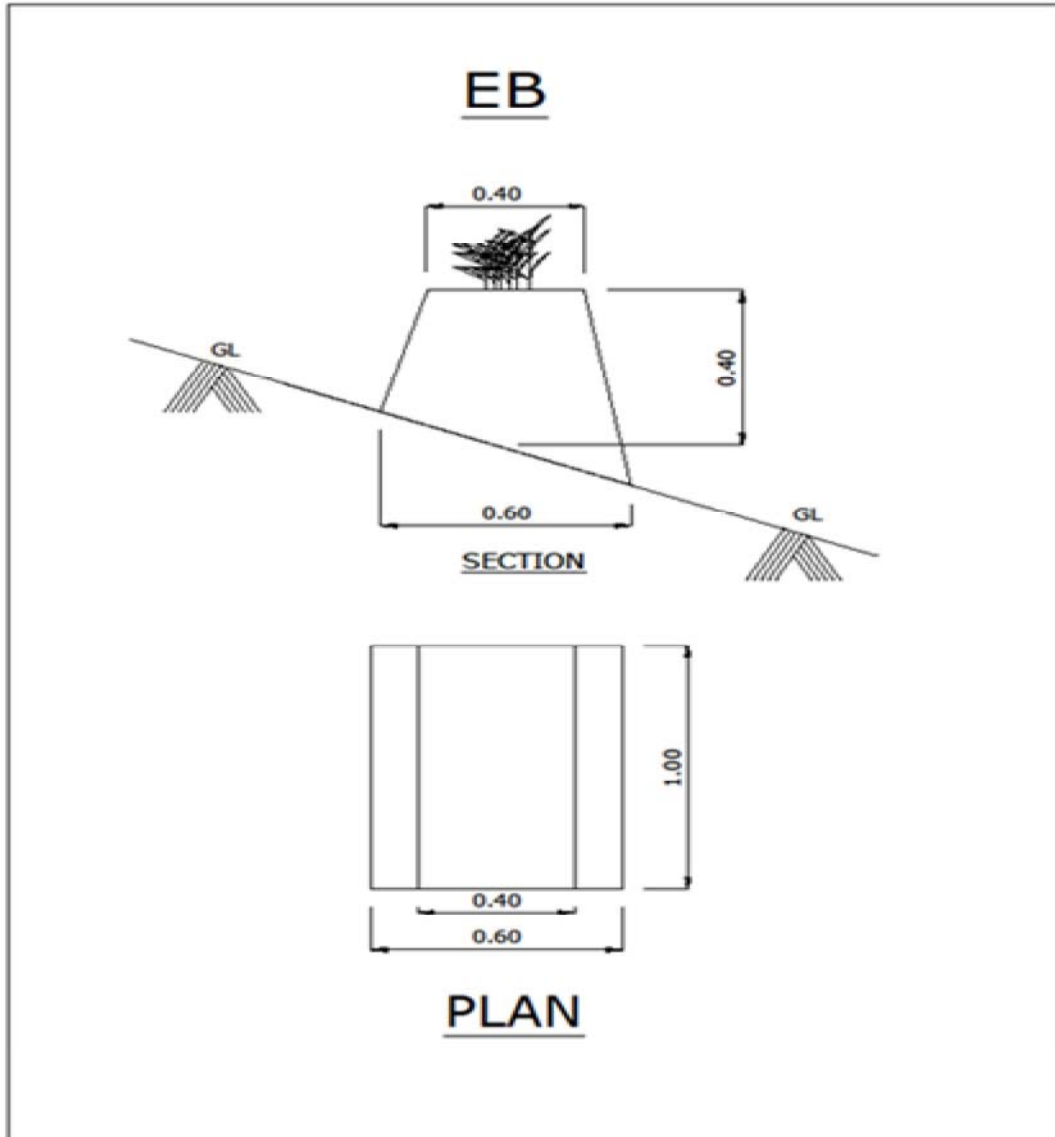
Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking etc complete.

$$1 \times 1.00 \times (0.40+0.60)/2 \times 0.40 = 0.20$$

**Say 0.20m<sup>3</sup> @ Rs 2064.07/10m<sup>3</sup> = 41.28**

Consolidation by ramming in 15cm layering including Watering for forming Earthen bund

	Quantity same as above =	0.20	
	<b>Say 0.20m<sup>3</sup> @ Rs263.90/10m<sup>3</sup></b>	=	<b>5.278</b>
Pineapple sukker planting top side of the bund for reinforcement			
	<b>2 Nos / Rm @ Rs 3.75/no</b>	=	<b>7.5</b>
	<b>Total</b>	=	<b>54.058</b>



### **Contour Trench (CT)**

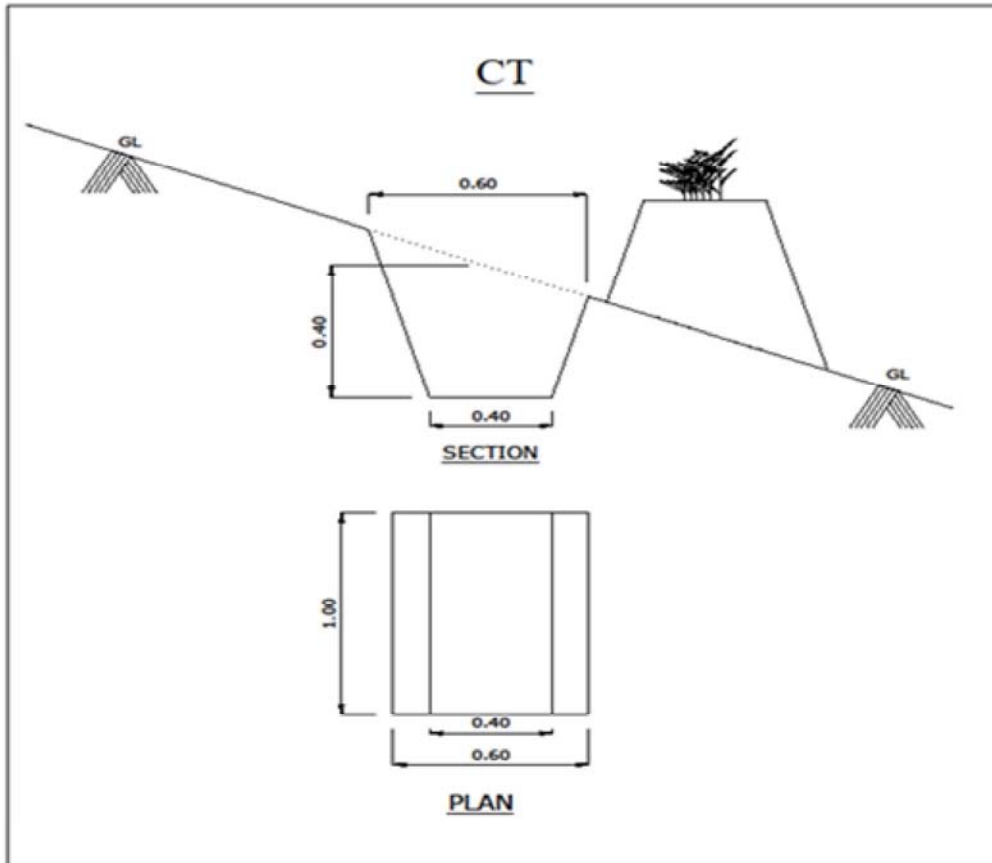
Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking etc complete.

$$1 \times 1.00 \times (0.40+0.60)/2 \times 0.40 = 0.20$$

<b>Say 0.20m<sup>3</sup> @ Rs 2064.07/10m<sup>3</sup></b>	=	<b>41.28</b>
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Consolidation by ramming in 15cm layering including Watering for forming Earthen bund

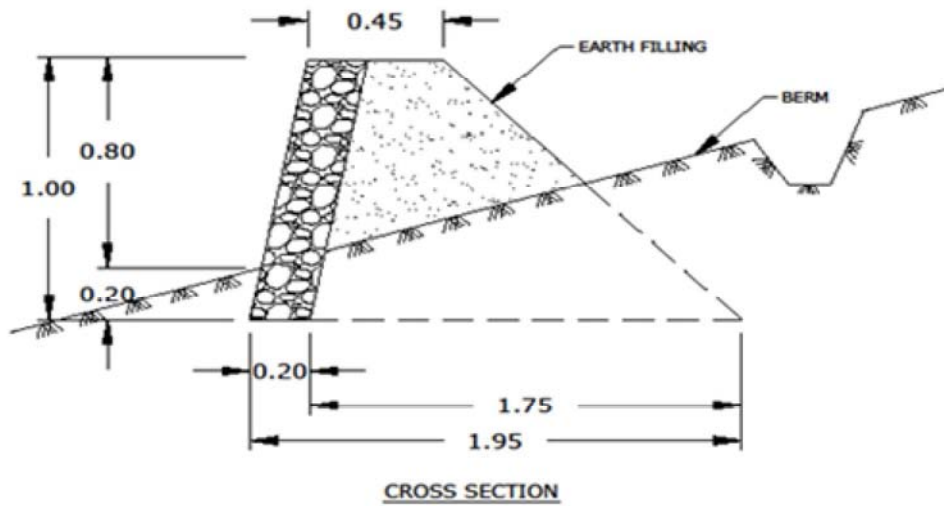
	Quantity same as above =	0.20	
	<b>Say 0.20m<sup>3</sup> @ Rs263.90/10m<sup>3</sup></b>		<b>= 5.278</b>
Pineapple sukker planting top side of the bund for reinforcement			
	<b>2 Nos / Rm @ Rs 3.75/no</b>		<b>= 7.5</b>
	<b>Total</b>		<b>54.058</b>



### **STONE PITCHED BUND (SPB)**

Contour bunding With leading up to 300m quarried dry blasted rubble or laterate boulder , pitching with a slope of 1:3 to 1:5 and each filling on the up hill portion with uniform slope in 1m high and slope width 50cm etc

Man required for 100m contour bund 59.80 x @ Rs 240 = 14352



## BENCH TERRACING

Earth work excavation in hard soil and depositing on bank with initial lead up to 50m. and lift up to 1.5m including neat banking etc. complete.

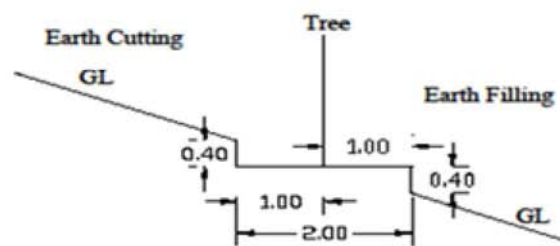
For Cutting

$$1 \times 5 \times 1 \times (0 + 0.4) / 2 = 1.00\text{m}^3$$

Say  $1.00\text{m}^3$  @ RS. 2064.07/10  $\text{m}^3$

206.40

## Terracing



Scale 1:100  
Dimensions in Mtrs

### OBSERVATION DATA

#### **Ground Water Recharging System**

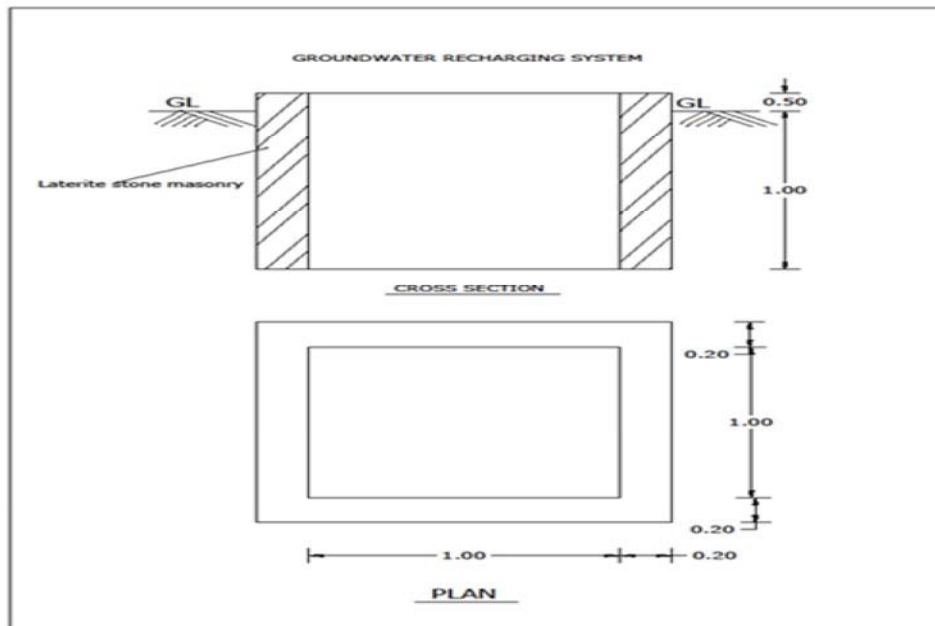
- 1 Earth work excavation in hard soil and depositing on the bank with initial lead upto 50m and lift upto 1.50m including all charges etc completed.

1            1.40            1.40            0.95            1.86



						1.86		
								<b>Say 1.86 m3 @Rs 2064.07/10m3</b>
								<b>383.25</b>
								Laterite masonry in cement mortar 1:6 mix for the side protection wall of the pit including cost of all materials labour charges etc completed
2		1	4.80	0.20	1.00	0.96		
						0.96		
								<b>Say 0.96 m3 @Rs 3427.23/m3</b>
								<b>3290.14</b>
								Supplying and 110 mm PVC gutter pipe (Pathi) of 10 kgf for collecting water from roof including cost and conveyance of all materials and labour charges only
3		1	10.00			10.00		
						10.00		
								<b>Say 5.00Rm @Rs316.70 /Rm</b>
								<b>3167.00</b>
								Supply and fixing 63 mm dia PVC pipe 6kgf/cm2 including all cost of materials labour charges and conveyance etc. complete
4		1	25.00			25.00		
						25.00		
								<b>Say25 Rm @Rs 200/Rm</b>
								<b>5000.00</b>
5	Un For seen item if any							<b>159.61</b>
								<b>Grant Total</b>
								<b>12000.00</b>

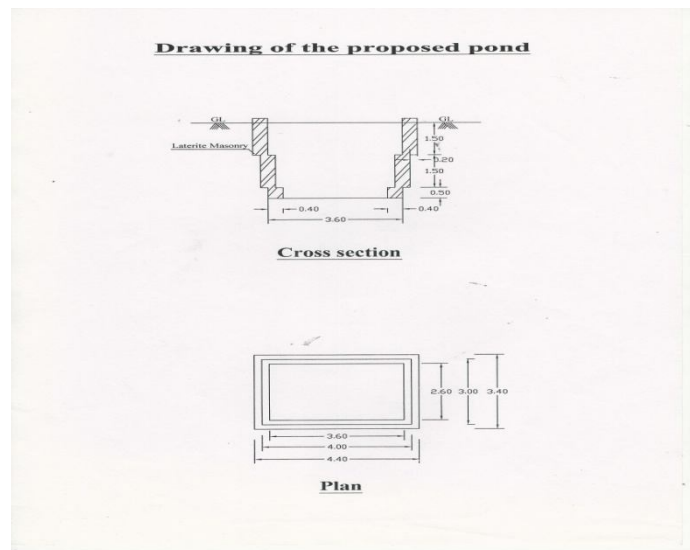
This is to Certified that the Observed Data given above is less than that of the Prevailing Rate



## Farm Pond

SI no	Description of work	No	Length	Breadth	Depth/Height	Quantity	Rate	Total Amount
1	Pond Earth work excavation in hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.	1	4.00	3.00	3.50			

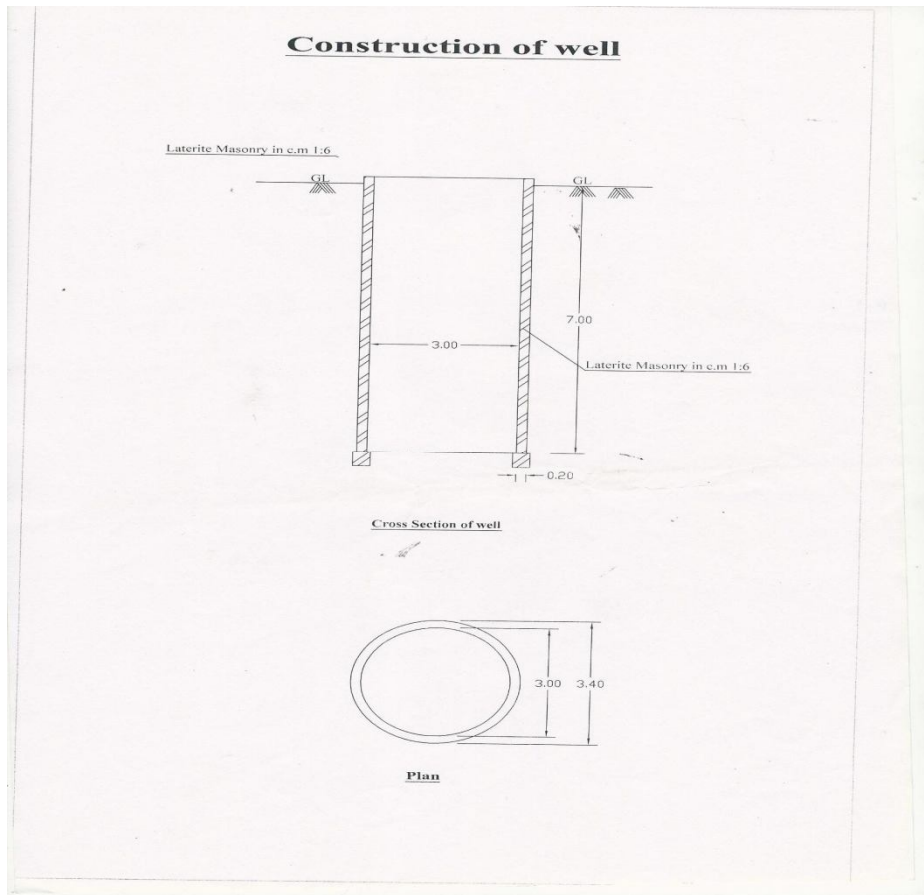
Initial depth	1	4.40	3.40	1.50	22.44	
<b>Total</b>					22.44	
<b>Say 22.44 m<sup>3</sup> @ Rs 2064.07/10m<sup>3</sup></b>						<b>4631.77</b>
Earth work excavation in hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50 - 3.00m including neat banking.						
2	First depth	1	4.00	3.00	1.50	18.00
<b>Total</b>					18.00	
<b>Say 18.00 m<sup>3</sup> @ Rs 2214.87/10m<sup>3</sup></b>						<b>3986.77</b>
4 Earth work excavation in hard soil and depositing on bank with initial lead up to 50m and lift up to 3.00m - 4.50m including neat banking.						
	Second depth		3.60	2.60	0.50	4.68
	Foundation	1	12.40	0.50	0.40	2.48
<b>Total</b>					7.16	
<b>Say 7.16m<sup>3</sup> @ Rs 2365.67/10m<sup>3</sup></b>						<b>1693.82</b>
5 Laterite masonry in cement mortar 1:6 including cost of all materials, labour charges etc completed						
For superstructure						
		1	14.80	0.40	1.50	8.88
		1	13.40	0.40	1.50	8.04
		1	10.80	0.40	0.60	2.59
	Foundation	1	10.80	0.50	0.40	2.16
<b>Total</b>					21.67	
<b>Say 21.67m<sup>3</sup> @ Rs 3427.23/m<sup>3</sup></b>						<b>74274.93</b>
<b>Unforeseen item if any</b>						<b>412.71</b>
<b>Grand Total</b>						<b>85000.00</b>



#### **OPEN WELL**

SL No	Description of item	No	Length	Breadth	Depth/ Height	Volume	Rate	Total Amount
	<b>Well</b>	<b>1</b>			<b>7.50</b>			
1	Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking							
	Initial Depth	1	3.14 x	2	1.5 x	14.84	14.84	

				$\frac{3.55}{4} \times$			
				2			
				$\frac{3.55}{4}$			
	<b>Total</b>					<b>14.84</b>	
							<b>Say 14.84 M3 @ Rs. 2064.07/10m3</b>
							<b>3063.08</b>
2	Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking						
				2			
				$\frac{3.55}{4}$			
	First Depth	1	3.14 x		x 1.50	14.84	
	<b>Total</b>					<b>14.84</b>	
							<b>Say 14.84 M3 @ Rs2476.88. /10m3</b>
							<b>3675.69</b>
3	Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking						
				2			
				$\frac{3.55}{4}$			
	Second Depth	1	3.14 x		x 1.50	14.84	
	<b>Total</b>					<b>14.84</b>	
							<b>Say 14.84 M3 @ Rs. 2972.25/10m3</b>
							<b>4410.82</b>
4	Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking						
				2			
				$\frac{3.55}{4}$			
	Third Depth	1	3.14 x		x 1.50	14.84	
	<b>Total</b>					<b>14.84</b>	
							<b>Say 14.84 M3 @ Rs. 3566.70/10m3</b>
							<b>5292.98</b>
5	Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m Including neat banking						
				2			
				$\frac{3.55}{4}$			
	Fourth Depth	1	3.14 x		x 1.00	9.89	
	<b>Total</b>					<b>9.89</b>	
							<b>Say 9.89 M<sup>3</sup> @ Rs. 4280.04/10m3</b>
							<b>4232.96</b>
6	Bailing out of water using 5HP engine and pumpset including conveyance to site and erroction of fuel lubricatig oil etc ( Deduct for each not working hours @ Rs 53.47/h						
							<b>Say 2days @ Rs 1394.87/day</b>
							<b>2789.74</b>
7	Laterite neatly dressed Stone size size 35x20x20 cm in cement mortar 1:6 for foundation And basement including cost of all materials and labour charges etc. complete (SL No. 206a)						
	Foundation of steening	3.14	x 3.2	x 0.35	x 0.20	0.70	
	Steening	3.14	x 3.2	x 0.20	x 7.00	14.06	
	<b>Total</b>					<b>14.76</b>	
							<b>Say 14.76 M<sup>3</sup> @ Rs. 3780.58/m3</b>
							<b>55801.36</b>
8	Unforseen item						
							<b>733.37</b>
							<b>Total</b>
							<b>80000.00</b>



### **WATER COLLECTION PIT (WCP)**

Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and

- 1 lift up to 1.50m Including neat banking etc complete.

$$1 \times (5.00 + 4.00) / 2 \times (3.00 + 2.00) / 2 \times 1.50 = 16.88$$

$$\text{Say } 14.07\text{m}^3 \text{ @ Rs } 2064.07/10\text{m}^3 = 3484.15$$

- 2 Planting Fodder grass on the top of the soil = 15.85

**Total 3500**

### **POND**

Sl no	Description of work	No	Length	Breadth	Depth/Height	Qty	Rate	Total Amount
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<b>Pond</b>	<b>1</b>	<b>8.00</b>	<b>6.00</b>	<b>7.00</b>		
1 Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50m including neat banking.						
Initial depth	1	8.00	6.00		1.50	72.00
						<b>Say 72.00m3 @ Rs 2064.07/10m3</b>
						<b>14861.30</b>
2 Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 1.50 - 3m including neat banking.						
First depth	1	7.60	5.60		1.50	63.84
						<b>Say 63.84 m3 @ Rs 2214.87/10m3</b>
						<b>14139.73</b>
3 Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 3m - 4.5m including neat banking.						
Second depth	1	7.20	5.20		1.50	56.16
						<b>Say 56.16 m3 @ Rs 2365.67/10m3</b>
						<b>13285.6027</b>
4 Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 4.50m - 6.00m including neat banking.						
Third depth	1	6.80	4.80		1.50	48.96
						<b>Say 48.96 m3 @ Rs 2516.47 /10m3</b>
						<b>12320.64</b>
5 Earth work excavation in Hard soil and depositing on bank with initial lead up to 50m and lift up to 6.00m - 7.50m including neat banking.						
Fourth depth	1	6.40	4.40		1.00	28.16
Foundation	1	6.40	0.60		0.60	2.30
						<b>30.46</b>
						<b>Say 30.46 m3 @ Rs 2667.27/10m3</b>
						<b>8125.57</b>
7 Bailing out of water using 5HP engine and pumpset including conveyance to site and erroction of fuel lubricatig oil etc ( Deduct for each not working hours @ Rs 53.47/h)						
						<b>Say 5 days @ Rs 1394.87/day</b>
						<b>6974.35</b>
8 Laterite masonry in cement mortar 1:6 including cost of all materials, labour charges etc completed For foundation and superstructure						
	2	8.00	0.60		1.50	14.40
	2	5.20	0.60		1.50	9.36
	2	7.20	0.60		1.50	12.96
	2	4.40	0.60		1.50	7.92
	2	6.40	0.60		1.50	11.52
	2	3.60	0.60		1.50	6.48
	2	5.60	0.60		1.50	10.08
	2	2.80	0.60		1.50	5.04
	2	4.80	0.60		1.50	8.64
	2	2.20	0.60		1.50	3.96
Parapet	1	29.80	0.60		0.40	7.15
	1	21.60	0.60		0.40	5.18
						<b>Total</b>
						<b>102.70</b>
						<b>Say 64.27m3 @ Rs.3427.23/m3</b>
						<b>351962.81</b>
9 Plastering with cement mortar 1:3 mix 12mm thick floated hard and truwelled smooth including, labour charge, conveyance etc completed						
Parapet inside	1	29.80			0.60	17.88
Parapet outside	1	30.40			0.60	18.24
Top portion	1	30.40	0.60			18.24
						<b>Total</b>
						<b>54.36</b>

10 Unfor seen item if any

Say 41.44 m2 @ Rs.1904.00/10m2

10350.14  
5859.85  
437880.00

Grand Total

**Loose Boulder check dam**

Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m including neat banking etc complete.

Foundation 1 x 3.00 x 2.00 x 0.30 = 1.80

Say 1.80 m3 @ Rs 2064.07/10m3 = 371.53

Laterite Stone Masonry for foundation and super structure

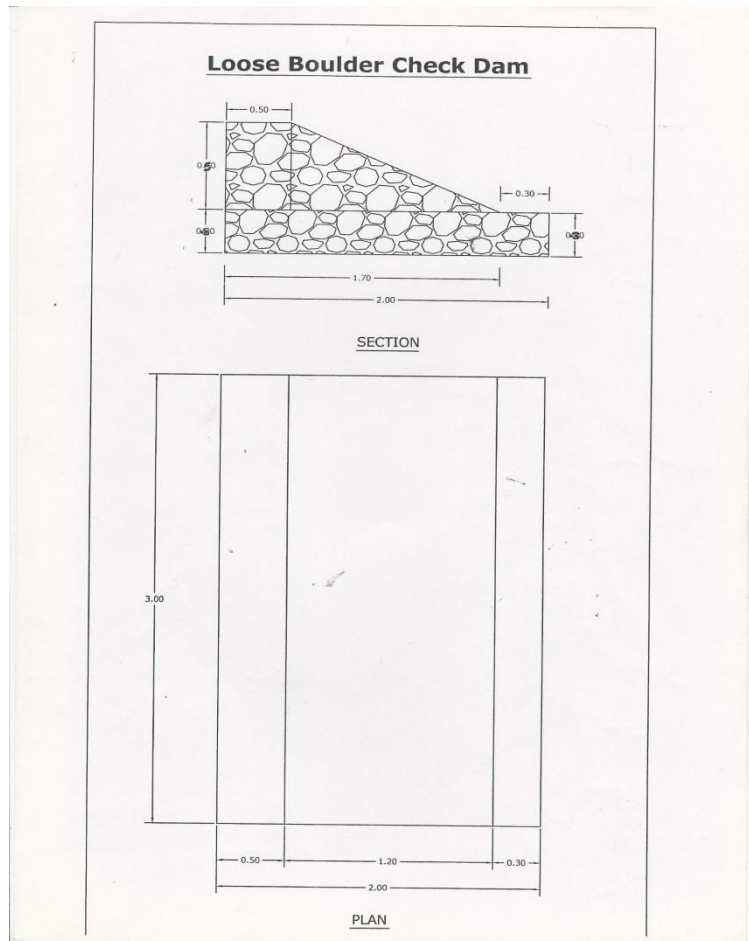
Foundation - 1 x 3.00 x 2.00 x 0.30 = 1.80

Super Structure - 1 x 3.30 x (0.50 + 1.70)/2 x 0.50 = 1.81  
3.61

Say 3.61 m3 @ 1264.40 Rs /m3 = 4564.48

Unforseen item if any = 63.99

**Total = 5000.00**



**DATA**

SL No	Quantity	Description of item	Rate	Amount
1		Earth Work in Ordinary Soil and depositing on bank with initial lead up to 0.50m and lift up to 1.50m		

	Including neat banking			
		<b>Labour</b>		
	0.90 No	Man/Women	377/E	339.30
	2.06 No	Man/Women	377/E	776.62
		<b>Total</b>		<b>1115.92</b>
		<b>Say 1115.92/10m3</b>		
2	Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m including neat banking			
		<b>Labour :</b>		
		<b>Initial Depth 0 to 1.50 m</b>		
	3.60 No	Man/Women	377/E	1357.20
	1.875 No	Man/Women	377/E	706.88
		<b>Total</b>		<b>2064.075</b>
		<b>Say 2064.07/10m3</b>		
3		<b>1st Depth 1.50m to 3.00m</b>		
		Rate of 1st depth		2064.07
	0.4	Women	377/E	150.80
		<b>Total</b>		<b>2214.870</b>
		<b>Say 2214.87/10m3</b>		
4		<b>2nd Depth 3.00m to 4.50m</b>		
		Rate of 2nd depth		2214.87
	0.4	Women	377/E	150.80
		<b>Total</b>		<b>2365.670</b>
		<b>Say 2365.67/10m3</b>		
5		<b>3rd Depth 4.50m to 6.00m</b>		
		Rate of 3rd depth		2365.67
	0.4	Women	377/E	150.80
		<b>Total</b>		<b>2516.47</b>
		<b>Say 2516.47/10m3</b>		
6		<b>4th Depth 6.00m to 7.50m</b>		
		Rate of 4th depth		2516.47
	0.4	Women	276/E	150.80
		<b>Total</b>		<b>2667.27</b>
		<b>Say 2667.27/10m3</b>		
7	Consolidation by ramming in 15cm layering including Watering for forming Earthen bund			
	0.7	Labour - Man/Women	377/E	263.9
		Say @ Rs 263.90/10m3		263.9
8	Laterite neatly dressed Stone size size 35x20x20 cm in cement mortar 1:6 for foundation And basement including cost of all materials and labour charges etc. complete (SL No. 206a)			
		<b>Materials</b>		
	60 Nos	Laterite stone undressed	2153/100Nos	1291.80
	0.16 m3	Sand	2777/m3	444.32
	38 Kg	Cement	5940/T	225.72
		<b>Labour</b>		0
	1.5 No	Mason	471/E	706.5

	0.35 No	Man	377/E	131.95
	0.5 No	Woman	377/E	188.5
		<b>Conveyance</b>		0
	1m3	Laterite stone undressed	365/m3	365.00
	0.16 m3	Sand	365/m3	58.40
	38 kg	Cement	396/T	15.04
		<b>Total</b>		<b>3427.23</b>
		<b>Say 3427.23/m3</b>		
9	Cement concrete 1:2:4 using 20mm thick (normal size) broken stone for re-inforced concrete work			
		<b>Materials</b>		
	0.009 m3	20mm (norminalsize) Broken stone	942/m3	8.47
	0.0045m3	Sand	2777/m3	12.49
	0.0033 tonne	Cement	5940/tonne	19.60
		<b>Labour</b>		0.00
	0.002 No	Mason	471/Each	0.94
	0.01No	Man	377/Each	3.77
	0.035 No	Women including for watering	377/Each	13.19
		<b>Conveyance</b>		0.00
	0.009 m3	Broken Stone	365/m3	3.28
	0.0045 m3	Sand	365/m3	1.64
	0.0033 tonne	Cement	396/tonne	1.30
		<b>Total</b>		<b>64.68</b>
		<b>Say64.68/10dm3 (6468/m3)</b>		
10	Plastering with Cement mortar 1:3,12mm thick one coat			
		<b>Materials</b>		
	0.14 m3	Dry sand	2777/m3	388.78
	0.066 tonne	Cement	5940/tonne	392.04
		<b>Labour</b>		
	0.90 No	Stone Mason	471/Each	423.90
	0.55 No	Man	377/Each	207.35
	1.10 No	Women	377/Each	414.70
		<b>Conveyance</b>		
	0.14 m3	Dry sand	365/m3	51.10
	0.066 m3	Cement	396/m3	26.13
		<b>Total</b>		<b>1904.00</b>
		<b>Say 1904.00/10m2</b>		
11	White washing two coat to new surface of wall including all cost, conveyance and labour charges etc completed			
		<b>Materials</b>		
	0.003 m3	Quick lime	3421/M3	10.26
	1 m3	glue other sundries	LS	3
		<b>Labour</b>		
	0.12 No	Special Mazdoor	471/E	56.52
	0.09 No	Man	377/E	33.93



		<b>Conveyance</b>		
	0.003 m3	Quick Lime	246/m3	0.73
		<b>Total</b>		<b>104.44</b>
		<b>Say 104.44/10m2</b>		
12	Bailing out of water using 5 HP engine and including all charges etc completed (Observed data)			
	1day	Hire charges engine 5 HP/day	100/day	100.00
	10 Ltrs	HSD Oil & Lubricating oil	50.00/Ltr	500.00
	1 No	Driver	396/day	396.00
	1 No	Cleaner	396/day	396.00
		Installation charges	LS	2.87
		<b>Total</b>		<b>1394.87</b>
		<b>Say 1394.87/Day</b>		
13	Providing and fixing of best quality 110mm dia PVC pipe 6kg/cm2 high density plastic for collecting rain water with suitable clamps at 1m interval , including supporting adjustable brackets etc.,complete and labour charges required for fixing in position (Observed data)			
	21No	140mm half round gutters	299/E	6279.00
	17No	Brackets with clamps	86.40/E	1468.80
	5No	PVC joint brackets	184/E	920
	2No	short stop ends	72/E	144
	1 No	Elbow	19.55/E	22.48
	1 No	Running outlet	227.2/E	227.2
	34 No	40 mm nuts and bolts	4.8/E	163.2
	LS	Total conveyance charges	LS	192
	2 No	Plumbers	471/E	942
	0.75 No	Man	377/E	282.75
		Total		10641.43
		Hence for 1m = 10641.43/33.6	33.6/Rm	<b>316.70</b>
		<b>Say 316.70/Rm</b>		
14	Supply and fixing 63 mm dia PVC pipe 6kgf/cm2 including all cost of materials labour charges and conveyance etc. complete (Observed data)			
		<b>Materials</b>		
	30m	PVC plastered pipes 110mm	72/m	2160.00
		add 5% for specials		108.00
	150gm	Solvent cement	400/kg	60.00
		<b>Labour</b>		0
	0.1 No	Plumber	471/E	47.10
	3 No	Man	377/E	1131.00
	0.1 No	Man	377/E	37.700
				<b>3543.80</b>
		<b>Say 118.12/Rm</b>		
15	Plastering with neat flushing coat including all cost conveyance ,labour charges etc. complete			
		<b>Materials</b>		
	22kg	Cement	5940/tonne	130.68
		<b>Labour</b>		0
	0.5 No	Man	377/E	188.5

		<b>Conveyance</b>		0
	22kg	Cement	396/m3	8.71
				<b>327.89</b>
		<b>Say 327.89/10m2</b>		
16	Cement concrete 1:4:8 using 20mm thick (normal size) broken stone for cement concrete work			
		<b>Materials</b>		
	0.009 m3	20mm (norminalsize) Broken stone	942/m3	8.47
	0.0045m3	Sand	2777/m3	12.49
	0.00216 tonne	Cement	5940/tonne	12.83
		<b>Labour</b>		0.00
	0.002 No	Mason	471/Each	0.94
	0.01No	Man	377/Each	3.77
	0.035 No	Women including for watering	377/Each	13.19
		<b>Conveyance</b>		0.00
	0.009 m3	Broken Stone	365/m3	3.28
	0.0045 m3	Sand	365/m3	1.64
	0.00216tonne	Cement	396/tonne	0.85
		<b>Total</b>		<b>57.46</b>
		<b>Say57.46/10dm3 (5746/m3)</b>		

**Well**

	For the First depth of 1.50m after the initial depth of 1.50m add to the rates for the initial depth of the different classes of soil			
	Above 2.50 metre dia but upto 3.50 metre dia			
17	Earth Work in Hard Soil and depositing of bank with initial lead up to 0.50m and lift up to 1.50m including neat banking			
		<b>Labour :</b>		
		<b>Initial Depth 0 to 1.50 m</b>		
	3.60 No	Man/Women	377/E	1357.20
	1.875 No	Man/Women	377/E	706.88
		<b>Total</b>		<b>2064.075</b>
		<b>Say 2064.07/10m3</b>		
18	<b>1st Depth 1.50m to 3.00m</b>			
		Rate of 1st depth		2064.07
		20 % Extra		412.81
		<b>Total</b>		<b>2476.88</b>
		<b>Say2476.88/10m3</b>		
19	<b>2nd Depth 3.00m to 4.50m</b>			
		Rate of 2nd depth		2476.88
		20 % Extra		495.37
		<b>Total</b>		<b>2972.25</b>
		<b>Say 2972.25 /10m3</b>		
20	<b>3rd Depth 4.50m to 6.00m</b>			
		Rate of 3rd depth		2972.25
		20 % Extra		594.45
		<b>Total</b>		<b>3566.70</b>
		<b>Say 3566.70 /10m3</b>		

21		<b>4th Depth 6.00m to 7.50m</b>		
		Rate of 4th depth		3566.70
		20 % Extra		713.34
		<b>Total</b>		<b>4280.04</b>
		<b>Say 4280.04 /10m3</b>		
22		<b>5th Depth 7.50m to 9.00m</b>		
		Rate of 5th depth		4280.04
		20 % Extra		856.00
		<b>Total</b>		<b>5136.04</b>
		<b>Say 5136.04 /10m3</b>		

**Well Work**

23	Laterite neatly dressed Stone size size 35x20x20 cm in cement mortar 1:6 for foundation And basement including cost of all materials and labour charges etc. complete (SL No. 206a)			
		<b>Materials</b>		
	60 Nos	Laterite stone undressed	2153/100Nos	1291.80
	0.16 m3	Sand	2777/m3	444.32
	38 Kg	Cement	5940/T	225.72
		<b>Labour</b>		0
	1.5 No	Mason	471/E	706.5
	0.35 No	Man	377/E	131.95
	0.5 No	Woman	377/E	188.5
		<b>Extra Labour For Well Work</b>		0
	0.35 no	Mason	471/E	164.85
	0.50 no	Man	377/E	188.5
		<b>Conveyance</b>		0
	1m3	Laterite stone undressed	365/m3	365.00
	0.16 m3	Sand	365/m3	58.40
	38 kg	Cement	396/T	15.04
		<b>Total</b>		<b>3780.58</b>
		<b>Say 3780.58/m3</b>		
24		Chicken Mesh	37/m2	37.00
25		Welded Mesh 50mmx50mm -10gx10g	217/m2	217
26		PVC Pipe-6kgf /cm2 63mm dia	72/m	72.00
27		PVC Pipe - 10kgf /cm2 50mm dia	66/m	66.00

This is to Certified that the Conveyance is as per the approved PWD Conveyance

28	husk Packing and Filling the earth on the top portion of the husk packing with an average thickness of 10cm
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	0.10	man	377/each	37.70
				37.70

**Observed DATA** This is to Certified that the Conveyance is as per the approved PWD Conveyance

**Conveyance Statement**

SL NO	MATERIALS	SOURCE	UNIT	LORRY LOAD		HEAD LOAD		Total
				DISTANCE	AMOUNT	DISTANCE	AMOUNT	
1	Laterite / Broken Stone	Neighbouring Area	m3	5 Km	218	150 M	147.00	365.00
2	Cement	Neighbouring Area	tonne	5 Km	323.00	150 M	73	396.00
3	Sand	Neighbouring Area	m3	5 Km	218.00	150 M	147	365.00
4	Lime	Neighbouring Area	m3	5 Km	174.00	150 M	72.00	246.00

This is to Certified that the Conveyance is as per the approved PWD Conveyance

