DETAILED PROJECT REPORT

of

KYNTHROIN WATERSHED

PROJECT – VIII (2011– 2012)

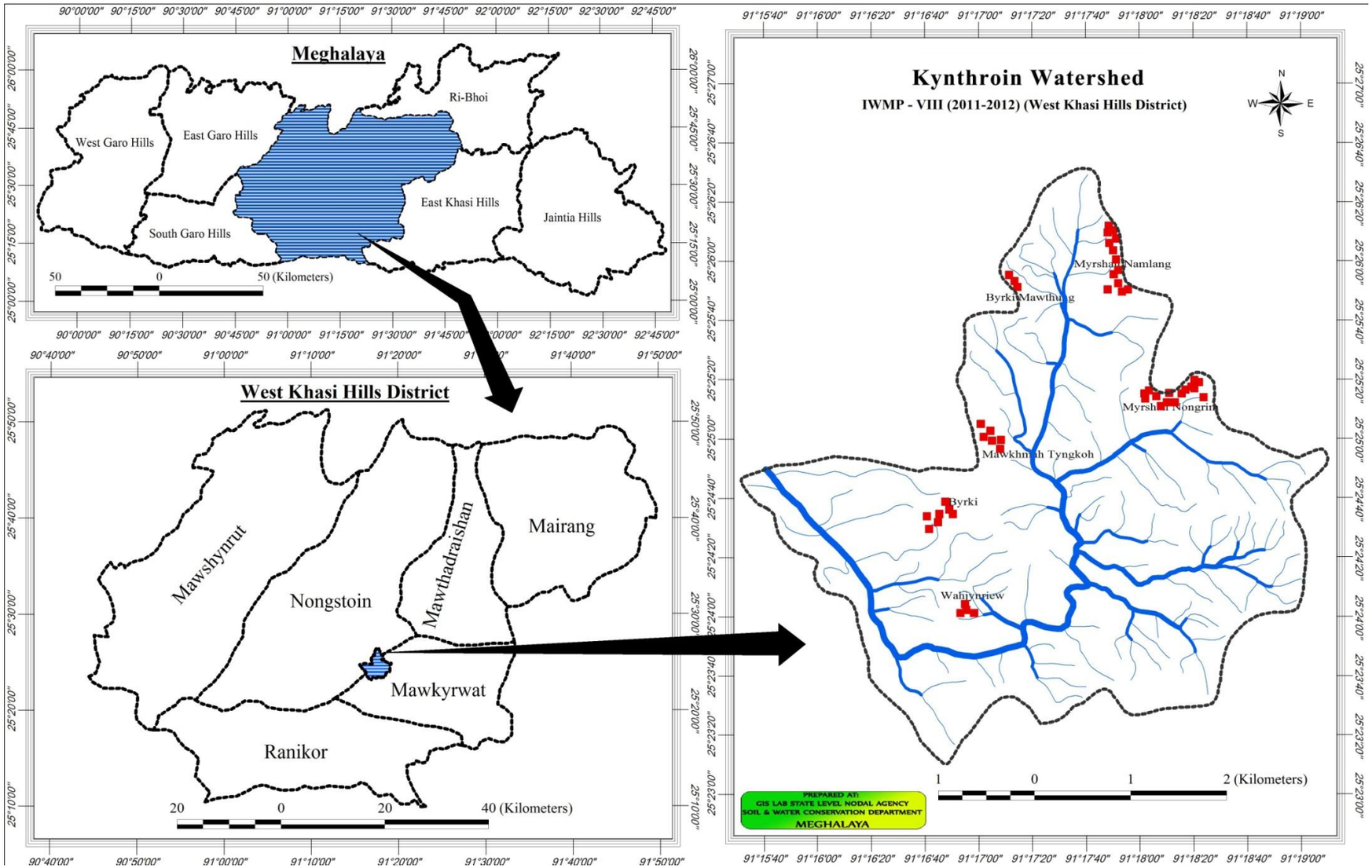
UNDER

INTEGRATED WATERSHED MANAGEMENT PROGRAMME (IWMP)

NONGSTOIN C&RD BLOCK, WEST KHASI HILLS DISTRICT, MEGHALAYA

PROJECT IMPLEMENTATION AGENCY (IWMP)
WEST KHASI HILLS DISTRICT
SOIL & WATER CONSERVATION DIVISION: NONGSTOIN

MAP 1: LOCATION OF KYNTHROIN WATERSHED, UNDER IWMP – VIII, WEST KHASI HILLS DISTRICT



SUMMARY

Name of the Sate	:	Meghalaya
Name of the District	:	West Khasi Hills District
Name of the C&RD Block	:	Nongstoin
Name of the Villages	:	(i) Byrki (ii) Byrki Mawthung (iii) Marshan Namlang
		(iv) Marshan Nongrim (v) Mawkhmah Tyngkoh (vi) Wahjynriew
Name of the Project	:	West Khasi Hills – IWMP – VIII
Total Geographical Area	:	1756 Ha
Total Treatment Area	:	1500 Ha
Total Project Cost	:	Rs. 225 Lakhs
Project Duration	:	5 Years
Project Implementing Agency	:	Soil & Water Conservation Division, Nongstoin.

A GLIMSE OF THE KYNTHROIN MICRO WATERSHED

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CHAPTER I

INTRODUCTION AND BACKGROUND

1.1 Project Background:

The Kynthroin Watershed (IWMP-VIII) project is located in Nongstoin C&RD Block, West Khasi Hills District of Meghalaya. Consisting of a single micro-watershed, the project area is drained by the Byrki River where in the middle reaches –the area centrally located in the Watershed- this river is also locally known as the Kynthroin River. Its tributaries flow in an East-to-West direction. The total area is 1756 Ha. with 1500 Ha. to be treated under the Integrated Watershed Management Programme (IWMP-VIII).

The Project area is located at a distance of about 23 km from Nongstoin, the District Headquarter of West Khasi Hills District. The geographical location is between 91^0 14' 30" to 91^0 21' 00" E Longitude and 25^0 23' 00'' to 25^0 26' 30" N Latitude. The Project Area is not well connected. It is accessible by an all weather black-topped road only upto the Nongkhlaw village which is about 18km from Nongstoin. From there-on, it is kuccha road, highly winding, rocky, making accessibility and transportation very difficult for the next 4 km upto the Byrki village, the last village accessible by kuccha road. Enroute from Nongkhlaw to Byrki (the village strategically located in the watershed), transportation is possible only by a jeep or a four-wheel drive where there is a need to cross the River Umjyrhap where there is no bridge yet. Public transport is available only upto Nongkhlaw village. From here, villagers move by foot which easily takes time about an hour or more upto Byrki.

A total of six (6) villages are covered under the project. These are:-

1. Byrki
2. Byrki Mawthung
3. Marshan Namlang
4. Marshan Nongrim
4. Marshan Nongrim
5. Mawkhmah Tyngkoh
6. Wahjynriew

1.2 Micro-watershed Information:

The micro-watershed code is 3C1B1a3c as codified by the North East Space Application Centre (NESAC) which are partially treated. The total area of the micro-watershed is 1756 Ha. with 1500 hectares to be treated under the Integrated Watershed Management Programme (IWMP-VIII).

1.3 Need and Scope for Watershed Development:

The micro-watersheds 3C1B1a3c falls under the Medium to High Priority category as per the prioritization of watersheds by the North East Space Application Centre (NESAC). Topography of the project consist mostly of undulating rolling hills with moderate to steep slopes. The elevation ranges from 1240 metres to 1560 metres above mean sea level. The Eastern side of the project area consists of hillocks from 1432 meters to 1500 meters or so thereby draining the watershed towards the western side, an area of lower elevation range of 1240 meters to 1368 meters. The centrally located area in the watershed depicts a relatively plain area consisting of mostly paddy fields amidst the foothills having elevation range of about 1368 meters to 1410 meters above mean sea level.

A wide majority of the population of the project area is fully dependent on agriculture. The farmers are mostly marginal and practice mono-cropping where paddy (rabi) forms the main crop. Adverse and unpredictable climatic condition, poor mobilization of resources and inadequate infrastructural facilities made agriculture an unprofitable and subsistence enterprise. Even though the area receives ample rainfall during the monsoons, there is acute shortage of water during the dry seasons.

Inspite of these problems, there are vast potentialities for the development of agriculture in the areas. Therefore, the project would undoubtedly boost living standards of the people of the area through agriculture and allied activities. Jhum cultivation is practiced by most of the inhabitants of these villages on the hill slopes.

1.4 Aim of the Project and Production Strategy/ Approach:

The aim of the Project is to scientifically managed the natural resources for achieving sustainable and enhanced production of the land so as to bring about overall upliftment of the socio-economic standard of the people in the watershed/project area.

Objectives:

- Enhance the productivity level of land and water resources in the context of agriculture and its allied activities.
- Improve the socio – economic setup of the people living in the project area.
- To achieve sustainable development through conservation and management of soil and water.
- Generate local employment – seasonal/perennial.
- And to reduce the disasters.

Keeping in view of the above objectives, the major thrust area being considered here is the approach to the programme in the form of its capability which will be acceptable to the local communities and which can sustain their livelihood for the present and the future generation through the cost effective measures. The strategy being conducted here is not for the context of sudden change of land use but instead land use changes should be gradual. Locally available materials and indigenous potential crops have been strongly advocated here.

Immediate necessity of the farmer communities in terms of their cereal requirement (paddy) has been prioritized. The individual farm holding within the homes-stead has been given due important for improved production activities of integrated approach. Water resources management and conservation in the form of controlling measures and trapping of such resources for multi uses has been given due preference.

The people's participation and identification of the needs of the area is considered foremost. As far as possible, assets (such as check dam, water harvesting structures, channels) are build whereby a vast number of beneficiaries are benefitted and that can be cater to.

1.5 Other developmental projects/schemes running in the Project Area:

The other developmental projects/schemes undertaken in the Project Area are:-

i. MGNREGS

CHAPTER II

BASIC INFORMATION OF THE PROJECT AREA

2.1 Location:

The Project area is located within Nongstoin C&RD Block, West Khasi Hills District. The Project area is located at a distance of about 23 km from Nongstoin, the District Headquarter of West Khasi Hills District. The geographical location is between 91^0 14' 30" to 91^0 21' 00" E Longitude and 25^0 23' 00'' to 25^0 26' 30" N Latitude.

There are six (6) villages within the Watershed which are as follows: –

1. Byrki
2. Byrki Mawthung
3. Marshan Namlang
4. Marshan Nongrim
5. Mawkhmah Tyngkoh
6. Wahjynriew

2.1.2 Physiography:

The physiography of the micro-watersheds is moderate to highly undulating. The altitude ranges from a minimum of 1240m to a high of 1560m above mean sea level. In the lower reaches (valley lands) and the eastern peripheral boundary of the watershed the slope ranges from 33% to 66% whereas in the mid reaches and the central part of the watershed, the slope ranges from 0% to 22%.

Table 2.1: Physiographic details

Elevation (metres)	Slope Range (%)	Order of watershed Sub/Micro-watershed	Major streams	Topography
1240 m to 1560 m	<1% to 66 %	Micro Watershed	Umbyrki River, Kyntroin River	Gentle to steep sloping

2.1.3 Drainage: The major stream draining the micro-watershed is the Umbyrki River which is a 4^{th} order stream flowing in a East-West direction. The slopes of the micro-watershed are dissected by numerous small tributaries flowing to the Umbyrki River. The Drainage System may be classified as dendritic. The important rivers of the area are Umbyrki, Kynthroin, Mawsyai, Phod spar and Wah Ktieh iaw Thynngor, along with a number of tributaries and streamlets. It has been observed that most (all) of these tributaries and streamlets are perennial in nature.

Drainage density calculated is 4.14 Km/Km^2 & the average **bifurcation ratio** worked out is 4.66. The total length of all the streams/rivers is 72.6896 Km (Ist Order to IVth Order). There are 100 First Order streams, 25 Second Order streams, 5 Third Order streams and 1 Fourth Order stream.

$$\textbf{Drainage Density} = \frac{\textbf{Total length of stream/rivers in the Watershed (Km)}}{\textbf{Area of Watershed (Km}^2\textbf{)}}$$

$$\textbf{Bifurcation Ratio} = \frac{\textbf{Previous streams order (Nos. of segments)}}{\textbf{Next Order (Nos. of Segments)}}$$

2.1.4 Soil: Soil are generally shallow with loam to sandy loam in surface texture which is attributed to deep weathering, leaching and eluviations. Soils are generally fairly well drained with moderate permeability. The soil reaction is acidic ranging from 4.80 to 5.20. as per soil Fertility Testing. Exposure to erosion hazard is moderately severe in the area.

Table 2.2: Details of soil erosion in the project areas:

1	2	3	4	5	6	7	8	9
Sl. No.	Names of State	Names of District	Names of Projects	Cause	Types of erosion	Area affected (ha)	Run-off (mm/ year)	Average soil loss (Tonnes/ ha/ year)
1	Meghalaya	West Khasi Hills	West Khasi Hills – IWMP VIII	**Water erosion:**				
				a	Sheet	1756	2700 - 3200	10.50 – 32.50
				b	Rill			
				c	Gully			
				Sub total		1756	2700 - 3200	10.50 – 32.50
				Wind erosion		NA	NA	NA

2.1.5 Climate: The climate in this area is humid subtropical (Sub-Montane), a typical characteristic representative of the Shillong Plateau Agro-Climatic Zone which is directly influence by the South West Monsoon originally from Bay of Bengal and Arabian Sea. The whole year can be divided into four seasons – Summer, Monsoon (rainy), Autumn and Winter. The summer season extend from the last part of March to Mid May, is characterized relatively high temperature, occasionally thunder storm and high wind velocity. The rainy season commence with the onset south west monsoon in April/May and last upto October/November, though it rain intermittently for the whole year but this is the wettest period of the year. The rainy season is followed by short Autumn from Mid October to November which sharp decline of temperature then the winter season start which is extend to the start of March. This is the coldest season of the year where winter is severe. The average rainfall in this area is 2960mm.

Table 2.3: Agro-climatic zones of the project areas, soil types, average rainfall and major crops.

1	2	3	4	5	6	7		8	9	
Sl. No.	Name of State	Name of the Agro-climatic zone	Area (in ha)	Names of the districts	Names of the Projects	Major soil types		Average annual rainfall in mm (preceding 5 years' average)	Major crops	
						Type	Area (ha)		Name	Area (ha)
1.	Meghalaya	Cold Moisture (1410m)	1500 Ha	West Khasi Hills	West Khasi Hills, IWMP – VIII	Soil are generally shallow with loam to sandy loam in surface texture Soils are generally fairly well drained with moderate permeability. Exposure to erosion hazard is moderately severe in the project area.	1756.00 Ha	2960 mm	Paddy	85 Ha.
									Maize	45 Ha.
									Potato	35 Ha.
									Sweet Potato	30 Ha.
									Total	**195 Ha**

2.1.6 Agriculture: The economy of the area is predominantly agrarian. Majority of the people of the region depends on Agriculture and allied activities. The people mostly practice jhum. Inspite of the problems such as the geographical isolation, infrastructural deficiencies, socio – economic structures, etc there are potentialities for the development of agriculture in the areas. The main agriculture crops are paddy, maize, sweet potato, potato, millet, yam, varieties of chilies, pumpkin, Cauliflower, radish, squash, and variety of vegetables, etc.

Horticulture: Orchard in a pure form does not exist in the watershed area but in a scattered manner fruit trees like Pear, Peach, Plum, Passion fruit, lemon, guava etc. are grown around their houses and in the same terraces in farm area. The condition of the fruit trees are not good and mostly are local varieties and stocking in poor. Due to inadequate management, yield and income from the fruit trees is not satisfactory.

Table 2.4: Crop yield and production

Crops	Area (ha)	Average Yield (Quintal per Ha.)	Total Production (Qtl.)
Paddy	120	18	2160
Maize	65	10	650
Potato	50	60	3000
Sweet Potato	40	37	34375
Total	**275**	**125**	**41665**

2.1.7 Natural Vegetation: Natural Vegetation of the project area is fairly poor due to tremendous biotic factors such as recurring fire hazards, overgrazing and browsing. Over exploitation of timber and fuel wood particularly the jhum cultivation practices and charcoal burning etc. have destroyed the economical species and left scrub vegetation in most of the area. The following species area available in the Watershed area:

- *Pinus kesiya* (Diengkseh)
- *Schima wallichi* (Diengngan)
- *Michelia champaca* (Diengrai)
- *Quercus spp. (dieng sning, dieng sai)*
- *Toona ciliata*
- *Alnus spp.*
- *Betula alnoides (dieng lieng lieh)*
- Bamboo
- *Castanapsis spp (Diengstap, dieng sohot)*
- *Emblica spp* (gooseberry)

2.1.8 Socio-Economic Profile: The Socio – Economic set up of the people in the area is very poor. Although Agriculture is the main stay of the people, this sector could barely meet their livelihood requirements as it is largely mono – agriculture and low productivity of the land. The average Annual Income is about Rs.28800/- per family.

Demographic Status: The total population of the Watershed is 835 attributed to 150 families of which 427 are males and 408 are females. The average size of the family is 5. The entire population is tribal, predominantly belonging to the Khasi Tribe.

The detail of the household in each of the villages in the watershed project is as follows:

Sl. No.	Villages	No. of Households	Population		Total
			Male	Female	
1	Byrki	29	75	73	148
2	Byrki Mawthung	8	21	21	42
3	Marshan Namlang	40	118	110	228
4	Marshan Nongrim	38	112	106	218
5	Mawkhmah Tyngkoh	21	59	57	116
6	Wahjynriew	14	42	41	83
	TOTAL	**150**	**427**	**408**	**835**

Infrastructure facilities **:**

- *Roads:* The Project Area is not well connected. It is accessible by an all weather black-topped road only upto the Nongkhlaw village which is about 18km from Nongstoin. From there-on, it is kuccha road, highly winding, rocky, making accessibility and transportation very difficult for the next 4 km upto the Byrki village, the last village accessible by road. Along the way, there is a need to cross the River Umjyrhap where there is no bridge yet making transportation possible only by a jeep or a four-wheel drive. Public transport is available only upto Nongkhlaw village. From here, villagers move by foot which easily takes time about an hour or more.

- *School:* There are several schools in the Project area which includes Lower Primary, Upper Primary though no Secondary Schools. They are both Government schools and privately managed.

- *Electricity :* Electric power supply is not available in all the villages. Wahjynriew have no electric power connection yet whereas Byrki have only 5 households with electric power connection.

- *Health :* Health care facility is poor. The only health care facilities available is from the Govt. Public Health Centre which is situated at Byrki village where there is no doctor but only nurses that attend once or twice a month.

- *Water Supply :* PHE's drinking Water Supply facility is there at Byrki while in all other villages they have to rely on natural water resources by fetching water from some distances. However, during lean seasons water supply is erratic and entire population have to depend on springs and other natural sources.

- *Market Facility:* Market is available for disposal of their farm produce and forest produce in once a week at Umdohlun or the people come to Nongstoin for the weekly marketing on market day.

Table 2.5: Infrastructure Status.

<table>
<tr><th>1</th><th>2</th><th colspan="2">3</th><th colspan="4">4</th></tr>
<tr><th>Name of District</th><th>Name of Project</th><th colspan="2">Parameters:</th><th colspan="4">Status</th></tr>
<tr><td rowspan="9">West Khasi Hills</td><td rowspan="9">West Khasi Hills – IWMP VIII</td><td>(i)</td><td>No. of villages connected to the main road by an all-weather road.</td><td colspan="4">None of the villages are connected by an all-weathered road but only by a kutcha road</td></tr>
<tr><td>(ii)</td><td>No. of village provided with electricity</td><td colspan="4">4 nos. except Wahjynriew and Byrki (partially)</td></tr>
<tr><td>(iii)</td><td>No. of households without access to drinking water</td><td colspan="4">25 nos.</td></tr>
<tr><td rowspan="2">(iv)</td><td rowspan="2">No. of educational institutions:
Primary (P)/ Secondary (S)/ Higher Secondary (HS)/ Vocational institution (VI)</td><td>(P)</td><td>(S)</td><td>(HS)</td><td>(VI)</td></tr>
<tr><td>7</td><td>Nil</td><td>Nil</td><td>Nil</td></tr>
<tr><td>(v)</td><td>No. of village with access to Primary Health Centre</td><td colspan="4">Nil</td></tr>
<tr><td>(vi)</td><td>No. of village with access Veterinary Dispensary</td><td colspan="4">Nil</td></tr>
<tr><td>(vii)</td><td>No. of village with access Post Office</td><td colspan="4">Nil</td></tr>
</table>

1	2	3		4			
		(viii)	No. of village with access Banks	Nil			
		(ix)	No. of village with access Markets/ mandis	6			
		(x)	No. of village with access Agro-Industries	Nil			
		(xi)	Total quantity of surplus milk	Nil			
		(xii)	No. of milk collection centres (e.g. Union (U)/ Society (S)/ Private agency (PA)/ Others (O))	(U)	(S)	(PA)	(O)
				Nil	Nil	Nil	Nil
		(xiii)	No. of villages with access to Aganwadi Centres	1 No.			
		(xiv)	Any other facilities with no. of villages (please specify)	-			

2.1.9 Livestock: The important livestock of the Watershed includes Cattle rearing, Piggery, Poultry, Goatery, Duckery, and Pisciculture. Most of the livestock are farmed at a small scale and reared for meat purpose and domestic consumption only. Bee-Keeping or Apiculture are also taken by few of the villagers in the project area.

Table 2.6: Existing livestock population

Type of Animal	Population
Cattle (Cows)	215
Goats	772
Piggery	273
Poultry	1162
Duck	6

2.1.10 Land ownership: There are primarily two types of land holding system, namely private lands (Ri Kynti i.e. individually owned land) and community lands (Ri Kur i.e. clan land and Ri Raid i.e. village community land).

Table 2.7: Land Holding:

1	2	3	4	5	6		
Name of District	Name of the Project	Types of Farmer	No. of households	No. of BPL households	Land holding (ha)		
					Irrigated	Rainfed	Total
West Khasi Hills	West Khasi Hills – IWMP VIII	(i) Large	25			77	77
		(ii) Small	57			189	189
		(iii) Marginal	68	32		34	34
		(iv) Landless	0	0		0	0
		Sub – Total	150	32		300	300

Table 2.5: Common Property Resources in the Project Area:

1	2	3	4				5			
Name of District	Name of the Projects	CPR Particulars	Total Area (ha) Area owned / In possession of				Area available for treatment (ha)			
			Pvt. Person	Govt. (specify deptt.)	PRI	Any other (Community)	Pvt. Person	Govt. (specify deptt.)	PRI	Any other (Community)
West Khasi Hills	West Khasi Hills – IWMP VIII	(i) Wasteland/ degraded land	787	-		97	662	-	-	-
		(ii) Pastures	5	-	-	-	-	-	-	-
		(iii) Private Agriculture land	350	-	-	-	382	-	-	-
		(iv) Village woodlot	-	-	-	9	-	-	-	-
		(v) Forest	392	-	-	8	450	-	-	-
		(vi) Village Ponds/ Tanks	-	-	-	1	-	-	-	1
		(vii) Community Buildings	-	0.75	-	1.25	-	-	-	-
		(viii) Weekly Markets	-	-	-	1	-	-	-	-
		(ix) Permanent Markets	-	-	-		-	-	-	-
		(x) Temples/ Places of worship	-	-	-	3	-	-	-	-
		(xi) Others (Built-up, Streams)(specify)	76	-	25	-	-	-	5	-
		Total	**1635 Ha**	**0.75 Ha**	**25**	**120.25 Ha**	**1499 Ha**	**-**	**5**	**1 Ha**

2.1.11 Land use and land cover : As per the land use land cover map generated by NESAC, Meghalaya from Satellite Image taken during 2005 – 2006 (LISS – III, Image) the Watershed area has been broadly classified into the following land uses.

a)	Built-up Area	=	76.00 Ha
b)	Agricultural land-crop land-kharif crop	=	350.00 Ha
c)	Tree clad Area-close	=	160.00 Ha
d)	Tree clad Area-open	=	249.00 Ha
e)	Wasteland – Open scrub	=	1246.00 Ha
	Total	**=**	**1756.00 Ha**

2.2 Problems of the Area: The problem of the area of the Watershed as in the general common problems in the state is the un-repairable exploitation of natural resources like soil, water and vegetation. The entire watershed suffers from problems of mismanagement of lands; unscientific land use, frequent forest fires, indiscriminate tree felling, uncontrolled grazing, charcoal burning etc. have already given rise to much soil erosion and increase runoff in the area. Jhumming, the unscientific method of cultivation has not only reduced the Jhum cycle, low crop yield but had adversely affected the ecological balance within the area. Lack of Awareness and Knowledge on improved agricultural practices, low marketing potential and unutilized Wastelands adds to the already existing problems.

In addition to the above mentioned problems, farmers' unawareness of the seriousness of the problem of mismanagement of land hence their lack of motivation and willingness to change their tradition method of farming and adopt another alternative and sustainable method of farming in arable land is another hurdle. Lack of extension, demonstration and infrastructure facilities also contributed to low yield in agriculture production.

The aforesaid problems identified through Participatory Rural Appraisal (PRA) Exercises need to be integrated in the process of farming of land use which will be acceptable to the village communities as a whole.

CHAPTER III

PROJECT PLANNING & INSTITUTION BUILDING

3.1.1 Scientific Planning

i) Base Line Survey: To establish a benchmark for assessing the impact of any intervention (pre-project & post project) a baseline survey is essential. The baseline survey included household census & socio-economic survey by using structured and semi –structured questionnaires, bio-physical survey to identify and assess the status of natural resources in the project area. Base line datas and information obtain from various authentic sources of Government and Semi Government Instiyutions were incorporated in the course of preparation of Detailed Project Report.

ii) Participatory Rural Appraisal: To further obtain information on the project area, the people, resources, various PRA techniques like resource mapping, social mapping, seasonal calendars, matrix ranking, Venn diagrams were used.

iii) GIS & Remote Sensing: To facilitate the process of prioritization and planning Geographic Information System was use. The land use and land cover (LULC) maps were prepared by the North Eastern Space Application Centre (NESAC) using the LISS III images (2006). The activities were located on the field by using GPS and accordingly transferred to the maps on GIS platform.

Table 3.1: Details of Scientific Planning and Inputs in IWMP projects:

1	2	3
Sl.No.	**Scientific criteria/ inputs used**	**No. of projects in which scientific criteria were used**
A.	**Planning**	
	Cluster approach	Yes
	Whether technical back-stopping for the project has been arranged? If yes, mention the name of the Institute.	NESAC, Nongsder., NIRD, Guwahati
	Baseline survey	Yes
	Hydro-geological survey	No
	Contour mapping	Yes
	Participatory Net Planning (PNP)	Yes
	Remote sensing data-especially soil/ crop/ run-off cover	Yes
	Ridge to Valley treatment	Yes

1	2	3
	Online IT connectivity between	
	(1) Project and DRDA cell/ZP	No
	(2) DRDA and SLNA	No
	(3) SLNA and DoLR	Yes
	Availability of GIS layers	
	1. Cadastral map	NA
	2. Village boundaries	NA
	3. Drainage	Yes
	4. Soil (Soil nutrient status)	Yes
	5. Land use	Yes
	6. Ground water status	No
	7. Watershed boundaries	Yes
	8. Activity	Yes
	Crop simulation models#	NA
	Integrated coupled analyzer/ near infrared visible spectroscopy/ medium spectroscopy for high speed soil nutrient analysis	NA
	Normalized difference vegetation index (NDVI)#	Yes (NA)
	Weather Stations	Nongstoin AW Station
B.	**Inputs**	
	1. Bio-pesticides	No
	2. Organic manures	Yes
	3. Vermi-compost	Yes
	4. Bio-fertilizer	Yes
	5. Water saving devices	Yes
	6. Mechanized tools/ implements	No
	7. Bio-fencing	Yes
	8. Nutrient budgeting	No
	9. Automatic water level recorders & sediment samplers	NA
	Any other (please specify)	-

31.2 Project Implementing Agency (PIAs):

The PIA is the Soil & Water Conservation Territorial Division, Nongstoin, West Khasi Hills District of Meghalaya. The Project Manager is be the Divisional Soil and Water Conservation Officer and will be assisted by an Asst. Soil & Water Conservation Officer along with WDT members in which expertise is drawn from the relevant fields for achieving smooth and successful implementation of the project.

1	2	3	
Names of Districts	**Names of projects**	**Details of PIA**	
West Khasi Hills	West Khasi Hills – IWMP VIII	(i) Type of organization	Government Agency
		(ii) Name of organization	Soil & Water Conservation Division, Nongstoin
		(iii) Designation & Address	Divisional Soil & Water Conservation Officer, Nongstoin, West Khasi Hills, Meghalaya.
		(iv) Telephone	0364 – 280236
		(v) Fax	0364 - 280236
		(vi) E-mail	soilnwatercon.ngn@gmail.com

3.2 Institution Building

i) Watershed Committee (WC):

The Watershed Committee of the Kynthroin Watershed IWMP - VIII was constituted with the active involvement of the villagers with strong support of the Traditional Institutions (Village Durbar/Council). The Kynthroin Watershed Committee has been registered under the Society Registration Act 1983.

Table 3.2: Details of Watershed Committees (WC) :

1	2	3	4	5		6	7	8	9	10	11	12	13	14	15	16	17	18	19
Names of the Districts	Names of projects	Names of WCs	Date of Registration as a Society (dd/mm/ yyyy)	Name	Village	Designation	M/F	SC	ST	SF	MF	LF	Landless	UG	SHG	GP	Any other	Educational qualification	Function/s assigned#
West Khasi Hills District	West Khasi Hills District IWMP – VIII	Kynthroin WC		Shri. Carlius Paliar	Marshan Nongrim	Chairman	M	-	ST		√				√			XII	A,B,C,D,E,G,H,I
				Shri. J. J. Lakiang		Secretary	M		ST									M.Sc.	A,B,C,D,E,F,G,H,I
				Smti. Dominica Thongni	Marshan Nongrim	Member	F	-	ST		√				√			X	A,B,E
				Smti. Delphina Thongnibah	Marshan Nongrim	Member	F	-	ST		√				√			III	A,B,E
				Shri. Starwell Sohshang	Marshan Namlang	Member	M	-	ST		√				√			IX	A,B,E
				Shri. Dwiling Thongni	Marshan Namlang	Member	M	-	ST		√				√		Farmer	VI	A,B,E
				Shri. Tomingstar Marthong	Byrki	Member	M	-	ST		√				√			V	A,B,E
				Shri. Handsly Wanniang	Byrki	Member	M	-	ST		√				√			VII	A,B,E
				Smti. Sralti Wanniang	Byrki	Member	F	-	ST		√						Farmer	IV	A,B,E
				Shri. Tros Syiemiong	Byrki Mawthung	Member	M	-	ST	√							School Teacher	B.A.	A,B,E
				Shri. Steadyshon Syiemlieh	Byrki Mawthung	Member	M	-	ST	√							Govt employee	B.A.	A,B,E
				Shri. Wilkle Iawren	Mawkhmah Tyngkoh	Member	M	-	ST						√		Farmer	-	A,B,E
				Smti. Srildaris Thongnibah	Mawkhmah Tyngkoh	Member	F	-	ST								Farmer	VI	A,B,E
				Shri. Krekshon Lyngkhoi	Wahjynriew	Member	M	-	ST	√							Farmer	-	A,B,E
				Shri. Andrias Puwein	Wahjynriew	Member	M	-	ST								Labourer	-	A,B,E

A. *PNP and PRA*
B. *Planning*
C. *Maintenance of Accounts*
D. *Signing of cheques and making payments*
E. *Supervision of construction activities*
F. *Cost Estimation*
G. *Verification & Measurement*
H. *Record of labour employed*
I. *Social Audit*
J. *Any other (please specify).*

ii) Self Help Group

Awareness Programmes were organized in the villages to inform and sensitize the people on the essence of organizing themselves in to homogenous groups for uplifting their livelihood especially the under privilege - for the women and the landless. Discussions were held at length with the WDT for organizing training and capacity building on the scope and procedure of group formation, availing credit, grading of the groups and so on.

Table 3.3: Details of Self Help Groups (SHGs) in the project areas:

1	2	3				4				5			6		
Names of the Districts	Names of projects	Total no. of registered SHGs				No. of members				No. of SC/ST in each category			No. of BPL in each category		
		With only Men	With only Women	With both	Total	Categories	M	F	Total	M	F	Total	M	F	Total
West Khasi Hills	WKH. IWMP-VIII	5	-	1no	6 Nos	(i) Landless									
						(ii) SF									
						(iii) MF	36	22	58	36	22	58			
						(iv) LF									

* (M – Male., F – Female)
** From Column no. 2,3 and 4, total no. of states, District and projects, respectively, from column 5 to 8, category-wise grand totals, may be given for the entire country at the end of the table.

iii) User Group

To manage the assets created and ensure their sustainability User Groups will be formed. The people have been sensitized on the importance of ensuring that the assets created are sustainably used and the essentiality of having User Groups for maintenance and operation of their assets.

Table 3.4: User Group Details

1	2	3				4				5			6		
Names of Districts	Names of Projects	Total no. of UGs				No. of members				No. of SC/ST in each category			No. of BPL in each category		
		Men	Women	Both	Total	Categories	M	F	Total	M	F	Total	M	F	Total
West Khasi Hills	WKH IWMP-VIII					(i)Landless									
						(ii) SF									
						(iii) MF									
						(iv) LF									
Total															

* (M – Male., F – Female)
** From Column no. 2,3 and 4, total no. of states, District and projects, respectively, from column 5 to 8, category-wise grand totals, may be given for the entire country at the end of the table.

CHAPTER IV

PROJECT ACTIVITIES

4.1 Preparatory Phase:

i) Entry Point Activities (EPA):

(Financial – Rs. in lakh)

1	2	3		4
Name of the Project	Amount earmarked for EPA	Entry Point Activities planned		Geographical Location
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	` 9.00	Drinking Well-3 nos	`1.261	
		Washing Place -3 nos.	` 3.02	
		Foot path -1 no	` 0.712	
		Drinking Water Supply System -1 no	` 1.6014	
		Community asset -7 nos.	` 2.4056	

ii) Other activities of Preparatory Phase:

1	2	3	4	5	6	7
Initiation of village level institution	Capacity building	IEC activities	Baseline survey	Hydro-geological survey	Identifying technical support agencies	Resource agreements
1 no. of W/C and 6 Nos. of Sub W/C.	4 nos.	2 nos.	Participatory Rural Appraisals	N.A.	Done	Done

4.2 Watershed Works Phase:

4.2.1 Activities related to surface water resources in the project areas:

1	2	3			4											
Name of Project	Type of structures	Pre-Project			Proposed Project											
					Augmentation/repair of existing structures				Construction of new structures				Total target			
		No.	Area irrigated (Ha.)	Storage capacity (m^3)	No.	Area to be treated (ha.)	Storage capacity (m^3)	Estimated cost (in Lakhs)	No.	Area to be treated (ha.)	Storage capacity (m^3)	Estimated cost (in Lakhs)	No.	Area to be treated (ha.)	Storage capacity (m^3)	Estimated cost (in Lakhs)
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	(i) Tank															
	(ii) Pond (Dug-Out)								19	34.2	3420	3.040	19	34.2	3420	3.040
	(iii) Lake															
	(iv) Check Dam								13	32.50	910	10.1605	13	32.50	910	10.1605
	(v) Percolation Tank															
	(vi) Diversion Channel								26	20.80		11.6082	26	20.80		11.6082
	(vii) Any other (specify)															
	- Protection Wall								65			22.4635	65			22.4635
	- Water Harvesting Structures								19	47.50	13110	27.2288	19	47.50	13110	27.2288
TOTAL									142 Nos. & 14510.25 Rm				142 Nos. & 14510.25 Rm			

4.2.2. Activities related to recharging ground water resources in the project areas:

1	2	3		4							
		Pre-Project		Proposed Project							
Name of Project	Type of structures	No.	Area irrigated (Ha.)	Augmentation/repair of existing recharging structures			Construction of new recharging atructures			Total target	
				No.	Area to be irrigated (Ha.)	Estimated cost	No.	Area to be irrigated (Ha.)	Estimated cost	Area to be irrigated (Ha.)	Estimated cost
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	(i) Open wells		Nil		Nil						
	(ii) Bore wells		Nil		Nil						
	(iii) Any others (Pls. specify)										
	1. Dug-out Pond		Nil		Nil		19	34.20	3.040	34.20	3.040
	2. Water Harvesting		Nil		Nil		19	47.50	27.2288	47.50	27.2288
	3. Check Dam		Nil		Nil		13	32.50	10.1605	32.50	10.1605
	TOTAL FOR THE PROJECT										

4.2.3 User Groups in the Project Areas.

The Watershed Committee (WC) shall also constitute User Groups in the watershed area with the help of WDT. These shall be homogenous groups of persons most affected by each work/ activity and shall include those having land holdings within the watershed areas. Each User Group shall consist of those who are likely to derive direct benefits from a particular watershed work or activity. The Watershed Committee (WC) with the help of the WDT shall facilitate resource-use agreements among the User Groups based on the principles of equity and sustainability. These agreements must be worked out before the concerned work is undertaken. The agreement must elaborate in what way the User Group (the group under which a particular activity or structure) plan to maintain, repair and if need be, raise fund for the same so that the particular structure/ activity may be repaired or even further renovate even after the closing of the Project. It must be regarded as a pre-condition for that activity. The User Groups will be responsible for the operation and maintenance of all the assets created under the project in close collaboration with the Village Dorbar.

4.2.5 Self Help Groups (SHGs) in the project areas:

The Watershed Committee shall constitute SHGs in the watershed area with the help of WDT from amongst poor, small and marginal farmer households, landless/assetless poor agricultural labourers, women, farmers and ST persons. The Kynthroin Watershed has so far constituted 3 SHG. It plans to initiate forming of 4 more. The Kynthroin Watershed in this respect has already organised SHG Training to help people be aware of the concept and scope of SHG formation. These Groups shall be homogenous groups having common identity and interest who are dependent on the watershed area for their livelihood.

Awareness Programmes were organized in the villages to inform and sensitize the people on the essence of organizing themselves in to homogenous groups for uplifting their livelihood especially the under privilege - for the women and the landless. Discussions were held at length with the WDT for organizing training and capacity building on the scope and procedure of group formation, availing credit, grading of the groups and so on.

4.2.7 Other activities of watershed works phase:

1	2		3		4		5		6		7		8		9		10		11		12
Names of project	Ridge area treatment		Drainage line treatment		Nursery raising		Land development		Crop demonstrations		Pasture development		Veterinary services		Fishery development		Non-conventional energy		Any other (please specify)		Total Estimated Cost
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	450 Ha.	21.127	142 Nos.	74.501	0.5 Ha.	9.556	109	8.216	13 units	0.65	nil	nil	89	11.74	69	10.50	nil	nil	168.40	11.905	127.113

4.2.8 Details of engineering structures in watershed works:

1	2	3			4			5		
Project	Name of Structures	Type of Treatment			Type of land			Target		
		(i) Ridge area (R)	(ii) Drainage line (D)	(iii) Land Dev. (L)	(i) Private	(ii) Community	(iii) Others (pl. specify)	No. of units (No. / cum / rmt.)	Estimated cost (Rs. in lakh)	Expected month & year of completion (mm/yyyy)
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	Staggered trenching									
	Loose boulder Contour bund									
	Graded bunding									
	Protection wall		D		P	C		65 Nos	22.4635	2015-16
	Earthen Check Dam									
	Masonry stop dam									
	Gully plugs									
	Gabion structures									
	Underground dykes									
	Field bunds									
	Any others (Pls. specify)									
	1. Bench Terracing			L	P			10 Nos.	3.00	2015-16
	2. Check Dam		D			C		13 Nos.	10.1605	2015-16
	3. Water Harvesting Structures		D			C		19 Nos.	27.2288	2015-16
	4. Small Dug-out Pond		D					19 Nos.	3.0400	2015-16
	5. Run-off Disposal Channel		D					26 Nos.	11.6082	2015-16

4.2.10 Details of activities connected with vegetative cover in watershed works:

1	2	3			4			5			
Project	Name of structure / work	Type of Treatment			Type of Land			Target			
		(i) Ridge area (R)	(ii) Drainage Line (D)	(iii) Land Dev. (L)	(i) Private	(ii) Community	(iii) Others (pl. specify)	Area (Ha.)	No. of plants	Estimated cost (` in lakh)	Expected month & year of completion mm/yyyy)
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	Afforestation	R			Pvt.	C		170		17.17	2015-16
	Regeneration										
	Agro-forestry										
	Fuel-wood										
	Fodder										
	Agro-Horticulture			L	Pvt.			155		13.33	2015-16
	Pasture dev.										
	Nursery raising										
	Others (pl. Specify)										
	1. Improvement of Degraded Forest	R				C		230		8.28	2015-16
	2. Strip Plantation	R			Pvt.	C		50		2.133	2015-16

in case two or more activities are executed over same area, the figures in area treated should be accounted only once and should reflect only the actual watershed area treated.

4.2.12 Details of allied / other activities:

1	2		3			4	
Project	**Name of activity**		**Type of land**			**Target**	
			(i) Private	**(ii) Community**	**(iii) Others (Landless)**	**Estimated cost (` in lakhs)**	**Expected month & year of completion (mm/yyyy)**
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	Carpentry	(39 units)	P			1.95	2015-2016
	Apiculture	(23 units)	P			1.84	2015-2016
	Poultry	(46 units)	P			6.10	2015-2016
	Pisciculture	(69 units)	P			10.50	2015-2016
	Piggery	(43 units)	P			5.64	2015-2016
	Compost pit	(4 units)	P			0.10	2015-2016
	Kitchen Gardening	(2 units)	P			0.30	2015-2016
	Tailoring	(69units)	P			5.52	2015-2016
	Agri-implements						
	Weaving						
	Betel nut Processing						
	Hollow Block Making	(6 units)	P			0.30	2015-2016
	Mushroom cultivation	(3 units)	P			0.90	2015-2016

* from column no. 2, no. of States; from column no. 3, no. of Districts; from column no. 4, total no. of Projects; from column no. 5, activity-wise totals, from column no. 6, type-wise totals, from coulmn no. 7, agency-wise totals, from column no. 8, total estimated cost, from column no. 9, total expenditure incurred, structure-wise no. of completed works, from column no. 10, item-wise totals, for the entire country may be indicated at the end of the table

@ The activities given in this column are merely indicative and States are free to choose any other activity suited to the project area.

4.3 Consolidation and withdrawal phase

Details of activities in the CPRs in the project areas:

1	2	3	4	5			
Names of project	Name(s) of villages	CPR particulars	Activity proposed	Target			
				Target area under the activity (Ha.)	Estimated expenditure (`)	Expected no. of beneficiaries	Estimated contribution to WDF (`)
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	Byrki	Degraded Forest/Wasteland	Afforestation	170 Ha.	1717000	70	85850
	Byrki Mawthung	Degraded Forest/Wasteland	Improvement of Existing Degrading Forest	230 Ha.	828000	70	41400
	Marshan Namlang	Community Land	Avenue/Strip Plantation	50 Ha.	213300	24	10665
	Marshan Nongrim	Community Land	Washing Place	3 Nos	160140	3	15100
	Mawkhmah Tyngkoh	Springs	Drinking Wells	3 Nos.	126100	3	6310
	Wahjynriew	Community Land	Footpath	1 No	71200	1	3560
		Streams	Check Dam	13 Nos	1016050	13	50802
		Streams	Water Harvesting Structure	19 Nos	2722880	19	136144
	TOTAL				**6854670**		**349831**

WATERSHED TREATMENT PLAN OF UMMAWIONG-KYNTHROIN MICRO WATERSHED UNDER IWMP – WEST KHASI HILLS, PROJECT - VIII

Project	**IWMP-VIII**
District	**West Khasi Hills**
C&RD Block	**Nongstoin**

Total Geographical Area	**2979 Ha.**
Treatable Area	**2500 Ha.**
Nos. of Villages	**10 Nos.**

Total Project Cost	**` 375.00 Lakhs**
Central Share	**` 337.50 Lakhs**
State Share	**` 37.50 Lakhs**

Total Population	**1715**
Total Household	**315**
No. of Micro-Watersheds	**4 No.**

(Rupees in Lakhs)

S. N.	Activities	Total				1st Year				2nd Year				3rd Year				4th Year				5th Year			
		Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
I	**Administrative Cost**		10.0%		37.50						2.0%		7.50		5.0%		18.75		3.0%		11.25				
II	**Monitoring & Evaluation**		2.0%		7.50						0.5%		1.875		1.0%		3.75		0.50%		1.875				
	Sub Total (I+II)	**0.00**	**12.0%**	**0.00**	**45.00**	**0.00**	**0.0%**	**0.00**	**0.00**	**0.00**	**2.5%**	**0.00**	**9.375**	**0.00**	**6.00%**	**0.00**	**22.50**	**0.00**	**3.5%**	**0.00**	**13.125**	**0.00**	**0.0%**	**0.00**	**0.00**
III	**Preparatory Phase**																								
A	**EPA**																								
	i) Drinking Well		4		1.7224		4.00		1.7224																
	ii) Washing Place		5		4.6301		5.00		4.6301																
	iii) Foot path		1		0.7120		1.00		0.712																
	iv) Drinking Water Supply System		1		1.6014		1.00		1.6014																
	v) Community assets		7		2.4056		7.00		2.4056																
	vi) Check Dam cum Washing Place		3		3.3286		3.00		3.3286																
	vii) Foot bridge		1		0.60		1.00		0.60																
	Sub Total of EPA	**0.00**	**22**	**0.00**	**15.00**	**0.00**	**22.00**	**0.00**	**15.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
B	**DPR**		1%		3.75		1.0%		3.750		0.00		0.00												
C	**Institutional & Capacity Building**		5%		18.75		1.0%		3.750		2.0%		7.50		1.0%		3.75		1.0%						
	Sub Total of III (Preparatory Phase)	**0.00**	**10%**	**0.00**	**37.50**	**0.00**	**6.0%**	**0.00**	**22.50**	**0.00**	**2.0%**	**0.00**	**7.50**	**0.00**	**1.0%**	**0.00**	**3.75**	**0.00**	**1.0%**	**0.00**	**3.75**	**0.00**	**0.0%**	**0.00**	**0.00**
IV	**Works Phase**																								
A	**Arable Land Treatment**																								
	Contour bund	20.00	20		1.50					5.00	5.00		0.375	15.00	15		1.125								
	Wet Terrace	8.00	13		1.20					3.00	5.00		0.450	5.00	8		0.75								
	Bench Terracing	15.00	10		3.00									15.00	10		3.00								
	Peripheral Bunding		75	1830.00	9.15						1.00	267.64	0.1338		60	14775.26	7.3876		14	3257.10	1.6286				
	Crop Demonstration		13		0.65										13		0.65								

S. N.	Activities	Total				1st Year				2nd Year				3rd Year				4th Year				5th Year			
		Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	Kitchen Garden		67		1.675										57		1.425		10		0.25				
	Improvement of Existing Paddy Fields	94.00	67		4.1280								0.3010	83.00	50		3.569	4.00	5		0.258				
	Agro-Horticulture	185.00	150		15.115									185.00	150		10.219	M	M		4.896				
	Sub Total of A (Arable)	**322.00**	**415.00**	**18300.00**	**36.4180**	**0.00**	**0.00**	**0.00**	**0.00**	**15.00**	**23.00**	**267.00**	**1.2598**	**303.00**	**363.00**	**14775.26**	**28.1256**	**4.00**	**29.00**	**3257.10**	**7.0326**	**0.00**	**0.00**	**0.00**	**0.00**
B	**Non-Arable Land**																								
	Improvement of Degraded Forest/ existing Natural Forest	300.00	140.00		10.24					230.00	70.00		5.980	70 & M	70		3.56	M	M		0.70				
	Afforestation	315.00	120.00		28.335					0.00	0.00			315.00	120		19.20	M	M		9.135				
	Avenue Plantation	50.00	24.00		2.1330					50.00	24.00		1.538	M	M		0.595								
	Agro-Forestry	115.00	65.00		8.8550						0.00			115.00	65		5.52	M	M		3.335				
	Nursery Establishment		94000.0		7.520						94000.0		7.52												
	Sub Total of B (Non Arable)	**780.00**	**425.00**	**0.00**	**57.0830**	**0.00**	**0.00**	**0.00**	**0.00**	**280.00**	**94.00**	**0.00**	**15.038**	**500.00**	**255.00**	**0.00**	**28.875**	**0.00**	**0.00**	**0.00**	**13.17**	**0.00**	**0.00**	**0.00**	**0.00**
C	**Drainage Line Treatment**																								
	Farm Ponds / Dug-out Ponds		23.00		5.1877						2.00		1.0259		21		4.1618								
	Water Harvesting Structures		28.00		40.1444						4.00		5.3698		17		26.282		7		8.4926				
	Check Dam, H/W Dam, Diversion Dam / Irrigation Dam		17.00		12.0707						3.00		2.2435		12		8.1182		2		1.709				
	Loose Boulder Check Dam cum Washing Place		1.00		0.4638						0.00				1		0.4638								
	Stone Masonry Protection Wall / Retaining Wall		116.00		45.3316						8.00		2.6893		74		31.1886		34		11.4537				
	Runoff Disposal Channel / Diversion drain		52.00	21020.23	13.3008						3.00	677.7450	0.4987		40	18379.70	11.5349		9	1962.785	1.2672				
	Sub Total of C (DLT)	**0.00**	**237.00**	**21020.23**	**116.499**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**20.00**	**677.7450**	**11.8272**	**0.00**	**165.00**	**18379.70**	**81.7494**	**0.00**	**52.00**	**1962.785**	**22.9225**	**0.00**	**0.00**	**0.00**	**0.00**
	Total of Watershed Works (A+B+C)	**1102.00**	**1077.00**	**39320.23**	**210.00**	**0.00**	**0.00**	**0.00**	**0.00**	**295.00**	**137.00**	**945.3850**	**28.125**	**803.00**	**783.00**	**33154.96**	**138.75**	**4.00**	**81.00**	**5219.885**	**43.125**	**0.00**	**0.00**	**0.00**	**0.00**
D	**Livelihood Activities**																								
	Tailoring		119.00		9.520						5.00		0.40		34		2.72		80		6.40				
	Carpentry / Black smithy		76.00		3.80						13.00		0.65		33		1.65		30		1.50				
	Kitchen Gardening		87.00		2.1750						30.00		0.75		17		0.425		40		1.00				
	Apiculture		33.00		2.640						8.00		0.64		10		0.80		15		1.20				
	Masonry / Hollow Block Making		19.00		0.950						5.00		0.25		11		0.55		3		0.15				
	Piggery		48.00		3.840						3.00		0.24		15		1.20		30		2.40				
	Poultry		50.00		4.00						4.00		0.32		16		1.28		30		2.40				

S. N.	Activities	Total				1st Year				2nd Year				3rd Year				4th Year				5th Year			
		Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	Vermi-Composting		13.00		1.225										9		0.725		4		0.50				
	Pisciculture		57.00		5.600						5.00		0.50		20		1.90		32		3.20				
	Sub Total of D (Livelihood)	0.00	502.00	0.00	33.750	0.00	0.00	0.00	0.00	0.00	73.00	0.00	3.75	0.00	165.00	0.00	11.25	0.00	264.00	0.00	18.75	0.00	0.00	0.00	0.00
E	**Production Systems**																								
	Poultry Farming		23.00		6.90						3.00		0.90		6		1.80		14		4.20				
	Piggery Farming		22.00		6.60						1.00		0.30		8		2.40		13		3.90				
	Food Processing		5.00		1.50						1.00		0.30		2		0.60		2		0.60				
	Pisciculture		18.00		5.40						3.00		0.90		6		1.80		9		2.70				
	Grocery shop		28.00		8.40						3.00		0.90		10		3.00		15		4.50				
	Vermi-composting		5.00		1.50														5		1.50				
	Mushroom cultivation		3.00		0.90														3		0.90				
	Weaving & Handloom		6.00		1.80										2		0.60		4		1.20				
	Carpentry / Blacksmithy		8.00		1.20						2.00		0.30		6		0.90								
	Rice Mill Operation		6.00		3.00														6		3.00				
	Kitchen Gardening		2.00		0.30						1.00		0.15		1		0.15								
	Sub Total of E (Production)	**0.00**	**126.00**	**0.00**	**37.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**14.00**	**0.00**	**3.75**	**0.00**	**41.00**	**0.00**	**11.25**	**0.00**	**71.00**	**0.00**	**22.50**	**0.00**	**0.00**	**0.00**	**0.00**
	Total of IV (A+B+C+D+E) Works Phase	**1102.00**	**1629.00**	**39320.23**	**281.25**	**0.00**	**0.00**	**0.00**	**0.00**	**295.00**	**224.00**	**945.385**	**35.625**	**803.00**	**989.00**	**33154.96**	**161.25**	**4.00**	**416.00**	**5219.885**	**84.375**	**0.00**	**0.00**	**0.00**	**0.00**
	Consolidation Phase		3.00%		11.25																		3.0%		11.25
	Sub Total of V (Consolidation Phase)	**0.00**	**3.00%**	**0.00**	**11.25**	**0.00**	**0.0%**	**0.00**	**0.00**	**0.00**	**0.00%**	**0.00**	**0.00**	**0.00**	**0.00%**	**0.00**	**0.00**	**0.00**	**0.00%**	**0.00**	**0.00**	**0.00**	**3.0%**	**0.00**	**11.25**
	Grand Total (I+II+III+IV+V)	**1102.00**	**1655.00**	**39320.23**	**375.00**	**0.00**	**22.00**	**0.00**	**22.50**	**295.00**	**228.50**	**945.385**	**52.50**	**803.00**	**989.00**	**33154.96**	**187.50**	**4.00**	**416.00**	**5219.885**	**101.25**		**0.00**		**11.25**

Divisional Officer,
Cum
Project Leader
Project Implementation Agency (IWMP)
Soil & Water Conservation Division,
Nongstoin

Deputy Commissioner,
West Khasi Hills District,
Nongstoin

CHAPTER V
PROJECT PHASING & BUDGETING

PLAN FOR RELEASE OF PROJECT FUND BY SLNA TO PROJECT IMPLEMENTATION AGENCY (PIA) & WATERSHED COMMITTEE FOR KYNTHROIN WATERSHED (WEST KHASI HILLS, IWMP – PROJECT VIII)

(Physical in %) (Financial: Rs. in Lakhs)

Particulars in Budget Component	Prescribed Percentage (%)		PIA (%)		Watershed Committee (%)		Year wise Phasing & Breakup of Prescribed Percentage under Column 2										TOTAL	
							1st Year		2nd Year		3rd Year		4th Year		5th Year			
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1. Administration																		
i. Administrative Cost	10 %	22.50	10 %	22.50	-	-	-	-	2 %	4.50	5 %	11.25	3 %	6.75	-	-	10 %	22.50
ii. Monitoring	1 %	2.25	1 %	2.25	-	-	-	-	0.2 %	0.45	0.5 %	1.125	0.3 %	0.675	-	-	1 %	2.25
iii. Evaluation	1 %	2.25	1 %	2.25	-	-	-	-	0.3 %	0.675	0.5 %	1.125	0.2 %	0.45	-	-	1 %	2.25
Total of 1	**12 %**	**27.00**	**12 %**	**27.00**	**-**	**-**	**-**	**-**	**2.5 %**	**5.625**	**6 %**	**13.50**	**3.5 %**	**7.875**	**-**	**-**	**12 %**	**27.00**
2. Preparatory Phase																		
i. Entry Point Activities	4 %	9.00	4 %	9.00	-	-	4 %	9.00	-	-	-	-	-	-	-	-	4 %	9.00
ii. Institutional, Capacity Building & Training, IEC Activities	5 %	11.25	5 %	11.25	-	-	1 %	2.25	2 %	4.50	1 %	2.25	1 %	2.25	-	-	5 %	11.25
iii. Preparation of DPR	1 %	2.25	1 %	2.25	-	-	1 %	2.25	-	-	-	-	-	-	-	-	1 %	2.25
Total of 2	**10 %**	22.50	**10 %**	**22.50**	**-**	**-**	**6 %**	**13.50**	**2 %**	**4.50**	**1 %**	**2.25**	**1 %**	**2.25**	**-**	**-**	**10 %**	**22.50**
3. Watershed Works Phase																		
i. Watershed Treatment / Development Works	56 %	126.00	-	-	56 %	126.00	-	-	7.5 %	16.875	37 %	83.25	11.50 %	25.875	-	-	56 %	126.00
ii. Livelihood Activities	9 %	20.25	-	-	9 %	20.25	-	-	1 %	2.25	3 %	6.75	5 %	11.25	-	-	9 %	20.25
iii. Production System & Micro Enterprises	10 %	22.50	-	-	10 %	22.50	-	-	1 %	2.25	3 %	6.75	6 %	13.50	-	-	10 %	22.50
Total of 3	**75 %**	**168.75**	-	-	**75 %**	**168.75**	**-**	**-**	**9.5 %**	**21.375**	**43 %**	**96.75**	**22.50 %**	**50.625**	**-**	**-**	**75 %**	**168.75**
4. Consolidation & Withdrawal Phase	3 %	6.75	3 %	6.75	-	-	-	-	-	-	-	-	-	-	3 %	6.75	3 %	6.75
Total of 4	**3 %**	**6.75**	**3 %**	**6.75**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 %**	**6.75**	**3 %**	**6.75**
TOTAL OF 1 TO 4	**100 %**	**225.00**	**25%**	**56.25**	**75 %**	**168.75**	**6 %**	**13.50**	**14 %**	**31.50**	**50 %**	**112.50**	**27 %**	**60.75**	**3 %**	**6.75**	**100 %**	**225.00**
Central Share (C.S) : 90 %								**12.15**		**28.35**		**101.25**		**54.675**		**6.075**		**202.50**
State Share (S.S.) : 10 %								**1.35**		**3.15**		**11.25**		**6.075**		**0.675**		**22.50**

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Deputy Commissioner,
West Khasi Hills District,
Nongstoin

WATERSHED TREATMENT PLAN OF KYNTHROIN MICRO WATERSHED UNDER IWMP – WEST KHASI HILLS PROJECT - VIII

Project	**IWMP-VIII**
District	**West Khasi Hills**
C&RD Block	**Nongstoin**

Total Geographical Area	**1756 Ha.**
Treatable Area	**1500 Ha.**
Nos. of Villages	**6 Nos.**

Total Project Cost	**` 225.00 Lakhs**
Central Share	**` 202.50 Lakhs**
State Share	**` 22.50 Lakhs**

Total Population	**835**
Total Household	**150**
No. of Micro-Watersheds	**1 No.**

(Rupees in Lakhs)

S. N.	Activities	Total				1st Year				2nd Year				3rd Year				4th Year				5th Year			
		Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
I	**Administrative Cost**		10.0%		22.50						2.0%		4.50		5.0%		11.250		3.0%		6.750				
II	**Monitoring & Evaluation**		2.0%		4.50						0.5%		1.125		1.0%		2.250		0.50%		1.125				
	Sub Total (I+II)	0.00	12.0%	0.00	27.00	0.00	0.0%	0.00	0.00	0.00	2.5%	0.00	5.625	0.00	6.00%	0.00	13.50	0.00	3.5%	0.00	7.875	0.00	0.0%	0.00	0.00
III	**Preparatory Phase**																								
A	**EPA**																								
	i) Drinking Well		3		1.2610		3.00		1.2610																
	ii) Washing Place		3		3.0200		3.00		3.0200																
	iii) Foot path		1		0.7120		1.00		0.7120																
	iv) Drinking Water Supply System		1		1.6014		1.00		1.6014																
	v) Community assets		7		2.4056		7.00		2.4056																
	vi) Check Dam cum Washing Place																								
	vii) Foot bridge																								
	Sub Total of EPA	0.00	15	0.00	9.00	0.00	15.00	0	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B	**DPR**		1%		2.25		1.0%		2.25																
C	**Institutional & Capacity Building**		5%		11.25		1.0%		2.25		2.0%		4.50		1.0%		2.250		1.0%		2.2500				
	Sub Total of III (Preparatory Phase)	0.00	10%	0.00	22.50		6.0%		13.50	0.00	2.0%	0.00	4.50	0.00	1.0%	0.00	2.250	0.00	1.0%	0.00	2.2500	0.00	0.0%	0.00	0.00
IV	**Works Phase**																								
A	**Arable Land Treatment**																								
	Contour bund																								
	Wet Terrace																								
	Bench Terracing	15.00	10.00		3.00									15.00	10.00		3.00								
	Peripheral Bunding		15.00	3298.00	1.6490										12.00	2668.00	1.3340		3.00	630.00	0.3150				
	Crop Demonstration		13.00		0.6500										13.00		0.650								

S. N.	Activities	Total				1st Year				2nd Year				3rd Year				4th Year				5th Year			
		Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	Kitchen Garden		67.00		1.6750										57.00		1.425		10.00		0.250				
	Improvement of Existing Paddy Fields	84.00	45.00		3.6120					2.0	2.0		0.0860	78.0	40.00		3.354	4.00	3.00		0.1720				
	Agro-Horticulture	155.00	120.00		13.330									155.00	120.00		9.145	M			4.1850				
	Sub Total of A (Arable)	**254.00**	**270.00**	**3298.0**	**23.916**	**0.00**	**0.00**	**0.00**	**0.00**	**2.0**	**2.0**	**0.00**	**0.0860**	**248.00**	**252.00**	**2668.00**	**18.9080**	**4.00**	**16.00**	**630.00**	**4.9220**	**0.00**	**0.00**	**0.00**	**0.00**
B	**Non-Arable Land**																								
	Improvement of Degraded Forest/ existing Natural Forest	230.00	70.00		8.280					230 (c)	70.00		5.980	M			2.30								
	Afforestation	170.00	70.00		17.170									170 (c)	70.00		12.24	M			4.930				
	Avenue Plantation	50.00	24.00		2.133					50.00	24.00		1.5380	M			0.595								
	Agro-Forestry																								
	Nursery Establishment																								
	Sub Total of B (Non Arable)	**450.00**	**164.00**	**0.00**	**27.583**	**0.00**	**0.00**	**0.00**	**0.00**	**280.00**	**94.00**	**0.00**	**7.5180**	**170.00**	**70.00**	**0.00**	**15.1350**	**0.00**	**0.00**	**0.00**	**4.9300**	**0.00**	**0.00**	**0.00**	**0.00**
C	**Drainage Line Treatment**																								
	Farm Ponds / Dug-out Ponds		19.00		3.040						1.00		0.160		18.00		2.8800								
	Water Harvesting Structures		19.00		27.2288						4.00		5.3698		12.00		17.3868		3.00		4.4722				
	Check Dam, H/W Dam, Diversion Dam / Irrigation Dam		13.00		10.1605						3.00		2.2435		8.00		6.2080		2.00		1.7090				
	Loose Boulder Check Dam cum Washing Place																								
	Stone Masonry Protection Wall / Retaining Wall		65.00	14510.25	22.4635						4.00		1.020		36.00		12.7230		25.00		8.7205				
	Runoff Disposal Channel / Diversion drain		26.00	14510.25	11.6082						2.00	597.125	0.4777		20.00	12511.50	10.0092		4.00	1401.6250	1.1213				
	Sub Total of C (DLT)	**0.00**	**142.00**	**17808.25**	**74.5010**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**14.00**	**597.1250**	**9.2710**	**0.00**	**94.00**	**12511.50**	**49.2070**	**0.00**	**34.00**	**1401.6250**	**16.0230**	**0.00**	**0.00**	**0.00**	**0.00**
	Total of Watershed Works (A+B+C)	**704.00**	**576.00**		**126.00**	**0.00**	**0.00**	**0.00**	**0.00**	**282.00**	**110.00**	**597.1250**	**16.8750**	**418.00**	**416.00**	**15179.50**	**83.250**	**4.00**	**50.00**	**2031.6250**	**25.8750**	**0.00**	**0.00**	**0.00**	**0.00**
D	**Livelihood Activities**																								
	Tailoring		69.00		5.52						5.00		0.400		24.00		1.92		40.00		3.20				
	Carpentry / Black smithy		39.00		1.95						3.00		0.150		13.00		0.65		23.00		1.1500				
	Kitchen Gardening																								
	Apiculture		23.00		1.84						8.00		0.640		5.00		0.40		10.00		0.80				
	Masonry / Hollow Block Making		6.00		0.30										6.00		0.30								
	Piggery		33.00		2.64						3.00		0.240		10.00		0.80		20.00		1.60				
	Poultry		35.00		2.80						4.00		0.320		11.00		0.8800		20.00		1.60				

S. N.	Activities	Total				1st Year				2nd Year				3rd Year				4th Year				5th Year			
		Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin	Ha	Nos	Rm	Fin
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	Vermi-Composting		4.00		0.10										4.00		0.10								
	Pisciculture		51.00		5.10						5.00		0.500		17.00		1.70		29.00		2.90				
	Sub Total of D (Livelihood)	**0.00**	**260.00**	**0.00**	**20.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**28.00**	**0.00**	**2.250**	**0.00**	**90.00**	**0.00**	**6.750**	**0.00**	**142.00**	**0.00**	**11.25**	**0.00**	**0.00**	**0.00**	**0.00**
E	**Production Systems**																								
	Poultry Farming		11.00		3.30						1.00		0.30		4.00		1.20		6.00		1.80				
	Piggery Farming		10.00		3.00						1.00		0.30		4.00		1.20		5.00		1.50				
	Food Processing																								
	Pisciculture		18.00		5.40						3.00		0.90		6.00		1.80		9.00		2.70				
	Grocery shop		22.00		6.60						2.00		0.60		8.00		2.40		12.00		3.60				
	Vermi-composting																								
	Mushroom cultivation		3.00		0.90														3.00		0.90				
	Weaving & Handloom																								
	Carpentry / Blacksmithy																								
	Rice Mill Operation		6.00		3.00														6.00		3.00				
	Kitchen Gardening		2.00		0.30						1.00		0.150		1.0		0.150								
	Sub Total of E (Production)	**0.00**	**72.00**	**0.00**	**22.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.00**	**0.00**	**2.250**	**0.00**	**23.00**	**0.00**	**6.750**	**0.00**	**41.00**	**0.00**	**13.50**	**0.00**	**0.00**	**0.00**	**0.00**
	Total of IV (A+B+C+D+E) Works Phase	**704.00**	**908.00**	**17808.25**	**168.75**	**0.00**	**0.00**	**0.00**	**0.00**	**282.00**	**146.00**	**597.125**	**21.375**	**418.00**	**529.00**	**15179.50**	**96.750**	**4.00**	**233.00**	**2031.6250**	**50.6250**	**0.00**	**0.00**	**0.00**	**0.00**
	Consolidation Phase		3.00		6.75																		3.0%		6.750
	Sub Total of V (Consolidation Phase)	**0.00**	**3.00%**	**0.00**	**6.75**	**0.00**	**0.0%**	**0.00**	**0.00**	**0.00**	**0.00%**	**0.00**	**0.00**	**0.00**	**0.00%**	**0.00**	**0.00**	**0.00**	**0.00%**	**0.00**	**0.00**	**0.00**	**3.0%**	**0.00**	**6.750**
	Grand Total (I+II+III+IV+V)	**704.00**	**923.00**	**17808.25**	**225.00**	**0.00**	**15.00**	**0.00**	**13.50**	**282.00**	**146.0**	**597.125**	**31.50**	**418.00**	**529.00**	**15179.50**	**112.50**	**4.00**	**233.00**	**2031.6250**	**60.750**	**0.00**	**0.00**	**0.00**	**6.750**

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VILLAGE WISE ACTION PLAN OF KYNTROIN WATERSHED UNDER IWMP – VIII

Name of District : West Khasi Hills	**Nos. of Villages : 6 Nos**	**Physical in Ha/Nos/RM/Units**
Name of C&RD Block : Nongstoin C&RD Block	**Project Area : 1500 Ha.**	**Financial : Rs. in Lakhs**

Sl. No	ACTIVITIES	Byrki		Byrki Mawthung		Marshan Namlang		Marshan Nongrim		Mawkhmah Tyngkoh		Wahjynriew		TOTAL	
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18
A	**Watershed Treatment / Development Works**														
i.	**Arable Land Treatment**														
1.	Bench Terracing @ 20000/Ha.	4 Ha.	0.80	1 Ha.	0.20	4 Ha.	0.80	4 Ha.	0.80	1 Ha.	0.20	1 Ha.	0.20	15 Ha.	3.00
2.	Peripheral Bunding @ 50/Rm	680 Rm	0.34	380 Rm	0.19	740 Rm	0.37	836 Rm	0.418	317 Rm	0.1585	345 Rm.	0.1725	3298 Ha.	1.649
3.	Crop Demonstration @ 5000/Unit.	3 Unit	0.15	1 Unit	0.05	3 Unit	0.15	3 Unit	0.15	2 Unit	0.10	1 Unit	0.05	13 Unit	0.65
4.	Kitchen Garden @ 2500/unit	13 Unit	0.325	7 Unit	0.175	18 Unit	0.45	20 Unit	0.50	6 Unit	0.15	3 Unit	0.075	67 Unit	1.675
5.	Improvement of Existing Paddy Fields @ 4300/Ha.	13 Ha.	0.559	9 Ha.	0.387	23 Ha.	0.989	21 Ha.	0.903	11 Ha.	0.473	7 Ha.	0.301	84 Ha.	3.612
6.	Agro-Horticulture @ 8600/Ha.	36 Ha.	3.096	11 Ha.	0.946	43 Ha.	3.698	42 Ha.	3.612	13 Ha.	1.118	10 Ha.	0.86	155 Ha.	13.33
	Total of Arable Land Treatment (i)		**5.27**		**1.948**		**6.457**		**6.383**		**2.1995**		**1.6585**		**23.916**
ii.	**Non Arable Land Treatment**														
1.	Improvement of Degraded Forest 3600/Ha.	58 Ha.	2.088	37 Ha.	1.332	36 Ha.	1.296	48 Ha.	1.728	28 Ha.	1.008	23 Ha.	0.828	230 Ha.	8.28
2.	Afforestation (Pine/Non Pine) @ 10100/Ha.	39 Ha.	3.939	32 Ha.	3.232	30 Ha.	3.03	29 Ha.	2.929	25 Ha	2.525	15 Ha.	1.515	170 Ha.	17.17
3.	Avenue / Strip Plantation (2 Rows) @ 4266/Ha.	11 Ha.	0.46926	11 Ha.	0.46926	8 Ha.	0.34128	7 Ha.	0.29862	5 Ha.	0.2133	8 Ha.	0.34128	50 Ha.	2.133
	Total of Non Arable Land Treatment (ii)		**6.49626**		**5.03326**		**4.66728**		**4.95562**		**3.7463**		**2.68428**		**27.583**
iii	**Drainage Line Treatment**														
1.	Small Dug-Out Ponds	3 Nos	0.48	3 Nos	0.48	4 Nos	0.64	5 Nos	0.80	2 Nos	0.32	2 Nos	0.32	19 Nos	3.04
2.	Water Harvesting	4 Nos	6.0342	4 Nos	5.4577	4 No	5.7372	4 No	6.1662	2 No	2.716	1 No	1.1175	19 No	27.2288
3.	Check Dam	2 Nos	1.389	2 No.	1.706	3 No.	2.5635	2 No.	1.316	2 No.	1.593	2 No.	1.593	13 No.	10.1605
4.	Protection Wall & Retaining Wall	15 Nos	5.38	7 Nos	2.244	16 Nos	5.4825	15 Nos	5.125	8 No	2.957	4 Nos	1.275	65 Nos	22.4635
5.	Irrign Channel/Run-off Disposal/Divrsn. Channel	2262.25Rm	1.80980	2841 Rm	2.2728	2139 Rm	1.71120	2608 Rm	2.0864	2305 Rm	1.844	2355 Rm	1.884	14510.25 Rm	11.6082
	Total of Drainage Line Treatment (iii)		**15.093**		**12.1605**		**16.1344**		**15.4936**		**9.43**		**6.1895**		**74.501**
	Total WS Treatment/Development Works (A)		26.85926		19.14176		27.25868		26.83222		15.37580		10.53228		126.00

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18
B	***Livelihood Activities***														
1.	Tailoring / Knitting @ 8000/No	17 Nos	1.36	8 Nos	0.64	19 Nos	1.52	15 Nos	1.20	8 Nos	0.64	2 Nos	0.16	69 Nos	5.52
2.	Carpentry/Basketry/Agri-implements @ 5000/No	9 Nos	0.45	4 Nos	0.20	8 Nos	0.40	7 Nos	0.35	7 Nos	0.35	4 Nos	0.20	39 Nos	1.95
3.	Kitchen Garden with Compost Pit@ 2500/No	1 Nos	0.025	-	-	1 Nos	0.025	1 Nos	0.025	1 Nos	0.025	-	-	4 Nos	0.10
4.	Apiculture @ 8000/No	5 Nos	0.40	2 Nos	0.16	7 Nos	0.56	4 Nos	0.32	3 No	0.24	2 No	0.16	23 No	1.84
5.	Hollow Block Making @ 5000/No	1 Nos	0.05	1 Nos	0.05	1 Nos	0.05	1 Nos	0.05	1 Nos	0.05	1 Nos	0.05	6 Nos	0.30
6.	Piggery	8 Nos	0.64	3 Nos	0.24	6 Nos	0.48	7 Nos	0.56	5 Nos	0.40	2 Nos	0.16	33 Nos	2.64
7.	Poultry	8 Nos	0.64	3 Nos	0.24	9 Nos	0.72	8 Nos	0.64	4 Nos	0.32	5 Nos	0.40	35 Nos	2.80
8.	Pisciculture @ 10000/No	13 Nos	1.30	3 Nos	0.30	19 Nos	1.90	11 Nos	1.10	3 Nos	0.30	2 Nos	0.20	51 Nos	5.10
	Total of Livelihood Activities (B)		**4.865**		**1.83**		**5.655**		**4.245**		**2.325**		**1.33**		**20.25**
C	***Production System & Micro Enterprises***														
1.	Poultry Farming	2 Nos	0.60	1	0.30	4 Nos	1.20	4 Nos	1.20	1 No	0.30	-	-	11 Nos	3.30
2.	Piggery Farming	2 Nos	0.60	-	-	3 Nos	0.90	2 Nos	0.60	1 No	0.30	1 No	0.30	10 Nos	3.0
3.	Pisciculture @ 30000/Unit	4 Units	1.20	1 Unit	0.30	5 Unit	1.50	3 Units	0.90	3 Units	0.90	2 Units	0.60	18 Unit	5.40
4.	Grocery Shop/Small Cottage Industry@30000/No	4 Nos	1.20	2 No.	0.60	8 Nos	2.40	8 No.	2.40	-	-	-	-	22 No	6.60
5.	Mushroom Cultivation @ 30000/No	-.	-	1 Nos.	0.30	1 No.	0.30	1 No.	0.30	-	-	-	-	3 Nos.	0.90
6.	Rice Mill Operation @ 50000/No	1 No	0.50	1 No.	0.50	1 Nos	0.50	1 No.	0.50	1 No.	0.50	1 Nos	0.50	6 No.	3.00
7.	Kitchen Gardening @ 15000/No	-	-	-	-	1 Nos	0.15	-	-	-	-	1 Nos	0.15	2 No	0.30
	Total of Production System & Micro Enterprises (C)		**4.10**		**2.00**		**6.95**		**5.90**		**2.00**		**1.55**		**22.50**
	TOTAL of *WATERSHED WORKS PHASE* (A+B+C)		**35.82426**		**22.97176**		**39.86368**		**36.97722**		**19.7008**		**13.41228**		**168.75**

WDT Member
(Community Organizer)

WDT Member
(Forestry)

WDT Member
(Civil Engineering)

WDT Member
(Agriculture)

Project Leader
Kyntroin Watershed Committee IWMP – VIII

ABSTRACT OF PERSPECTIVE PLAN FOR CONVERGENCE OF NREGS WITH IWMP 2011-12 UNDER IWMP-VIII

Name of Project	IWMP-VIII		Total Wage Component @ ` 117/- per annum in the 1st Year	` 448542.00
Name of Watershed	Kynthroin & Ummawiong Watershed		Total Wage Component @ ` 117/- per annum in the 2nd Year	` 450879.00
Name of C & RD Block	Nongstoin		Total Wage Component @ ` 117/- per annum in the 3rd Year	` 147060.00
Name of the District	West Khasi Hills		Total Wage Component @ ` 117/- per annum in the 4th Year	` 0.00
Total No. of Job Card Holder	315		**Total Wage Component**	**` 1046481.00**

S. N.	Activities	Units	PROJECT PERIOD												Total				Mandays to be Generated
			2012-13			2013-14			2014-15			2015-16							
			Phy	Financial		Phy	Financial		Phy	Financial		Phy	Financial		Phy	Financial			
				Wages	Material		Wages	Material		Wages	Material		Wages	Material		Wages	Material	Total	
1.	Diversion Dam	Nos	1	41844	27896	1	57366	38244							2	99210	66140	165350	848.00
2.	Farm Pond	Nos	2	306618	204412	2	323937	215958	1	147060	98040				5	777615	518410	1296025	6647.00
3.	Check Dam	Nos				1	69576	46384							1	69576	46384	115960	595.00
4.	Runoff Disposal Channel	Rm	1258	100080	0.00										1258	100080	0.00	100080	856.00
	Total			448542	232308		450879	300586		147060	98040					1046481	630934	1677415	8946

Amount allotted for Convergence for the period 2012-13 to 2015-16

1. Wage Component ` 1046481.00
2. Material Component ` 630934.00

Grand Total ` 1677415.00

Grand Total (Rupees Sixteen Lakhs Seventy Seven Thousand Four Hundred and Fifteen) only

Divisional Officer,
Cum
Project Leader
Project Implementation Agency (IWMP)
Soil & Water Conservation Division,

Deputy Commissioner,
West Khasi Hills District,
Nongstoin

Nongstoin

ABSTRACT OF PERSPECTIVE PLAN FOR CONVERGENCE OF NREGS WITH KYNTHROIN WATERSHED, IWMP 2011-12 UNDER IWMP-VIII

Name of Project	IWMP-VIII		Total Wage Component @ ` 117/- per annum in the 1st Year	` 100080.00
Name of Watershed	Kynthroin Watershed		Total Wage Component @ ` 117/- per annum in the 2nd Year	` 0.00
Name of C & RD Block	Nongstoin		Total Wage Component @ ` 117/- per annum in the 3rd Year	` 0.00
Name of the District	West Khasi Hills		Total Wage Component @ ` 117/- per annum in the 4th Year	` 0.00
Total No. of Job Card Holder	431		**Total Wage Component**	**` 100080.00**

S. N.	Activities	Units	PROJECT PERIOD												Total				Mandays to be Generated
			2012-13			2013-14			2014-15			2015-16							
			Phy	Financial		Phy	Financial		Phy	Financial		Phy	Financial		Phy	Financial			
				Wages	Material		Wages	Material		Wages	Material		Wages	Material		Wages	Material	Total	
1.	Channel	Rm	1258	100080											1258	100080	0.0	100080	856

Amount allotted for Convergence for the period 2012-13 to 2015-16

1. Wage Component ` 100080.00
2. Material Component ` 0.00

Grand Total ` 100080.00

Grand Total (RupeesOne Lakh and Eighty) only

Divisional Officer,
Cum
Project Leader
Project Implementation Agency (IWMP)
Soil & Water Conservation Division,
Nongstoin

Deputy Commissioner,
West Khasi Hills District,
Nongstoin

CERTIFICATE OF APPROVAL OF CONVERGENCE

OFFICE OF THE
DISTRICT RURAL DEVELOPMENT AGENCY
WEST KHASI HILLS DISTRICT
NONGSTOIN

No.DRDA/NG-63/Con of NREGA-Pt.1/09/27 **Dated Nongstoin the 17th January 2012**

CERTIFICATE OF APPROVAL

In pursuance to the Provision of Convergence/Dovetailing of Mahatma Gandhi NREGA Operational Guidelines, the below mentioned projects are hereby approved to be taken up under convergence of IWMP Project-VIII Kynthroin Watershed under Nongstoin C&RD Block during the financial year 2012-13, 2013-14 and 2014-15 with Soil and Water Conservation Department, Nongstoin Vide proposal No.ND/IWMP/Genl/2011-12/1480-82 dt 12th January 2012.

Block	Name of Project	Unit of Measurement	Name of Village	Fin. Year	Wages MGNREGS (60%)	Materials Soil & WC Deptt (40%)	Total (100%)	Phy. target
Nongstoin C&RD Block	Run- off Disposal Channel	Rm	1.Byrki	2nd 2012-13	50120	Nil	50120	630 Rm
			2. Marshan Nongrim	2nd 2012-13	49960	Nil	49960	628 Rm
	Total				**1,00,080**	**Nil**	**1,00,080**	**1258 Rm**

District Programme Coordinator
MGNREGA/MGNREGS
West Khasi Hills District
Nongstoin

Details of the types of areas covered under the IWMP Programme:

1	2	3		4	5	6	7				8				
Name of Projects	Yearo f Sancti on	Project Duration (dd mm yyyy)		Area of the Project to be treated (Treatable Area)	Project Cost (` in Lakhs)	Name of Micro watershed & code nos. (as per Dolp's unique codification)	Treatable Area (Ha) (As per LULC)				Area details (Ha) (falling within the project) As per ownership				
		From	To				Cultivated rainfed area	Cultivated irrigated area	Uncultivated wasteland		Pvt. Agri. land	Forest land	Community land	Others (pls specify)	Total area (Ha)
									a) Temporary fallow	b) Permanent					
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	2009 - 2010	2011-12	2016-17	1500 Ha.	225.00	3C1B1a3c	350	-	189	677	350	409	12	985	1756

Fund provision for the IWMP projects from all sources:

1	2		3										4
Name of Projects	IWMP Fund		Funds from other sources in addition to IWMP funds										Total
	Central Share	State Share	Convergence funds		PPP		Community		Institutional finance		Others (Pl. specify)		
			Name of Scheme	Amount (Lakhs)	Name of private sector	Financial contribution	Name	Financial contribution	Name	Financial contribution	Name	Financial contribution	
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	202.50	22.50	MGNREGS	1.0008	-	-	-	-	-	-	-	-	225.00

Details of Project Fund Accounts of Distt. Agency and Watershed Committees:

1	2				3				
Names of Projects	Distt. Agency's Project Account details				Watershed Committee (WC) account details:				
	Name of the Bank and Branch where project account has been opened	Account Number (to be obtained confidentially)	Account type (Savings/ Current/ Others)	Name & Designation of authorized persons who operate the account.	Name of Watershed Committee	Name of the Bank and Branch where project account has been opened	Account number (to be obtained confidentially	Account type (Savings/ current others)	Name & Designation of authorized persons who operate the account.
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	State Bank of India		Saving	Shri D.K.Khonglah, D.S. & W.C.O.	Kynthroin Watershed Committee	SBI, Nongstoin		Saving	Chairman W.C, Secretary W.C, Project Leader / WDT

Details of Convergence of IWMP with other Schemes:

	1	2	3	4	5	6	7
Sl. No.	District	Names of projects	Names of Departments with Schemes converging with IWMP	Fund made available to IWMP due to convergence (Rs. in lakh)	Name of activity/task/structure undertaken with converged funds (a) Structures (b) livelihoods (c) Any other (pl. specify)[#]	Reference no. of activity/ task/ structure in DPR[@]	Level at which decision for convergence was taken[$]
1	West Khasi Hills	West Khasi Hills – IWMP VIII	* Community Rural Development Department NREGS	1.0008l	a) Run-off Disposal Channel	As per Convergence Treatment Plan	Block Level & District Level

Note: Byrki & Marshan Nongrim Village

a) Run-off Disposal channel, Wages-1.0008 Lakhs, Materials – 0.00 Lakhs

CHAPTER VI
CAPACITY BUILDING

Capacity Building is a process to systematically upgrade the skill of individuals or groups for achieving a specific target. Capacity building in the project has been planned for all the stake holders involved i.e. State Level, District Level, Project Level and Village Level. The relevant details pertaining to Capacity Building has been shown below.

Table 6.1: List of approved Training Institutes for Capacity Building:

1	2	3	4	5	6	7
Sl. No	State	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute	Type of Institute#	Area(s) of specialization$
1	Meghalaya	NIRD (NER)	Guwahati	Director	Central Govt.	Remote Sensing, Rural Devt.
2		SIRD	Nongsder	Director	State Govt.	Capacity Building
3		RRTC	Umran	Director	Don-Bosco	Agri-Horti, Animal Husbandry, Entrepreneurship
4		ICAR	Umiam	Director	Central Govt.	Agri-Horti, Animal Husbandry, Entrepreneurship
5		VTC	Kyrdem Kulai	Director	State Govt.	Animal Husbandry
6		Directorate of Agricuture	Shillong	Director	State Govt.	Agri-Horti, Fruit Processing
7		CTI	Byrnihat	Jt. Director	State Govt.	Watershed Management
8.		FMA Outreach	Shillong	Director	Private	SHG, Rural Resource Management

- *From Column no. 2, total no. of States implementing the programme, from Column no. 3, no. of training institutes, from column No. 9, total no. of category-wise trainings and trainees may be given at the end of the table for the entire country.*

\# *Central govt. Dept./ State govt. Dept./ Autonomous Body/ Research Institutes/ Universities/ Others (pl. specify).*

$ *Capacity Building/ Agriculture/ Horticulture/ Animal Husbandry/ Pisciculture/ Remote Sensing/ Water conservation/ Ground water/ Forestry/ livelihoods/ entrepreneurship development/ others (pl. specify).*

@ *The training institutes must fulfill the conditions mentioned in the operations guidelines.*

(i) Technical experts in fields required by IWMP
(ii) Past experiences
(iii) Annual Turnover
(iv) Receives funds either from the Central or State Government
(v) Publications
(vi) Not blacklisted by any Govt. organizations
(vii) Audited accounts
(viii) Organizational structure

Table 6.2: Capacity Building activities for the year 2011-12 as on 31/03/2012 (dd/mm/yyyy)*

1	2	3	4					5
Project	**Type of Training / Capacity Building**	**Agency / Institution to provide training**	**No. of trainings targeted during each financial year**					**Total**
			1st Year	**2nd Year**	**3rd Year**	**4th Year**	**5th Year**	
PIAs	Community Organisation, Remote Sensing, Rural Development, Convergence, Management Information System (MIS), Watershed Management and Approach, Soil & Water conservation measures (awareness and concept), Office Accounts & Procedure, Awareness Programme on Watershed Projects and implementation.	SIRD, NIRD (NER)	2	3	1	1		7
WDTs	Exposure Trip, Watershed Management, Soil & Water conservation measures (awareness and concept), GPS handling, Accounts & Procedure, Community Organisation, Management Information System (MIS)	RRTC, VTC, ICAR, Agriculture Directorate	1	1		1		3
UGs	Watershed Management, Rural Resource and utilization, Plantation and nursery management.	RRTC, VTC, ICAR, Agriculture Directorate		1				1
SHGs	Exposure Trip, Animal husbandry, Tailoring, Apiculture, Rural Resource Management, Cropping System Management, Agroforestry, SHGs concept and formation, Book Keeping and accounts, Agri-Horticulture, Floriculture, Enterpreneurship,	RRTC, VTC, ICAR, Agriculture Directorate, SHG Groups, Entrepreneur and Farmers, FMA	1	2	1	1		6
WCs	Community Organisation & Public Relation, Soil & Water conservation measures (awareness and concept). Environmental management, Agri-Horticulture, Animal Husbandry, Enterpreneurship, Fruit and Food Processing, Floriculture	RRTC, VTC, ICAR, Agriculture Directorate, SHG Groups, Entrepreneur and Farmers, FMA	2	3	2	2		9
GPs								
Community	Agri-Horticulture, Animal Husbandry, Enterpreneurship, Fruit and Food Processing, Package of practices in agriculture (mixed farming) and livestock management.	Horti-Hub, RRTC		1	1	1		3
Others (Pl. specify)								

Table 6.3: Information, Education & Communication (IEC) activities for the year 2011-12 as on 31/03/10 (dd/mm/yyy)*

Sl. No.	1	2	3
	Activity	Executing agency	Estimated expenditure (`.)
	Awareness	S&WC Division	
	PRA Exercises	S&WC Division	
	Exposure Visits	S&WC Division	
	Capacity Building	S&WC Division	

CHAPTER VII
EXPECTED OUTCOME

Table 7.1 Employment related outcomes:

Sl No	Name of Village	1										2				
		Wage employment										Self employment				
		No. of mandays					No. of beneficiaries					No. of beneficiaries				
		SC	ST	Others	Women	Total	SC	ST	Others	Women	Total	SC	ST	Others	Women	Total
1.	Byrki		100 %					100 %					100 %			
2.	Byrki Mawthung		100 %					100 %					100 %			
3.	Marshan Namlang		100 %					100 %					100 %			
4.	Marshan Nongrim		100 %					100 %					100 %			
5.	Mawkhmah Tyngkoh		100 %					100 %					100 %			
6.	Wahjynriew		100 %					100 %					100 %			

Table 7.2 Migration Details:

1	2	3	4	5	6	7	8	9	10	
Names of the Districts	Names of Projects	Name of village	No. of persons migrating	No. of days per year of migration	Major reason(s) for migrating	Distance of destination of migration from the village (km)	Occupation during migration	Income from such occupation (Rs. in lakh)	For reduced migration identify major activities of IWMP responsible	
									(a) Structures	(b) Livelihoods
				N	I	L				

* From column no. 2, total number of States; from column no. 3, total no. of Districts; from column no. 4, total no. of projects; from column no. 5, total no. of villages; from column no. 6, total no. of persons migrating; from column no. 7, average no. of days for annual migration; from column no. 9, average distance of migration from the village and form column no. 11, average income from occupation during migration, for the entire country may be given at the end of the Table.

Table 7.5.2 Status of Drinking water:

1			2			3
Availability of drinking water			**Quality of drinking water**			
Pre-project	**Post-project**	**Change in availability**	**Pre-project**	**Post-project**	**Change in quality**	**Comments**
Insufficient	Sufficient	10	Moderate	Improved	Improved	

*From column no. 2, total number of States implementing the programme, from column no. 3, total no. of Districts; from column no. 4, category-wise no. of projects, from column no. 5, average no. of months may be given at the end of the table for the entire country.

Table 7.5.3 Water Use efficiency:

1	2	3			
Name of the project	**Name of major crop**	**Water savings in cu.m.**			
		through water saving devices[$]	**through water conserving agronomic practices[#]**	**Any other (pl specify)**	**Total**
Kynthroin Watershed, IWMP-VIII, West Khasi Hills.	Paddy				
	Maize				
	Potato				
	Sweet Potato				

* From column no. 2, total number of States implementing the programme, from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column no. 6, practice-wise totals may be mentioned at the end of the table for the entire country.

$ Sprinkler, Drip, PVC pipe, etc.

Vermi-compost, organic manuring, Mulching, Check basin, Alternate furrow, Ridges & furrow & other scientific practices.

Table 7.6: Vegetation/ crop related outcomes:

Table 7.6.1 Details of Karif crop area and yield in the project areas:

1	2	3						4						5					
Name of Projects	Name of crops	Pre-project						Mid-term						Post-project					
		Area (ha)		Average Yield (Qtl) per ha.		Total Production (Qtl)		Area (ha)		Average Yield per ha (Qtl)		Total Production (Qtl)		Area (ha)		Average Yield per ha (Qtl)		Total Production (Qtl)	
		Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.
WKH-IWMP VIII	Paddy		120		18		2160												
	Maize		65		10		650												
	Potato		50		60		3000												
	Sweet Potato		40		37		34375												

* From column no. 2, total number of States; from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column no. 5, total no. of crops; from column no. 6 to 8, the totals for the area, average yield per ha and total production, category-wise, for the entire country may be given at the end of the Table.
Irri. – Irrigated Rf – Rainfed

Table 7.6.2 Details of Rabi crop area and yield in the project areas:

1	2	3						4						5					
Name of Projects	Name of crops	Pre-project						Mid-term						Post-project					
		Area (ha)		Average Yield (Qtl) per ha.		Total Production (Qtl)		Area (ha)		Average Yield per ha (Qtl)		Total Production (Qtl)		Area (ha)		Average Yield per ha (Qtl)		Total Production (Qtl)	
		Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.
WKH-IWMP VIII																			
	Total for the District																		

* From column no. 2, total number of States; from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column no. 5, total no. of crops; from column no. 6 to 8, the totals for the area, average yield per ha and total production, category-wise, for the entire country may be given at the end of the Table.
Irri. – Irrigated Rf – Rainfed

Table 7.6.3 Details of Zaid crop area and yield in the project areas of the Country: State-wise:

1	2	3						4						5					
Name of Projects	Name of crops	Pre-project						Mid-term						Post-project					
		Area (ha)		Average Yield (Qtl) per ha.		Total Production (Qtl)		Area (ha)		Average Yield per ha (Qtl)		Total Production (Qtl)		Area (ha)		Average Yield per ha (Qtl)		Total Production (Qtl)	
		Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.	Irri	Rf.
WKH-IWMP VIII		-	-	-	-	-	-		-		-		-		-		-		-
	Total for the District																		

A

* From column no. 2, total number of States; from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column no. 5, total no. of crops; from column no. 6 to 8, the totals for the area, average yield per ha and total production, category-wise, for the entire country may be given at the end of the Table. Irri. – Irrigated Rf – Rainfed

Table 7.6.4 Increase/ Decrease in area under fodder:

1	2	3			4		
Name of project	Duration of Project	Existing area under fodder (ha)			Achievement (ha)		
		Source/Name of report	Year of reference	Area already under fodder	Area under fodder proposed to be covered through IWMP	Area under fodder actually covered through IWMP	Change in area under fodder
WKH-IWMP VIII	5 yrs	NA	NA	NA	Nil	Nil	Nil

* From column no. 2, total number of States implementing the programme, from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column nos. 6 & 7, total area in ha may be given at the end of the table for the entire country.

Table 7.6.5 Increase/ Decrease in Forest/vegetation cover:

1	2	3			4		
Name of project	Duration of Project	Existing area tree cover (ha)			Expected Outcome (ha)		
		Source/Name of report	Year of reference	Area already under forest/vegetative cover	Forest/vegetative cover area proposed to be covered under IWMP	Forest/vegetative cover area actually covered under IWMP	Change in forest/vegetative cover area
WKH-IWMP VIII	5 yrs	LULC Map, NESAC, Umiam	2005-06	409.00 Ha.	450.00 Ha.	450.00 Ha.	450.00 Ha.

* From column no. 2, total number of States implementing the programme, from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column nos. 6 & 7, total area in ha may be given at the end of the table for the entire country.

Table 7.6.6 Increase/ Decrease in area under horticulture:

1	2	3			4		
Name of project	Duration of Project	Existing area under horticulture (ha)			Achievement (ha)		
		Source/Name of report	Year of reference	Area already under horticulture	Area under horticulture proposed to be covered through IWMP	Area under horticulture actually covered through IWMP	Change in area under horticulture
WKH-IWMP VIII	5 yrs	LULC Map, NESAC, Umiam	2005-06	NA	155 Ha.	155 Ha.	155 Ha.

* From column no. 2, total number of States implementing the programme, from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column nos. 6 & 7, total area in ha may be given at the end of the table for the entire country.

Table 7.6.7 Increase/ Decrease in area under fuel-wood:

1	2	3	4			5		
District	**Name of project**	**Duration of Project**	**Existing area under fuelwood (ha)**			**Achievement (ha)**		
			Source/Name of report	**Year of reference**	**Area already under fuelwood**	**Area under fuelwood proposed to be covered through IWMP**	**Area under fuelwood actually covered through IWMP**	**Change in area under fuelwood**
West Khasi Hills District	WKH-IWMP VIII	5 yrs	LULC Map, NESAC, Umiam	2005-06	160.00 Ha.	400 Ha.	400 Ha.	400 Ha.

* From column no. 2, total number of States implementing the programme, from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column nos. 6 & 7, total area in ha may be given at the end of the table for the entire country.

Table 7.7 Livelihood related outcomes:

Table 7.7.1 Details of livestock in the project areas (for fluids please mention in litres, for solids please mention in kgs. and income in Rs.):

1	2	3			4			5			6
Name of Projects	**Type of Animal**	**Pre-project**			**Mid-term**			**Post-project**			**Remarks**
		No.	**Yield**	**Income**	**No.**	**Yield**	**Income**	**No.**	**Yield**	**Income**	
WKH-IWMP VIII	Cow	215									
	Goat	772									
	Piggery	273									
	Poultry	1162									
	Duckery	6									
Total		**2428**									

* From column no. 2, total number of States; from column no. 3, total no. of Districts; from column no. 4, total no. of projects, from column nos. 5 to 8, the total nos. of animals and the average yield and incomes, category-wise, for the entire country may be given at the end of the Table.

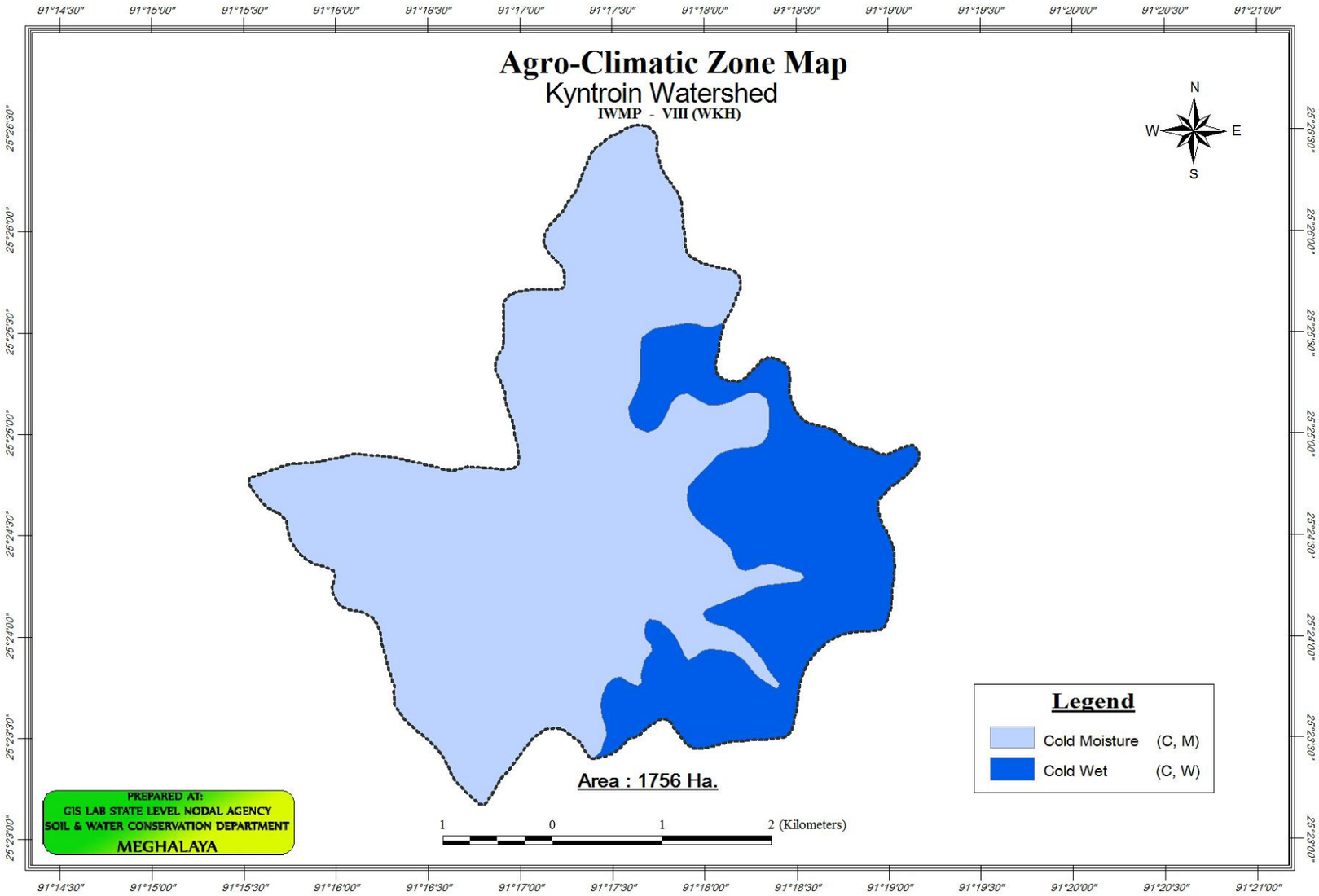
Table 7.10 Benefit Cost Analysis

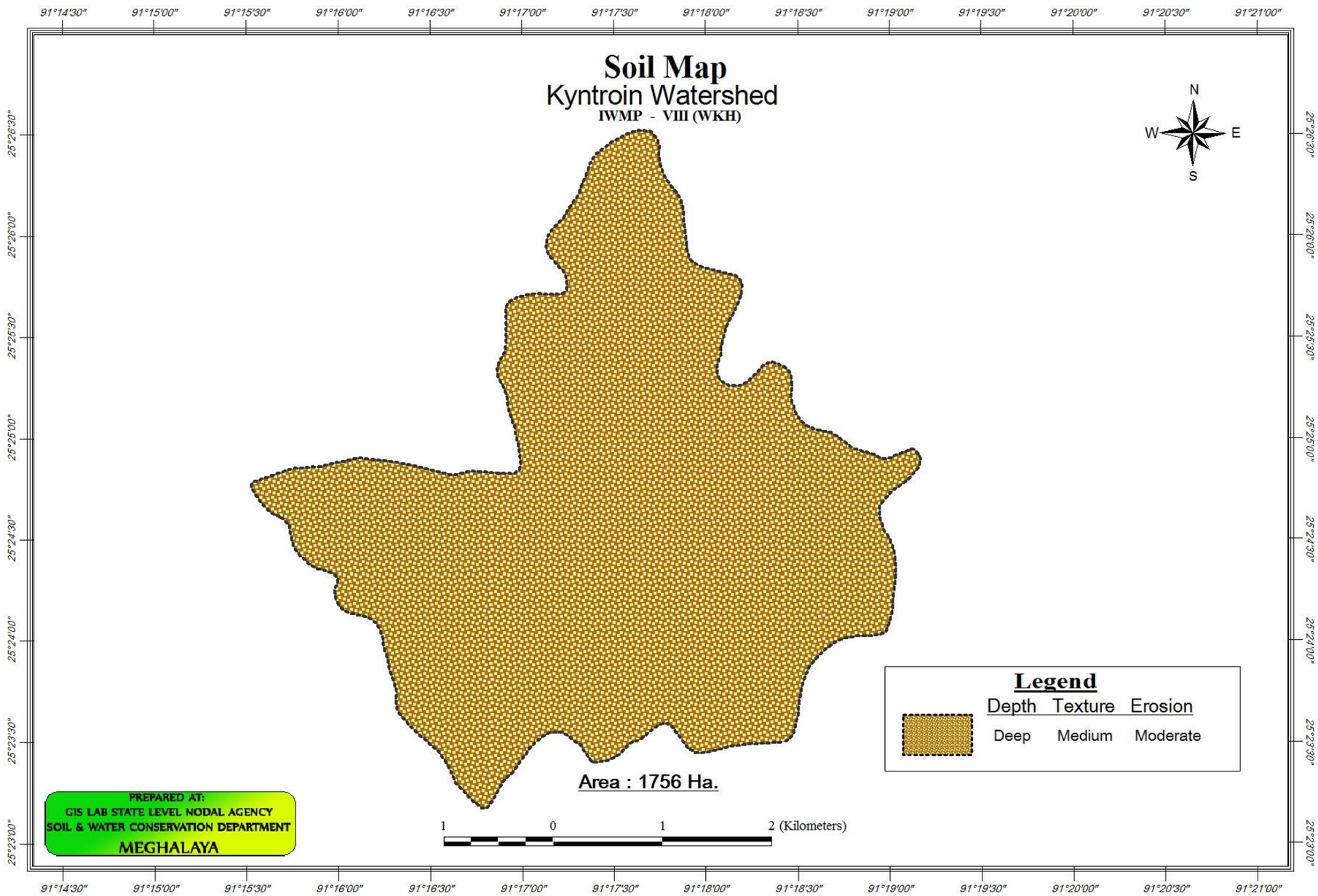
1	2	3	4	5	6	7
District	**Name of project**	**Name of WC**	**Name of structure/ activity**	**Estimated cost (Rs.)**	**Expected quantifiable benefits (Rs.)**	**Benefit: Cost ratio[#]**
West Khasi Hills	WKH-IWMP VIII	Kynthroin WC	As per Action Plan	2389.502	3510.362	1.34

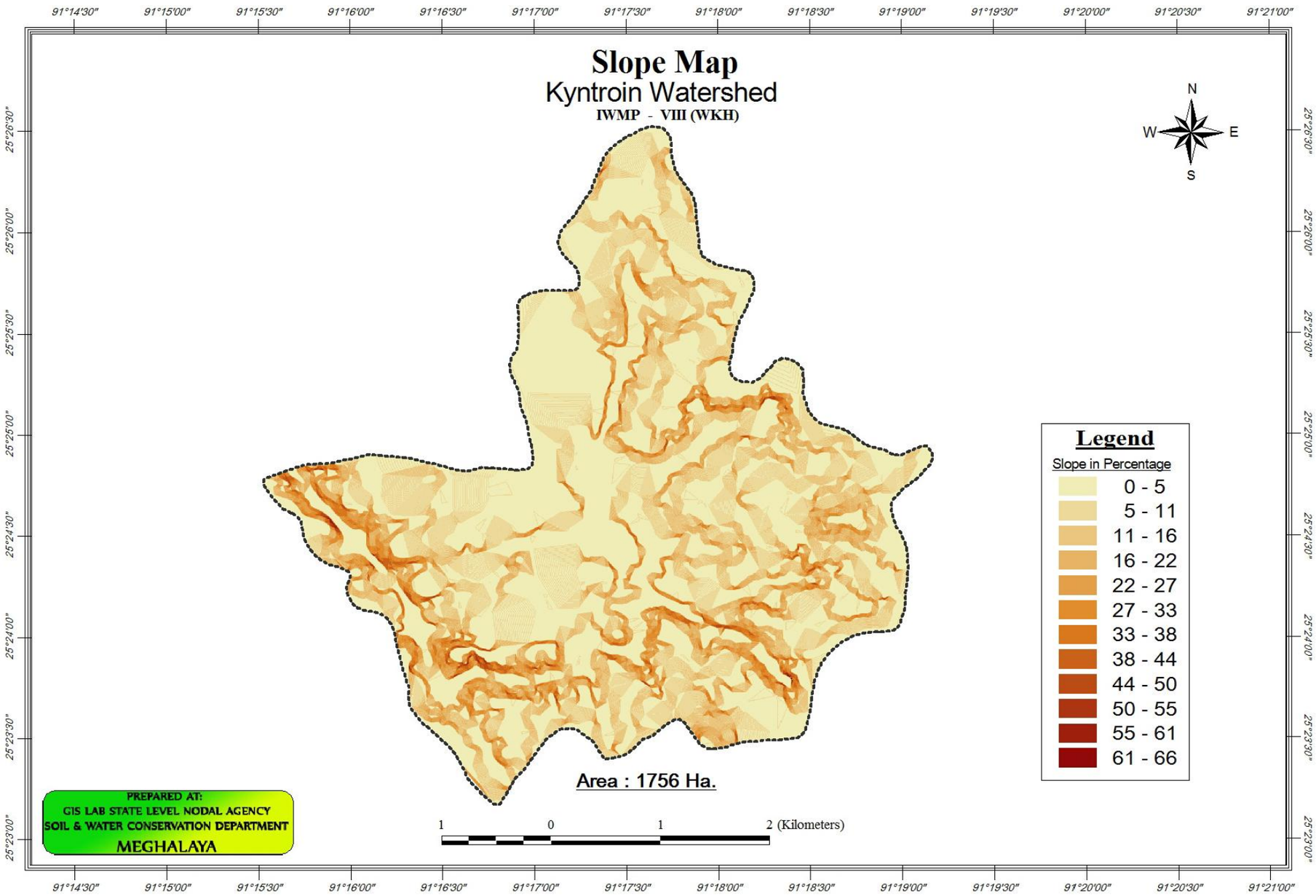
***** from column no. 2, total no. of States implementing the programme, from column no. 3, total no. of Districts; from Column no. 4, no. of projects, from column no. 5, no. of WCs, from column no. 6, no. of structures/ activities, from column no. 7 to 10, category-wise# totals, may be mentioned at the end of the table for the entire country.

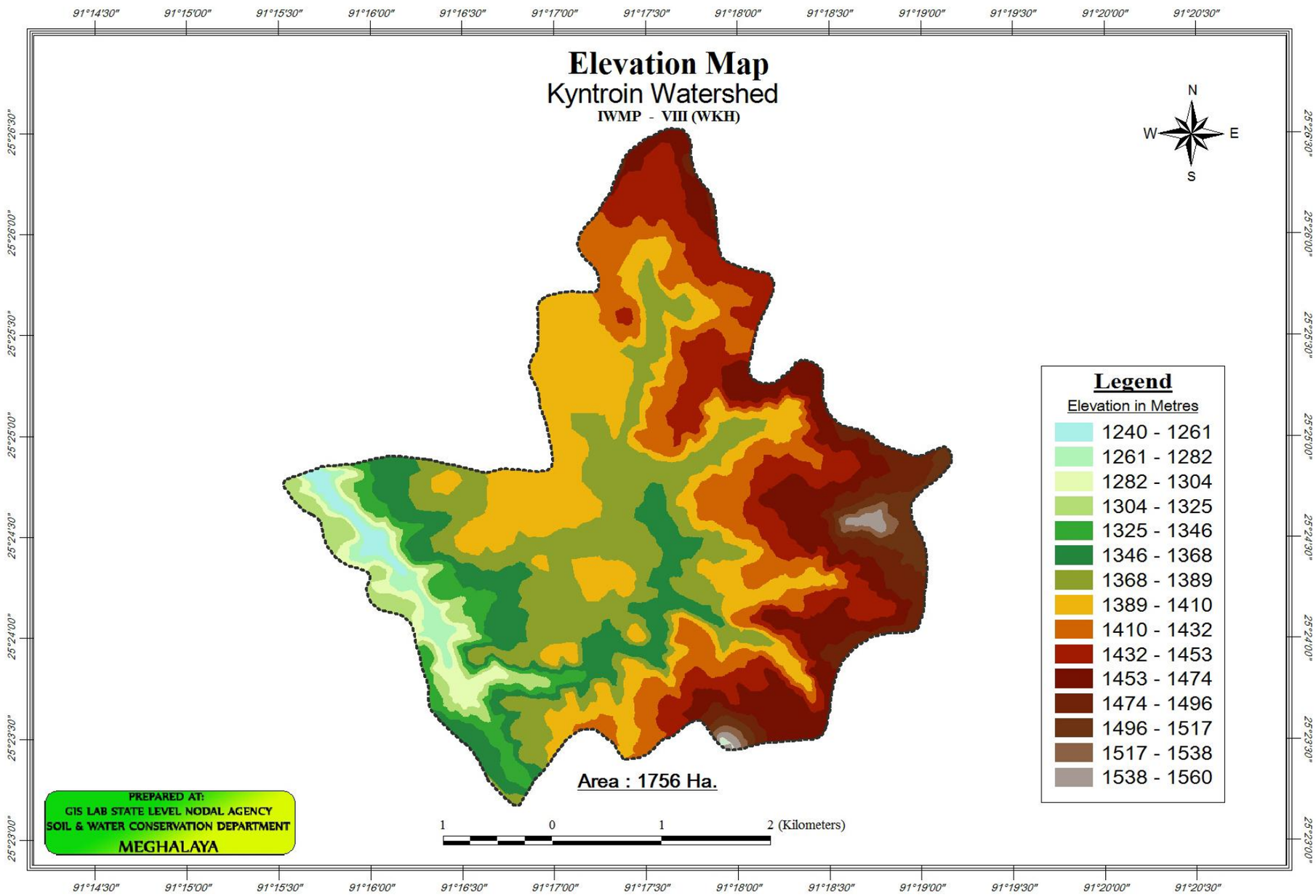
[#] B:C ratio more than 1 – cost effective, less than 1 – Not cost effective

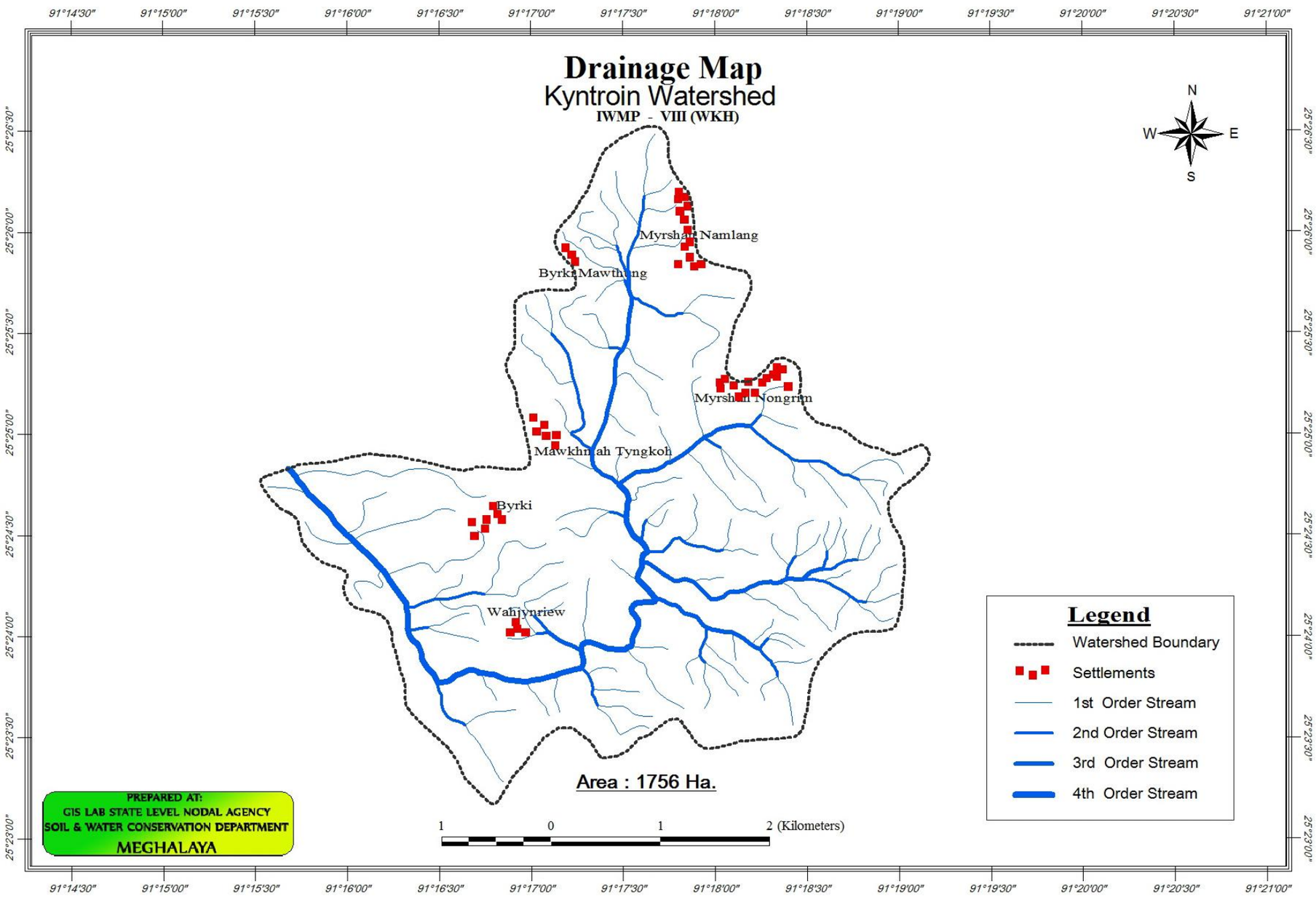
ANNEXURE I
MAPS

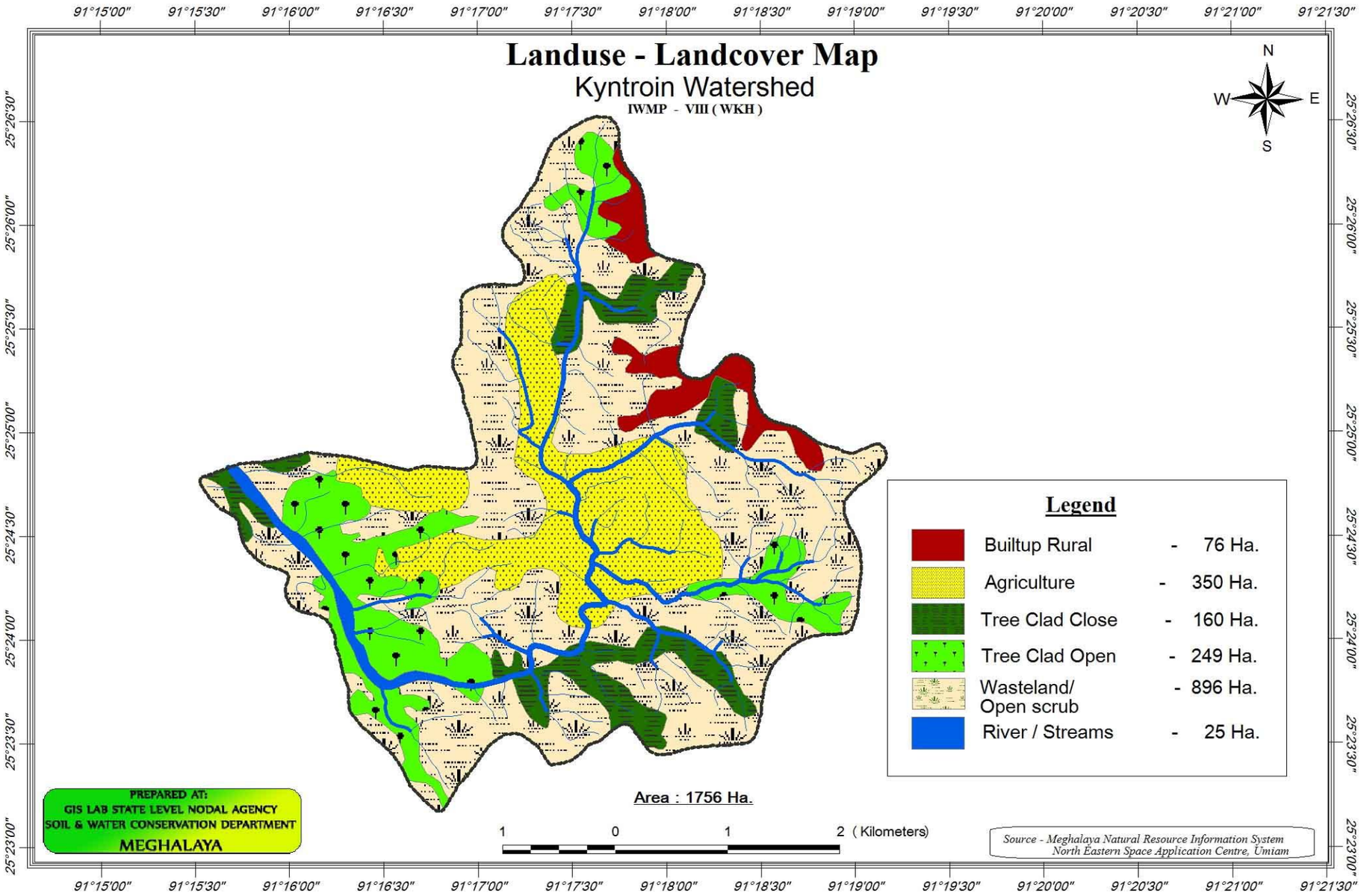


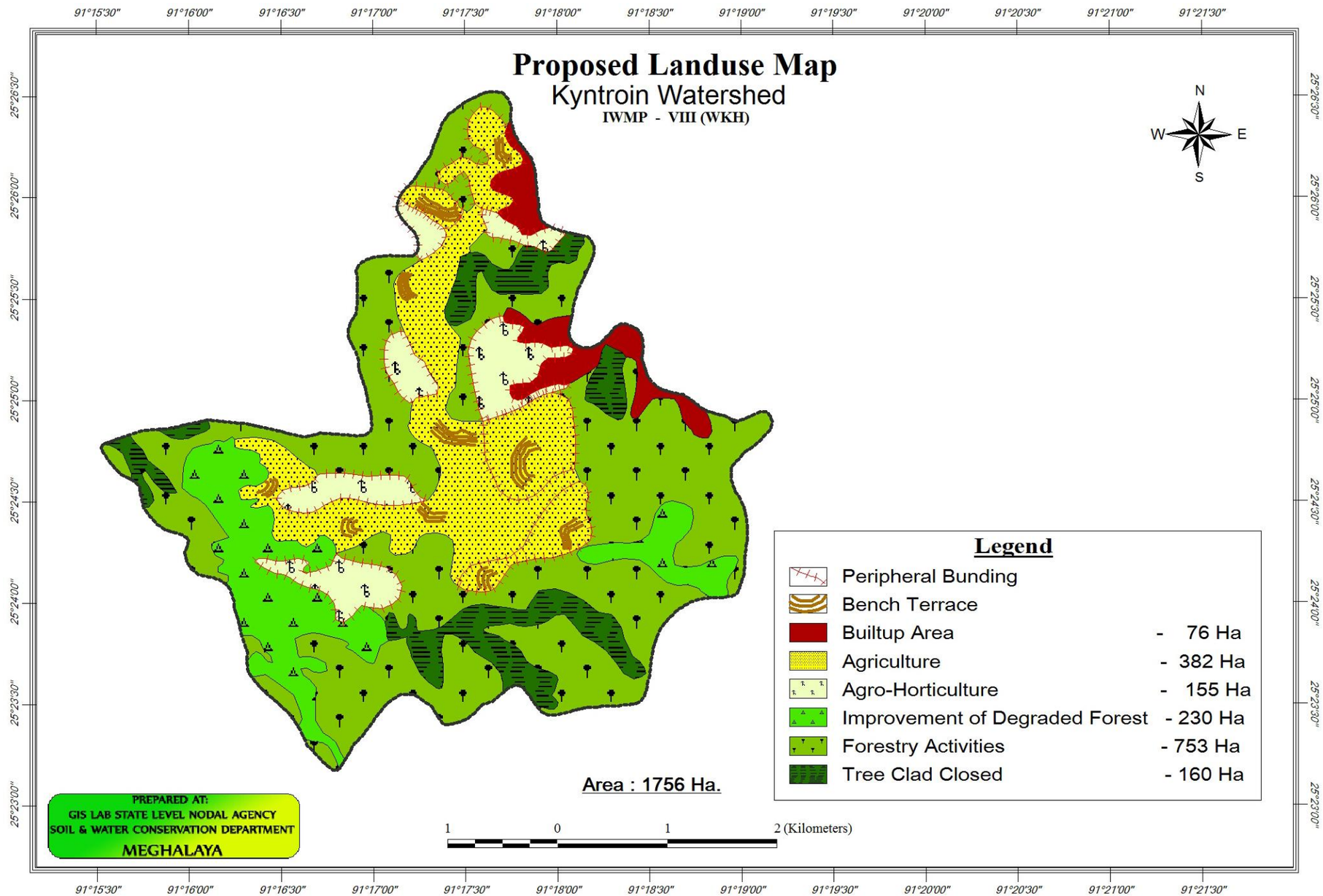

Soil Map
Kyntroin Watershed
IWMP - VIII (WKH)
N
W
E
S
91°14'30"
91°15'00"
91°15'30"
91°16'00"
91°16'30"
91°17'00"
91°17'30"
91°18'00"
91°18'30"
91°19'00"
91°19'30"
91°20'00"
91°20'30"
91°21'00"
25°26'30"
25°26'00"
25°25'30"
25°25'00"
25°24'30"
25°24'00"
25°23'30"
25°23'00"
Legend
Depth Texture Erosion
Deep Medium Moderate
Area : 1756 Ha.
1 0 1 2 (Kilometers)
PREPARED AT:
GIS LAB STATE LEVEL NODAL AGENCY
SOIL & WATER CONSERVATION DEPARTMENT
MEGHALAYA

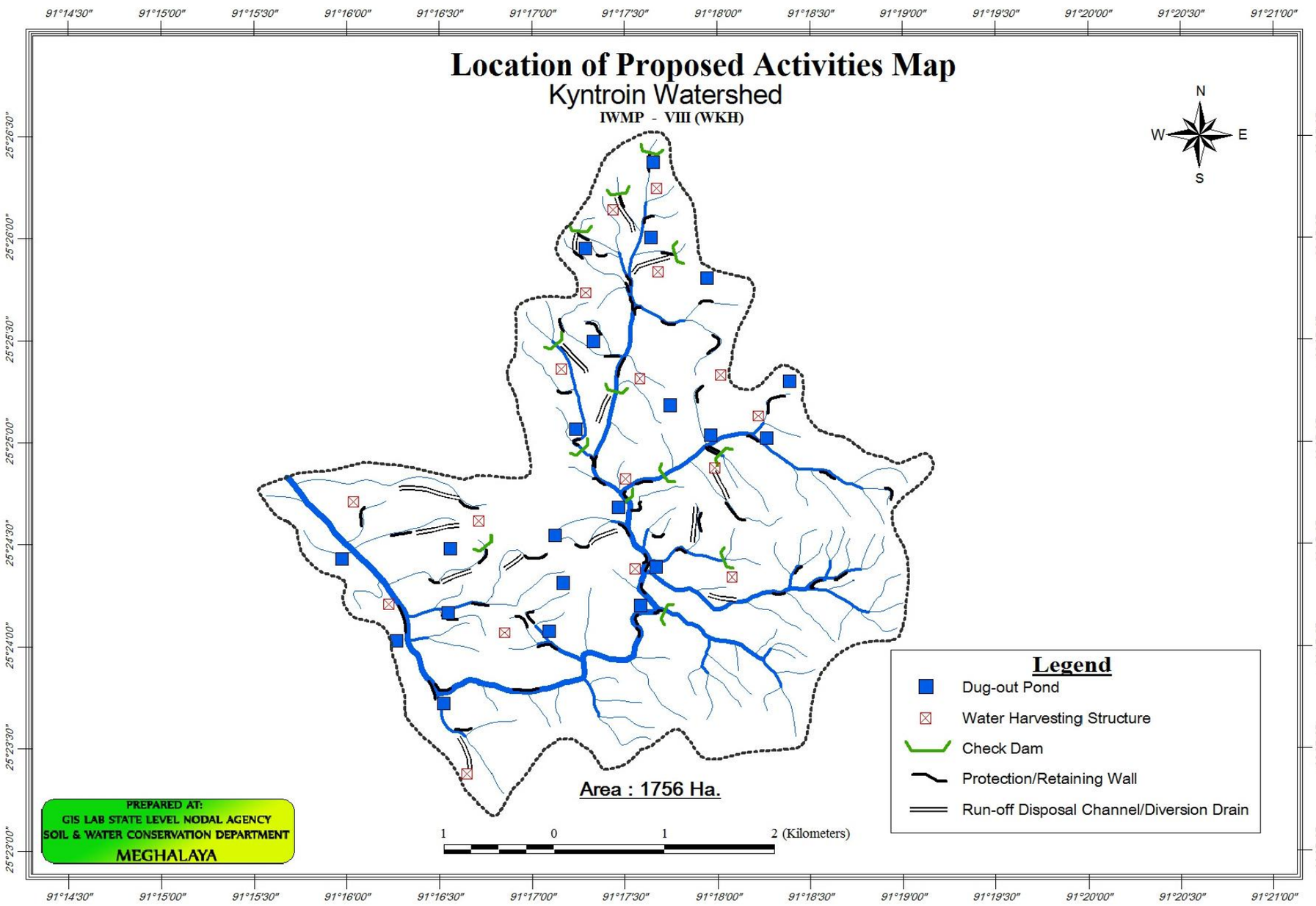

Slope Map
Kyntroin Watershed
IWMP - VIII (WKH)
N
W
E
S
Legend
Slope in Percentage
0 - 5
5 - 11
11 - 16
16 - 22
22 - 27
27 - 33
33 - 38
38 - 44
44 - 50
50 - 55
55 - 61
61 - 66
Area : 1756 Ha.
1 0 1 2 (Kilometers)
PREPARED AT:
GIS LAB STATE LEVEL NODAL AGENCY
SOIL & WATER CONSERVATION DEPARTMENT
MEGHALAYA
91°14'30" 91°15'00" 91°15'30" 91°16'00" 91°16'30" 91°17'00" 91°17'30" 91°18'00" 91°18'30" 91°19'00" 91°19'30" 91°20'00" 91°20'30" 91°21'00"
25°26'30" 25°26'00" 25°25'30" 25°25'00" 25°24'30" 25°24'00" 25°23'30" 25°23'00"


Elevation Map
Kyntroin Watershed
IWMP - VIII (WKH)
N
W
E
S
Legend
Elevation in Metres
1240 - 1261
1261 - 1282
1282 - 1304
1304 - 1325
1325 - 1346
1346 - 1368
1368 - 1389
1389 - 1410
1410 - 1432
1432 - 1453
1453 - 1474
1474 - 1496
1496 - 1517
1517 - 1538
1538 - 1560
Area : 1756 Ha.
1 0 1 2 (Kilometers)
PREPARED AT:
GIS LAB STATE LEVEL NODAL AGENCY
SOIL & WATER CONSERVATION DEPARTMENT
MEGHALAYA
91°14'30" 91°15'00" 91°15'30" 91°16'00" 91°16'30" 91°17'00" 91°17'30" 91°18'00" 91°18'30" 91°19'00" 91°19'30" 91°20'00" 91°20'30"
25°26'30" 25°26'00" 25°25'30" 25°25'00" 25°24'30" 25°24'00" 25°23'30" 25°23'00"


Drainage Map
Kyntroin Watershed
IWMP - VIII (WKH)
N
W
E
S
Myrshan Namlang
Byrki Mawthung
Myrshan Nongrim
Mawkhmah Tyngkoh
Byrki
Wahiynriew
Area : 1756 Ha.
1 0 1 2 (Kilometers)
Legend
Watershed Boundary
Settlements
1st Order Stream
2nd Order Stream
3rd Order Stream
4th Order Stream
PREPARED AT:
GIS LAB STATE LEVEL NODAL AGENCY
SOIL & WATER CONSERVATION DEPARTMENT
MEGHALAYA
91°14'30"
91°15'00"
91°15'30"
91°16'00"
91°16'30"
91°17'00"
91°17'30"
91°18'00"
91°18'30"
91°19'00"
91°19'30"
91°20'00"
91°20'30"
91°21'00"
25°26'30"
25°26'00"
25°25'30"
25°25'00"
25°24'30"
25°24'00"
25°23'30"
25°23'00"


Landuse - Landcover Map
Kyntroin Watershed
IWMP - VIII (WKH)
N
W
E
S
91°15'00"
91°15'30"
91°16'00"
91°16'30"
91°17'00"
91°17'30"
91°18'00"
91°18'30"
91°19'00"
91°19'30"
91°20'00"
91°20'30"
91°21'00"
91°21'30"
25°26'30"
25°26'00"
25°25'30"
25°25'00"
25°24'30"
25°24'00"
25°23'30"
25°23'00"
Legend
Builtup Rural - 76 Ha.
Agriculture - 350 Ha.
Tree Clad Close - 160 Ha.
Tree Clad Open - 249 Ha.
Wasteland/ Open scrub - 896 Ha.
River / Streams - 25 Ha.
Area : 1756 Ha.
1 0 1 2 (Kilometers)
PREPARED AT:
GIS LAB STATE LEVEL NODAL AGENCY
SOIL & WATER CONSERVATION DEPARTMENT
MEGHALAYA
Source - Meghalaya Natural Resource Information System
North Eastern Space Application Centre, Umiam


Proposed Landuse Map
Kyntroin Watershed
IWMP - VIII (WKH)
N
W
E
S
Legend
Peripheral Bunding
Bench Terrace
Builtup Area - 76 Ha
Agriculture - 382 Ha
Agro-Horticulture - 155 Ha
Improvement of Degraded Forest - 230 Ha
Forestry Activities - 753 Ha
Tree Clad Closed - 160 Ha
Area : 1756 Ha.
PREPARED AT:
GIS LAB STATE LEVEL NODAL AGENCY
SOIL & WATER CONSERVATION DEPARTMENT
MEGHALAYA
1 0 1 2 (Kilometers)
91°15'30" 91°16'00" 91°16'30" 91°17'00" 91°17'30" 91°18'00" 91°18'30" 91°19'00" 91°19'30" 91°20'00" 91°20'30" 91°21'00" 91°21'30"
25°26'30" 25°26'00" 25°25'30" 25°25'00" 25°24'30" 25°24'00" 25°23'30" 25°23'00"


Location of Proposed Activities Map
Kyntroin Watershed
IWMP - VIII (WKH)
N
W
E
S
91°14'30"
91°15'00"
91°15'30"
91°16'00"
91°16'30"
91°17'00"
91°17'30"
91°18'00"
91°18'30"
91°19'00"
91°19'30"
91°20'00"
91°20'30"
91°21'00"
25°26'30"
25°26'00"
25°25'30"
25°25'00"
25°24'30"
25°24'00"
25°23'30"
25°23'00"
Legend
Dug-out Pond
Water Harvesting Structure
Check Dam
Protection/Retaining Wall
Run-off Disposal Channel/Diversion Drain
Area : 1756 Ha.
1 0 1 2 (Kilometers)
PREPARED AT:
GIS LAB STATE LEVEL NODAL AGENCY
SOIL & WATER CONSERVATION DEPARTMENT
MEGHALAYA

ANNEXURE II

SOCIO-ECONOMIC SURVEY DETAILS

STATEMENT SHOWING SOCIO-ECONOMIC SURVEY

Name of Watershed **: Kyntroin Micro Watershed**

Name of C&RD Block **: Nongstoin C&RD Block**

Name of District : **West Khasi Hills District**

SL No	NAME OF VILLAGE	No. of House Hold	Nos of. Population			Total of Child below 12 Yrs both male & female of col. 6	Occupation	literacy		Land holding in ha/household			Name of Crops grown	Average yield of each crop in kg/ha	Livestock in nos					Total income of each family per annum (Rs.)
			Male	Female	Total			Literate	Illiterate	Arable	Non Arable	Total			Cattle	Goat	Piggery	Poultry	Duckery	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.	Byrki	29	75	73	148	71	Farmer:61, Govt. Service:1	113	5	47.5	35.5	83	Rice, Potato, Maize, Sweet potato, ginger, Yam, vegetable	1580 Kg/Ha.	19	43	15	251	5	8606
2.	Byrki Mawthung	8	21	21	42	15	Farmer:9, Cultivator:3, Teacher:3, Govt. Service:2, Others:2	31	5	19	11.5	30.5	Rice, Maize, Potato, vegetables	1478 Kg/Ha.	41	10	2	58	0	37125
3.	Marshan Namlang	40	118	110	228	118	Labour:8, Farmer:53, Cultivator:10, Teacher:3, Business:2, Govt. Service:4, Others:3	193	7	96	57.5	153.5	Rice, Potato, Maize, vegetable	1452 Kg/Ha.	13	600	224	75	0	24382
4.	Marshan Nongrim	38	112	106	218	79	Farmer:85, Teacher:4, Govt. Service:4, Others:5	102	-	97.5	64.5	162	Rice, Potato, Millet, Sweet Potato, Yam, vegetable	1653 Kg/Ha.	108	93	16	481	0	51784
5.	Mawkhmah Tyngkoh	21	59	57	116	52	Farmer:13, Labour:5, Others:1	98	2	15	34	49	Rice, Potato, Sweet potato, vegetable	1023 Kg/Ha	0	0	12	168	0	28800
6.	Wahjynriew	14	42	41	83	42	Labour:16, Farmer:7, Other:1	68	-	25	21	46	Rice, Potato, Sweet Potato, Maize, vegetable	1525 Kg/Ha.	34	26	4	129	1	22107
	TOTAL	150	427	408	835	377		605	19	300	224	524		1451.83 Kg/Ha.	215	772	273	1162	6	172804

ANNEXURE III
COST ESTIMATES

ESTIMATE FOR CONSTRUCTION OF DRINKING WELL NO - 1
AT BYRKI MAWTHUNG UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/2.2 (a) Earthwork in excavation below the lowest bed level including dewatering and bailing out water etc including leveling the foundation etc as directed complete.

3.00 x 3.00 x 1.80 = 16.20 m^3

@ Rs. 194.00/- m^3 …… Rs. 3142.8

2/4.8 Providing C.C. work in proportion 1:4:8 with hard broken stone aggregate 40 mm and dawn graded etc complete and as directed.

3.00 x 0.20 x 0.20 = 0.12 m^3

3.00 x 0.20 x 0.20 = 0.12 m^3

= 0.24 m^3

@ Rs. 2823.00/- m^3 …… Rs. 677.52

3/4.3 Providing stone pitching including filling the Interstices and carriage of stone filling within 200m complete as directed.

2.80 x 2.80 x 0.20 = 1.57 m^3

3.00 x 4.50 x 0.20 = 2.70 m^3

= 4.27 m^3

@ Rs. 559.00/- m^3 …… Rs. 2386.93

4/4.2 (a) Providing regular stone masonry with hammer dressed Or blunt chisel dressed in cement mortar 1:6 including carriage of stone within 200m complete as directed.

2.80 x 3.00 x 0.20 = 1.68 m^3

2.80 x 2.60 x 0.20 = 1.46 m^3

$2 \times 2.60 \times \frac{3.00 + 2.60}{2} \times 0.20$ = 2.91 m^3

= 6.05 m^3

@ Rs. 1479/- m^3 …… Rs. 8947.95

5/6.15 (A) Providing steel reinforcement of R.C.C work including Bending, binding and placing in position etc complete as directed.

2 x 37 x 3.60 = 266.40 Rm x 0.62 = 1.65 Qntl

@ Rs. 5055.00/- Qntl …… Rs. 8340.75

6/6.12 Providing shuttering with dressed plank not less than 25mm thick properly joined etc and removing the same after the concrete hardens complete as directed.

3.60 x 3.60 = 12.96 m^2

@ Rs. 308.00/- m^2 …… Rs. 3991.68

7/6.2 Providing C.C. work in proportion 1:2:4 with hard granular Stone of 20 mm dawn graded including curing and necessary local carriage of stones within 200m etc complete as directed.

3.60 x 3.60 x 0.10 = 1.30 m^3
3.00 x 4.50 x 0.10 = 1.35 m^3
= 2.65 m^3

@ Rs. 4074.00/- m^3 ..... Rs. 10796.1

8/7.3 (b) Providing 12mm thick cement plastering in propn. 1:4 Including clearing the surface and carriage of sand within 200 m complete as directed.

2.80 x 3.00 = 8.40 m^2
2.80 x 2.60 = 7.28 m^2
2 x 2.60 x $\frac{3.00 + 2.60}{2}$ = 14.56 m^2
3.00 x 0.60 = 1.80 m^2
2 x 3.00 x $\frac{1.60 + 1.20}{2}$ = 8.40 m^2
3.60 x 3.60 = 12.96 m^2
2 x 2 x 3.60 x 0.10 = 1.44 m^2
3.00 x 4.50 = 13.50 m^2
= 68.34 m^2

@ Rs. 103.00/- m^2 ..... Rs. 7039.02

9/31 (a)(i) Cutting drain .....etc. complete
Length of drain = 35.0 m
@ Rs. 49.00/- Rm Rs.1715.00

TOTAL Rs. 47037.75

SAY, Rs. 47000.00

(Rupees Forty Seven Thousand) only

ESTIMATE FOR CONSTRUCTION OF DRINKING WELL NO - 2 AT MARSHAN NAMLANG UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/2.2 (a) Earthwork in excavation below the lowest bed level including dewatering and bailing out water etc including leveling the foundation etc as directed complete.

3.00 x 3.00 x 1.80 = 16.20 m^3
@ Rs. 194.00/- m^3 ..... Rs. 3142.8

2/4.8 Providing C.C. work in proportion 1:4:8 with hard broken stone aggregate 40 mm and dawn graded etc

complete and as directed.

3.00 x 0.20 x 0.20 = 0.12 m^3

3.00 x 0.20 x 0.20 = 0.12 m^3

= 0.24 m^3

@ Rs. 2823.00/- m^3 ..... Rs. 677.52

3/4.3 Providing stone pitching including filling the Interstices and carriage of stone filling within 200m complete as directed.

2.80 x 2.80 x 0.20 = 1.57 m^3

3.00 x 1.20 x 0.20 = 0.72 m^3

= 2.29 m^3

@ Rs. 559.00/- m^3 ..... Rs. 1280.11

4/4.2 (a) Providing regular stone masonry with hammer dressed Or blunt chisel dressed in cement mortar 1:6 including carriage of stone within 200m complete as directed.

2.80 x 3.00 x 0.20 = 1.68 m^3

2.80 x 2.60 x 0.20 = 1.46 m^3

2 x 2.60 x $\frac{3.00 + 2.60}{2}$ x 0.20 = 2.91 m^3

= 6.05 m^3

@ Rs. 1479/- m^3 ..... Rs. 8947.95

5/6.15 (A) Providing steel reinforcement of R.C.C work including Bending, binding and placing in position etc complete as directed.

2 x 37 x 3.60 = 266.40 Rm x 0.62 = 1.65 Qntl

@ Rs. 5055.00/- Qntl Rs.8340.75

6/6.12 Providing shuttering with dressed plank not less than 25mm thick properly joined etc and removing the same after the concrete hardens complete as directed.

3.60 x 3.60 = 12.96 m^2

@ Rs. 308.00/- m^2 ..... Rs. 3991.68

7/6.2 Providing C.C. work in proportion 1:2:4 with hard granular Stone of 20 mm dawn graded including curing and necessary local carriage of stones within 200m etc complete as directed.

3.60 x 3.60 x 0.10 = 1.30 m^3

3.00 x 1.20 x 0.10 = 0.36 m^3

= 1.66 m^3

@ Rs. 4074.00/- m^3 ..... Rs. 6762.84

8/7.3 (b) Providing 12mm thick cement plastering in propn. 1:4 Including clearing the surface and carriage of sand within 200 m complete as directed.

2.80 x 3.00 = 8.40 m^2

2.80 x 2.60 = 7.28 m^2

2 x 2.60 x $\frac{3.00 + 2.60}{2}$ = 14.56 m^2

3.00 x 0.60 = 1.80 m^2

2 x 3.00 x $\frac{1.60 + 1.20}{2}$ = 8.40 m^2

3.60 x 3.60 = 12.96 m^2

2 x 2 x 3.60 x 0.10 = 1.44 m^2
3.00 x 1.20 = 3.60 m^2
= 58.44 m^2

@ Rs. 103.00/- m^2 …… Rs. 6019.32

9/31 (a)(i) Cutting drain ……..……etc. complete
Length of drain = 25.0 m
@ Rs. 49.00/- Rm ……..... Rs. 1225.00

TOTAL Rs. 40387.97

SAY, Rs. 40300.00

(Rupees Fourty Thousand Three Hundred) only

ESTIMATE FOR CONSTRUCTION OF DRINKING WELL NO - 3
AT MAWKHMAH TYNGKOH UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/2.2 Earthwork in excavation for Bridges and culverts below the lower bed level including dewatering and bailing out water in order to keep the foundation trenches free of water and protecting the sides of foundation by adequate shoring, scaffolding including leveling the foundation longitudinally and transversely etc as directed by the Engineer-in-charge

(a) Soft or Laminated rock or medium shale

Well : 1 x 2.6 x 2.1 x 1.356 = 7.371m^3
Wash Basin : 1 x 2.6 x 2.1 x .4 = 2.184m^3
Total = 9.55m^3

@ of Rs. 194.00/m3…… Rs. 1852.70

2/4.2 Providing regular stone masonry in retaining walls breast walls and wing walls etc. with hammer dressed or blunt chisel dressed stones of heavy section (size not less than 25cm x 25cm x 30 cm long) with proper key stone within 200 meters and providing weep holes at 1.2 to 1.5 meter apart staggered complete (a height of wall for every 1 metre should be kept exposed till inspected by the Supervising Officer.

(a) With new stone

Well: 2 x 2.6 x 0.3 x 0.5 = 0.678m^3
2 x 1.5 x 0.3 x 0.5 = 0. 45m^3
Bed: 1 x 2.6 x 2.1 x 0.5 = 2. 73m^3
1 x 2.0 x 0.4 x 0.3 = 0. 54 m^3
Basin: 1 x 2.6 x 0.3 x 0.5 = 0. 39m^3
2 x 1.2 x 0.3 x 0.5 = 0. 36m^3
Total = 5.148m^3

@ Rs. 1479.00/m^3…… Rs. 7613.89

3/4.5 Providing stone pitching with one man size boulders not less than 25cm x 30cm long including filling the interstices with spoils and carriage of stone filling within a distance of 200 meters complete as directed.

Wash Basin : 2 x 2.2 x 1 x 0.2 = 0.88 m^3
1 x 2.6 x 1 x 0.2 = 0.52 m^3
Total = 1.40 m^3

@ Rs. 559.00/ m^3 …… Rs. 782.60

4/4.8 Providing cement concrete work proportion 1:4:8 with hard broken stone aggregates 40mm, nominal size including necessary carriage of stones and sand within distance of 200 metres and curing (excluding shuttering) complete as directed.

Washing Place: 2 x 2.2 x 1 x 0.1 = 0.44 m^3
1 x 2.6 x 1 x 0.1 = 0.26 m^3
2 x 2.6 x 0.3 x 1 = 1.56 m^3
2 x 1.5 x 0.3 x 1 = 0. 9 m^3
Total = 3.16 m^3

@ Rs. 2823.00 m^3 …….. Rs. 6389.52

5/6.2 Providing cement concrete work in proportion 1:2:4 corresponding to M150 with very hard stone or river shingle aggregates of 23mm downgraded including curing and necessary local carriage of stone aggregates and sand within 200metres for R.C.C. slab in decking, girders, diaphragm and railing, rails posts, kerbs, etc. (excluding shuttering and reinforcement).

Slab: 1 x 3 x 2.7 x 0.1 = 0.81 m^3

@ Rs. 4074.00 m^3…… Rs. 3299.94

6/6.12 Providing shuttering in PCC/ R. C. C. bridge and culverts with dressed planks not less than 25mm thick properly jointed, including battens, props to the proper level and removing the same after the concrete hardened complete and as directed by the E.E. in-charged. (No extra payment for props and battens etc).

Internal : 2 x 1.4 x 1 = 3m^2
2 x 2 x 1 = 4m^2
External: 2 x 2.6 x 0.5 = 2.1m^2
2 x 2.6 x 0.5 = 2.6m^2
Slab: 1 x 3 x 2.7 = 8.1m^2
2 x 3 x 0.1 = 0.6m^2
2 x 2.7 x 0.1 = 0.54m^2
Total = 21.4m^2

@ Rs. 308 m^2…… Rs. 7422.80

7/7.1 Providing 12mm thick cement plastering in proportion 1:4 including screening the sand, cleaning the surface and carriage of sand within 200metre complete as directed.
(no plastering is to be done in retaining walls, breast walls and face walls)

(a) Prop 1:2

Slab: 2 x 1.5 x 1 = 3 m^2
2 x 2 x 1 = 4 m^2
External: 2 x 2.1 x 0.5 = 2.1 m^2
2 x 2.7 x 0.1 = 0.4 m^2
Washing Place : 2 x 2.6 x 0.1 = 0.52 m^2
1 x 4 x 0.1 = 0.4 m^2
2 x 2.6 x 1.3 = 6.76 m^2
1 x 4 x 1.3 = 5.2 m^2
Total = 33.46 m^2

@ of Rs. 171m^2…… Rs. 5721.66

8/6.15 Supplying fitting and fixing including bending, cranking and placing in position as per approved designed drawing, including supplying of tying wire 20 gauge complete as directed.
A. Mild Steel Bars.

1 % of Item No. 5/28
= 1/100 x 0.81 x 78.5 = 0.63585 m^2

@ Rs. 5055.00 …….. Rs. 3214.222

GRAND TOTAL = Rs. 38828.49

SAYS = Rs. 38800.00

(Rupees Thirty Eight Thousand Eight Hundred) only

ESTIMATE FOR CONSTRUCTION OF WASHING PLACE NO - 1 AT BYRKI MAWTHUNG UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/2.2 (b) Earthwork in excavation below the lowest bed level including dewatering and bailing out water etc including leveling the foundation etc as directed complete.
Hard Soil

Dam:	15.8 x 0.60 x 0.70	= 6.636 m^3
W/Wall:	2 x 1.50 x 0.60 x 0.70	= 1.26 m^3
Washing Platform:	2 x 2.50 x 1.50 x 0.15	= 1.125 m^3
Curtain Wall:	1.00 x 0.30 x 0.60	= 0.18 m^3
Apron:	4.00 x 1.00 x 0.10	= 0.40 m^3
Guide Wall:	2 x 2.50 x 0.60 x 0.70	= 2.10 m^3
		= 12.881 m^3

@ Rs. 201.00/- m^3 …….. Rs. 2589.081

2/24 (a) Providing stone pitching including filling the Interstices and carriage of stone filling within 200m complete as directed.

15.8 x 0.60 x 0.10	= 0.948 m^3
2 x 1.50 x 0.60 x 0.10	= 0.18 m^3
2 x 2.50 x 1.50 x 0.10	= 0.75 m^3
1 x 1.00 x 0.30 x 0.15	= 0.045 m^3
1 x 15.8 x 1.00 x 0.10	= 1.58 m^3
2 x 2.50 x 0.60 x 0.10	= 0.30 m^3
	= 3.803 m^3

@ Rs. 559.00/- m^3 …… Rs. 2125.877

3/6.1 Providing C.C. work in wing walls etc in proportion1:3:6 including necessary curing as directed complete.

15.8 x 0.60 x 0.50	= 4.74 m^3
15.8 x $\frac{0.60 + 0.40}{2}$ x 0.90	= 7.11 m^3
15.8 x 0.40 x 0.30	= 1.896 m^3
1.00 x 1.50 x 0.15	= 0.225 m^3
1.00 x 0.30 x 1.00	= 0.30 m^3
2 x 2.50 x 1.50 x 0.15	= 1.125 m^3
15.8 x 1.00 x 0.10	= 1.58 m^3

= 16.976 m^3

@ Rs. 3216.00/- m^3 ..... Rs. 54594.816

4/4.8 Providing C.C. work in proportion 1:4:8 with hard broken stone aggregate 40 mm and down graded etc complete and as directed.

15.8 x 0.60 x 0.10 = 0.948 m^3
2 x 1.50 x 0.60 x 0.10 = 0.18 m^3
2 x 2.50 x 0.60 x 0.10 = 0.30 m^3
= 1.428 m^3

@ Rs. 2823.00/- m^3 ..... Rs. 4031.244

5/4.2 (a) Providing regular stone masonry with hammer dressed Or blunt chisel dressed in cement mortar 1:6 including carriage of stone within 200m complete as directed.

2 x 1.50 x 0.60 x 0.60 = 1.08 m^3
2 x 1.50 x $\frac{0.60 + 0.50}{2}$ x 1.10 = 1.815 m^3
2 x 2.50 x 1.50 x 0.50 = 3.75 m^3
2 x 2.50 x 0.60 x 0.60 = 1.80 m^3
2 x 2.50 x $\frac{0.60 + 0.50}{2}$ x 1.10 = 3.025 m^3
= 11.47 m^3

@ Rs. 1479.00/- m^3 ..... Rs. 16964.13

6/38 Providing shuttering with dressed plank not less than 25mm thick properly joined etc and removing the same after the concrete hardens complete as directed.

2 x 15.8 x 1.10 = 34.76 m^2
1.00 X 0.55 = 0.55 m^2
= 35.31 m^2

@ Rs. 308.00/- m^2 ..... Rs. 10875.48

7/7.1 (a) Providing 12mm thick cement plastering in propn. 1:4 Including clearing the surface and carriage of sand within 200 m complete as directed.

2 x 15.8 x 1.20 = 37.92 m^2
1 x 15.8 x 0.40 = 6.32 m^2
2 x 2.50 x 1.50 = 7.50 m^2
2 x 2.50 x 0.50 = 2.50 m^2
1.00 x 0.50 = 0.50 m^2
1.00 x 0.30 = 0.30 m^2
2 x 1.50 x 1.10 = 3.30 m^2
2 x 1.50 x 0.50 = 1.50 m^2
2 x 2.50 x 1.10 = 5.50 m^2
2 x 2.50 x 0.50 = 2.50 m^2
= 67.84 m^2

@ Rs. 171.00/- m^2 ..... Rs. 11600.64

TOTAL Rs. 102781.268
SAY, Rs. 103000.00

(Rupees One Lakh Three Thousand) only

ESTIMATE FOR CONSTRUCTION OF WASHING PLACE NO - 2
AT MARSHAN NAMLANG UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/2.2 (b) Earthwork in excavation below the lowest bed level including dewatering and bailing out water etc including leveling the foundation etc as directed complete.

Hard Soil

Dam:	14.2 x 0.60 x 0.70	= 5.964 m^3
W/Wall:	2 x 1.50 x 0.60 x 0.70	= 1.26 m^3
Washing Platform:	2 x 2.50 x 1.50 x 0.15	= 1.125 m^3
Curtain Wall:	1.00 x 0.30 x 0.60	= 0.18 m^3
Apron:	4.00 x 1.00 x 0.10	= 0.40 m^3
Guide Wall:	2 x 2.50 x 0.60 x 0.70	= 2.10 m^3
		= 12.049 m^3

@ Rs. 201.00/- m^3 …….. Rs. 2421.849

2/24 (a) Providing stone pitching including filling the Interstices and carriage of stone filling within 200m complete as directed.

14.2 x 0.60 x 0.10	= 0.852 m^3
2 x 1.50 x 0.60 x 0.10	= 0.18 m^3
2 x 2.50 x 1.50 x 0.10	= 0.75 m^3
1 x 1.00 x 0.30 x 0.15	= 0.045 m^3
1 x 14.2 x 1.00 x 0.10	= 1.42 m^3
2 x 2.50 x 0.60 x 0.10	= 0.30 m^3
	= 3.547 m^3

@ Rs. 559.00/- m^3 …… Rs. 1982.773

3/6.1 Providing C.C. work in wing walls etc in proportion1:3:6 including necessary curing as directed complete.

14.2 x 0.60 x 0.50	= 4.26 m^3
14.2 x $\frac{0.60 + 0.40}{2}$ x 0.90	= 6.39 m^3
14.2 x 0.40 x 0.30	= 1.704 m^3
1.00 x 1.50 x 0.15	= 0.225 m^3
1.00 x 0.30 x 1.00	= 0.30 m^3
2 x 2.50 x 1.50 x 0.15	= 1.125 m^3
14.2 x 1.00 x 0.10	= 1.42 m^3
	= 15.424 m^3

@ Rs. 3216.00/- m^3 …… Rs. 49603.584

4/4.8 Providing C.C. work in proportion 1:4:8 with hard broken stone aggregate 40 mm and down graded etc complete and as directed.

14.2 x 0.60 x 0.10	= 0.852 m^3
2 x 1.50 x 0.60 x 0.10	= 0.18 m^3
2 x 2.50 x 0.60 x 0.10	= 0.30 m^3
	= 1.332 m^3

@ Rs. 2823.00/- m^3 ..... Rs. 3760.236

5/4.2 (a) Providing regular stone masonry with hammer dressed or blunt chisel dressed in cement mortar 1:6 including carriage of stone within 200m complete as directed.

2 x 1.50 x 0.60 x 0.60 = 1.08 m^3
2 x 1.50 x $\frac{0.60 + 0.50}{2}$ x 1.10 = 1.815 m^3
2 x 2.50 x 1.50 x 0.50 = 3.75 m^3
2 x 2.50 x 0.60 x 0.60 = 1.80 m^3
2 x 2.50 x $\frac{0.60 + 0.50}{2}$ x 1.10 = 3.025 m^3
= 11.47 m^3

@ Rs. 1479.00/- m^3 ..... Rs. 16964.13

6/38 Providing shuttering with dressed plank not less than 25mm thick properly joined etc and removing the same after the concrete hardens complete as directed.

2 x 14.2 x 1.10 = 31.24 m^2
1.00 X 0.55 = 0.55 m^2
= 31.79 m^2

@ Rs. 308.00/- m^2 ..... Rs. 9791.32

7/7.1 (a) Providing 12mm thick cement plastering in propn. 1:4 Including clearing the surface and carriage of sand within 200 m complete as directed.

2 x 14.2 x 1.20 = 34.08 m^2
1 x 14.2 x 0.40 = 5.68 m^2
2 x 2.50 x 1.50 = 7.50 m^2
2 x 2.50 x 0.50 = 2.50 m^2
1.00 x 0.50 = 0.50 m^2
1.00 x 0.30 = 0.30 m^2
2 x 1.50 x 1.10 = 3.30 m^2
2 x 1.50 x 0.50 = 1.50 m^2
2 x 2.50 x 1.10 = 5.50 m^2
2 x 2.50 x 0.50 = 2.50 m^2
= 63.36 m^2

@ Rs. 171.00/- m^2 ..... Rs. 10834.56

TOTAL **Rs. 95358.452**

SAY, **Rs. 95,300.00**

(Rupees Ninety Five Thousand Three Hundred) only)

ESTIMATE FOR CONSTRUCTION OF WASHING PLACE NO - 3
AT MAWKHMAH TYNGKOH UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/2.2 (b) Earthwork in excavation below the lowest bed level including dewatering and bailing out water etc including leveling the foundation etc as directed complete.

Hard Soil

Dam:	16.00 x 0.60 x 0.70	= 6.72 m^3
W/Wall:	2 x 1.50 x 0.60 x 0.70	= 1.26 m^3
Washing Platform:	2 x 2.50 x 1.50 x 0.15	= 1.125 m^3
Curtain Wall:	1.00 x 0.30 x 0.60	= 0.18 m^3
Apron:	16.00 x 1.00 x 0.10	= 1.60 m^3
Guide Wall:	2 x 2.50 x 0.60 x 0.70	= 2.10 m^3
		= 12.985 m^3

@ Rs. 201.00/- m^3 …… Rs. 2609.985

2/24 (a) Providing stone pitching including filling the Interstices and carriage of stone filling within 200m complete as directed.

16 x 0.60 x 0.10	= 0.96 m^3
2 x 1.50 x 0.60 x 0.10	= 0.18 m^3
2 x 2.50 x 1.50 x 0.10	= 0.75 m^3
1 x 1.00 x 0.30 x 0.15	= 0.045 m^3
1 x 16.00 x 1.00 x 0.10	= 1.60 m^3
2 x 2.50 x 0.60 x 0.10	= 0.30 m^3
	= 3.835 m^3

@ Rs. 559.00/- m^3 …… Rs. 2143.765

3/6.1 Providing C.C. work in wing walls etc in proportion1:3:6 including necessary curing as directed complete.

16.00 x 0.60 x 0.50	= 4.8 m^3
16.00 x $\frac{0.60 + 0.40}{2}$ x 0.90	= 7.20 m^3
16.00 x 0.40 x 0.30	= 1.92 m^3
1.00 x 1.50 x 0.15	= 0.225 m^3
1.00 x 0.30 x 1.00	= 0.30 m^3
2 x 2.50 x 1.50 x 0.15	= 1.125 m^3
16.00 x 1.00 x 0.10	= 1.60 m^3
	= 17.17 m^3

@ Rs. 3216.00/- m^3 …… Rs. 55218.72

4/4.8 Providing C.C. work in proportion 1:4:8 with hard broken stone aggregate 40 mm and down graded etc complete and as directed.

16.00 x 0.60 x 0.10	= 0.96 m^3
2 x 1.50 x 0.60 x 0.10	= 0.18 m^3
2 x 2.50 x 0.60 x 0.10	= 0.30 m^3
	= 1.44 m^3

@ Rs. 2823.00/- m^3 …… Rs. 4065.12

5/4.2 (a) Providing regular stone masonry with hammer dressed or blunt chisel dressed in cement mortar 1:6 including carriage of stone within 200m complete as directed.

2 x 1.50 x 0.60 x 0.60 = 1.08 m^3

2 x 1.50 x $\frac{0.60 + 0.50}{2}$ x 1.10 = 1.815 m^3

2 x 2.50 x 1.50 x 0.50 = 3.75 m^3

2 x 2.50 x 0.60 x 0.60 = 1.80 m^3

2 x 2.50 x $\frac{0.60 + 0.50}{2}$ x 1.10 = 3.025 m^3

= 11.47 m^3

@ Rs. 1479.00/- m^3 ..... Rs. 16964.13

6/38 Providing shuttering with dressed plank not less than 25mm thick properly joined etc and removing the same after the concrete hardens complete as directed.

2 x 14.2 x 1.10 = 35.20 m^2

1.00 X 0.55 = 0.55 m^2

= 35.75 m^2

@ Rs. 308.00/- m^2 ..... Rs. 11011.00

7/7.1 (a) Providing 12mm thick cement plastering in propn. 1:4 Including clearing the surface and carriage of sand within 200 m complete as directed.

2 x 16.00 x 1.20 = 38.40 m^2

1 x 16.00 x 0.40 = 6.40 m^2

2 x 2.50 x 1.50 = 7.50 m^2

2 x 2.50 x 0.50 = 2.50 m^2

1.00 x 0.50 = 0.50 m^2

1.00 x 0.30 = 0.30 m^2

2 x 1.50 x 1.10 = 3.30 m^2

2 x 1.50 x 0.50 = 1.50 m^2

2 x 2.50 x 1.10 = 5.50 m^2

2 x 2.50 x 0.50 = 2.50 m^2

= 68.40 m^2

@ Rs. 171.00/- m^2 ..... Rs. 11696.40

TOTAL Rs. 103709.12

SAY, Rs. 103700.00

(Rupees One Lakh Three Thousand Seven Hundred) only

ESTIMATE FOR CONSTRUCTION OF FOOTPATH AT WAHJYNRIEW UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/2.2 Earthwork in excavation below the lowest bed level including dewatering and bailing out water etc including leveling the foundation etc as directed complete.

(a) Ordinary Soil:

85.00 x 1.20 x 0.10 = 12.75 m^3

@ Rs. 194.00/- m^3 ..... Rs. 2473.50

2/4.5 Providing stone pitching including filling the Interstices and carriage of stone filling within 200m complete as directed.

85.00 x 1.50 x 0.15 = 19.125 m^3

@ Rs. 559.00/- m^3 …….. Rs. 10690.875

3/6.1 Providing C.C. work in abutment wingwall and return wall in prop 1:3:6 with hard broken stone aggregates 40mm downgraded including carriage of stones and sand within 200m complete.

85.00 x 1.50 x 0.08 = 10.20 m^3

@ Rs. 3216.00/- m^3 …… Rs. 32803.20

4/7.1(a) Providing 12mm thick cement plaster including clearing the surface, curing carriage of sand within 200m, complete as directed.

Dam : 85.00 x 1.50 = 127.50 m^2

2 x 85.00 x 0.117 = 19.89 m^2

= 147.39 m^2

@ Rs. 171/-m^2…… Rs. 25203.69

Total = Rs. 71171.265

Say, Rs. 71200.00

(Rupees Seventy One Thousand Two Hundred) only

MODEL NORMS PER HECTARE FOR AGRO – HORTICULTURE WITH CITRUS FRUIT UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Rate as per PWD, SOR for R&B 2008 – 2009)

Spacing - 8m x 6.3m

Plant Density - 200 Nos.

A. Creation

I. Site clearance
3 mandays @ Rs.100/- per manday - Rs. 300.00

II. Pit digging (pit size 0.45m x 0.45m x 0.45m)
200 Nos. @ Rs.5/- each - Rs. 1000.00

III. Cost of planting materials
200 Nos. @ Rs.10/- each - Rs. 2000.00

IV. Cost of planting 200 Nos. @ Rs. 3/- each - Rs. 600.00

V. Weeding two times
20 mandays @ Rs.100/- per manday - Rs. 2000.00

Total - Rs. 5900.00

B. Maintenance

I. Refilling vacancy (10%) - Rs. 360.00

II. Weeding two times
20 mandays @ Rs.100/- per manday - Rs.2000.00

III Plant protection measures including
cost of chemical - Rs. 340.00

Total - Rs.2700.00

Grand Total A+B = Rs.5900.00 + Rs.2700.00 = Rs.8600.00

(Rupees Eight Thousand Six Hundred) only.

MODEL NORMS PER HECTARE FOR BENCH TERRACE UNDER KYNTROIN WATERSHED (IWMP – VIII)

SL.NO.	TECHNICAL PARAMETERS	6-10%(8%)
1	Average terrace width recommended (m)	12
2	Vertical interval V1-W X S/100 – S	1.04
3	Terrace length (m) =A/W +V1	767
4	Earth work = 12.5 X W X SM^3	1200
5	Shouler Bund Length	779
6	Shoulder Bund cross section (m^2)	0.08
7	Earth work for shouler bund (m^3)	62.32
8	Area available for cultivation (Ha)	0.87
B)	**COST ESTIMATE**	
i	Jungle clearance including uprooting of stumps	1225
Ii	Cost of terracing @ Rs. 14/m^3	16800
iii	Cost of shoulder @ Rs.7/m^3	436
Iv	Dressing, shaping and grading of bench terraces	350
V	Water disposal structure (LS)	850
	Total Cost:	**19661**
		Say, Rs. 20000

(Rupees Twenty Thousand) only

COST NORMS FOR EARTHEN PERIPHERAL BUND WITH LIVE VEGETATION PER METRE UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Rate as per PWD, SOR for R&B 2008 – 2009)

A. PERIPHERAL BUNDS SPECIFICATION & COSTS

Top Width = 1.0 m
Bottom Width = 1.2 m
Height = 1.0 m

1/3 (a) Earthwork in excavation etc. in ordinary soil etc.

$$1.0\text{m} \times \frac{1.0+1.2}{2}\ \text{m} \times 1.0\text{m} = 1.10\text{m}^3$$

@ Rs.39.00/ m^3 …….... Rs. 43.00

2. Supplying and planting of live hedges on toe of bunds with local shrubs/cutting etc.
per Running metre in L.S …….. Rs. 7.00

Total = Rs.50.00

(Rupees Fifty) only

COST NORMS FOR CROP DEMONSTRATION UNDER KYNTROIN WATERSHED (IWMP – VIII)

Sl. No	Items of Works	Amount
1.	Soil working and cost of sowing -5Mandays @Rs.100/Mdays	Rs. 500.00
2.	Cost of seed for 4 varieties @RS.300/Variety/Kg	Rs. 1200.00
3.	Organic manure	Rs. 500.00
4.	Watering including implements (pipe etc)	Rs. 1500.00
5.	Plant protection including hand sprayers	Rs. 800.00
6.	Mulching (winter crop to conserve moisture)/ weeding / intercultural operation	Rs. 500.00
	Total	**Rs. 5000.00**

COST NORMS FOR IMPROVEMENT OF EXISTING PADDY FIELD UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Rate as per PWD, SOR for R&B 2008 – 2009)

A. MARGINAL BUND

$$50 \times \frac{0.40 + 0.70}{2} \times 0.60 = 16.5\ m^3$$

B. SHOULDER BUND

1/3 (a) Earthwork in excavation etc. in ordinary soil.

$$10\ Nos. \times 50 \times \frac{0.50 + 0.30}{2} \times 0.50 = 100.00\ m^3$$

Land leveling L.S = 50.00 m^3

166.50 m^3

@ Rs.26.00/- per m^3 …… Rs. 4329.00

Total Rs. 4329.00

Say Rs. 4300.00

(Rupees Four thousand three hundred) only

MODEL NORMS PER HECTARE FOR AFFORESTATION WITH PINE/NON-PINE UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Rate as per PWD, SOR for R&B 2008 – 2009)

Spacing 6m x 5.5m,
Plant Density – 300 Nos.

A.	**Creation**		
I.	Jungle clearance etc. 5 mandays @ Rs.100/- per manday ……..	Rs. 500.00	
II.	Pit digging (pit size 0.30m x 0.30m x 0.30m) 300 Nos. @ Rs.4/- each……...	Rs. 1200.00	
III.	Cost of planting materials 300 Nos. @ Rs.8/- each ……..	Rs. 2400.00	
IV.	Cost of planting 300 Nos. @ Rs. 2/- each ……..	Rs. 600.00	
V.	Weeding two times 20 mandays @ Rs.100/- per manday ……	Rs. 2000.00	
VI.	Fire protection measures 5 mandays @ Rs.100/- per manday ……	Rs. 500.00	
		Total	**Rs. 7200.00**
B.	**Maintenance**		
I.	Vacancy refilling (10%) …….	Rs. 400.00	
II.	Weeding two times 20 mandays @ Rs.100/- per manday …….	Rs. 2000.00	
III.	Fire protection measures 5 mandays @ Rs.100/- per manday …….	Rs. 500.00	
		Total	**Rs. 2900.00**
	Grand Total (A+B) Rs.7200.00 + Rs.2900.00 ……		**Rs.10100.00**

(Rupees Ten Thousand One Hundred) only

MODEL NORMS PER HECTARE FOR IMPROVEMENT OF DEGRADED FOREST UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Rate as per PWD, SOR for R&B 2008 – 2009)

A.	**Creation**	
I.	Site clearance 3 mandays @ Rs.100/- per manday…….	Rs. 300.00
II.	Pit digging (pit size 0.30m x 0.30m x 0.30m) 100 Nos. @ Rs.4/- each ……..	Rs. 400.00
III.	Cost of planting materials 100 Nos. @ Rs.8/- each ……..	Rs. 800.00
IV.	Cost of planting 100 Nos. @ Rs. 2/- each ……	Rs. 200.00
V.	Round Weeding around the plant four times 5 mandays @ Rs.100/- per manday ……..	Rs. 500.00

VI. Fire protection measures
4 mandays @ Rs.100/- per manday ……. Rs. 400.00
Total Rs. 2600.00

B. Maintenance

I. Refilling vacancy (10%) …… Rs. 100.00

II. Round Weeding around the plant four times
5 mandays @ Rs.100/- per manday …… Rs. 500.00

III. Fire protection measures
4 mandays @ Rs.100/- per manday ……. Rs. 400.00
Total Rs. 1000.00

Grand Total (A+B) = Rs.2600.00 + Rs.1000.00 ……. Rs. 3600.00

(Rupees Three Thousand Six Hundred) only

MODEL NORMS PER HECTARE OF STRIP PLANTATION TWO ROWS ALONG THE BOUNDARY WITH FAST GROWING SPECIES UNDER KYNTROIN WATERSHED (IWMP – VIII) (Rate as per PWD, SOR for R&B 2008 – 2009)

Spacing: 6m from plant to plant, 2.5m from row to row

A. Creation

I. Site clearance
2 mandays @ Rs.100/- per manday …… Rs. 200.00

II. Pit digging (pit size 0.30m x 0.30m x 0.30m)
134 Nos. @ Rs.4/- each ……. Rs. 536.00

III. Cost of planting materials
134 Nos. @ Rs.8/- each ……. Rs. 1072.00

IV. Cost of planting
134 Nos. @ Rs. 2/- each …….. Rs. 268.00

V. Round Weeding around the plant two times
6 mandays @ Rs.100/- per manday……. Rs. 600.00

VI. Fire protection measures
4 mandays @ Rs.100/- per manday …… Rs. 400.00
Total Rs. 3076.00

B. Maintenance

I. Refilling vacancy (10%) …… Rs. 190.00

II. Round Weeding around the plant two times
6 mandays @ Rs.100/- per manday …… Rs. 600.00

III. Fire protection measures
4 mandays @ Rs.100/- per manday …… Rs. 400.00
Total Rs. 1190.00

Grand Total (A+B) = Rs.3076.00 + Rs.1190.00 …… Rs. 4266.00

(Rupees Four Thousand Two Hundred Sixty Six) only

ESTIMATE FOR CONSTRUCTION OF RETAINING WALL NO – 1 to 24 & 29 to 38
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

2.2 (a) Earthwork in excavation for bridges and culvert below the lowest bed level including dewatering and bailing out water in order to keep the foundation trenches of water and protecting the sides of foundation etc. Complete.

$10.00 \times 0.90 \times 0.65 = 5.85 m^3$

@ Rs 194.00/m^3 ..... Rs. 1134.90

2/25 Providing C.C. work prop 1:4:8 with hard broken stones aggregates 40mm nominal sizes including necessary carriage of stones and sand within a distance 200m complete and curing.

$10.00 \times 0.90 \times 0.20 = 1.80 m^3$

@ Rs 3216.00/ m^3..... Rs. 5788.80

3/4.2 Providing stone masonry work in wing wall/guide wall with hammer dressed stone of heavy section 25x25x30cm complete as directed.

$$10.00 \times \frac{0.90+0.80}{2} \times 1.00 = 8.50 m^3$$

$10.00 \times 0.90 \times 0.45 = 4.05 m^3$

$12.55 m^3$

@ Rs 1479.00/ m^3..... Rs. 18561.45

Total **Rs. 25485.15**

Say **Rs. 25500.00**

(Rupees Twenty Five Thousand Five Hundred) only

ESTIMATE FOR CONSTRUCTION OF RETAINING WALL NO – 25 to 28 & 39 to 49
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

2.2 (a) Earthwork in excavation for bridges and culvert below the lowest bed level including dewatering and bailing out water in order to keep the foundation trenches of water and protecting the sides of foundation etc. Complete.

$15.00 \times 0.90 \times 0.65 = 8.775 m^3$

@ Rs 194.00/m^3 ..... Rs. 1702.35

2/25 Providing C.C. work prop 1:4:8 with hard broken stones aggregates 40mm nominal sizes including necessary carriage of stones and sand within a distance 200m complete and curing.

$15.00 \times 0.90 \times 0.20 = 2.70 m^3$

@ Rs 3216.00/ m^3..... Rs. 8683.20

3/4.2 Providing stone masonry work in wing wall/guide wall with hammer dressed stone of heavy section 25x25x30cm complete as directed.

$$15.00 \times \frac{0.90+0.80}{2} \times 1.00 = 12.75 m^3$$

15.00 x 0.90 x 0.45 = 6.075 m^3

18.825 m^3

@ Rs 1479.00/ m^3 ..... Rs. 27842.175

Total **Rs. 38227.725**

Say **Rs. 38250.00**

(Rupees Thirty Eight Thousand Two Hundred and Fifty) only

ESTIMATE FOR CONSTRUCTION OF PROTECTION WALL NO – 1 to 5 & 13 to 15 UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

2.2 (a) Earthwork in excavation for bridges and culvert below the lowest bed level including dewatering and bailing out water in order to keep the foundation trenches of water and protecting the sides of foundation etc. Complete.

18.00 x 0.90 x 0.65 = 10.53m^3

@ Rs 194.00/m^3 ..... Rs. 2042.82

2/25 Providing C.C. work prop 1:4:8 with hard broken stones aggregates 40mm nominal sizes including necessary carriage of stones and sand within a distance 200m complete and curing.

18.00 x 0.90 x 0.20 = 3.24 m^3

@ Rs 3216.00/ m^3 ..... Rs. 10419.84

3/4.2 Providing stone masonry work in wing wall/guide wall with hammer dressed stone of heavy section 25x25x30cm complete as directed.

18.00 x $\frac{0.90+0.80}{2}$ x 1.00 = 15.30 m^3

18.00 x 0.90 x 0.45 = 7.29 m^3

22.59 m^3

@ Rs 1479.00/ m^3 ..... Rs. 33410.61

Total **Rs. 45873.27**

Say **Rs. 45900.00**

(Rupees Fourty Five Thousand Nine Hundred) only

ESTIMATE FOR CONSTRUCTION OF PROTECTION WALL NO – 6, 7, 8 & 9 UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

2.2 (a) Earthwork in excavation for bridges and culvert below the lowest bed level including dewatering and bailing out water in order to keep the foundation trenches of water and protecting the sides of foundation etc. Complete.

20.00 x 0.90 x 0.65 = 11.70m^3

@ Rs 194.00/m^3 ..... Rs. 2269.80

2/25 Providing C.C. work prop 1:4:8 with hard broken stones aggregates 40mm nominal sizes including necessary carriage of stones and sand within a distance 200m complete and curing.

$20.00 \times 0.90 \times 0.20 = 3.60\ m^3$

@ Rs 3216.00/ m^3..... Rs. 11577.60

3/4.2 Providing stone masonry work in wing wall/guide wall with hammer dressed stone of heavy section 25x25x30cm complete as directed.

$20.00 \times \frac{0.90+0.80}{2} \times 1.00 = 17.00\ m^3$

$20.00 \times 0.90 \times 0.45 = 8.10\ m^3$

$25.10\ m^3$

@ Rs 1479.00/ m^3..... Rs. 37122.90

Total **Rs. 50970.30**

Say **Rs. 51000.00**

(Rupees Fifty One Thousand) only

ESTIMATE FOR CONSTRUCTION OF PROTECTION WALL NO – 10, 11, 12 & 16 UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

2.2 (a) Earthwork in excavation for bridges and culvert below the lowest bed level including dewatering and bailing out water in order to keep the foundation trenches of water and protecting the sides of foundation etc. Complete.

$23.00 \times 0.90 \times 0.65 = 13.455 m^3$

@ Rs 194.00/m^3 ..... Rs. 2610.27

2/25 Providing C.C. work prop 1:4:8 with hard broken stones aggregates 40mm nominal sizes including necessary carriage of stones and sand within a distance 200m complete and curing.

$23.00 \times 0.90 \times 0.20 = 4.14\ m^3$

@ Rs 3216.00/ m^3..... Rs. 13314.24

3/4.2 Providing stone masonry work in wing wall/guide wall with hammer dressed stone of heavy section 25x25x30cm complete as directed.

$23.00 \times \frac{0.90+0.80}{2} \times 1.00 = 19.55\ m^3$

$23.00 \times 0.90 \times 0.45 = 9.315\ m^3$

$28.865\ m^3$

@ Rs 1479.00/ m^3..... Rs. 42691.335

Total **Rs. 58615.845**

Say **Rs. 58600.00**

(Rupees Fifty Eight Thousand Six Hundred) only

ESTIMATE FOR CONSTRUCTION OF CHECK DAM NO - 1
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall : 5.00X1.20X0.30 = 1.80 m^3

Ground wall/ Sidewall/wing wall: 2X3.60X0.60X0.30 = 1.30m^3

3.10 m^3

@ Rs 194.00/m^3..... Rs. 601.40

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall : 5.00X1.20X0.10 = 0.60 m^3

Ground wall/ Sidewall/wing wall: 2X3.60X0.60X0.10 = 0.43m^3

Appron: 2X0.60X0.10X5.00 =0.60m^3

1.63m^3

@ Rs 559.00/m^3..... Rs. 911.17

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Vide refer item no.3/6.1 = 1.63 m^3

@ Rs. 3,216.00/ m^3..... Rs. 5,242.08

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 5.00 X 1.80 X (1.20+0.70)/2= 8.55m^3

Ground wall/ Sidewall/wing wall: 2X3.60X0.60X1.80 = 7.78m^3

16.33m^3

@ Rs. 1,479.00/m^3..... Rs. 24,152.07

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 1X5.00X1.80X0.35 = 3.15m^3

@ Rs. 4,074.00/m^3..... Rs. 12,833.10

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2.

Facewall: 2x5.00x1.80 = 18.00m^3

1x0.70x5.00 = 3.50m^3

Ground wall/ Sidewall/wing wall: 2x2x3.60x1.80 = 25.92m^3

2x3.60x0.60 = 4.32m^3

Appron: 2X0.60X5.00 = 6.00m^3

57.74m^3

@ Rs. 171.00/m^3..... Rs. 9,873.54

Total Rs. 53,613.36

Say Rs. 53,600.00

(Rupees Fifty Three Thousand Six Hundred) only

ESTIMATE FOR CONSTRUCTION OF CHECK DAM NO – 2, 7 & 8
UNDER KYNTROIN WATERSHED (IWMP – VIII)

(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall :	8.00X1.20X0.30	= 2.88 m^3
Ground wall/ Sidewall/wing wall:	2X4.00X0.70X0.30	= 1.68m^3
		4.56 m^3

@ Rs 194.00/m^3..... Rs. 884.64

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall :	8.00X1.20X0.10	= 0.96 m^3
Ground wall/ Sidewall/wing wall:	2X4.00X0.70X0.10	= 0.56m^3
Appron:	2X1.50X0.10X8.00	= 2.40m^3
		3.92m^3

@ Rs 559.00/m^3..... Rs. 2191.28

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Vide refer item no.2/4.5 = 3.92 m^3

@ Rs. 3,216.00/ m^3..... Rs. 12606.72

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall:	8.00 X 1.80 X (1.20+0.70)/2=	13.68m^3
Ground wall/ Sidewall/wing wall:	2X4.00X1.80X0.70	= 10.08m^3
		23.76m^3

@ Rs. 1,479.00/m^3..... Rs. 35141.04

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall:	1X8.00X1.80X0.35	= 5.04m^3

@ Rs. 4,074.00/m^3..... Rs. 20532.96

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2.

Facewall:	2x8.00x1.80	= 28.80m^3
	1x0.70x8.00	= 5.60m^3
Ground wall/ Sidewall/wing wall:	2x2x4.00x1.80	= 28.80m^3
	2x4.00x0.70	= 5.60m^3
Appron:	2X0.80X8.00	= 12.80m^3
		81.60m^3

@ Rs. 171.00/m^3..... Rs. 13,953.60

Total **Rs. 85310.24**

Say **Rs. 85,300.00**

(Rupees Eighty Five Thousand Three Hundred) only

ESTIMATE FOR CONSTRUCTION OF CHECK DAM NO – 3, 9, 10, 11, 12 & 13
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall : 10.00X1.20X0.30 = 3.60 m^3

Ground wall/ Sidewall/wing wall: 2X4.00X0.90X0.30 = 2.16m^3

5.03 m^3

@ Rs 194.00/m^3..... Rs. 1117.44

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall : 10.00X1.20X0.10 = 1.20 m^3

Ground wall/ Sidewall/wing wall: 2X4.00X0.90X0.10 = 0.72m^3

Appron: 2X0.80X10.00X0.10 = 1.60m^3

3.52m^3

@ Rs 559.00/m^3..... Rs. 1967.68

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Vide refer item no.2/4.5 = 3.52 m^3

@ Rs. 3,216.00/ m^3..... Rs. 11,320.32

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 10.00 X 1.50 X (1.20+0.80)/2= 15.00m^3

Ground wall/ Sidewall/wing wall: 2X4.00X(0.90+0.60)/2X1.5 = 9.00m^3

24.00m^3

@ Rs. 1,479.00/m^3..... Rs. 35496.00

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 1X10.00X1.50X0.35 = 5.25m^3

@ Rs. 4,074.00/m^3..... Rs. 21,388.50

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(b) 1:2.

Facewall: 2x10.00x1.50 = 30.00m^3

1x10.0x8.00 = 8.00m^3

Ground wall/ Sidewall/wing wall: 2x2x4.00x1.50 = 24.00m^3

2x4.00x0.60 = 4.80m^3

Appron: 2X0.80X10.00 = 16.00m^3

82.80m^3

@ Rs. 171.00/m^3..... Rs. 14,158.80

Total Rs. 85448.74

Say Rs. 85,450.00

(Rupees Eighty Five Thousand Four Hundred Fifty) only

ESTIMATE FOR CONSTRUCTION OF CHECK DAM NO – 4
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall : 5.00X1.20X0.30 = 1.80 m^3

Ground wall/ Sidewall/wing wall: 2X3.60X0.70X0.30 = 1.51m^3

3.31m^3

@ Rs 194.00/m^3..... Rs. 642.14

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall : 5.00X0.90X0.10 = 0.45 m^3

Ground wall/ Sidewall/wing wall: 2X3.60X0.60X0.10 = 0.43m^3

Appron: 2X0.60X5.00X0.10 = 0.60m^3

1.48m^3

@ Rs 559.00/m^3..... Rs. 827.32

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Vide refer item no.2/4.5 = 1.48 m^3

@ Rs. 3,216.00/ m^3..... Rs. 4759.68

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 5.00 X 1.50 X (0.70+1.20)/2= 7.13m^3

Ground wall/ Sidewall/wing wall: 2X3.60X0.70xX1.5 = 7.56m^3

14.69m^3

@ Rs. 1,479.00/m^3..... Rs. 21726.51

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 1X5.00X1.50X0.35 = 2.63m^3

@ Rs. 4,074.00/m^3..... Rs. 10694.25

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(b) 1:2.

Facewall: 2x5.00x0.20 = 12.00m^3

1x0.70.0x5.00 = 3.50m^3

Ground wall/ Sidewall/wing wall: 2x2x3.60x1.20 = 17.28m^3

2x3.60x0.70 = 5.04m^3

Appron: 2X0.60X5.00 = 6.00m^3

43.82m^3

@ Rs. 171.00/m^3..... Rs. 7493.22

Total **Rs. 46,143.12**

Say **Rs. 46,150.00**

(Rupees Fourty Six Thousand One Hundred Fifty) only

ESTIMATE FOR CONSTRUCTION OF CHECK DAM NO – 5 & 6
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall : 7.00X1.20X0.30 = 2.52 m^3

Ground wall/ Sidewall/wing wall: 2X4.00X0.70X0.30 = 1.68m^3

4.20m^3

@ Rs 194.00/m^3..... Rs. 814.80

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall : 7.00X1.20X0.10 = 0.84 m^3

Ground wall/ Sidewall/wing wall: 2X4.00X0.70X0.10 = 0.56m^3

Appron: 2X0.80X0.10X7.00 = 1.12m^3

2.52m^3

@ Rs 559.00/m^3..... Rs. 1408.68

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Vide refer item no.2/4.5 = 2.52 m^3

@ Rs. 3,216.00/ m^3..... Rs. 8104.32

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 7.00 X 1.80 X (1.20+0.70)/2= 11.97m^3

Ground wall/ Sidewall/wing wall: 2X4.00X1.80X0.70 = 10.08m^3

22.05m^3

@ Rs. 1,479.00/m^3..... Rs. 32611.95

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 1X7.00X1.80X0.35 = 4.41m^3

@ Rs. 4,074.00/m^3..... Rs. 17,966.34

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(b) 1:2.

Facewall: 2x7.00x1.80 = 25.20m^3

1x0.70.0x7.00 = 4.90m^3

Ground wall/ Sidewall/wing wall: 2x2x4.00x1.80 = 28.80m^3

2x4.00x0.70 = 5.60m^3

Appron: 2X0.80X7.00 = 11.20m^3

57.74m^3

@ Rs. 171.00/m^3..... Rs. 12944.70

Total Rs. 73,850.79

Say Rs. 73,850.00

(Rupees Seventy Three Thousand Eight Hundred and Fifty) only

ESTIMATE FOR CONSTRUCTION OF WATER HARVESTING STRUCTURE NO – 1 & 6
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall:	15.00X 0.50X1.2	= 9.00m^3
	15.00x0.50x0.50	= 3.75m^3
		8.50m^3

@ Rs 194.00/m^3 .... Rs. 2,473.50

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall:	15.00x1.20x0.10	= 1.80m^3
	15.00x0.50x0.10	= 0.75m^3
Appron:	2x1.50x10.00x0.10	= 4.50m^3
		7.05m^3

@ Rs. 559.00/m^3..... Rs. 3,940.95

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Face wall: Vide refer item no.3/6.1 =7.05 m^3

@ Rs. 3,216.00/ m^3..... Rs. 22,672.80

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall:	15.00x0.60x1.50	= 13.50m^3
	15.00x (1.20+0.60) x1.00 / 2	= 13.50m^3
		27.00m^3

@ Rs. 1,479.00/m^3..... Rs. 39,933.00

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 1x15.00x1.50x0.10 = 2.25m^3

@ Rs. 4,074.00/m^3..... Rs. 9,166.50.00

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2. Facewall:	15.10(1.50+0.60+0.60)	= 40.50m^3
Front Appron:	1x1.50x15.10	= 2.50m^3
		63.00m^3

@ Rs. 171.00/m^3..... Rs. 10.773.00

Total Rs. 88,959.75

Say Rs. 89,000.00

(Rupees Eighty Nine Thousand) only

ESTIMATE FOR CONSTRUCTION OF WATER HARVESTING STRUCTURE NO – 2, 3, 10 & 18
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.
(a) Ordinary soil.

Face wall:	20.00X 0.50X1.2	= 12.00m^3
	20.00x0.50x0.60	= 6.00m^3
		18.00m^3

@ Rs 194.00/m^3 .... Rs. 3492.00

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall:	20.00x1.20x0.10	= 2.40m^3
	20.00x0.60x0.10	= 1.20m^3
Appron:	2x1.50x20.00x0.10	= 6.00m^3
		9.60m^3

@ Rs. 559.00/m^3..... Rs. 5366.40

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.
Face wall: Vide refer item no.3/6.1 =9.6 m^3
@ Rs. 3,216.00/ m^3..... Rs. 30873.60

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall:	20.00x0.60x1.70	= 20.40m^3
	20.00x $\frac{(1.20+0.60)}{2}$ x1.00	= 18.00m^3
		38.40m^3

@ Rs. 1,479.00/m^3..... Rs. 56793.60

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.
Face wall: 1x20.00x1.70x0.20 = 6.80m^3
@ Rs. 4,074.00/m^3..... Rs. 27703.20

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2. Facewall:	20.00(1.70+0.60+0.60)	= 58.00m^3
Front Appron:	1x1.50x20	= 30.00m^3
		88.00m^3

@ Rs. 171.00/m^3..... Rs. 15048.00

Total Rs. 139294.80
Say Rs. 139290.00

(Rupees One Lakh Thirty Nine Thousand Two Hundred and Ninety) only

ESTIMATE FOR CONSTRUCTION OF WATER HARVESTING STRUCTURE NO – 4, 11, 12 & 13
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.
(a) Ordinary soil.

Face wall:	25.00X 0.50X1.2	= 15.00m^3
	25.00x0.50x0.60	= 7.50m^3
		22.50m^3

@ Rs 194.00/m^3 .... Rs. 4365.00

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall:	25.00x1.20x0.10	= 3.00m^3
	25.00x0.60x0.10	= 1.50m^3
Appron:	2x1.50x25.00x0.10	= 7.50m^3
		12.00m^3

@ Rs. 559.00/m^3..... Rs. 6708.00

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.
Face wall: Vide refer item no.2/4.5 =12.00 m^3
@ Rs. 3,216.00/ m^3..... Rs. 38592.00

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall:	25.00x0.60x1.60	= 24.00m^3
	25.00x (1.20+0.60) x1.00 / 2	= 22.50m^3
		46.50m^3

@ Rs. 1,479.00/m^3..... Rs. 68773.50

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.
Face wall: 1x25.00x1.6x0.20 = 8.00m^3
@ Rs. 4,074.00/m^3..... Rs. 32592.00

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2. Facewall:	25.00(1.60+0.60+0.60)	= 70.00m^3
Front Appron:	1x1.50x25	= 37.50m^3
		107.50m^3

@ Rs. 171.00/m^3..... Rs. 18382.50

Total Rs. 169435.50
Say Rs. 169400.00

(Rupees One Lakh Sixty Nine Thousand Four Hundred) only

ESTIMATE FOR CONSTRUCTION OF WATER HARVESTING STRUCTURE NO – 5
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011.

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall: 10.00X 0.50X1.2 = 6.00m^3

10.00x0.50x0.50 = 2.50m^3

8.50m^3

@ Rs 194.00/m^3 .... Rs. 1649.00

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall: 10.00x1.20x0.10 = 1.20m^3

10.00x0.50x0.10 = 0.50m^3

Appron: 2x1.50x10.00x0.10 = 3.00m^3

4.70m^3

@ Rs. 559.00/m^3..... Rs. 2627.30

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Face wall: Vide refer item no.2/4.5 =4.70 m^3

@ Rs. 3,216.00/ m^3..... Rs. 15115.20

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 10.00x0.60x1.50 = 9.00m^3

10.00x $\frac{(1.20+0.60)}{2}$ x1.00 = 9.00m^3

18.00m^3

@ Rs. 1,479.00/m^3..... Rs. 26622.00

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 1x10.00x1.5x0.10 = 1.50m^3

@ Rs. 4,074.00/m^3..... Rs. 6111.00

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2. Facewall: 10.10(1.50+0.60+0.60) = 27.00m^3

Front Appron: 1x1.50x10.10 = 15.00m^3

42.00m^3

@ Rs. 171.00/m^3..... Rs. 7182.00

Total Rs. 59306.50

Say Rs. 59300.00

(Rupees Fifty Nine Thousand Three Hundred) only

ESTIMATE FOR CONSTRUCTION OF WATER HARVESTING STRUCTURE NO – 7 & 17
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall: 12.00X 0.50X1.2 = 7.20m^3

Ground wall/ Sidewall/wing wall:12.00x0.50x0.60 = 3.60m^3

10.80m^3

@ Rs 194.00/m^3 .... Rs. 2095.20

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall: 12.00x1.20x0.10 = 1.44m^3

Ground wall/ Sidewall/wing wall:12.00x0.60x0.10 = 0.72m^3

Appron: 2x1.50x12.00x0.10 = 3.60m^3

5.76m^3

@ Rs. 559.00/m^3..... Rs. 3219.84

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Face wall: Vide refer item no.2/4.5 = 5.76 m^3

@ Rs. 3,216.00/ m^3..... Rs. 18524.16

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 12.00x0.60x2.20 = 15.84m^3

Ground wall/ Sidewall/wing wall:12.0x $\frac{(1.20+0.60)}{2}$ x1.80 = 19.44m^3

35.28m^3

@ Rs. 1,479.00/m^3..... Rs. 52179.12

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 12.0x2.20x0.15 = 3.96m^3

@ Rs. 4,074.00/m^3..... Rs. 16,133.04

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2.

Facewall: 12.0(2.20+0.60+0.60) = 40.80m^3

Front Appron: 1x1.50x12.00 = 18.80m^3

58.80m^3

@ Rs. 171.00/m^3..... Rs. 10054.80

Total Rs. 102206.16

Say Rs. 102200.00

(Rupees One Lakh Two Thousand Two Hundred) only

ESTIMATE FOR CONSTRUCTION OF WATER HARVESTING STRUCTURE NO – 8 & 9
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall: 15.0X 0.50X1.20 = 9.00m^3

Ground wall/ Sidewall/wing wall:15.00x0.50x0.60 = 4.50 m^3

13.50m^3

@ Rs 194.00/m^3 .... Rs. 2619.00

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall: 15.00x1.20x0.10 = 1.80m^3

Ground wall/ Sidewall/wing wall:15.00x0.60x0.10 = 0.90m^3

Appron: 2x1.50x15.00x0.10 = 4.50m^3

7.20m^3

@ Rs. 559.00/m^3..... Rs. 4024.80

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Face wall: Vide refer item no.2/4.5 = 7.20 m^3

@ Rs. 3,216.00/ m^3..... Rs. 23155.20

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 15.00x0.60x1.80 = 16.20m^3

Ground wall/ Sidewall/wing wall:15.0x(1.20+0.60) x1.50 = 20.25m^3

2 36.45m^3

@ Rs. 1,479.00/m^3..... Rs. 53909.55

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 15.0x1.80x0.15 = 4.05m^3

@ Rs. 4,074.00/m^3..... Rs. 16,499.70

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2.

Facewall: 15.0(1.80+0.60+0.60) = 45.00m^3

Front Appron: 1x15.0x1.50 = 22.50m^3

67.50m^3

@ Rs. 171.00/m^3..... Rs. 11542.50

Total Rs. 111750.75

Say Rs. 111750.00

(Rupees One Lakh Eleven Thousand Seven Hundred and Fifty) only

ESTIMATE FOR CONSTRUCTION OF WATER HARVESTING STRUCTURE NO – 14, 15, 16 & 19
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

1/ 2.2 Earth in excavation for foundation of bridges and culvert upto the founding level including making of coffer dam, dewatering and bailing out and diverting of water, in order to keep the foundation trenches free of water and protecting the side of foundation by adequate shoring etc complete.

(a) Ordinary soil.

Face wall: 28.0X 0.50X1.20 = 16.80m^3

Ground wall/ Sidewall/wing wall:28.00x0.50x0.70 = 9.80 m^3

26.60m^3

@ Rs 194.00/m^3 .... Rs. 5160.40

2/4.5 Providing stone pitching with one man size boulders not less than 25cmX25cmX30cm long including filling the interstices with spoils and carriage of stone within a distance of 200m complete as directed.

Face wall: 28.00x1.20x0.10 = 3.36m^3

Ground wall/ Sidewall/wing wall:28.0x0.70x0.10 = 1.96m^3

Appron: 2x1.50x28.00x0.10 = 8.40m^3

13.72m^3

@ Rs. 559.00/m^3..... Rs. 7669.48

3/6.1 Providing cement concrete cement work in proportion 1:3:6 (M_{1000}) with hard broken stone aggregates 40mm downgraded including necessary curing and carriage of stone within a distance of 200m complete as directed.

Face wall: Vide refer item no.2/4.5 = 13.72 m^3

@ Rs. 3,216.00/ m^3..... Rs. 44123.52

4/4.2 Providing regular stone masonry in returning walls, breast wall and wing walls with hammer dressed or blunt chisel dressed stones of heavy section(size not less than 25cmX 25cmX30cm) with proper key stones of size not less than 25cmX 25cm X 75cm long in cement mortar 1:6 etc complete.

Face wall: 28.00x0.60x1.80 = 30.24m^3

Ground wall/ Sidewall/wing wall:28.0x(1.40+0.60) x1.0 = 28.00m^3

2 36.45m^3

@ Rs. 1,479.00/m^3..... Rs. 86136.96

5/6.2 Providing concrete cement 1:2:4 (M_{150}) etc complete.

Face wall: 28.0x1.80x0.20 = 10.08m^3

@ Rs. 4,074.00/m^3..... Rs. 41065.92

6/7.1 Providing 12mm thick cement plastering including cleaning surface, curing, carriage of sand within 200m complete.

(a) 1:2.

Facewall: 28.0x(1.80+0.60+0.60) = 84.00m^3

Front Appron: 1x15.0x28.00 = 42.00m^3

126.00m^3

@ Rs. 171.00/m^3..... Rs. 21546.00

Total Rs. 205730.28

Say Rs. 205730.00

(Rupees Two Lakh Five Thousand Seven Hundred and Thirty) only

ESTIMATE FOR CONSTRUCTION OF FARM POND
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(The rate based as per M.P.W.D Schedule of rates for Roads, Bridges and E & D Works 2008 - 2009)

1/3 Earthwork in excavation to the proper grade including light dressing, providing cambering and superlative as directed and removal of spoils up to 30m lead and all lift.
(d) Soft or laminated rock or medium shale.

$V = \frac{1.20}{6} \{ 20 \times 10 + 18.8 \times 8.8 + 4 (19.4 \times 9.40) \}$

$V = 219.00\ m^3$

@ Rs.53.00/m^3 …… Rs. 11607.00

2/14(ii) Cutting road side drain including dressing, grading and removal of spoils up to 15.0 m complete as directed. In ordinary soil, comprising of black cotton soil, green vegetation soil, red soil, loamy soil, clay, soft shale and loose moorum etc.

126 Rm @ Rs.35.00/Rm ……. …… Rs. 4410.00

TOTAL: Rs. 16017.00

Say Rs. 16, 000.00

(Rupees Sixteen Thousand) only

COST NORMS FOR RUN – OFF DISPOSAL CHANNEL/DIVERSION DRAIN
UNDER KYNTROIN WATERSHED (IWMP – VIII)
(Based as per PWD S.O.R. for Roads & Bridges (Other than Highway Work) for National Highway Circle PWD (Roads) for the year 2010-2011)

Specification - Top Width = 1.00m
Bottom Width = 0.70m
Depth = 1.2m

1/3 (a) Earthwork in excavation etc. in ordinary soil.

$1m \times \frac{1.00 + 0.7}{2} \times 1.2m = 1.02\ m^3$

@ Rs.78.00/- per m^3 …….. Rs. 79.56

Total Rs. 79.56

Say Rs. 80.00

(Rupees Eighty) only

OFFICE OF THE DORBAR SHNONG

BYRKI, BYRKI MAWTHUNG, MAWKHMAH TYNGKOH, MARSHAN NAMLANG, MARSHAN NONGRIM, WAHJYNRIEW VILLAGES

WEST KHASI HILLS DISTRICT

NO OBJECTION CERTIFICATE

This is certify that the Dorbar Shnong of Byrki, Byrki Mawthung, Mawkhmah Tyngkoh, Marshan Namlang, Marshan Nongrim and Wah Jynriew welcome the implementation of the Project and has no objection to the Soil & Water Conservation Department, Government of Meghalaya to implement the WKH-IWMP-Project-VIII (Kyntroin Watershed) within the area of the above mention villages.

1. **BYRKI**

2. **BYRKI MAWTHUNG**

Byrki Mawthung (Vill)
Nongstoin Syiemship

3. **MAWKHMAH TYNGKOH**

4. **MARSHAN NAMLANG**

5. **MARSHAN NONGRIM**

Village Marshan Nongrim
Nongstoin Syiemship
West Khasi Hills Dist.

6. **WAHJYNRIEW**

RESOLUTION OF THE VILLAGES COMMITTEE / DORBAR SHNONG

A General meeting of the 7 villages falling under Kyntroin Watershed (Byrki, Byrki Mawthung, Mawkhmah Tyngkoh, Marshan Namlang, Marshan Nongrim and Wah Jynriew) was held on the 22nd November, 2011 and the following resolution were adopted unanimously by the Committee.

1. That the villages posses land more than 1500 Ha. To treat under various soil and watershed works.
2. That we will extend all possible help to the Soil and Water Conservation Department while implementing the Integrated Watershed Management Programme (IWMP) in the degraded wasteland areas of villages.
3. That we will render all help possible to the survey team and cooperate with the Officers of the State ?Central Government whenever they come to our village.
4. That the Secretary of the Watershed Committee will be from the Office of the Soil & Water Conservation Department, Nongstoin Soil & Water Conservation Division, Nongstoin and the Chairman of the Watershed Committee will be elected from the member of the villages.
5. That the villages will take over all assets created by the department when they will be handed over after completion of the Project and device means to maintain and improve their sustainability.
6. That the common benefits will be shared amongst all the villages including the weaker section, women and the landless.

1. **BYRKI**

2. **BYRKI MAWTHUNG**

Headman
Byrki Mawthung (Vill)
Nongstoin Sylemship

3. **MAWKHMAH TYNGKOH**

4. **MARSHAN NAMLANG**

5. **MARSHAN NONGRIM**

Headman
Village Marshan Nongrim
Nongstoin Sylemship
West Khasi Hills Dist

MEMBERS

KYNTROIN WATERSHED COMMITTEE

	NAME	VILLAGE			Signature
1.	Shri. Carlius Paliar	Marshan Nongrim	Chairman	SHG	
2.	Smti. Dominica Thongni	Marshan Nongrim	Member	SHG	
3.	Smti. Delphina Thongnibah	Marshan Nongrim	Member	SHG	
4.	Shri. Starwell Sohshang	Marshan Nonlang	Member	SHG	
5.	Shri. Dwiling Thongni	Marshan Nonlang	Member	SHG, Farmer	
6.	Shri. Tomingstar Marthong	Byrki	Member	SHG	
7.	Shri. Hambaly Wanniang	Byrki	Member	SHG	
8.	Smti. Srafti Wanniang	Byrki	Member	Farmer	
9.	Shri. Tim Syiemlang	Byrki Mawlbung	Member	School Teacher	
10.	Shri Swadyshon Syiemlieh	Byrki Mawtiang	Member	Govt. Service	
11.	Shri. Wilkle Iawren	Mawkhmah Tyngkoh	Member	SHG, Farmer	
12.	Smti. Srildaris Thongnibah	Mawkhmah Tyngkoh	Member	Farmer	
13	Shri Krekshon Tyngkhai	Wahjynniew	Member	Farmer	
14	Shri Andrias Rwein	Wahjynniew	Member	Labourer	

KYNTROIN SUB WATERSHED COMMITTEE

BYRKI SUB-WATERSHED COMMITTEE

	NAME		SIGNATURE
1.	Shri Teminystar Marthong		[signature]
2.	Shri Hensley Nongrang		[signature]
3.	Smt Stally Wanning		[signature]
4.	Shri Dranston Marwein		[signature]
5.	Smt Ristilda Wanning		[signature]

BYRKI MAWTHUNG SUB-WATERSHED COMMITTEE

	NAME		SIGNATURE
1.	Shri Tros Syiemlong		[signature]
2.	Shri Steadyshon Syiemlieh		[signature]
3.	Smt phripsilda Lyngdoh		[signature]
4.	Shri Goldenstar Kharbani		[signature]
5.	Shri Babersingh		[signature]

MARSHAN NAMLANG SUB-WATERSHED COMMITTEE

	NAME		SIGNATURE
1.	Shri Storwell Sohshang		[signature]
2.	Shri Dwiling Thongni		[signature]
3.	Shri Shanborlin Lyngkhoi		[signature]
4.	Smt Krisitibiris Lyngkhoi		[signature]
5.	Smt Khwilleda Tariphniaw		[signature]

MARSHAN NONGRIM SUB-WATERSHED COMMITTEE

	NAME		SIGNATURE
1.	Shri Caslius palias		[signature]
2.	Smt Dominica Thongni		[signature]
3.	Smt Delphina Thongkhoh		[signature]

MAWKHMAH TYNGKOH SUB-WATERSHED COMMITTEE

	NAME		SIGNATURE
1.	Nindlerfield Lyngdoh		[signature]
2.	Shri Obester L Rynjah		[signature]
3.	Shri Wilkie lawrem		[signature]
4.	Smt Srilderis Thongkhoh		[signature]
5.	Shri Jsndrey Kharbani		

WAHJYNRIEW SUB-WATERSHED COMMITTEE

	NAME		SIGNATURE
1	Shri Kretshan Lyngkhoi		[signature]
2	Shri Andrias puwein		
3	Shri Sphindro Thongnint		[signature]
4	Smt Diewmores Wanning		[signature]
5	Smt. Jtilda Thongni R. jadong		[signature]