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Forest and Bio-diversity Conservation for Climate Change Response in West Bengal (WB-FBCCCR)

FUNDED BY JAPANESE ODA LOAN

CATCHMENT AREA TREATMENT (CAT) PLAN OF PURULIA FOREST DIVISION

Prepared by

ICAR-INDIAN INSTITUTE OF SOIL AND WATER CONSERVATION (ICAR-IISWC)

218, Kaulagarh Road, Dehradun – 248 195, Uttrakhand

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Consultancy Project: Preparation of Catchment Area Treatment Plan (CAT Plan) for13 Forest Divisions in West Bengal under JICA Funded WB-FBCCCR

Consultant: ICAR-Indian Institute of Soil and Water Conservation (ICAR-IISWC)
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Disclaimer

All input data / information *pertaining to status of DMU, existing and proposed interventions with respect to DLT, WHS and Land Treatments reported in this CAT plan were provided by the concerned officials of the DMU with technical support of the consultant. Thematic layers in terms of different maps are generated in GIS environment using basic inputs from topological maps of Survey of India, soil map of NBSS&LUP, DEM data of Copernicus, watershed boundary from SLUSI and, DMU boundaries and forest cover maps provided by WB-FBCCCR. Design, cost estimation and mapping of the said proposed measures were carried out by the consultant (Scientists and Technical) from ICAR-Indian Institute of Soil and Water Conservation (ICAR-IISWC), H/Q, Dehradun (Uttarakhand) and its Research Centres. This report is only for official purpose of the client and consultant.*

Sponsored by

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Glossary of Abbreviations

ICAR	Indian Council of Agricultural Research
IISWC	Indian Institute of Soil & Water Conservation
WB-FBCCCR	West Bengal-Forest and Bio-diversity Conservation for Climate Change Response
JICA	Japan International Cooperation Agency
ODA	Official Development Assistant
JFMC	Joint Forest Management Committees
CAT	Catchment Area Treatment
DMU	Divisional Management Unit
DLT	Drainage Line Treatment
WHS	Water Harvesting System
LT	Land Treatment
SLUSI	Soil & Land Use Survey of India
GIS	Geographical Information System
NBSS&LUP	National Bureau of Soil Survey and Land Use Planning
IFS	Indian Forest Service
Addl. PCCF	Additional Principal Chief Conservator of Forests
CCF	Chief Conservator of Forests
CF	Conservator of Forests
Addl. PD	Additional Project Director
Deputy CF	Deputy Conservator of Forests
JPD	Joint Project Director
DFO	Divisional Forest Officer
ADFO	Additional Divisional Forest Officer
Ros	Range Officers
Bos	Beat Officers
H/Q	Head Quarter
PI	Principal Investigator
Sr. Scientist	Senior Scientist
ACTO	Assistant Chief Technical Officer
TO	Technical Officer
STA	Senior Technical Assistant
ST	Senior Technician
JRF	Junior Research Fellow
YP-II	Young Professional-II
PA	Personal Assistant
HCN	Hydrologic Cover Complex
ESI	Erosion Susceptibility Index
HFL	Height Flood Level
BCD	Brushwood Check Dam

LBCD	Loose Boulder Check Dam
GC	Gabion Check
GCD	Gabion Check Dam
RRMCD	Random Rubble Masonry Check Dam
EP	Embankment Pond
PR	Pond Renovation
PP	Percolation Pond
DP	Dugout Pond
CST	Contour Staggered Trenching
CCT	Continuous Contour Trench
RT	Riser Trench
DD	Diversion Draine
FP	Forest Plantation
GF %	Gap Filling Percentage
NFP	New Forest Plantation
SGP	Shrub and Grasses Planning
H.I.	Horizontal Interval
V.I.	Vertical Interval
F.D.	Foundation Depth
m	Meter
sqm	Square meter
cm	Centimeter
gm	Gram
kg	Kilogram
Rs/m	Rupees per meter
cum	cubic meter
m^3	Cubic Meter
ha	hectare
NA	Not Applicable
Qty	Quantity
LS	Lump sum
C	Runoff Coefficient
Q	Peak Discharge
I	Rainfall Intensity
A	Catchment Area
L	Length of Weir
F	Fall/Drop
h	Depth of Flow
LB	Length of Basin

1. CAT Plan at a Glance

(A) PURULIA FOREST DIVISION

Area Statistics

DIVISION	No. of Ranges	No. of Beats	Reported Area (ha)	GIS Calculated Area (ha)	Difference b/w Reported vs GIS Calculated (ha)
Purulia	8	24	71952.5	52852.2	-19100.3

Area statistics of different forest cover classes in Purulia division

Forest Cover Class	Divisional Total Area (ha)	% to total Forest Area
Other Forest Area (No Canopy)	18051.5	35.3
Scrub (Tree Canopy Density < 10%)	1587.6	3.1
Open Forest (Tree Canopy Density 10- 40%)	17382.9	34.0
Moderately Dense Forest (Tree Canopy Density 40 - 70%)	13071.7	25.6
Very Dense Forest (Tree Canopy Density >70%	1043.9	2.0

Area statistics of different Slope classes of Purulia division

Slope Class	0 - 1	1 - 3	3 - 5	5 - 10	10 - 15	15 - 25	25 - 33	33 - 50	> 50	Total Area
Divisional Area (ha)	395.6	4999	6405.9	12329	6331.3	9102.7	3141.7	5018.5	3413.8	**51137.6**
% to total Area	0.8	9.8	12.5	24.1	12.4	17.8	6.1	9.8	6.7	**100**

Area statistics of different ESI classes spread over Purulia division

FOREST DIVISION	Area (ha) under different classes of Erosion Susceptibility Index					Total Area (ha)
	Non critical (< 0.33)	Slightly critical (0.33 - 0.47)	Moderately critical (0.48 - 0.62)	Critical (0.63 - 0.79)	Very critical (> 0.79)	
Total Area (ha)	**6440.9**	**20039.2**	**20285.3**	**4291.7**	**80.5**	**51137.6**
% of Total Forest Division Area	**12.6**	**39.2**	**39.7**	**8.4**	**0.2**	**100.0**

Existing Drainage Line Treatment

Condition	Check Dam	Loose Boulder Check Dam	Masonry Check Dam
Breached		10	1
Functional	3	5	12
Not Functional	1	5	-
Partly Damaged	2	-	-
purpose is fulfilled	-	15	2
TOTAL	**6**	**35**	**15**

Existing Water Harvesting Structure

Condition	Earthen Dam	Pond	Well	Nothing Mentioned
Fair		3		1
Good	2	17	3	6
Poor	1	33	6	1
Not functional	-	1	-	-
TOTAL	**3**	**54**	**9**	**8**

(B) PROPOSED ACTION PLAN

Physical and Financial Summary of Action Plan

BEAT	DLT Structures		Water Harvesting Structures		Trenching (CST, CPT, CCT etc.)		Forest Plantation		Total Estimated Cost (in lakh ₹) * Except Forest Plantation
	No. of Structures	Estimated Cost (in lakh ₹)	No. of Structures	Estimated Cost (in lakh ₹)	Area to be covered (ha)	Estimated Cost (in lakh ₹)	Total Area for Plantation (ha)	Estimated Cost (in lakh ₹)	
Ajodhya	92	90.25	10	19.26	177.91	18.16	177.91	Department norms may be adopted	127.67
Arsha	57	92.72	3	35.30	88.59	8.21	88.59		136.23
Baghmundi	445	148.88	4	23.48					172.36
Balarampur	4	0.49	2	78.93					79.42
Bangidiri	1	0.70	1	0.60					1.30
Bersa	4	1.44	1	19.20					20.64
Burda	236	65.81	23	197.09					262.9
Ghatbera			2	50.84					50.84
Jhalda	36	42.65	11	20.11	93.57	10.64	93.57		73.40
Joypur			1	1.38					1.38
Kalimati	49	36.17	13	15.31					51.48
Kalma	24	16.82	9	100.27	571.08	43.29	571.08		160.38
Kantadih	32	44.77	5	79.72	171.82	20.49	171.82		144.98
Khamar	86	82.76	37	54.93	1091.05	103.60	1091.05		241.29
Kudna	24	15.25	4	2.08					17.33
Matha	5	1.71	1	0.74					2.45
Matha PF	6	2.13							2.13
Murguma	11	13.72	5	3.92			3.90		17.64
Nowahatu	9	26.2	5	12.73					38.93
PARDIHh	12	7.72	1	0.32					8.04
Ranga	156	80.55	11	102.90	137.16	13.89	137.16		197.34
Simni	21	63.36	5	28.42	229.82	21.09	229.82		112.87
Sirkabad	30	43.20	2	13.97	25.73	2.67	25.73		59.84
Talmu	1	0.12	3	9.05					9.17
Grand Total	**1341**	**877.42**	**159**	**870.55**	**2586.73**	**242.04**	**2590.60**		**1990.01**

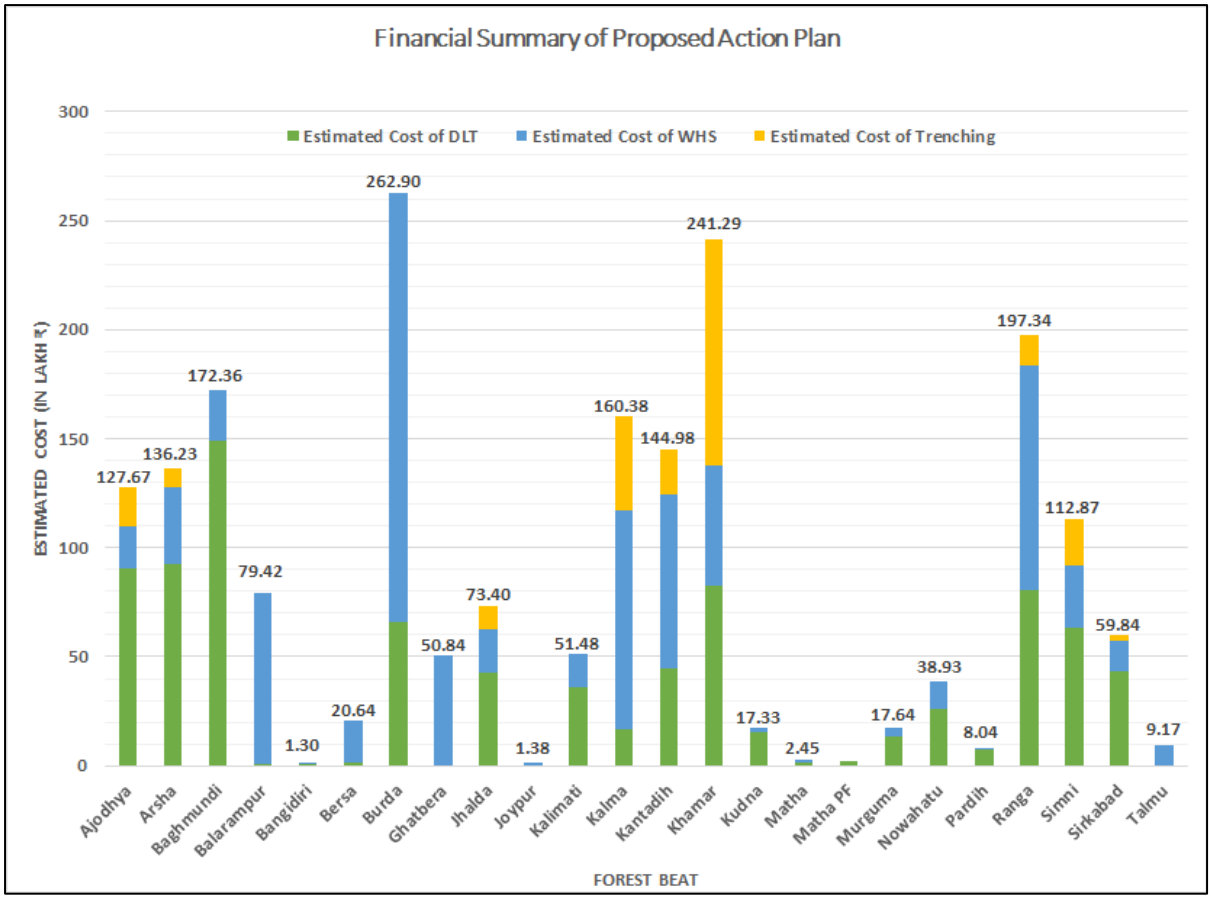

Fig 1.1: Beat wise financial Summary of proposed action plan for Purulia Forest Division

2. About WB-FBCCCR

Based on the Exchange of Notes between the Government of Japan and Government of India (GOI), Japan International Cooperation Agency (JICA) has extended a loan to implement the "Project for Forest and Biodiversity Conservation for Climate Change Response in West Bengal (WB-FBCCCR)". Total outlay of the project is ₹650 crore (₹520 crore loan component and ₹130 crore state share) for duration of 8 years starting from 2023-24 to 2030-31. The Govt. of West Bengal vide its Resolution No. 710-FOR/13099/18/2023, dated 4th May, 2023, the West Bengal Forest & Biodiversity Conservation Society has been established to get the project implemented by its Project Management Unit (PMU). Various offices of the West Bengal Forest Department (WBFD) at the Circle, Division and Range levels are implementing the Project. At the field level, 34 nos. of Division Management Units (DMU) and 90 nos. of Field Management Units (FMU) have been established. A total of 600 numbers Joint Forest Management Committees (JFMC), have been formed as per the extant resolutions/regulations issued by Government of West Bengal.

Broad objectives of this project are to mitigate and adapt to climate change, conserve and restore ecosystems by ecosystem based climate change measures, biodiversity conservation and restoration, livelihood improvement activities and institutional strengthening, thereby contributing to sustainable socio-economic development in West Bengal. There are four major components of work being implemented under this project viz. Ecosystem Based Climate Change Measures, Biodiversity Conservation, Livelihood Improvement and Institutional Strengthening. Disaster risk reduction is intended to achieve by Catchment Area Treatment (CAT) which is part of Ecosystem Based Climate Change Measures.

3. Brief about ICAR-IISWC

The ICAR-Indian Institute of Soil and Water Conservation (ICAR-IISWC), (Formerly CSWCRTI) was established on 1st April,1974 with Headquarters at Dehradun by combining Soil and Water Conservation Research, Demonstration and Training Centres which were established in 1950's at Dehradun, Kota, Bellary, Udhagamandalam, Vasad, Agra and Chandigarh. These centres were initially established by the Govt. of India and transferred to the Indian Council of Agricultural Research (ICAR) on 1st October, 1967. Subsequently two new Research Centres were added to the CSWCRTI, one at Datia in M.P. (18th September, 1986) to tackle soil and water conservation problems of Bundelkhand region and another at Koraput in Orissa (31st January, 1992) to address the problems of shifting cultivation areas. The institute with the national mandate and multi-disciplinary team of scientists and paraphernalia vehemently involved in research, training, consultancy and demonstration on various aspects of soil and water conservation, watershed management and natural resource management as pioneer. The Institute was renamed as Indian Institute of Soil and Water Conservation (ICAR-IISWC) by ICAR on April 7, 2014.

4. Brief Introduction about Consultancy Project

Chief Project Director, WB-FBCCCR (Forest and Bio-diversity Conservation for Climate Change Response in West Bengal), JICA Funded Project has proposed to prepare Catchment Area

Treatment Plan (CAT Plans) for13 Forest Divisions in West Bengal. Forest Department, Govt. of West Bengal is implementing a Japanese ODA loan assisted project FBCCCR which includes an activity of preparation of CAT plans for 13 Forest divisions located in dry lateritic southern part of West Bengal (Details are provided in Table 4.1). The total project area is 4,66,654 ha which spread over thirteen forest divisions in West Bengal. Forest areas are being managed with respective working plans which will be more meaningful and effective if an integrated approach of watershed management is adopted. Hence the present project on Preparation of Catchment Area Treatment Plan (CAT Plans) for13 Forest Divisions in West Bengal under JICA Funded WB-FBCCCR was taken up by ICAR-IISWC as a consultancy project in accordance with MoU signed between both the parties.

Table 4.1: Project Area - Information on forest divisions, ranges and beats

S. No.	Name of Circle	District	Forest Division	Area (ha)	No. of ranges	No. of beats
1	Central	Bankura	Bankura North	54594	10	33
2			Bankura South	56300	12	38
3			Panchet	33850	5	21
4	South West	Purulia	Purulia	51173	8	24
5			Kangsabati north	26883	5	18
6			Kangsabati south	27862	6	15
7	South East	Purba Burdwan	Burdwan	21845	7	20
8		Pashim Burdwan	Durgapur	4963	3	8
9		Birbhum	Birbhum	16645	7	20
10	Western	Pashchim Madnipur	Mednipur	51358	9	29
11			Rupnarayan	29139	5	18
12			Kharagpur	32544	6	17
13		Jhargram	Jhargram	59498	12	36
				466654	95	297

5. Brief about Purulia Forest Division

Initially, to reduce the inflow of sediment carried by Kangsabati, Kumari, and Damodar, it was decided to concentrate soil conservation works in the entire catchment area of the Kangsabati and part of the Damodar River. To combat such hazardous erosion, Kangsabati Soil Conservation Division-I, Kangsabati Soil Conservation Division-II, and Panchet Soil Conservation Division were opened in the year 1964.

Purulia District was a part of Manbhum District of Bihar and came under the W.B. (Transfer of Territories) Act 1956 w.e.f. 1st November 1956. Working Plans (South) Division-II with Headquarters at Bankura was created in 1966 vide G.O. No. 6676-For dt. 06.12.1966 for Bankura & Purulia District. Bankura Division split into Bankura (North) & Bankura (South) Division vide G.O. No. 1119-For/4E-413/78 dt. 28.02.79. Soil Conservation Division, KS.C.-1, KS.C.-II in Purulia District, P.S.C. at Bankura District, and Durgapur S.F. Division in Burdwan District were created in 1982. These divisions came under the purview of territorial administrative jurisdiction in 1995 vide G.O. 37/F.R./0/D/1/4E-2/95 dt. 27.03.96 (K.S.C.-I & II) and G.O. No. 2891-For/FR/O/D/1/4E-2/95 dt. 27.06.95. At present, the

jurisdiction of the Working Plans (South) Division-II comprises Bankura (North), Bankura (South), Panchet, **Purulia**, Kangsabati North, Kangsabati South, Burdwan, Durgapur, and the Arambagh Range of the Howrah & Birbhum Division.

Purulia forests are distributed more or less throughout the district, comprising 21 police stations, viz., Arsha, Bagmundi, Balarampur, Bandwan, Barabazar, Boro, Hura, Jhalda, Joypur, Kashipur, Kenda, Kotshila, Manbazar, Neturia, Para, Puncha, Purulia (M), Purulia Town, Raghunathpur, Santaldih & Santuri (Location map of Purulia division is given as Fig. 5.1). The forest of the district mainly belonged to Zammeet, the local demands. The first tiny step to scientifically manage the forest under government control was taken in 1894 (more than 100 years ago) when certain forest blocks at Matha and Kuilapal were declared protected forests. The area of these two forests combined was only 14 square miles (22.5 sq. km.), and it is remarkable that while these comparative dots of forest were considered worth preserving, nothing was done for the overwhelming majority. The obvious reason was that these forests belonged to the government to which the Indian Forest Act could apply. The headquarters of the Forest Divisions of Purulia Division is at Purulia Sadar. Purulia division consists of 64140.41 ha forest land (Details about forest ranges and beats are given in Table 5.1).

The soil of Purulia division is undulating tract of high ridges and low valleys. The valleys are steep along the rivers. The whole area is network of number of rivers Damodor, Kangsabati, Kumari, Darakeswar and Subarnarekha.TheKangsabati is the master stream of this area. Due to undulating topography, nearly 50% of the rainfall flows away as runoff. The area is covered by mostly residual soil formed by weathering of bed rocks.

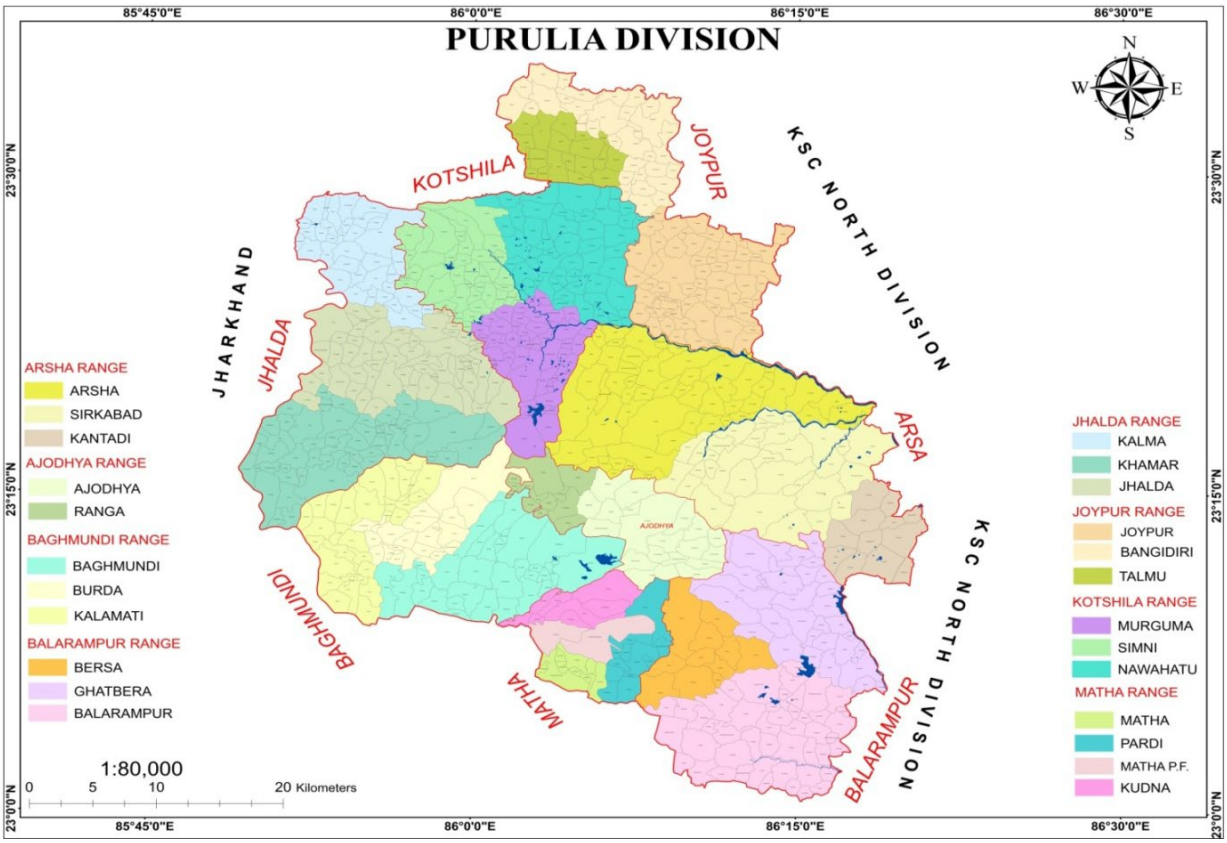

Fig. 5.1: Location map of Purulia forest division

Table 5.1: Information on range and beats of Purulia forest division

S. No.	Range	Beat	Range Officer (RO)	RO's mobile number	Beat Officer
1	Ajodhya	Ajodhya	Manaj Mojumder	7908928464	Susanta Das
		Ranga			Subrata Basak
2	Baghmundi	Baghmundi	Shahnawaz Faruk Ahmed	7001100239	Saheb Mahata
		Burda			Ishar Chandra Mahato
		Kalimati			Saheb Mahata
3	Jhalda	Jhalda	Apurba Mahanty	7908993063	Subhas Chandra Badhuk
		Kalma			Rambilash Hansda
		Khamar			Subhas Chandra Badhuk
4	Joypur	Joypur	Basudeb Rajwar	9002243864	Marut Mahato
		Talmu			Krishna Chandra Laya
		Bangidiri			Marut Mahato
5	Kotshila	Murguma	Giridhan Roy	9284528925	Madhu Soren
		Simni			Joyram Mandi
		Nowahatu			Dhananjoy Mahato
6	Balarampur	Balarampur	Saikat Mondal	7980331843	JagannathTudu
		Bersa			Sitaram Mahato
		Ghatbera			Sitaram Mahato
7	Matha	Matha	Saroj Kumar Mudi	9002757554	Santanu Mondal
		Matha PF			Santanu Mondal
		Kudna			Maruti Mahato
		PARDIH			Maruti Mahato
8	Arsha	Arsha	Anowar Sadat	8001945597	Swarup Das
		Sirkabad			Swarup Das
		Kantadih			Biswanath Mahato

Table 5.2: Beat Area and Forest Cover comparison

S. No.	Rnage	Beat	Area (ha) as reported by the division	Area (ha) as derived by GIS for boundary provided by the Client	Forest Cover (canopy %) reported by the division	Forest Cover (canopy %) arrived by GIS analysis (wt. area av.)
1	Ajodhya	Ajodhya	9783.2	5201.6	87	36.5
2		Ranga	3958.2	1856.7	65	39.0
3	Baghmundi	Baghmundi	8335.0	3094.0	75	29.5
4		Burda	3803.1	1642.8	70	33.2
5		Kalimati	1910.4	1706.3	65	18.0
6	Jhalda	Jhalda	2983.7	2549.2	45	28.2
7		Kalma	2293.0	2189.7	65	24.5
8		Khamar	3196.3	3369.8	65	26.8
9	Joypur	Joypur	627.1	1542.0	90	9.6
		Talmu	1123.8	1458.3	60	9.5
		Bangidiri	1048.5	2441.7	40	7.0
10	Kotshila	Murguma	2048.7	2303.5	75	31.8
11		Simni	2220.6	2151.4	70	33.0
12		Nowahatu	1010.5	1148.1	65	22.4

13	Balarampur	Balarampur	1467.3	1651.0	70	20.1
14		Bersa	2242.8	2226.4	70	24.3
15		Ghatbera	3529.2	2331.9	70	21.4
16	Matha	Matha	633.8	207.4	70	31.2
17		Matha PF	362.1	208.1	75	33.7
18		Kudna	1767.7	1734.1	70	42.7
19		PARDIH	1437.0	974.6	70	29.6
20	Arsha	Arsha	4344.1	4767.1	40	25.5
21		Sirkabad	2434.9	4103.5	40	22.4
22		Kantadih	1579.6	278.4	40	11.5

Table 5.3: Meteorological data in the Purulia forest division (average of last 10 years)

Month	No. of rainy days	Rainfall (mm)	Max Temp. (°C)	Min Temp. (°C)	Wind velocity (km/hr)	Bright sunshine hours (hrs/day)	Humidity (%)	
							07:23 hrs	14:23hrs
January	1.8	14.8	25.1	10.1	0.8	6.4	81.7	35.9
February	2.2	10.9	29.3	13.1	1.1	7.8	77.1	32.0
March	3.9	13.5	33.0	17.5	4.4	7.1	67.1	29.5
April	4.4	26.4	37.7	22.8	2.1	7.4	71.1	31.0
May	8.2	94.0	37.0	23.6	2.7	7.9	78.4	44.4
June	12.2	156.8	36.2	25.0	2.1	6.1	82.5	57.6
July	19.4	268.8	32.2	24.6	2.4	4.3	89.2	73.3
August	18.7	253.0	32.1	24.3	1.9	4.7	90.8	73.9
September	14.1	203.9	32.5	23.8	1.4	5.8	89.7	70.5
October	6.9	149.4	31.9	20.3	1.0	6.7	80.8	59.2
November	0.7	8.3	29.6	14.5	0.6	7.1	78.9	41.8
December	1.9	15.2	25.4	10.7	0.5	6.4	81.9	36.9
Total / average	**94.4**	**1214.8**	**31.8**	**19.2**	**1.8**	**6.5**	**80.8**	**48.8**

Source: Met. Station: District Seed Farm, Hathuara, Purulia

6. Geology and Landform of Purulia District

Purulia district is located in the western most part of West Bengal and forms the eastern fringe of the Chhotanagpur Plateau. It spans approximately 6,259 square kilometers and contains rock formations ranging from the Archaean to the Quaternary periods. The region is rich in mineral resources but faces significant challenges such as soil degradation, deforestation, and unsustainable land use. The geology of Purulia is dominated by the Chhotanagpur Gneissic Complex, which primarily consists of high-grade metamorphic rocks like gneisses and schists. Other major rock types include plutonic rocks such as gabbro and anorthosite, along with granitic intrusions like the Kuilapal and Manbhum granites. The Singhbhum Group includes meta-sedimentary and meta-basic rocks, while the Dalma Group features basic volcanic formations. Gondwana sedimentary rocks, found in faulted basins, contain valuable coal seams, and Quaternary deposits are present in the valleys. This geological variety reflects a long history of tectonic activity, igneous intrusions, sedimentation, and weathering.

7. Drainage and Contours

This thematic layer has been prepared for all 13 forest divisions in GIS environment with basic inputs for topological maps of Survey of India. Forest beat wise soft and hard copies of these maps have been provided to three forest divisions (Purulia, Kangsabati North and Kangsabati South) where field survey have been completed. These features are depicted in Map-1 as base map of Purulia division.

8. Land Slope

This thematic layer has been prepared with utilizing DEM input of 30 m resolution of Copernicus available on Open Topography which is an open source of topographical data worldwide. This feature is depicted in Map-2. Beat wise area statistics of different slope groups present in Purulia division is given in Table 8.1.

Table 8.1. Area (ha) of different beat fall under different slope classes in Purulia division

BEAT NAME	Area (ha) under different slope (%) classes									Total Area
	0 – 1	1 – 3	3 - 5	5 - 10	10 - 15	15 - 25	25 - 33	33 - 50	> 50	
AJODHYA	4.2	41.4	115.2	986.7	1196.1	1751.6	470.3	480.8	155.3	5201.6
ARSHA	78.8	611.5	629.3	1086.0	625.1	889.9	278.3	422.1	146.1	4767.1
BAGHMUNDI	23.6	240.9	317.1	690.7	406.5	636.2	219.8	318.6	240.5	3094.0
BALARAMPUR	19.1	327.2	385.0	570.8	143.8	104.9	28.8	44.8	26.6	1651.0
BANGIDIRI	49.9	667.5	853.9	744.5	81.9	29.6	3.7	7.7	2.9	2441.7
BERSA	12.2	165.4	276.5	459.2	234.3	342.9	145.5	294.5	295.9	2226.4
BURDA	5.5	86.5	128.9	270.3	168.7	323.7	140.4	261.0	257.8	1642.8
GHATBERA	21.1	357.5	377.4	419.0	239.8	387.3	163.5	217.9	148.4	2331.9
JHALDA	7.8	149.5	218.4	594.1	237.7	408.3	188.8	409.5	335.0	2549.2
JOYPUR	28.1	422.1	552.3	489.3	42.1	8.0	-	-	-	1542.0
KALAMATI	12.8	278.6	262.8	360.2	152.8	295.0	97.3	171.5	75.2	1706.3
KALMA	10.7	154.8	279.6	499.8	166.0	303.3	175.3	325.8	274.4	2189.7
KANTADIH	13.0	122.4	80.6	60.5	1.1	0.8	-	-	-	278.4
KHAMAR	9.5	152.8	296.5	907.6	489.9	645.3	230.0	387.4	250.6	3369.8
KUDNA	38.8	155.6	141.3	482.3	270.1	284.1	104.3	157.1	100.5	1734.1
MATHA	0.9	18.9	27.8	124.3	29.7	5.6	0.3	-	-	207.4
MATHA P.F.	0.8	16.5	22.3	43.0	15.8	12.7	10.3	22.1	64.6	208.1
MURGUMA	10.5	146.3	200.1	538.5	344.5	531.7	152.2	263.7	116.1	2303.5
NOWAHATU	3.5	38.8	95.5	407.0	171.0	135.3	56.4	109.2	131.4	1148.1
PARDIH	3.2	21.7	49.9	211.8	146.6	200.7	90.0	160.2	90.5	974.6
RANGA	0.9	14.7	37.2	283.8	412.9	748.2	164.5	142.8	51.7	1856.7
SIMNI	4.2	90.9	178.9	434.2	205.6	343.5	188.3	415.7	290.1	2151.4
SIRKABAD	32.1	598.1	586.8	860.8	402.4	625.1	231.9	406.2	360.1	4103.5
TALMU	4.0	119.3	292.5	804.5	146.8	89.2	1.8	-	-	1458.3
Division Total	**395.6**	**4999.0**	**6405.9**	**12329**	**6331.3**	**9102.7**	**3141.7**	**5018.5**	**3413.8**	**51137.6**
Per cent to total	**0.8**	**9.8**	**12.5**	**24.1**	**12.4**	**17.8**	**6.1**	**9.8**	**6.7**	**100.0**

9. Soils of Purulia Forest Division

Data / information on soil parameters like soil units, depth and texture were collected from ICAR-NBSS&LUP, Nagpur. Forest boundaries provided by WB-FBCCCR in terms of shape files were used to extract maps and data tables on these soil parameters restricting to forest areas alone. The following Table 9.1.1 shows the distribution of different soil types present in the Purulia forest division which excludes the area of water bodies and rock outcrops. Each range, such as Ajodhya, Arsha, Baghmundi, and others, has a unique combination of soils differing in depth, texture, drainage and erosion levels. The soils of Purulia division are predominantly very deep to deep, occurring mostly on gently sloping to undulating terrains, which offer potential for productive land use if proper soil conservation is adopted. However, significant areas are characterized by shallow and gravelly soils with high erosion risk, particularly on ridges and slopes, limiting bio-mass productivity. Spatial distribution of different soils in Purulia division is given in Map-3.

9.1 Soil depth

The soils of Purulia division exhibit considerable spatial variability in depth with moderately shallow soils being the most widespread, covering nearly 37.97% of the total soil area. Shallow soils follow, occupying about 33.3%, indicating a predominance of limited-depth soils across the region. Deep and very deep soils are less extensive, found mainly in localized patches, offering better potential of plant growth in these areas (Table 9.1.2). Map-4 shows spatial distribution of soil depth in Purulia division.

Table 9.1.1. Area statistics of different Soil Units in Purulia Forest division

Unit Code	Description	Area (ha)	Percent to total (%)
W091	Very deep, moderately drained soils on gently sloping to hilly areas.	22,953.31	44.89
W092	Very shallow, gravelly soils on ridges with high erosion risk.	2,358.53	4.61
W093	Shallow, gravelly soils on low ridges with severe erosion.	748.35	1.46
W094	Deep, well-drained soils on gentle to moderate plains.	9,504.16	18.59
W095	Shallow, coarse soils on gently sloping plains.	211.18	0.41
W096	Shallow, gravelly soils on undulating terrain with moderate erosion.	3,524.14	6.89
W102	Very deep, well-drained soils on undulating plains.	6,722.84	13.15
W104	Very deep, imperfectly drained soils on elevated plateaus.	5,115.06	10.00
	Total	**51,137.58**	**100.00**

Table 9.1.2. Soil Depth Classification in Purulia Forest Division

Depth Class	Area (ha)	Percentage (%)
Very shallow	2,130.79	4.17
Shallow	17,031.29	33.30
Moderately shallow	19,415.20	37.97
Moderately deep	1,378.85	2.70
Deep	5,972.91	11.68
Very deep	5,208.54	10.19
Total	**51,137.58**	**100.00**

Table 9.1.3 Soil Depth Beat Wise

Row Labels	Deep	Mod. deep	Mod. shallow	Rock outcrop	Shallow	Very deep	Very shallow	Grand Total Area (ha)
AJODHYA	0.9		3442.4		1758.3			5201.6
ARSHA	432.7	151.8	1684.7		1905.6	453.0	159.0	4786.8
BAGHMUNDI	582.9		1816.8		538.2	253.5	18.6	3210.1
BALARAMPUR	792.5				663.3	171.9	33.1	1660.7
BANGIDIRI		422.5			885.5	1141.8		2449.8
BERSA	276.7		1188.9		392.8	198.0	176.6	2233.1
BURDA	161.8		825.7		398.0	3.5	265.4	1654.5
GHATBERA	960.1		947.5	57.5	298.9	12.1	126.9	2403.0
JHALDA	162.0	183.3	888.5	97.8	971.3	298.1	54.2	2655.1
JOYPUR	78.3	150.8			797.7	516.5		1543.3
KALAMATI	84.4		492.6		663.5	20.7	445.1	1706.3
KALMA	348.0	104.5	947.1		504.8	144.3	141.0	2189.7
KANTADIH	134.4				9.7	127.5	6.8	278.4
KHAMAR	190.1	77.2	1248.6		1352.3	178.5	328.1	3374.7
KUDNA	693.3		985.1		42.9	5.2	9.3	1735.8
MATHA	130.7		25.3		52.0			207.9
MATHA P.F.	156.0		41.1		11.1			208.1
MURGUMA	37.3	9.4	571.0		1546.0	133.5	36.1	2333.5
NOWAHATU	29.8	23.6	267.3		497.9	195.1	144.3	1158.0
PARDI	130.4		824.0			20.9		975.3
RANGA			932.9		923.8			1856.7
SIMNI	217.9	8.7	1194.6		401.9	210.7	120.7	2154.5
SIRKABAD	416.8	11.9	1213.8		2001.6	404.8	67.4	4116.3
TALMU		236.9			470.0	751.3		1458.3
Grand Total Area (ha)	**6016.9**	**1380.6**	**19537.8**	**155.2**	**17087.2**	**5241.1**	**2132.7**	**51551.5**

9.2 Soil Texture

Purulia Division's soil texture is predominantly coarse to moderately fine, with sandy loam to sandy clay loam textures covering nearly half (49.90%) of the area. Sandy clay loam is the second most widespread texture, comprising about 22.7% of the area. Finer textures like loam and clay loam occupy smaller proportions, indicating generally low water retention and moderate fertility levels across the region (Table 9.2.1). Map-5 shows spatial distribution of soil textural classes present in Purulia division.

Table 9.2.1. Area (ha) of different Soil Textural Class Distribution in Purulia Division

Soil Textural Class	Area (ha)	Percentage (%)
Loam	668.07	1.31
Loam to clay loam	2850.03	5.57

Loamy sand	8874.66	17.35
Sandy clay loam	11606.95	22.70
Sandy clay loam to clay	158.40	0.31
Sandy clay loam to clay loam	62.39	0.12
Sandy loam	1231.83	2.41
Sandy loam to clay loam	170.01	0.33
Sandy loam to sandy clay loam	25515.24	49.90
Grand Total	**51137.58**	**100.00**

Table 9.2.2 Soil Texture Beat Wise

BEAT NAME	Loam	Loam to clay loam	Loamy sand	Rock outcrop	Sandy clay loam	Sandy clay loam to clay	Sandy clay loam to clay loam	Sandy loam	Sandy loam to clay loam	Sandy loam to sandy clay loam	Grand Total Area (ha)
AJODHYA			192.2		1566.1					3443.3	5201.6
ARSHA		171.5	1132.9		1212.9	135.0		35.9		2098.6	4786.8
BAGHMUNDI	105.3		42.3		614.6			57.7		2390.2	3210.1
BALARAMPUR	92.0		22.1		667.8		30.9	591.7	84.4	171.9	1660.7
BANGIDIRI		885.5			1564.3						2449.8
BERSA	0.6		290.3		279.1			105.3		1557.7	2233.1
BURDA	22.6		231.9		466.2			91.8		841.9	1654.5
GHATBERA	357.2		96.8	57.5	409.7			149.5		1332.3	2403.0
JHALDA		101.8	869.5	97.8	252.4			54.2		1279.4	2655.1
JOYPUR		797.7			383.2	1.6			67.4	293.4	1543.3
KALAMATI	43.7		663.5		454.4			6.7		538.0	1706.3
KALMA		194.4	310.4		264.8					1420.0	2189.7
KANTADIH	21.5		9.7		32.9	1.5	2.9	81.6		128.3	278.4
KHAMAR	10.0	9.2	1343.1		416.7			13.9		1581.8	3374.7
KUDNA	3.8		42.9		23.6			2.1		1663.4	1735.8
MATHA			52.0							155.9	207.9
MATHA P.F.			11.1		6.0			8.0		183.2	208.1
MURGUMA		38.0	915.9		601.6	4.8		36.1	11.9	725.2	2333.5
NOWAHATU		157.7	340.3		304.1	0.7			6.1	349.3	1158.0
PARDIH										975.3	975.3
RANGA			32.1		891.8					932.9	1856.7
SIMNI		20.4	381.5		129.4				0.6	1622.6	2154.5
SIRKABAD	23.0	13.0	1933.1		106.3	18.6	28.5			1993.8	4116.3
TALMU		470.0			988.2						1458.3
Grand Total Area (ha)	**679.9**	**2859.2**	**8913.4**	**155.2**	**11635.9**	**162.2**	**62.4**	**1234.5**	**170.4**	**25678.4**	**51551.5**

10. Forest Cover in Purulia Division

Spatial data on forest cover showing different classes like non-forest, scrub, open forest, moderate forest and dense forest cover was generated using shape files on Forest Cover and Forest Boundary provided by WB-FBCCCR in GIS environment. Beat wise area statistics of different forest

cover classes are given in Table 10.1 and their spatial distribution is depicted in Map 6. Information on predominant species of trees, shrubs and grasses was provided by Purulia division and presented in Table 10.2.

Table 10.1: Beat wise area statistics of different forest cover classes in Purulia division.

Beat	OTHER FOREST AREA (NO CANOPY)	SCRUB (Tree Canopy density < 10%)	OPEN FOREST (Tree Canopy density 10-40%)	MODERATELY DENSE FOREST (Tree Canopy density 40 - 70%)	VERY DENSE FOREST (Tree Canopy density >70%
AJODHYA	794.8	-	1961.2	2374.2	71.4
ARSHA	1953.8	5.8	1483.2	1261.0	63.3
BAGHMUNDI	672.1	-	1529.9	872.6	19.4
BALARAMPUR	1052.7	-	165.5	432.8	-
BANGIDIRI	2294.8	-	81.6	65.3	-
BERSA	716.6	13.3	1113.2	335.6	47.7
BURDA	259.5	98.5	663.1	556.0	65.8
GHATBERA	1000.1	32.1	922.1	347.4	30.2
JHALDA	867.8	126.1	732.8	712.7	109.8
JOYPUR	1277.7	-	202.9	61.4	-
KALAMATI	384.4	393.3	810.2	118.4	-
KALMA	550.8	330.3	860.2	348.5	100.0
KANTADIH	220.6	-	36.1	21.7	-
KHAMAR	726.3	230.4	1641.6	701.0	70.5
KUDNA	194.8	-	544.3	835.5	159.5
MATHA	61.1	-	62.7	83.5	-
MATHA P.F.	55.5	-	55.6	96.6	0.4
MURGUMA	643.8	1.5	730.8	899.1	28.4
NOWAHATU	580.7	-	279.7	287.7	-
PARDIH	91.0	-	683.4	189.8	10.4
RANGA	170.6	-	751.3	887.1	47.7
SIMNI	318.3	216.0	903.1	495.8	218.2
SIRKABAD	1917.1	140.5	1036.1	1008.5	1.3
TALMU	1246.9	-	132.0	79.4	-
Divisional Total	**18051.5**	**1587.6**	**17382.9**	**13071.7**	**1043.9**
% to total	**35.3**	**3.1**	**34.0**	**25.6**	**2.0**

Table 10.2: Predominant species of trees, shrubs and grasses in Purulia division

Dominant tree species		Dominant shrub species and climber	
Vernacular or common Names	**Botanical Name**	**Vernacular or common Names**	**Botanical Name**
Akashmonhi, Sonajhuri	*Acacia auriculiformis*	Anantamul	*Hemidesmus indicus*
Aam	*Mangifera indica*	Asamlata	*Eupatorium odoratum*
Amla	*Emblica officinalis*	Atari	*Combretum decandrum*
Amra	*Spondius pinnata*	Bagnaki	*Martyniadiandra*
Ankar	*Alangiumsalvifolium*	Bainchi	*Flacourtia indica*
Arjun	*Terminalis arjuna*	Bankal or Dholkalmi	*Chosy Austin*

Asan	*Terminalia tomentosa*	Bantulsi	*Ociumamericanum*
Aswatha	*Ficus religiosa*	Berala	*Sida cordifolia*
Bahera	*Terminalia bellirica*	Bhabri	*Lantana camara*
Bandar Lathi, Sonalu	*Cassia fistula*	Bhurru	*Gardenia gummifera*
Bat	*Ficus benghalensis*	Chakunda	*Cassia tora*
Bel	*Aegle marmelos*	Kalmegh	*Andrographis paniculata*
Cashew, Kaju	*Anacardiu occidentale*	Koromcha/Bankoromcha	*Carissa spinarum*
Challa	*Holoptelea integrifolia*	Kul	*Zizyphusglaberrima*
SajneSiries	*Albizia Odoratissima*	Kurchi	*Holarrhenaantidysenterica*
Chhatim	*Alstonesisscholaris*	Maiynakanta	*Catunaregam spinosa*
Dhaw	*Anogeissus latifolia*	Nakdana	*Opuntica stricta*
Dumur	*Ficus serica*	Nilkanta	*Curcuma cassia*
Gabdi, Palas	*Butea monosperma*	Nisinda	*Vitex negunda*
Gamar	*Gmelina arborea*	Bankhejur	*Phoenix acaulis*
Gokul	*Ailanthus excelsa*	Putri	*Croton roxburghii*
JagnyaDumur/ Gular	*Ficus recemosa*	Satamuli	*Asparagus racemosa*
Haldu or Karam	*Haldina cordifolia*	Shialkanta	*Mimosa ruicaulis*
Haritaki	*Termanaliachebula*	Talmuli	*Curculigoorchioides*
Kanthal	*Artocarpus heterophyllus*	Dudhilata	*Ichnicarpus frutescens*
Jarul	*Largerstroemiaflosreginae*	Gulancha	*Tinospora cordifolia*
Kadam	*Anthocephaluscadamba*	Kantaalu	*Dioscorespintaphylla*
Kaj	*Uridelia retusa*	Kunch	*Abris precatoreius*
Kaju	*Anacardium occidentale*	Latapalash	*Butea superb*
Kalojam	*Syzygumcumini*	Maljan	*Bauhinia vahlii*
Kamla or Sindure	*Mallotusphilippensis*	Maula	*Butea parviflora*
KantaBhuel	*Xantoistementosa*	Shoraalu	*Dioscoresnummularia*
Kend or Kendu	*Diospyros melanoxylon*	**Dominant grass species**	
Kumbhi	*Careya arborea*	**Vernacular or common Names**	**Botanical Name**
Kusum	*Schleicheraoleosa*	Kashful	*Saccharum spontaneum*
Latikaram	*Hymanodictyonexcelsum*	Vetiver or Khus	*Vetiveria zizanoides*
Madar	*Artocarpus lacucha*	Cogon grass or blady grass	*Imperata cylindrica*
Mahua or Mahul	*Madhuca indica*	Lemongrass	*Cymbopogon flexuosus*
Minjiri	*Cassia siamea*	Hathi Ghas	*Themeda arundinacea*
Neem	*Azadirachuta indica*	-	-
Palas	*Butea Monosperma*		
Panjan	*Ougeiniaoojeinensis*		
Parashi	*Cleistanthuscollinus*		
Peasal/murga	*Pterocarpus marsupium*		
Pitali	*Trewianudiflora*		
Piyal	*Buchananialanzan*		

Rahara	*Soymidafebrifuga*		
Sal	*Shorearobusta*		
Setisal	*Dalbergia latifolia*		
Sidha	*Lagerstroemia parviflora*		
Simul	*Salmaliamalabarica*		
Siris	*Albizzia odoratissima*		
Sissu	*Dalbergia sisso*		
Tamal	*Diospyros exaculpta*		
Teak	*Tactona grandis*		

11. Surface Runoff

Surface runoff has been assessed employing Hydrologic Cover Complex (HCN) method. Entire forest division area was first divided into homogenous hydrologic response units by over laying and intersecting forest cover, land slope and soil type. Runoff potential with 15 years average rainfall was calculated and forest range wise maps were generated (Map 7).

Table 11.1. Regarding Beat wise area statistics of different Annual Surface Runoff classes

BEAT NAME	Annual Surface Runoff (mm)					Grand Total Area (ha)
	< 50	50 - 100	100 - 150	150 - 200	> 200	
AJODHYA		3189.8	1219.2	613.4	179.3	5201.6
ARSHA	19.7	1954.5	1203.1	1422.0	187.5	4786.8
BAGHMUNDI	117.2	2211.2	583.6	275.4	22.6	3210.1
BALARAMPUR	9.7	598.3	659.3	393.4		1660.7
BANGIDIRI	8.1	119.1	27.9	2235.8	59.0	2449.8
BERSA	6.7	1278.2	218.4	650.6	79.3	2233.1
BURDA	11.7	1039.4	380.9	140.0	82.4	1654.5
GHATBERA	13.6	1088.2	223.7	992.8	84.6	2403.0
JHALDA	10.0	1247.9	681.6	432.7	282.9	2655.1
JOYPUR	1.3	264.3	354.6	918.1	5.1	1543.3
KALAMATI		901.9	317.0	327.6	159.8	1706.3
KALMA	0.3	1181.2	481.0	359.0	168.2	2189.7
KANTADIH		57.0	0.8	220.6		278.4
KHAMAR	7.3	2110.1	630.6	467.4	159.4	3374.7
KUDNA	20.5	1307.8	294.9	97.0	15.5	1735.8
MATHA	0.5	146.0	19.9	41.5		207.9
MATHA P.F.	0.4	88.6	80.2	29.3	9.6	208.1
MURGUMA	30.5	1323.6	538.9	385.0	55.4	2333.5
NOWAHATU	9.9	204.3	363.1	417.4	163.2	1158.0
PARDI	1.5	814.1	101.2	58.5		975.3
RANGA	1.1	1505.0	187.3	157.6	5.6	1856.7
SIMNI	3.5	1416.8	431.8	199.6	102.8	2154.5
SIRKABAD	12.8	1305.2	992.2	1585.5	220.5	4116.3
TALMU		135.1	76.3	1170.3	76.6	1458.3
Grand Total Area (ha)	**286.5**	**25487.7**	**10067.3**	**13590.5**	**2119.5**	**51551.5**

12. Existing Engineering Structures and Other Information

In order to collect information on existing engineering structures in different forest division, data collection format were designed and circulated among all 13 forest divisions. This information was collected with geo-coordinates of each structure as to delineate them on map in GIS environment. Details on existing engineering structures (DLT and WHS) are provided in Tables 12.1 and 12.2 and their spatial distribution are provided in Map 8a,Map 8b, Map 8c, Map 8d, Map 8e, Map 8g andMap 8h. Similarly information on land treatments carried out in Purulia division was collected and presented in Table 12.3. Information on earlier works carried out and dependency on forests were also sought from forest division and what so ever information received is presented in Table 12.4 and 12.5.

Table 12.1: Drainage line treatments: Loose boulder check dam/brush wood check dam/ masonry check dam etc.

S. No.	Type of Measure	Beat and Mouza No.	Condition (breached/ silted-up / functional)	Order of Gully	Latitude	Longitude	Remarks*
1	RCD	Ajodhya & 108	Breached	1 Order	N 23°22'0.89''	E 86°12'26.85''	Repairing needed
2	RCD	Ajodhya & 117	Breached	2nd Order	N 23°19'22.96''	E 86°16'76.85''	Repairing needed
3	RCD	Ajodhya & 103	Breached	1 Order	N 23°19'99.37''	E 86°11'32.03''	Repairing needed
.4	RCD	Ajodhya & 76	Breached & Functional	1 Order	N 23°15'514''	E 86°06'738''	Repairing needed
5	RCD	Ajodhya & 77	Breached	2nd Order	N 23°14'33.4''	E 86°07'15.6''	Repairing needed
6	RCD	Ajodhya & 109	Breached	1 Order	N 23°11'43.98''	E 86°7'0.282''	Repairing needed
7	RCD	Ranga & 75	Breached	1 Order	N 23°15'14.088''	E 86°5'23.214''	Repairing needed
8	RCD	Ranga & 81	Breached	2nd Order	N 23°14'16.155''	E 86°4'21.926''	Repairing needed
9	RCD	Ranga & 80	Breached	1 Order	N 23°14'9.472''	E 86°5'40.298''	Repairing needed
10	RCD	Ranga & 73	Breached	1 Order	N 23°15'367''	E 86°03'211''	Repairing needed
11	RCD	Ranga & 73	Breached	1 Order	N 23°15'092''	E 86°03'355''	Repairing needed
12	Masonry Check Dam	Baghmundi & 98	Functional	2nd Order	N 23°16'15.23”	E 86°03'74.41''	Purpose Served (Redigging needed due to siltation depth is decreased)
13	Masonry Check Dam	Baghmundi &101	Functional	2nd Order	N 23°16'22.76”	E 86°06'05.09''	Purpose Served (Redigging needed due to siltation depth is decreased)
14	Masonry Check Dam	Baghmundi &99	Functional	2nd Order	N 23°15'15.54”	E 86°03'93.68''	Purpose Served (Redigging needed due to siltation depth is decreased)

15	Masonry Check Dam	Baghmundi &86	Functional	2nd Order	N 23°23'37.97”	E 86°03'11.27”	Purpose Not Served (Repairing needed due to leakage of water stream bottom)
16	Masonry Check Dam	Baghmundi & 103	Functional	2nd Order	N 23°17'00.86”	E 86°06'91.59''	Purpose Served (Need repairing due to Siltation depth decreased)
17	Masonry Check Dam	Baghmundi & 89	Functional	2nd Order	N 23°21'98.55”	E 86°03'04.17''	Purpose Served (Need repairing due to Siltation depth decreased)
18	Masonry Check Dam	Baghmundi & 89	Functional	2nd Order	N 23°21'25.28”	E 86°03'30.50''	Purpose Served (Need repairing due to Siltation depth decreased)
19	Masonry Check Dam	Baghmundi & 63	Functional	2nd Order	N 23°22'870”	E 86°01'7.85''	Purpose Served (Need repairing due to siltation depth decreased)
20	Masonry Check Dam	Baghmundi & 89	Functional	2nd Order	N 23°21'996”	E 86°03'04.9''	Purpose Served(Need repairing due to siltation depth decreased)
21	Masonry Check Dam	Baghmundi & 89	Functional	2nd Order	N 23°21'261”	E 86°03'36.9''	Purpose Served (Need repairing due to siltation depth decreased)
22	Masonry Check Dam	Baghmundi &105	Functional	2nd Order	N 23°20'970"	E 86°04'9.18"	Purpose Served (Need repairing due to siltation depth decreased)
23	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 105	Breached	2nd Order	N 23°12'27"	E 86°'03’21"	Purpose served
24	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 105	Breached	2nd Order	N 23°12'35"	E 86°03'17"	Purpose served
25	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 105	Breached	2nd Order	N 23°12'31"	E 86°03'17"	Purpose served

26	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 105	Breached	2nd Order	N 23°12'37"	E 86°03'15"	Purpose served
27	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 105	Breached	2nd Order	N 23°12'25"	E 86°03'18"	Purpose served
28	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 105	Breached	2nd Order	N 23°12'42"	E 86°03'08"	Purpose served
29	Loose Boulder Check Dam (Gully Plugging)	Baghmundi &105	Breached	2nd Order	N 23°12'27"	E 86°03'11"	Purpose served
30	Loose Boulder Check Dam (Gully Plugging)	Baghmundi &105	Breached	2nd Order	N 23°12'33"	E 86°03'02"	Purpose served
31	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 89	Breached	2nd Order	N 23°12'52"	E 86°02'02"	Purpose served
32	Loose Boulder Check Dam (Gully Plugging)	Baghmundi &89	Breached	2nd Order	N 23°13'06"	E 86°02'36"	Purpose served
33	Loose Boulder Check Dam (Gully Plugging)	Baghmundi &89	Breached	2nd Order	N 23°13'09"	E 86°02'32"	Purpose served
34	Loose Boulder Check Dam (Gully Plugging)	Baghmundi &89	Breached	2nd Order	N 23°13'07"	E 86°01'52"	Purpose served

35	Loose Boulder Check Dam (Gully Plugging)	Baghmundi &89	Breached	2nd Order	N 23°13'42"	E 86°02'22"	Purpose served
36	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 63	Breached	2nd Order	N 23°13'43"	E 86°00'49"	Purpose served
37	Loose Boulder Check Dam (Gully Plugging)	Baghmundi & 63	Breached	2nd Order	N 23°13'47"	E 86°00'48"	Purpose served
38	Loos Boulder check dam	Beat- Khamar, Mouza- Hensla, No-01	Functional (Loos Boulder check dam)	2nd order	N 23.258022˚	E85.906670˚	Purpose served
39	Check Dam	Beat- Khamar, Mouza- Olgara, No-01	Not functional (Check Dam)	3rd order	N 23.183381˚	E85.581570˚	Repairing needed
40	WHS	Beat- Kalma, Mouza- Kiribera, No-01	Not functional (WHS)	2nd order	N 23.433698˚	E85.922699˚	Repairing needed
41	Rock Check Dam	Beat-Kalma, Mouza-Bakad, No-1	Not functional	2nd order	N 23.234190˚	E85.542613˚	Repairing needed
42	Rock Check Dam	Beat-Kalma, Mouza-Bakad, No-1	Not functional	2nd order	N 23.232841˚	E85.542685˚	Repairing needed
43	Rock Check Dam	Beat-Kalma, Mouza-Kansra, No-1	Not functional (RCD)	2nd order	N 23.234402˚	E85.560702˚	Repairing needed
44	Rock Check Dam	Beat-Khamar, Mouza-Pandri, No-1	Not functional	3rd order	N 23.286403˚	E85.003780˚	Repairing needed
45	Rock Check Dam	Beat-Khamar, Mouza-Pandri, No-1	Not functional	2nd order	N 23.283318˚	E85.002812˚	Repairing needed
47	masonry Check dam (Jalatirtha)	Simni, (Benko, JL. No.- 155	breached	3rd order	N 23°26'22.2"	E85°56'48.5''	Purpose not served
48	*	Simni, (Tahaddiri, Jl. No.- 157	silted-up	3rd order	N 23°26’21.2"	E85°57’20.8”	Purpose served
49	*	Murguma, (Jaharhatu, Jl. No.-264)	silted-up	3rd order	N 23°19’2.9"	E8602’38.6”	Purpose served
50	Check Dam	Bersa/Garga(22)	Partly Damaged	1st order	N23˚8’57.10’’	E86˚9’43.35''	Purpose served

51	*	Bersa/Garga(22)	Partly Damaged	1st order	N23˚9’05.04’’	E86˚08’53.16’’	Purpose served
52	Masonry Check Dam	PARDIH Beat Mouza-Chaownia, JL-143	functional	1st order	N 23°06’43.2’’	E86°08’17.4''	Purpose served (Need repairing due to Siltation depth decreased)
53	Check Dam	Sirkabad/ Kalabani-29	functional	2nd order	N 23.26715˚	E 86.178646˚	Repairing needed
54	Check Dam	Sirkabad/Tanbashi-26	functional	2nd order	N 23.266822˚	E 86.178014˚	Repairing needed
55	Rock Check Dam	Sirkabad/ Sirkabad-68	functional	2nd order	N 23.257651˚	E86.18265˚	Repairing needed
56	Rock Check Dam	Sirkabad/ Sirkabad-68	functional	2nd order	N 23.257047˚	E86.183639˚	Repairing needed
57	Rock Check Dam	Sirkabad/ Sirkabad-68	functional	1st order	N 23.2577˚	E86.182562˚	Repairing needed
58	Check Dam	Kantadih/ Karoriya-96	functional	1st order	N 23.226777˚	E 86.342718˚	Repairing needed

* No Information provided for the mentioned blank cells by the Concerned Office.

Table 12.2: Water harvesting structures (pond/well/tank/percolation pond/small dam etc.)

S. No.	Type of Structures	Beat and Mouza	Condition (Good / Fair/ Poor)	Approx. Capacity (cum)	Latitude	Longitude	Remarks*
1	Pond	Ajodhya & 114	Poor	180	23°11'45.7''	86°10'29.2''	Redigging needed
2	Pond	Ajodhya & 117	Poor	210	23°11'41.9''	86°11'16.7''	Redigging needed
3	Pond	Ajodhya & 119	Poor	254	23°19'14.22''	86°15'82.92''	Redigging needed
4	Pond	Ajodhya & 79	Poor	250	23°13'47.05''	86°06'57.27''	Redigging needed
5	Pond	Ajodhya & 86	Poor	240	23°15'52.89''	86°7'13.64''	Redigging needed
6	Pond	Ranga & 75	Fair	260	23°15'41.106''	86°4'47.058''	Redigging needed
7	Pond	Ranga & 75	Good	190	23°15'11.65''	86°5'11.242''	Redigging needed
8	Pond	Ranga & 75	Fair	230	23°15'21.383''	86°5'29.376''	Redigging needed
9	Pond	Ranga & 75	Good	245	23°15'23.445''	86°4'31.334''	Redigging needed
10	Pond	Ranga & 74	Poor	120	23°14'53.571''	86°4'18.291''	Redigging needed
11	Pond	Ranga & 73	Fair	235	23°15'23.423''	86°3'25.923''	Redigging needed
12	Well	Ranga & 80	Good	60	23°14'10.373''	86°5'24.334''	Redigging needed
13	Well	Ajodhya & 119	Poor	40	23°19'28.27''	86°15'81.24''	Redigging needed
14	Pond	Baghmundi & 89	Poor	0.4	N 23°12'54"	E 86° '02’01"	Redigging needed
15	Pond	Baghmundi & 89	Poor	0.26	N 23°13'34"	E 86° '02’05"	Redigging needed
16	Pond	Baghmundi & 89	Poor	0.26	N 23°13'12"	E 86° '02’02"	Redigging needed
17	Pond	Baghmundi & 89	Poor	0.26	N 23°12'53"	E 86° '02’37"	Redigging needed
18	Pond	Baghmundi & 103	Poor	0.26	N 23°12'17"	E 86° '05’36"	Redigging needed
19	Pond	Baghmundi & 63	Poor	0.33	N 23°14'04"	E 086° '01’01"	Redigging needed
20	Pond	Baghmundi & 63	Poor	0.26	N 23°12'57"	E 86° '00’00"	Redigging needed
21	Pond	Baghmundi & 63	Poor	0.26	N 23°13'16"	E 86° '00’13"	Redigging needed
22	Pond	Baghmundi & 63	Poor	0.33	N 23°13'14"	E 86° '00’18"	Redigging needed
22	Pond	Baghmundi & 63	Poor	0.26	N 23°13'16"	E 86° '00’20"	Redigging needed

23	Pond	Baghmundi & 63	Poor	0.26	N 23°13'20"	E 86° '00’20"	Redigging needed
24	Pond	Baghmundi & 63	Poor	0.26	N 23°13'20"	E 86° '00’23"	Redigging needed
25	Pond	Baghmundi & 63	Poor	0.33	N 23°13'23"	E 86° '00’38"	Redigging needed
26	Pond	Baghmundi & 63	Poor	0.26	N 23°13'30"	E 86° '00’40"	Redigging needed
27	Pond	Baghmundi & 63	Poor	0.33	N 23°13'38"	E 86° '00’27"	Redigging needed
28	Pond	Baghmundi & 63	Poor	0.4	N 23°13'59"	E 86° '01’19"	Redigging needed
29	Pond	Burda & 68	Poor	0.33	N 23°15'20"	E 86° '00’43"	Redigging needed
30	Pond	Burda & 68	Poor	0.26	N 23°15'15.42"	E 86° '01’03.28"	Redigging needed
31	Pond	Kalimati &1	Poor	0.33	N 23°14'30.20"	E 85°52'30.70"	Redigging needed
32	Pond	Kalimati &3	Poor	0.26	N 23°14'25.70"	E 85°53'41.11"	Redigging needed
33	Pond	Kalimati & 4	Poor	0.26	N 23°14'28.12"	E 85°54'22.25	Redigging needed
34	Pond	Kalimati & 32	Poor	0.26	N 23°14'35.55"	E 85°54'52.03"	Redigging needed
35	Pond	Kalimati & 34	Poor	0.26	N 23°16.330'	E 85°56.275'	Redigging needed
36	Pond	Beat- Kalma, Mouza- Mahadebpur No-01	Poor	0.23	N23.242350˚	E85.552887˚	Repairing needed
37	Well	Beat- Jhalda, Mouza- Nowagarh, No-01	Poor	40	N23.172881˚	E85.581914˚	Repairing needed
39	Earthen Dam (CAT PLAN)	Simni, (Benko, JL. No.- 155	Poor	2622.38	N 23°26'22.2"	E85°56’48.5''	Improvement needed
40	*	Simni, (Tahaddiri, Jl. No.- 157	Fair	2622.38	N 23°26’21.2";	E85°57’20.8”	Improvement needed
41	*	Murguma, (Jaharhatu, Jl. No.- 264)	Poor	2622.38	N 23°19’2.9";	E8602’38.6”	Improvement needed
42	ED	Bersa /Berma (73)	Good	2383	N23˚8'36.98''	E86˚20'56.56''	Slightly repairing needed
43	*	Bersa/Bersa(21)	Good	2457	N23.142973˚	E86.19439˚	Slightly repairing needed
44	*	*	Good	2212	N23.141908˚	E86.196061˚	Slightly repairing needed
45	Pond	*	Good	*	N23.15203615˚	E86.187865˚	Slightly repairing needed
46	E.D	PARDIH Beat Mouza-Chaownia, JL-143	Good	2020	23°06'44.7’’	86°08'00.0''	Slightly repairing is needed
47	*	PARDIH Beat Mouza-Kududih, JL-140	Good	2130	23°07’46.4’’	86°07’44.6’’	Slightly repairing is needed
48	*	MathaBeat Mouza-Munibera JL-130	Good	2210	23°06’24.6’’	86°03’55.4’’	Slightly repairing is needed
49	*	MathaBeat Mouza-Charakpathar JL-128	Good	2220	23°06’18.7’’	86°03’19.8’’	Slightly repairing is needed

50	*	Matha PF BeatMouza-Sonkup JL-127	Good	2310	23°07'11.2''	86°03'24.6''	Slightly repairing is needed
51	Pond	Sirkabd/ Sirkabad-68	Good		N 23.25618252˚	E 86.19418029˚	Redigging needed
52	Pond	Sirkabd/ Gurahata-67	Good		N 23.25915397˚	E 86.2000788˚	Redigging needed
53	Well	Sirkabd/ Gurahata-67	Poor		N 23.25550336˚	E 86.20733616˚	Redigging needed
54	Pond	Arsha/ Ghatban-06	Good		N 23.342451˚	E 86.118991˚	Redigging needed
55	Pond	Arsha/ Ghatban-06	Good		N 23.347027˚	E 86.121185˚	Redigging needed
56	Pond	Arsha/ Upargugui-17	Poor		N 23.318796˚	E 86.093383˚	Redigging needed
57	Pond	Arsha/ Uparjari- 16	Poor		N 23.3077625˚	E 86.0980293˚	Redigging needed
58	Well	Arsha/ Uparjari- 16	Poor		N 23.312892˚	E 86.1101259˚	Redigging needed
59	Well	Arsha/ Uparjari- 16	Poor		N 23.31392˚	E 86.1066246˚	Redigging needed
60	Pond	Arsha/ Uparjari- 16	Good		N 23.312892˚	E 86.1101259˚	Redigging needed
61	Well	Arsha/ Uparjari- 16	Poor		N 23.3136115˚	E 86.109171˚	Redigging needed
62	Well	Arsha/ Uparjari- 16	Good		N 23.3124732˚	E 86.1082161˚	Redigging needed
63	Pond	Arsha/ Uparjari- 16	Poor		N 23.312426˚	E 86.1063063˚	Redigging needed
64	Pond	Arsha/ Uparjari- 16	Good		N 23.303587999˚	E 86.10328005˚	Redigging needed
65	Pond	Arsha/ Uparjari- 16	Good		N 23.312892˚	E 86.1101259˚	Redigging needed
66	Pond	Arsha/ Uparjari- 16	Good		N 23.2710188˚	E 86.0846561˚	Redigging needed
67	Pond	Arsha/ Ulugoria-07	Good		N 23.345641˚	E 86.102925˚	Redigging needed
68	Well	Arsha/ Ulugoria-07	Good		N 23.34756˚	E 86.105883˚	Redigging needed
69	Pond/ED	Kantadih/ Kararіya-96	Good		N 23.220577˚	E 86.345252˚	Redigging needed
70	Pond/ED	Kantadih/ Dhanara-88	Good		N 23.236535˚	E 86.319122˚	Redigging needed
71	Pond/ED	Kantadih/ Rajpati-70	Good		N 23.229048˚	E 86.236528˚	Redigging needed
72	Pond/ED	Kantadih/ Kararіya-96	Good		N 23.220577˚	E 86.345252˚	Slightly repairing is needed
73	Pond/ED	Kantadih/ Kararіya-96	Good		N 23.200252˚	E 86.333422˚	Slightly repairing is needed

* No Information provided for the mentioned blank cells by the Concerned Office.

Table 12.3. Existing Land Treatment

S. No.	Type of Measure	Beat and Mouza No.	Condition (Good/ Fair /Poor)	Approx area(ha)	Number or running meter per ha	Approx. size	Remarks*
1	Trenching	Ajodhya & 119	Fair	7	1600/ ha	2Ft x 2Ft	Repair needed
2		Ajodhya & 76	Fair	5	60/ ha	4 Ft x 2ft x 1.5 ft	Repair needed
3		Ajodhya & 79	Poor	5	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
4		Ajodhya & 108	Poor	3.9	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
5		Ajodhya & 108	Poor	3.9	50/ha	4Ft x 3Ft x 1.5 KM	Repair needed
6		Ajodhya & 79	Poor	5	50/ha	4Ft x 3Ft x 800 mt	Repair needed
7		Ajodhya & 108	Poor	5	60/ ha	4ft x 2ft x 1.5 ft	Repair needed

8		Ajodhya & 108	Poor	5	50/ha	4Ft x 3Ft x 700 mt	Repair needed
9		Ajodhya & 110	Poor	3	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
10		Ajodhya & 76	Poor	5	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
11		Ajodhya & 76	Poor	5	50/ha	4Ft x 3Ft x 1 KM	Repair needed
12		Ajodhya & 117	Poor	12	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
13		Ajodhya & 119	Poor	20	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
14		Ajodhya & 110	Poor	5	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
15		Ajodhya & 107	Poor	3	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
16		Ranga & 106	Poor	10	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
17		Ranga & 81	Poor	20	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
18		Ranga & 81	Poor	10	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
19		Ranga & 81	Poor	5	50/ha	4Ft x 3Ft x 500 mt	Repair needed
20		Ranga & 74	Poor	5	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
21		Ranga & 74	Poor	5	50/ha	4Ft x 3Ft x 600 mt	Repair needed
22		Ranga & 74	Poor	5	50/ha	4Ft x 3Ft x 550 mt	Repair needed
23		Ranga & 75	Poor	27	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
24		Ranga & 75	Poor	3	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
25		Ranga & 75	Poor	10	20/ ha	14Ft x 2Ft x 1.5 Ft	Repair needed
26		Ranga & 73	Poor	42	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
27		Ranga & 73	Poor	10	50/ha	4Ft x 3Ft x 1 Km	Repair needed
28		Ranga & 82	Poor	3	60/ ha	4ft x 2ft x 1.5 ft	Repair needed
29		Ranga & 106	Poor	20	1600/ ha	2Ft x 2Ft x1 Ft	Repair needed
30		Ranga & 106	Poor	20	50/ha	4Ft x 3Ft x 2km	Repair needed
31		Ajodhya & 79	Poor	18	1600/ ha	2Ft x 2Ft x1 Ft	Repair needed
32		Ajodhya & 79	Poor	18	50/ha	4Ft x 3Ft x 400mt	Repair needed
33	CPT	Baghmundi& 89	Poor	47 Ha		1.20mt X 1.20mt X 200 rmt /Ha	Redigging
34	CPT	Baghmundi& 63	Poor	74 Ha			
35	CPT	Burda & 67	Poor	30 Ha			
36	CPT	Kalimati& 32	Poor	10 Ha			
37	CPT	Kalimati& 4	Poor	10 Ha			
38	CPT	Kalimati& 2	Poor	10 Ha			
39	CPT	Kalimati& 1	Poor	10 Ha			
40	CT	Baghmundi& 89	Poor	47 Ha	500 mt/Ha	5mt X 0.45mt X 0.45mt	Redigging
41	CT	Baghmundi& 63	Poor	74 Ha			
42	CT	Burda & 67	Poor	30 Ha			
43	CT	Kalimati& 32	Poor	10 Ha			
44	CT	Kalimati& 4	Poor	10 Ha			
45	CT	Kalimati& 2	Poor	10 Ha			
46	CT	Kalimati& 1	Poor	10 Ha			
47	EPT	Baghmundi& 63	Poor	1.5 KM		3mt X 2mt X 1mt	Redigging
48	EPT	Kalimati& 32	Poor	6 KM			
49	EPT	Kalimati& 33	Poor	1.5 KM			
50	EPT	Kalimati& 4	Poor	1.5 KM			
51	Trenching	Beat- Khamar, Mouza-Jojohatu	Poor	15 Ha	500 meter	5meter	Redigging needed
52	Trenching	Beat- Khamar, Mouza-Olgara	Poor	15 Ha	500 meter	5meter	Redigging needed
53	Trenching	Beat- Jhalda, Mouza-Latar	Poor	15 Ha	500 meter	5meter	Redigging needed
54	Trenching	Beat- Kalma, Mouza-Kalma	Poor	25 Ha	500 meter	5meter	Redigging needed
55	Trenching	Beat- Khamar, Mouza-Hensla	Poor	15 Ha	500 meter	5meter	Redigging needed

56	Trenching	Beat- Khamar, Mouza-Uhatu	Poor	15 Ha	500 meter	5meter	Redigging needed
57	Trenching	Beat- Kalma, Mouza-Kalma	Poor	5Ha	500 meter	5meter	Redigging needed
58	Trenching	Beat- Khamar, Mouza-Patradi	Poor	1.5 Ha	500 meter	5meter	Redigging needed
59	Trenching	Beat- Khamar, Mouza-Nowagarh	Poor	30Ha	500 meter	5meter	Redigging needed
60	Contour Trench	Beat-Joypur Mouza No-66	Good	05 Ha.	500 Meter	0.45 x 0.30 x 15 k.m	Improvement needed
61	Contour Trench	Beat-Talmu Mouza No-8	Good	05 Ha.	500 Meter	0.45 x 0.45 x 21 k.m	Improvement needed
62	Box trench (CAT plan)	Simni, (Benko, JL. No.- 155	Poor	4	1600/ ha	2 ft X 2 ft X 2 ft	Improvement needed
63	Box trench (CAT plan)	Simni, (Tahaddiri, Jl. No.- 157	Poor	2	1600/ ha	2 ft X 2 ft X 2 ft	Improvement needed
64	Box trench (CAT plan)	Murguma, (Jaharhatu, Jl. No.- 264)	Poor	2	1600/ ha	2 ft X 2 ft X 2 ft	Improvement needed
65	Contour trench (CAT Plan)	Simni, (Benko, JL. No.- 155	Poor	10	500 mt/ ha	5 mtr X 0.45 mtr X 0.45 mtr	Improvement needed
66	Contour trench (CAT Plan)	Simni, (Tahaddiri, Jl. No.- 157	Poor	10	500 mt/ ha	5 mtr X 0.45 mtr X 0.45 mtr	Improvement needed
67	Contour trench (CAT Plan)	Murguma, (Jaharhatu, Jl. No.- 264)	Poor	10	500 mt/ ha	5 mtr X 0.45 mtr X 0.45 mtr	Improvement needed
68	Gully Plugging (North-i) (CAT PLAN)	Simni, (Tahaddiri, Jl. No.- 157	Poor	450 cum	375 mtr	1.2 X 1 X 5 mtr	Improvement needed
69	Gully Plugging (North-i) (CAT PLAN)	Simni, (Benko, JL. No.- 155	Poor	500 cum	415 mtr	1.2 X 1 X 5 mtr	Improvement needed
70	Gully Plugging (North-i) (CAT PLAN)	Murguma, (Jaharhatu, Jl. No.- 264)	Poor	500 cum	415 mtr	1.2 X 1 X 5 mtr	Improvement needed
71	Construction of irrigation channel (CAT PLAN)	Simni, (Tahaddiri, Jl. No.- 157	Fair	2250 cum	1 KM	1.5 X1.5 X1000 mtr	Improvement needed

* No Information provided for the mentioned blank cells by the Concerned Office.

Table 12.4. Forest Plantation Works carried out in Recent Years (last five years) in Purulia Division

Year	Area (ha)	Works
2019-20	402.0	No information received
2020-21	442.0	No information received
2021-22	525.8	No information received

2022-23	503.5	No information received
2023-24	136.4	No information received

Table 12.5. Dependency on Forest in Purulia Division

S. No.	Range	No. of JFMC	Total Population	Total area in Ha	Dependency (in Percentage)
1	Ajodhya	27	6152	2368.0	55%
2	Baghmundi	33	3340	5268.1	50%
3	Jhalda	27	3505	4410.7	30%
4	Joypur	38	3860	3406.0	70%
5	Kotshila	33	10217	9033.0	35%
6	Balarampur	21	3131	2380.7	30%
7	Matha	19	3411	3769.1	35%
8	Arsha	32	3010	2746.4	20%
Total		**230**	**36626**	**33382.0**	

13. Erosion Susceptibility Index in Purulia Forest Division

Major factors responsible for assessing relative degree of soil erosion are identified as forest cover, land slope, soil texture and soil depth. These factors were classified in different groups and each of these groups was assigned numerical values as to reflect the severity of erosion. Finally Erosion Susceptibility Index (ESI) was computed for different erosion response units arrived by over laying and intersecting four thematic layers viz. forest cover, land slope, soil depth and soil texture. Range wise area statistics of different ESI classes spread over Purulia division is given in Table 13.1. Spatial distribution of these ESI classes is depicted in range wise ESI maps number Map 9a, Map 9b, Map 9c, Map 9d, Map 9e, Map 9f, Map 9g and Map 9h. Further beat wise priority table is also prepared by computing weighted area average ESI value and presented in Table 13.2.

Table 13.1. Range wise area statistics of different ESI classes spread over Purulia division

FOREST RANGE	Area (ha) under different classes of Erosion Susceptibility Index					Total Area (ha)
	Non critical (< 0.33)	Slightly critical (0.33 - 0.47)	Moderately critical (0.48 - 0.62)	Critical (0.63 - 0.79)	Very critical (> 0.79)	
AJODHYA	93.4	2658.8	4101.0	205.2	-	7058.3
ARSHA	1275.7	4414.1	3101.3	347.8	10.1	9149.0
BAGHMUNDI	826.8	2095.3	3156.4	355.7	8.8	6443.1
BALARAMPUR	1035.3	2028.7	2843.2	301.1	1.0	6209.3
JHALDA	872.5	3465.3	3097.2	636.3	37.3	8108.6
JOYPUR	880.2	1960.0	625.8	1955.2	20.7	5442.0
KOTSHILA	603.7	2195.7	2326.4	474.9	2.5	5603.1
MATHA	853.4	1221.4	1033.9	15.4	-	3124.2
Total Area (ha)	**6440.9**	**20039.2**	**20285.3**	**4291.7**	**80.5**	**51137.6**
% of Total Forest Division Area	**12.6**	**39.2**	**39.7**	**8.4**	**0.2**	**100.0**

Table 13.2: Beat wise priority for taking up CAT interventions in Purulia forest division

BEAT	ESI	Priority
Kantadih	0.3492	Low priority ↓ High priority
Matha	0.3575	
Kudna	0.4040	
Balarampur	0.4340	
Matha P.F.	0.4550	
Sirkabad	0.4581	
Arsha	0.4645	
Baghmundi	0.4691	
Khamar	0.4710	
Murguma	0.4745	
PARDIH	0.4809	
Kalamati	0.4813	
Simni	0.4815	
Bersa	0.4869	
Jhalda	0.4874	
Ghatbera	0.4886	
Bangidiri	0.4902	
Ajodhya	0.4928	
Kalma	0.4993	
Ranga	0.4994	
Talmu	0.5054	
Burda	0.5095	
Joypur	0.5103	
Nowahatu	0.5195	

14. Proposed Action Plan

"In all the following calculations the estimated amount has arrived using Schedule of Rates 2018 of Irrigation & Waterways Department, Government of West Bengal and is indicative only. The actual amount is the vetted estimates may vary."

14.1 Brushwood Check Dam

Input Parameters:

- ✓ Structure No
- ✓ Order of gully
- ✓ Type of DLT
- ✓ Availability of Stone
- ✓ Shape of Gully (1=V, 2=U and 3=Parabolic)
- ✓ Gully width (m) at Highest Flood Level (HFL)
- ✓ Gully depth in centre at HFL (m)
- ✓ General clearance Rate (Rs/Sqm) @ Rs. 171

- ✓ Collecting poles about 8-10 cm dia of required height including driving poles (2 rows)- Rate (Rs/m) @ Rs. 33
- ✓ Collecting horizontal sticks about 4-6 cm dia of required length including placing sticks (for 2 vertical rows) – Rate (Rs/m) @ Rs. 6
- ✓ GI wire for binding poles and sticks @ 50 gm per node – Rate (Rs/kg) @ Rs. 85.55
- ✓ Collecting and spreading brushes – Rate (Rs/cum) @ Rs. 492.48
- ✓ Planting seedlings & maintenance charges including watering (LS) – Rate @ Rs. 500

Design Logic Used

i. For Design Width:

Gully width (m) at HFL	Design width (m)	Gully width (m) at HFL	Design width (m)
<=1	1.0	>3.5 but <=4	4.0
>1 but <=1.5	1.5	<4 but <=4.5	4.5
>1.5 but <=2,	2.0	>4.5 but <=5	5.0
>2 but <=2.5	2.5	>5 but <=5.5	5.5
>2.5 but <=3	3.0	>5.5 but <=6	6.0
>3 but <=3.5	3.5		

ii. For Design Height:

Gully depth in center at HFL (m)	Design height (m)
<0.5	NA
>=0.5 but <=0.75	0.5
>0.75 but <=1.75	Gully depth-0.25
>1.75	1.5

iii. For depth of driving vertical poles inside the earth(m): Design height * 0.6

iv. Breath (m) - spacing between two rows:

Design Width (m)	Breath (m) - spacing between two rows
<=2.5	0.5
>2.5 but <=4.5	0.75
>4.5 but <=6	1.0

v. General clearance Qty:
(Design width * Breath (m) - Spacing between two rows) * 1.5

vi. Collecting poles about 8-10 cm dia of required height including driving poles (2 rows):

No of Poles of design height: Round ((Design width/0.4),0) *2
Total Length of Poles (m): (Design height + Depth of driving Vertical Poles inside the earth) * No of Poles of design height

vii. **Collecting horizontal sticks about 4-6 cm dia of required length including placing sticks (for 2 vertical rows):**
No of Sticks of design width: Round ((Design height/0.25),0) *2
Total Length of Sticks (m): Design width + No of Sticks of design width

viii. **GI wire for binding poles and sticks @ 50 gm per node- Qty:**
Round (((No of Poles of design height * No of Sticks of design width) / 2) * 0.05,1)

ix. **Collecting and spreading brushes – Qty:**
Round ((Design width * Design height * Breath Spacing between two rows),1)

x. **Total Cost:**
(General clearance Qty * Rate) + (Total Length of Poles * Rate) + (Total Length of Sticks * rate) + (GI wire for binding poles and sticks @ 50 gm per node- Qty * Rate) + (Collecting and spreading brushes – Qty *Rate)

xi. **Unforeseen items if any @3%:**

Total Cost * 0.03

xii. **Grand Total:**
Total Cost + Unforeseen items if any @3%

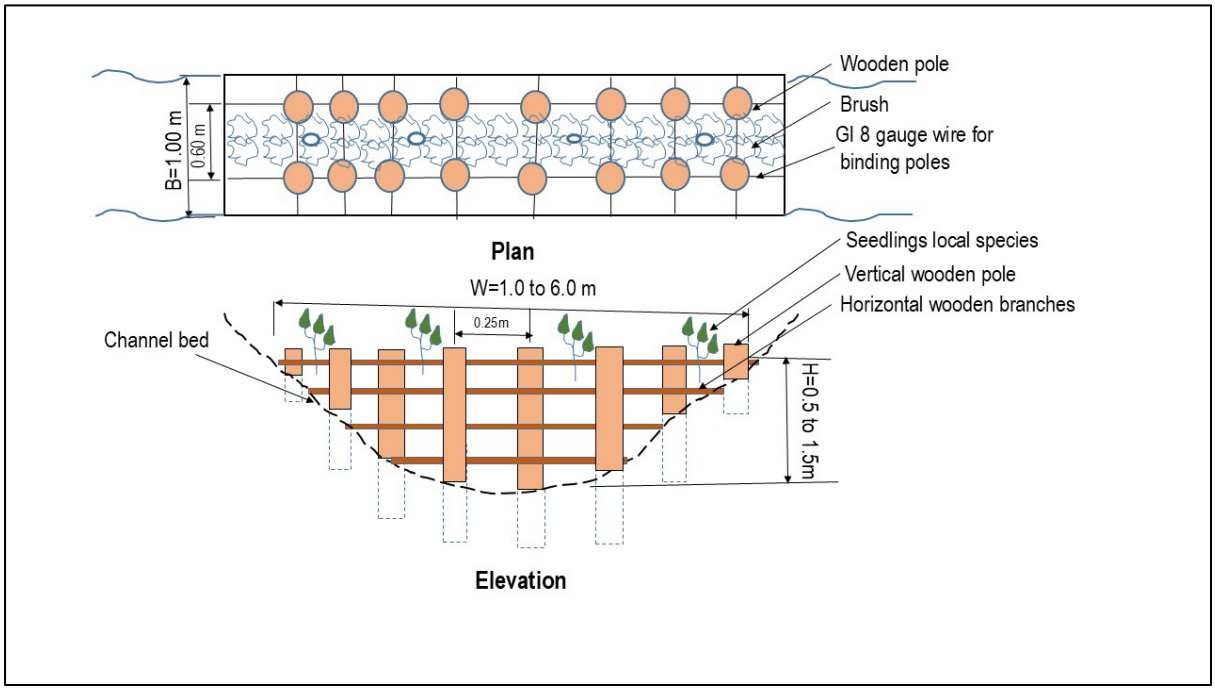

Fig.14.1: General Design and Drawing of Brush wood Check Dam

14.2 Loose Boulder Check Dam (LBCD)

Input Parameters:

- ✓ Structure No.
- ✓ Order of gully
- ✓ Type of DLT
- ✓ Availability of Stone
- ✓ Shape of Gully (1=V, 2=U and 3=Parabolic)
- ✓ Gully width (m) at HFL
- ✓ Gully depth in centre at HFL (m)
- ✓ Earth work Rate (Rs/cum) @ Rs. 82.98
- ✓ Boulder Rate (Rs/cum) @ Rs. 1998
- ✓ Labour Charges @ Rs. 380

Design Logic Used

i. For Design Width:

Gully width at HFL (m)	Design width (m)	Gully width (m) at HFL	Design width (m)
<1 and >8.5	NA	>= 4.5 but <5	5.5
>= 1 but <1.5	2.0	>= 5 but <5.5	6.0
>= 1.5 but <2	2.5	>= 5.5 but <6	6.5
>= 2 but <2.5	3.0	>= 6 but <6.5	7.0
>= 2.5 but <3	3.5	>= 6.5 but <7	7.5
>= 3 but <3.5	4.0	>= 7 but <7.5	8.0
>= 3.5 but <4	4.5	>= 7.5 but <8	8.5
>= 4 but <4.5	5.0	>= 8 but <8.5	9.0

ii. For Design Height:

Gully Depth at centre (m) of HFL	Design Height (m)	Gully Depth at centre (m) of HFL	Design Height (m)
<0.5	NA	>=1.5 but <1.75	1.0
>=0.5 but <0.75	0.5	>=1.75 but <2	1.05
>=0.75 but <1	0.6	>=2 but<2.25	1.2
>=1 but <1.25	0.75	>=2.25 but <2.75	1.35
>=1.25 but <1.5	0.90	>=2.75	1.5

iii. Top Width:

Design Height (m)	Top Width
<=0.75	0.4
>0.75 but <=1	0.5
>1 but <=1.5	0.6

iv. Bottom Width:

Round ((Design height *0.5 + Design height * Top width),1)

v. Foundation Depth (m):

Round ((Design height *0.3),1)

vi. Earth Work Qty:

(0.5 * Design width * Bottom width * Foundation depth)

vii. Boulder Qty:

((Design width * Bottom width * Foundation depth) + (((Top Width + Bottom width) / 2) * Design height * Design width)) * 1.2

viii. Total Cost:

(Earth work Qty * Earth work Rate) + (Boulder Qty * Boulder Rate) + (Boulder Qty * Labour Charges)

ix. Unforeseen items if any @3%:

Total Cost * 0.03

x. Grand Total:

Total Cost + Unforeseen items if any @3%

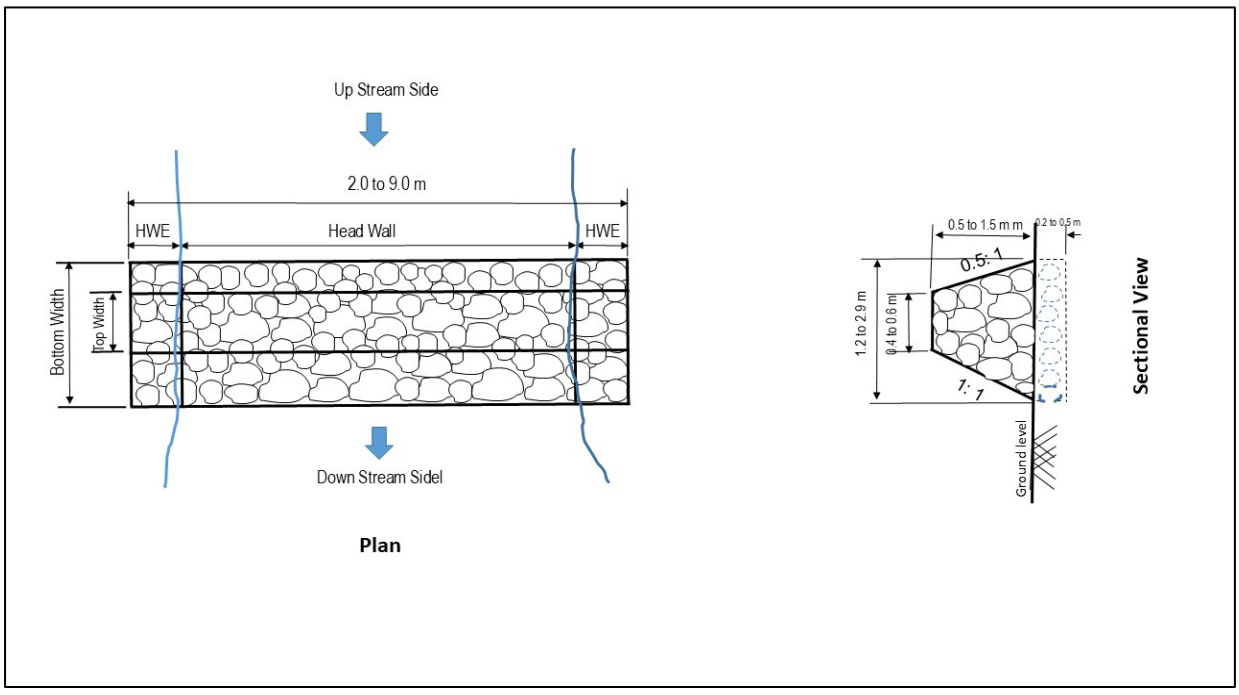

Fig. 14.2: General Drawing of Loose Boulder Check Dam (LBCD)

14.3 Gabion Check (GC)

Input Parameters:

- ✓ Structure No
- ✓ Order of gully
- ✓ Type of DLT
- ✓ Availability of Stone
- ✓ Shape of Gully (1=V, 2=U and 3=Parabolic)
- ✓ Gully width (m) at HFL
- ✓ Gully depth (m) in centre at HFL
- ✓ Earth work Rate (Rs/cum) @ Rs. 82.98
- ✓ Gabion wire Rate (Rs/kg) @ Rs. 85.55
- ✓ Labour Charges for wire netting (Rs/sqm) @ Rs.70.29
- ✓ Boulder Rate (Rs/cum) @ Rs. 1998
- ✓ Labour Charges @ Rs. 380

Design Logic Used

i. For Design Width:

Gully Width (m)	Design Width (m)
<1.5 and >8.5	NA
>= 1.5 but <2.5	3
>= 2.5 but <3.5	4
>= 3.5 but <4.5	5
>= 4.5 but <5.5	6
>= 5.5 but <6.5	7
>= 6.5 but <7.5	8
>= 7.5 but <8.5	9

ii. For Design Height:

Gully Depth (m)	Design Height (m)
<0.55	NA
>=0.55 but <1	0.6
>=1 but <1.5	1
>=1.5 but <2	1.2
>=2 but <3	1.5
>=3	1.8

iii. Foundation Depth (m):

Design Height (m)	Foundation Depth (m)
0.6	0.3
1.0	0.4
1.2	0.4
1.5	0.5
1.8	0.6

iv. Gabion boxes height (m):

Bottom Row:
If (Design height + Foundation Depth) > 1 then height of bottom row is 1 otherwise (Design height + Foundation Depth)

Middle Row:
If (Design height + Foundation Depth) <1 then height of middle row is 0,
If (Design height + Foundation Depth) - 1 <1 then height of middle row is (Design height + Foundation Depth) – 1 otherwise 1

Top Row:
(Design height + Foundation Depth) - Bottom Row height – Top Row height

v. Earth Work Qty:

0.5 * (Design Width * Foundation Depth * Design Breath)
(Design Breath taken as 1 m)

vi. Wire netting Qty:
Design width * {(2 * 1 * Bottom Row Height) + (2 * 1 * Design Breath) + (2 * Design Breath * Bottom Row Height)} + Design width * {(2 * 1 * Middle Row Height) + (2 * 1 * Design Breath) + (2 * Design Breath * Middle Row Height)} + Design width * {(2 * 1 * Top Row Height) + (2 * 1 * Design Breath) + (2 * Design Breath * Top Row Height)}

vii. Gabion Wire Qty:
1.2 * Wire netting Qty *1.28

viii. Boulder Qty:
(Design Width * Design Breath) * (Design Height + Foundation Depth)) * 1.2

ix. Total Cost:
(Earth Work Qty * Earth Work Rate) + (Wire netting Qty * Labour Charges for wire netting) + (Gabion Wire Qty * Gabion wire Rate) + (Boulder Qty * Boulder Rate) + (Boulder Qty * Labour Charges)

x. Unforeseen items if any @3%:
Total Cost * 0.03

xi. Grand Total:

Total Cost + Unforeseen items if any @3%

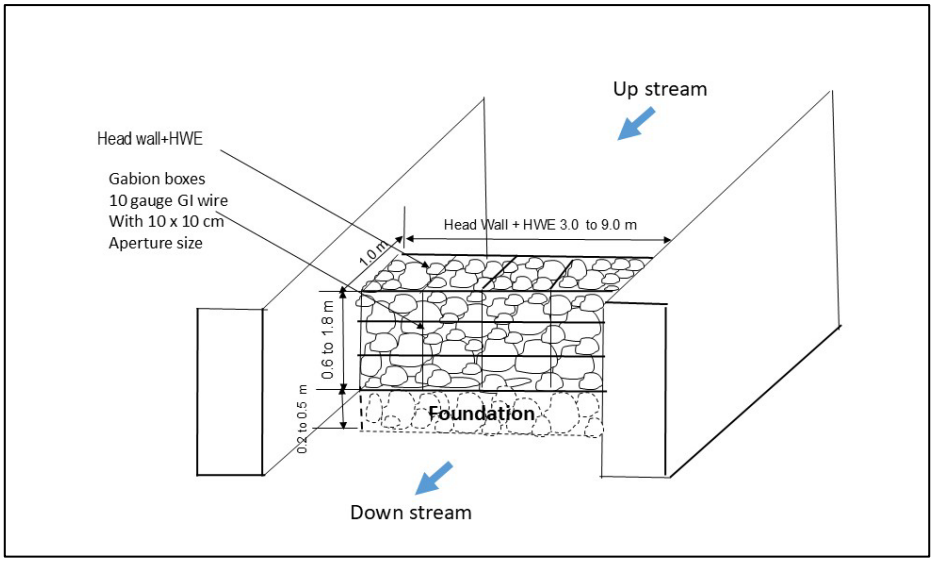

Fig.14.3. Isometric view of Gabion Check

14.4 Gabion Check Dam (GCD)

Input Parameters:

- ✓ Structure No
- ✓ Order of gully
- ✓ Type of DLT
- ✓ Availability of Stone
- ✓ Shape of Gully (1=V, 2=U and 3=Parabolic)
- ✓ Gully width (m) at HFL
- ✓ Gully depth in centre at HFL (m)
- ✓ Earth work Rate (Rs/cum) @ Rs.82.98
- ✓ Gabion wire Rate (Rs/kg) @ Rs. 85.55
- ✓ Labour Charges for wire netting (Rs/sqm) @ Rs.70.29
- ✓ Boulder Rate (Rs/cum) @ Rs.1998
- ✓ Labour Charges @ Rs. 380

Design Logic Used

For Head Wall:

i. For Design Width:

Gully Width at HFL (m)	Design Width (m)	Gully at HFL Width (m)	Design Width (m)
<6 and >13	NA	>= 9.5 but <10	10.0
>= 6 but <6.5	6.5	>= 10 but <10.5	10.5
>= 6.5 but <7	7.0	>= 10.5 but <11	11.0
>= 7 but <7.5	7.5	>=11 but <11.5	11.5
>= 7.5 but <8	8.0	>= 11.5 but <12	12.0
>= 8 but <8.5	8.5	>= 12 but <12.5	12.5
>= 8.5 but <9	9.0	>= 12.5 but <=13	13.0
>= 9 but <9.5	9.5		

ii. For Design Height:

Gully Depth (m)	Design Height (m)
<1 and >6	NA
>=1 but <1.2	1
>=1.2 but <1.5	1.2
>=1.5 but <1.8	1.5
>=1.8 but <2.1	1.8
>=2.1 but <=6	2.1

iii. Design Breath (m): taken as 1 m

iv. Foundation Depth (m):

Round ((Design height * 0.35),1)

v. Gabion Boxes Height including Foundation depth (m):

1st Row:

If Design height + Foundation depth >1 then height of 1st Row is 1 otherwise Design height + Design breath

2nd Row:

If Design height + Foundation depth <1 then height of 2nd Row is 0

If (Design height + Foundation depth)-1 <1 then height of 2nd Row is (Design height + Foundation depth)-1 otherwise 1

3rd Row:

If (Design height + Foundation depth) - 1st Row height - 2nd Row height

For Side Wall:

i. For Design Length:

Design Width (m) of Head wall	Design Length (m)
>=6.5 but <7.5	2 * 1.5
>=7.5 but <9.5	2 * 2.0
>=9.5 but <11.5	2 * 2.5
>=11.5	2 * 3.0

ii. For Design Height:

Design Height of Headwall +1

iii. Design Breath: it takes as 1 m

iv. Foundation Depth (m):

Round ((Design Height * 0.35),1)

v. Gabion Boxes Height including Foundation Depth (m):

1st Row:

If Side wall Design height + Side wall Foundation depth > 1, then height of 1st Row is 1 otherwise Side wall Design height + Side wall Foundation depth

2nd Row:

If Side wall Design height + Side wall Foundation depth < 1, then height of 2nd Row is 0
If (Side wall Design height + Side wall Foundation depth)-1 < 1, then height of 2nd Row is (Side wall Design height + Side wall Foundation depth)-1 otherwise 1

3rd Row:

If (Side wall Design height + Side wall Foundation depth) - 1st Row height – 2nd Row Height < 1, then height of 3nd Row is (Side wall Design height + Side wall Foundation depth) - 1st Row height – 2nd Row Height otherwise 1

4th Row:

(Side wall Design height + Side wall Foundation depth) - 1st Row height – 2nd Row Height – 3rd Row height

vi. For Apron:

Design Length (m): Design width - 2
Apron Height (m): taken as 0.3 m
Design Breath – Lb (m): (Side wall design length / 2) -0.5
Foundation Depth (m): taken as 0.2 m

vii. For Toe Wall:

Design Length (m): Design width - 2
Toe Wall Height (m): taken as 0.3 m
Design Breath (m): taken as 0.4 m
Foundation Depth (m): Round (Head wall design height * 0.35,1)

viii. 1 cum. on both side of HW to raise it up to SW:

Design Length (m): taken as 1 m
Design Height (m): taken as 1 m

ix. <u>For Earth Work Qty:</u>

(0.5 * Headwall Design Width * Headwall Design Breath * Headwall Foundation Depth) + (2 * (Side wall Design length * Side wall Design breath * Side wall Foundation depth)) + (Apron Design length * Apron Design breath * Apron Foundation depth) + (Toe wall Design length * Toe wall Design Breath * Toe wall Foundation depth)

x. For Wire Netting Qty:

(Headwall Design width -0.5) * ((2 * 1 * Headwall Gabion box 1st row height) + (2 * 1 * Headwall Design breath) + (2 * Headwall Design breath * Headwall Gabion box 1st row height)) +

(Headwall Design width -0.5) * ((2 * 1 * Headwall Gabion box 2nd row height) + (2 * 1 * Headwall Design breath) + (2 * Headwall Design breath * Headwall Gabion box 2nd row height)) +

0.5 * ((2 * 1 * Headwall Gabion box 1st row height) + (2 * 1 * Headwall Design breath) + (2 * Headwall Design breath * Headwall Gabion box 1st row height)) +

0.5 * * ((2 * 1 * Headwall Gabion box 2nd row height) + (2 * 1 * Headwall Design breath) + (2 * Headwall Design breath * Headwall Gabion box 2nd row height)) +

Side wall Design length * 2 * ((2 * 1 * Side wall Gabion box 1st row height) + (2 * 1 * Side wall Design breath) + (2 * Side wall Gabion box 1st row height * Side wall Design breath)) +

Side wall Design length * 2 * (2 * 1 * Side wall Gabion box 2nd row height) + (2 * 1 * Side wall Design breath) + (2 * Side wall Gabion box 2nd row height * Side wall Design breath)) +

Side wall Design length * 2 * (2 * 1 * Side wall Gabion box 3rd row height) + (2 * 1 * Side wall Design breath) + (2 * Side wall Gabion box 3rd row height * Side wall Design breath)) +

(2 * Toe wall design length * (Toe wall Foundation depth + Toe wall Design height)) +

(2 * Toe wall design length * Toe wall Design breath) + (2 * (Toe wall Foundation depth + Toe wall Design height) * Toe wall Design breath)

xi. For Gabion Wire Qty:

1.2 * Wire Netting Qty * 1.28

xii. For Boulder Qty:

1.2 * ((Head wall Design Width * 2 *1.7) + (Head wall Design Width * 1 * 1) + 2 * ((12 * 2 * Side wall Design breath * 1)) + (Apron Design length * Apron design Breath Lb * Apron Foundation depth) + (Toe wall Design length * Toe wall Design breath * (Toe wall Foundation depth + Toe wall height)) + (1 cum. on both side of HW to raise it up to SW- Design length * 1 cum. on both side of HW to raise it up to SW- Design Height * Headwall Design breath))

xiii. For Total Cost:

(Earth Work Qty * Earth Work Rate) + (Wire Netting Qty * Labour Charges for Wire Netting) + (Gabion Wire Qty * Gabion Wire Rate) + (Boulder Qty * Boulder Rate) + (Boulder Qty * Labour Charges)

xiv. For Unforeseen items if any @3%:

Total Cost * 0.03

xv. For Grand Total:

Total cost + Unforeseen items if any @3%

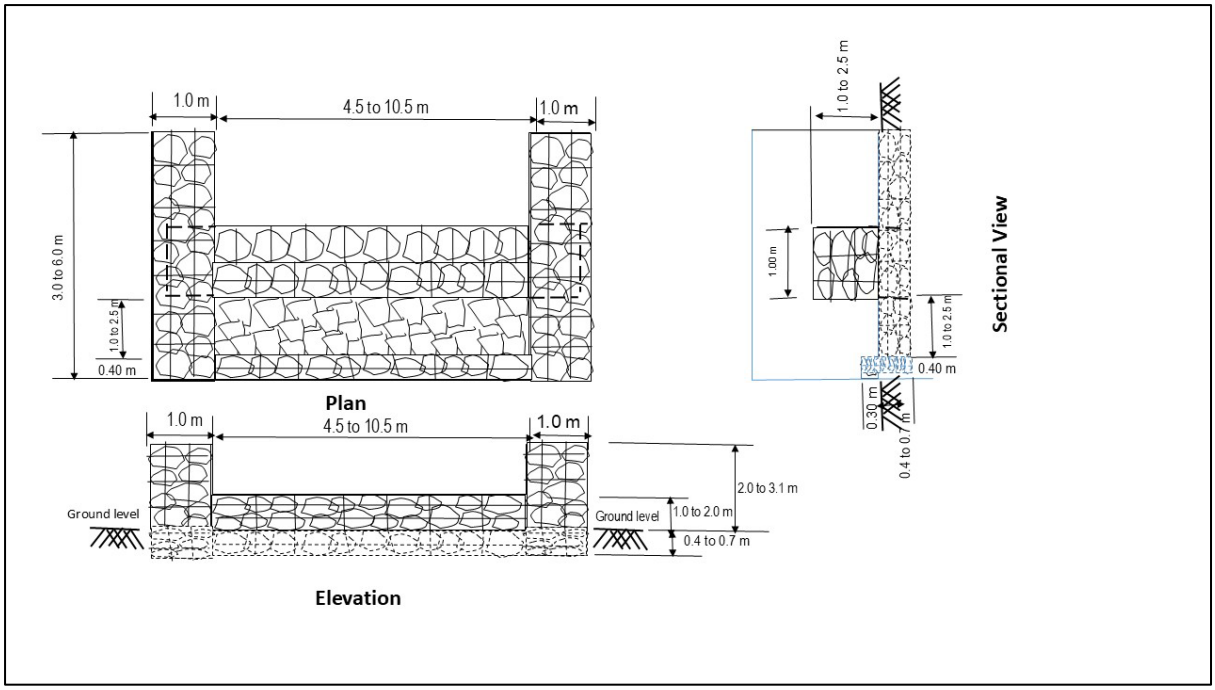

Fig.14.4: Drawing of Gabion Check Dam

14.5 Contour Staggered Trenching

Input Parameters:

- ✓ Forest Cover Class
- ✓ Area (ha) of the polygon
- ✓ Soil depth class
- ✓ Slope Class

Design Logic used

i. For Horizontal Interval (H.I.):

Slope Class	H.I.
<=5	6.5
>5 but <=10	5.8
>10 but <=25	5.5
>25 but <=33	5.2
>33 but <=50	5.0
>50	NA

ii. For No. of Lines of 100 m Length/ha:
Round(100/H.I.,0)

iii. For No of Trenches per ha:
No. of Lines of 100 m Length/ha * 16

iv. For No of trenches for polygon:
Round (No of trenches for polygon * Area,0)

v. For Soil depth class

Depth (cm)	Trench Design (LxWxD)
< 50	Type I (3.0x0.45x0.30)
> 50	Type II (3.0x0.45x0.45)

vi. For Cross-sectional Area:

Trench Design	Cross Section Area (m)
Type I	0.45 * 0.30
Type II	0.45 * 0.45

vii. For Volume (m³):

No of trenches for polygon * 3 * Cross-sectional Area

viii. For Cost Calculation:

Volume (m³) * Rate (Rs.)

Cost/ha = Volume (m³) / Area

ix. For Plantation (GF):

Forest Cover Class	Plantation (GF)
NON-FOREST	100 %
SCRUB	90 %
OPEN FOREST	50 %

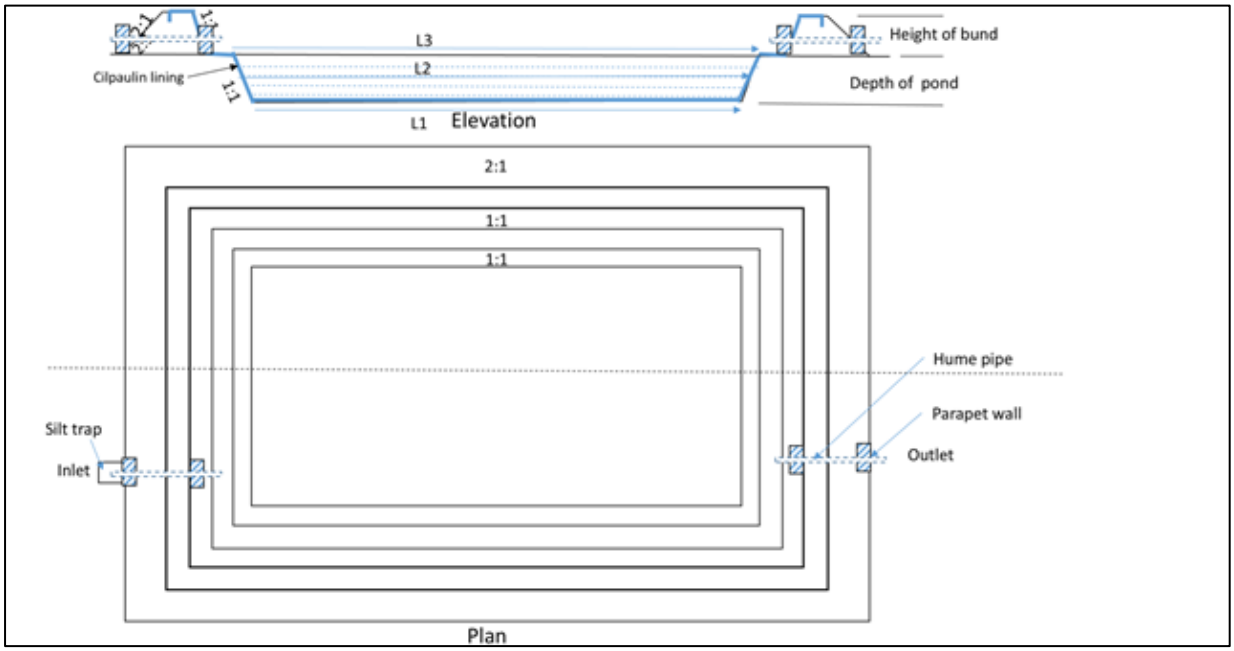

Fig. 14.5: Drawing of Dugout Pond to be constructed in the Purulia Forest Division under JICA consultancy project at West Bengal

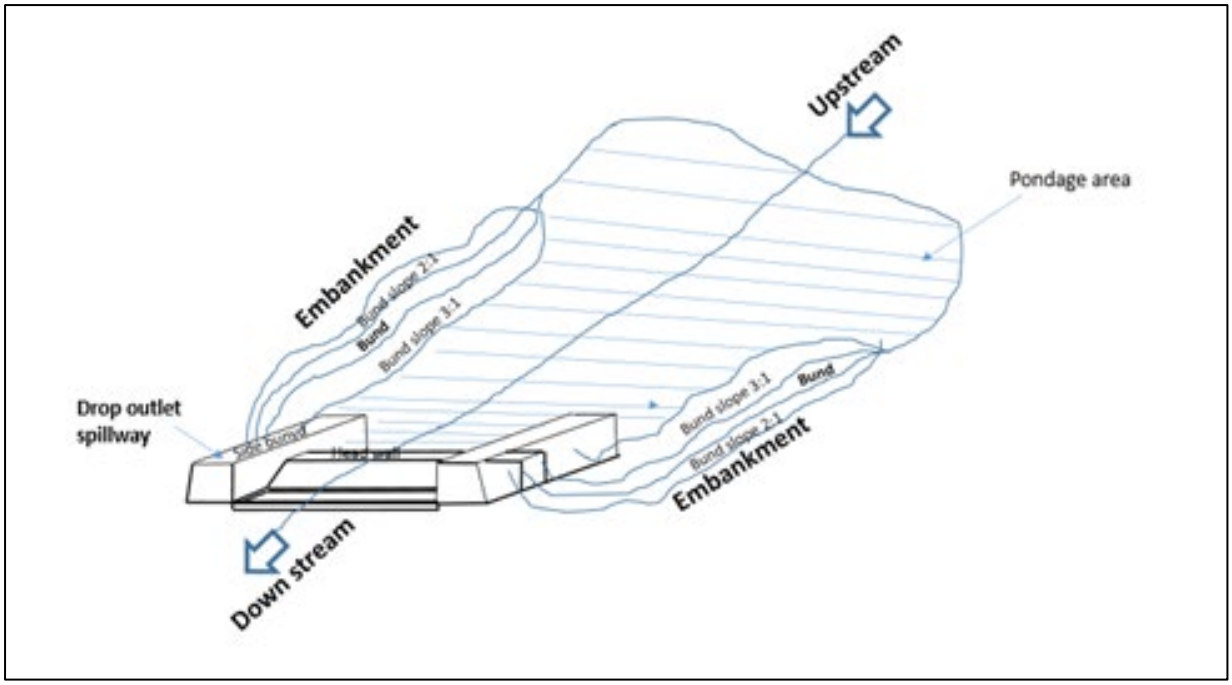

Fig. 14.6: Embankment Pond with Drop outlet spillway to be constructed in the Purulia Forest Division under JICA consultancy project at West Bengal

15. Summary of Proposed Action Plan

Table No. 15.1. Summary of Proposed Loose Boulder Check Dam

Beat	Design width (m)	No. of Structures	Estimated Cost (in lakh ₹)	Total Estimated Cost of Beat (in lakh ₹)
Ajodhya	2.5	1	0.07	8.45
	3	4	0.43	
	3.5	4	0.39	
	4	5	0.52	
	4.5	4	0.65	
	5	5	0.87	
	5.5	1	0.16	
	6	9	2.07	
	6.5	4	0.78	
	7	6	1.52	
	8	1	0.24	
	9	1	0.73	
Arsha	3	3	0.23	6.38
	3.5	1	0.10	
	5	2	0.30	
	6.5	1	0.19	
	7	9	1.88	
	8	3	0.72	
	9	11	2.96	
Baghmundi	2	7	0.39	41.62

	2.5	17	1.27	
	3	42	4.03	
	3.5	55	6.13	
	4	69	9.18	
	4.5	36	5.34	
	5	35	5.51	
	5.5	18	3.21	
	6	11	2.41	
	6.5	8	1.71	
	7	5	1.30	
	8.5	3	1.13	
Balarampur	3.5	1	0.08	0.49
	5	1	0.09	
	6	2	0.32	
Bersa	5	1	0.15	0.51
	6	2	0.36	
Burda	2.5	2	0.15	30.27
	3	10	0.87	
	3.5	24	2.55	
	4	42	4.95	
	4.5	30	4.23	
	5	41	6.17	
	5.5	13	2.13	
	6	18	3.63	
	6.5	4	1.06	
	7	4	1.14	
	7.5	4	1.36	
	8	4	0.90	
	8.5	3	1.13	
Jhalda	4	6	0.92	8.01
	5	8	2.15	
	5.5	2	0.60	
	6	2	0.89	
	7	2	1.22	
	8	3	1.95	
	9	1	0.27	
Kalimati	3.5	1	0.17	10.28
	4	5	0.70	
	4.5	3	0.40	
	5	7	1.51	
	5.5	2	0.60	
	6	8	2.15	
	7	6	1.96	
	8	4	1.55	
	9	3	1.25	
Kalma	3	1	0.06	4.52
	4	6	1.24	
	5	3	0.71	
	6	3	0.83	
	7	2	1.69	

Kantadih	4	2	0.24	3.60
	5	2	0.30	
	6	7	1.25	
	7	3	0.63	
	8	3	0.91	
	9	1	0.27	
Khamar	4	6	2.31	47.34
	4.5	1	0.42	
	5	25	11.53	
	5.5	1	0.52	
	6	15	8.33	
	6.5	3	1.84	
	7	11	7.71	
	7.5	2	1.51	
	8	7	5.90	
	9	8	7.26	
Kudna	4.5	1	0.09	0.09
Matha PF	6	1	0.18	0.42
	8	1	0.24	
Murguma	5	1	0.41	6.09
	6	3	1.37	
	7	1	0.57	
	9	4	3.74	
Nowahatu	6	1	0.72	2.64
	8	2	1.92	
PARDIHh	4.5	2	0.27	1.03
	5	1	0.15	
	6	1	0.18	
	7	1	0.21	
	7.5	1	0.22	
Ranga	2	3	0.18	22.38
	2.5	4	0.36	
	3	13	1.37	
	3.5	14	1.75	
	4	29	4.14	
	4.5	17	2.61	
	5	14	2.87	
	5.5	10	2.18	
	6	8	1.99	
	6.5	5	1.41	
	7	3	0.63	
	7.5	2	0.77	
	8	2	0.67	
	8.5	2	0.95	
	9	1	0.49	
Simni	5	1	0.15	2.77
	6	1	0.49	
	7	3	1.16	
	8	1	0.24	
	9	1	0.73	

Sirkabad	4	1	0.12	2.15
	5	2	0.30	
	6	1	0.18	
	7	1	0.21	
	9	5	1.34	
Talmu	4	1	0.12	0.12
Grand Total		**928**	**199.15**	**199.15**

Table No.15.2. Summary of Proposed Gabion Check Dam

BEAT	Head wall Design width (m)	No. of Structures	Estimated Cost (in lakh ₹)	Total Estimated Cost of Beat (in lakh ₹)
Ajodhya	6.5	3	8.16	21.36
	7.5	1	2.87	
	8.5	1	3.12	
	9.5	1	3.65	
	10.5	1	3.55	
Arsha	9.5	3	10.17	20.90
	10.5	3	10.73	
Jhalda	6.5	1	2.92	2.92
Kalimati	6.5	2	5.49	14.32
	7.5	3	8.83	
Kalma	7.5	2	5.89	9.56
	10.5	1	3.67	
Kantadih	8.5	1	3.22	7.36
	12.5	1	4.14	
Khamar	6.5	1	2.92	6.03
	7.5	1	3.11	
Kudna	7.5	1	3.11	3.11
Murguma	10.5	2	7.63	7.63
Nowahatu	10.5	6	23.56	23.56
Ranga	6.5	1	2.87	21.20
	7	1	2.84	
	7.5	4	12.07	
	8.5	1	3.42	
Simni	9.5	2	6.76	42.59
	10.5	3	10.90	
	12.5	6	24.93	
Grand Total		**53**	**180.54**	**180.54**

Table No.15.3. Summary of Proposed Gabion Check

BEAT	Design width (m)	No. of Structures	Cost (₹)	Total Cost (₹)
Ajodhya	3	1	18379.03	584488.81
	4	4	98021.49	
	5	2	61220.70	

	6	4	155926.85	
	7	1	42884.40	
	8	3	152996.17	
	9	1	55060.17	
Arsha	5	2	57481.28	271467.33
	6	4	146929.68	
	8	1	67056.38	
Baghmundi	3	8	131042.05	3898458.26
	4	22	550567.44	
	5	28	847568.20	
	6	20	721357.87	
	7	18	762745.37	
	8	8	382541.79	
	9	9	502635.53	
Bersa	9	1	92769.76	92769.76
Burda	3	2	36706.78	1006071.74
	4	8	186794.87	
	5	6	179837.20	
	6	6	224764.90	
	7	2	90927.42	
	8	4	231980.41	
	9	1	55060.17	
Jhalda	5	1	34359.17	335236.45
	6	1	36758.06	
	7	2	101498.91	
	8	1	76581.50	
	9	1	86038.81	
Kalma	5	1	51602.86	273089.94
	6	4	149243.07	
	7	1	72244.00	
Kantadih	7	1	48162.67	483647.74
	8	2	97953.12	
	9	6	337531.96	
Khamar	6	1	50292.28	50292.28
Kudna	5	1	30588.98	900896.74
	6	4	105378.09	
	7	6	256947.45	
	8	7	342801.72	
	9	3	165180.50	
Matha	5	3	91766.94	171298.30
	6	1	36706.78	
	7	1	42824.57	
Matha PF	6	2	73413.56	171298.30
	8	2	97884.74	
PARDIHh	5	2	61177.96	183533.89
	6	2	73413.56	
	8	1	48942.37	
Ranga	3	1	18379.03	565403.63
	4	4	100900.89	
	5	2	61220.70	

	7	4	200777.56	
	8	1	67141.85	
	9	2	116983.60	
Simni	9	2	110274.18	110274.18
Sirkabad	5	2	61177.96	609011.19
	6	2	77937.78	
	8	2	97953.12	
	9	6	371942.33	
Grand Total		**251**	**9707238.52**	**9707238.52**

Table No.15.4. Summary of Proposed Brushwood Check Dam

BEAT	Design width (m)	No. of Structures	Cost (in thousand ₹)	Total Cost (₹)
Ajodhya	1	8	9.45	37.83
	1.5	6	9.12	
	2	5	8.36	
	2.5	3	7.86	
	3	1	3.04	
Arsha	2	2	3.83	48.01
	3	3	9.72	
	4	2	8.41	
	4.5	1	4.19	
	6	3	21.87	
Baghmundi	1	1	1.07	68.28
	1.5	1	1.24	
	2	1	1.83	
	2.5	13	29.25	
	3	7	21.32	
	4	2	7.62	
	4.5	1	5.96	
Burda	1.5	1	1.53	25.48
	2	2	3.65	
	3	2	6.38	
	4	3	13.92	
Jhalda	3	1	3.04	28.38
	4	2	5.78	
	6	2	19.56	
Kalimati	2	3	4.82	11.56
	2.5	1	2.49	
	3	1	4.25	
Kantadih	4	1	4.47	4.47
Khamar	4	2	12.09	28.90
	6	2	16.81	
Kudna	3	1	3.04	3.04
PARDIHh	6	1	4.85	4.85
Ranga	1.5	2	3.58	15.46
	2.5	2	5.42	
	6	1	6.46	

Sirkabad	3	2	6.08	26.96
	4	4	16.69	
	4.5	1	4.19	
Grand Total		**97**	**303.22**	**303.22**

Table No.15.5. Summary of Proposed Random Rubble Masonry Check Dam

Name of Beat	Length of weir, L.m	Height of dam, F	Estimated Cost (in lakh ₹)	Total Estimated Cost of Beat (in lakh ₹)
Ajodhya	19.00	3.00	16.80	16.80
Ranga	6.00	2.00	4.00	15.87
	5.00	1.50	2.82	
	6.00	3.00	9.04	
Arsha	16.00	1.50	6.01	14.71
	12.00	1.50	4.99	
	7.00	1.50	3.71	
Sirkabad	18.00	1.80	8.00	8.00
Kantadih	25.00	2.50	12.75	24.50
	15.00	3.00	11.75	
Simni	24.00	3.00	16.90	16.90
Bangidiri	2.10	0.50	0.70	0.70
Grand Total			**97.48**	**97.48**

Table No.15.6. No DLT structure is being recommended for below given dataset due to inconsistent data.

Sr. No.	DMU	Range	Beat	Map_Id	Latitude	Longitude
91	Purulia	Jhalda	Jhalda	D5	23.31043	86.03427
111	Purulia	Jhalda	Jhalda	D25	23.31409	86.02814
179	Purulia	Ajodhya	Ajodhya	D23	23.22217	86.1458
204	Purulia	Ajodhya	Ajodhya	D48	23.25786	86.11628
234	Purulia	Ajodhya	Ajodhya	D78	23.20077	86.16504
255	Purulia	Ajodhya	Ranga	D4	23.2623	86.05441
271	Purulia	Ajodhya	Ranga	D20	23.26364	86.05323
283	Purulia	Ajodhya	Ranga	D32	23.26415	86.0722
413	Purulia	Arsha	Arsha	D-3	23.28337	86.08735
414	Purulia	Arsha	Arsha	D-4	23.30011	86.08792
415	Purulia	Arsha	Arsha	D-5	23.30035	86.08869
423	Purulia	Arsha	Arsha	D-13	23.29686	86.09833
424	Purulia	Arsha	Arsha	D-14	23.29714	86.09842
437	Purulia	Arsha	Arsha	D-27	23.31267	86.08533
449	Purulia	Arsha	Arsha	D-39	23.28617	86.08308
458	Purulia	Arsha	Arsha	D-48	23.28392	86.08658
460	Purulia	Arsha	Arsha	D-50	23.28417	86.08853
495	Purulia	Arsha	Sirkabad	D-19	23.24276	86.18495
506	Purulia	Arsha	Sirkabad	D-30	23.24328	86.18817
527	Purulia	Arsha	Kantadih	D-19	23.22461	86.22519
560	Purulia	Baghmundi	Baghmundi	D 019	23.18189	86.09072

1273	Purulia	Kotshila	Simni	D1	23.45696	85.96699
1274	Purulia	Kotshila	Simni	D2	23.45705	85.96655
1276	Purulia	Kotshila	Simni	D4	23.45655	85.96734
1277	Purulia	Kotshila	Simni	D5	23.4567	85.96754
1278	Purulia	Kotshila	Simni	D6	23.45716	85.96786
1279	Purulia	Kotshila	Simni	D7	23.45725	85.96876
1280	Purulia	Kotshila	Simni	D8	23.46509	85.96756
1281	Purulia	Kotshila	Simni	D9	23.4642	85.96688
1282	Purulia	Kotshila	Simni	D10	23.46342	85.96638
1283	Purulia	Kotshila	Simni	D11	23.46364	85.96392
1285	Purulia	Kotshila	Simni	D13	23.4623	85.96578
1286	Purulia	Kotshila	Simni	D14	23.46343	85.96424
1289	Purulia	Kotshila	Simni	D17	23.45777	85.97112
1299	Purulia	Kotshila	Simni	D27	23.46999	85.98098
1305	Purulia	Kotshila	Simni	D33	23.47296	85.98135
1306	Purulia	Kotshila	Simni	D34	23.47203	85.98212
1309	Purulia	Kotshila	Simni	D37	23.47077	85.98543
1311	Purulia	Kotshila	Murguma	D1	23.30125	86.06253
1313	Purulia	Kotshila	Murguma	D3	23.30108	86.0617
1316	Purulia	Kotshila	Murguma	D6	23.29638	86.06392
1317	Purulia	Kotshila	Murguma	D7	23.29644	86.06326
1318	Purulia	Kotshila	Murguma	D8	23.29751	86.06165
1327	Purulia	Kotshila	Murguma	D17	23.30118	86.05896
1328	Purulia	Kotshila	Nowahatu	D1	23.47483	86.02068
1329	Purulia	Kotshila	Nowahatu	D2	23.47398	86.02346
1340	Purulia	Joypur	Talmu	Damru 7	23.54659	86.03385
1341	Purulia	Joypur	Bangidiri	Bangidiri 1	23.54915	86.14267

Table No.15.7. Summary of Water Harvesting Structures

#Cost in Lakh ₹

BEAT	Dugout Pond		DP/PR		Embankment Pond		Percolation Pond		Pond Renovation		Proposed for PR but No existing Pond at Given Coordinates		Total Estimated Cost of WHS in Beat
	No. of DP	Estimated Cost	No. of DP/PR	Estimated Cost	No. of EP	Estimated Cost	No. of PP	Estimated Cost	No. of PR	Estimated Cost	No. of PR	Estimated Cost	
Jhalda	1	5.81	-	-	7	11.04	-	-	3	3.26	-	-	20.11
Ranga	-	-	-	-	2	2.82	2	15.68	6	51.63	1	32.77	102.9
Ajodhya	-	-	-	-	8	18.03	-		1	0.48	1	0.75	19.26
Arsha	-	-	-	-	-	-	-	-	3	35.3	-	-	35.3
Baghmundi	3	21.35	-	-	-	-	-	-	1	2.13	-	-	23.48
Balarampur	-	-	2	78.93	-	-	-	-	-	-	-	-	78.93
Bangidiri	-	-	-	-	-	-	-	-	1	0.6	-	-	0.6
Bersa	-	-	1	19.2	-	-	-	-	-	-	-	-	19.2
Burda	6	94.66	-	-	-	-	-	-	16	98.68	1	3.75	197.09
Ghatbera	1	31.32	-	-	-	-	-	-	1	19.52	-	-	50.84
Joypur	-	-	-	-	-	-	-	-	1	1.38	-	-	1.38

Kalimati	1	5.9	-	-	6	3.12	-	-	6	6.29	-	-	15.31
Kalma	1	76.15	-	-	6	17.98	-	-	2	6.14	-	-	100.27
Kantadih	-	-	-	-	-	-	-	-	4	76.78	1	2.94	79.72
Khamar	2	4.83	-	-	13	19.78	-	-	19	26.5	3	3.82	54.93
Kudna	-	-	-	-	-	-	-	-	4	2.08	-	-	2.08
Matha	-	-	-	-	-	-	-	-	1	0.74	-	-	0.74
Murguma	-	-	-	-	3	1.54	-	-	2	2.38	-	-	3.92
Nowahatu	-	-	-	-	1	0.88	-	-	4	11.85	-	-	12.73
PARDIHh	-	-	-	-	-	-	-	-	1	0.32	-	-	0.32
Simni	-	-	-	-	4	25.72	-	-	1	2.7	-	-	28.42
Sirkabad	-	-	-	-	-	-	-	-	2	13.97	-	-	13.97
Talmu	-	-	-	-	-	-	1	6.66	2	2.39	-	-	9.05
Grand Total	**15**	**240.02**	**3**	**98.13**	**50**	**100.91**	**3**	**22.34**	**81**	**365.12**	**7**	**44.03**	**870.55**

Table No.15.8. Beat wise Summary of Land Treatment SWC Measures

BEAT NAME	Tench Density/ha	Total No. of Trenches	Area (ha)	Total Estimated Cost (in lakh ₹)	Grand Total of Estimated Cost (in lakh ₹)
Ajodhya	240	1258	5.24	0.44	18.16
	272	7740	28.45	2.73	
	288	30850	107.12	10.89	
	304	4775	15.71	1.68	
	320	6846	21.39	2.42	
Arsha	240	62	0.26	0.02	8.21
	272	3389	12.46	1.20	
	288	11648	40.44	4.11	
	304	3007	9.89	1.06	
	320	5168	16.15	1.82	
	No Treatment Proposed / Recommended		9.39		
Jhalda	240	5596	23.31	2.58	10.64
	272	9480	34.86	4.05	
	288	8220	28.55	3.11	
	304	1170	3.85	0.47	
	320	961	3.00	0.41	
Kalma	240	28158	117.32	11.08	43.29
	272	40704	149.64	16.35	
	288	25300	87.85	10.28	
	304	4188	13.78	1.64	
	320	9969	31.16	3.94	
	No Treatment Proposed / Recommended		171.33		
Kantadih	240	2757	11.49	1.35	20.49
	272	7973	29.31	3.58	
	288	15798	54.86	6.17	
	304	8166	26.85	3.22	
	320	15780	49.31	6.18	
Khamar	240	46506	193.78	16.92	103.60
	272	88518	325.44	32.19	

	288	86263	299.52	31.29	
	304	23293	76.62	8.40	
	320	40731	127.28	14.79	
	No Treatment Proposed / Recommended		68.41		
Ranga	240	800	3.33	0.28	13.89
	272	8463	31.12	2.99	
	288	23084	80.15	8.15	
	304	3814	12.55	1.35	
	320	3202	10.01	1.13	
Simni	240	13505	56.27	6.55	21.09
	272	14357	52.78	6.68	
	288	9783	33.97	4.03	
	304	3982	13.10	1.55	
	320	5976	18.67	2.27	
	No Treatment Proposed / Recommended		55.03		
Sirkabad	240	389	1.62	0.14	2.67
	272	1188	4.37	0.42	
	288	2677	9.29	0.94	
	304	575	1.89	0.20	
	320	2740	8.56	0.97	

Table No.15.9. Beat wise Summary of Forest Plantation (Gap filling-GF or New forest Plantation – NFP) recommended

BEAT NAME	GF (50%)	GF (80%)	NFP (100%)	Total Area (ha)	Total Estimated Cost (in lakh ₹)
Ajodhya	169.9		8.0	177.9	Calculate As per Regulations of the department
Arsha	76.0		12.6	88.6	
Jhalda	74.9	12.3	6.3	93.6	
Kalma	263.1	169.0	138.9	571.1	
Kantadih	134.2	0.2	37.4	171.8	
Khamar	654.2	96.7	340.1	1091.0	
Murguma	3.0		0.9	3.9	
Ranga	124.4		12.8	137.2	
Simni	123.9	36.9	69.0	229.8	
Sirkabad	16.0		9.8	25.7	
Grand Total	**1639.7**	**315.2**	**635.7**	**2590.6**	

16. BEAT WISE DETAILED PROPOSED SWC MEASURES DESIGN & COST ESTIMATES - PURULIA Forest Division

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			LBCD	**6.1.2**
			GC	**6.1.3**
		Water Harvesting Structures	DP	**6.2.1**
			PR	**6.2.2**
	BURDA	Drainage Line Treatment	BCD	**7.1.1**
			LBCD	**7.1.2**
			GC	**7.1.3**
		Water Harvesting Structures	DP	**7.2.1**
			PR	**7.2.2**
	KALAMATI	Drainage Line Treatment	BCD	**8.1.1**
			LBCD	**8.1.2**
			GCD	**8.1.3**
		Water Harvesting Structures	DP	**8.2.1**
			EP	**8.2.2**
			PR	**8.2.3**
BALARAMPUR	BALARAMPUR	Drainage Line Treatment	LBCD	**9.1.1**
		Water Harvesting Structures	DP	**9.2.1**
	BERSA	Drainage Line Treatment	LBCD	**10.1.1**
			GC	**10.1.2**
		Water Harvesting Structures	DP	**10.2.1**
	GHATIBERA	Water Harvesting Structures	DP	**11.1.1**
			PR	**11.1.2**
JHALDA	JHALDA	Drainage Line Treatment	BCD	**12.1.1**
			LBCD	**12.1.2**
			GC	**12.1.3**
			GCD	**12.1.4**
		Water Harvesting Structures	DP	**12.2.1**
			EP	**12.2.2**
			PR	**12.2.3**
		Land Treatment & Plantation	LT & FP	**12.3.1**
	KALMA	Drainage Line Treatment	LBCD	**13.1.1**
			GC	**13.1.2**
			GCD	**13.1.3**
		Water Harvesting Structures	DP	**13.2.1**
			EP	**13.2.2**
			PR	**13.2.3**
		Land Treatment & Plantation	LT & FP	**13.3.1**
	KHAMAR	Drainage Line Treatment	BCD	**14.1.1**
			LBCD	**14.1.2**
			GC	**14.1.3**
			GCD	**14.1.4**
		Water Harvesting Structures	DP	**14.2.1**
			EP	**14.2.2**
			PR	**14.2.4**
		Land Treatment & Plantation	LT & FP	**14.3.1**

JOYPUR	BANGIDIRI	Drainage Line Treatment	RRMCD	**15.1.1**
		Water Harvesting Structures	PR	**15.2.1**
	JOYPUR	Water Harvesting Structures	PR	**16.1.1**
	TALMU	Drainage Line Treatment	LBCD	**17.1.1**
		Water Harvesting Structures	PP	**17.2.1**
			PR	**17.2.2**
KOTSHILA	MURGUMA	Drainage Line Treatment	LBCD	**18.1.1**
			GCD	**18.1.2**
		Water Harvesting Structures	EP	**18.2.1**
			PR	**18.2.2**
		Land Treatment & Plantation	LT & FP	**18.3.1**
	NOWAHATU	Drainage Line Treatment	LBCD	**19.1.1**
			GCD	**19.1.2**
		Water Harvesting Structures	EP	**19.2.1**
			PR	**19.2.2**
	SIMNI	Drainage Line Treatment	LBCD	**20.1.1**
			GC	**20.1.2**
			GCD	**20.1.3**
			RRMCD	**20.1.4**
		Water Harvesting Structures	EP	**20.2.1**
			PR	**20.2.2**
		Land Treatment & Plantation	LT & FP	**20.3.1**
MATHA	KUDNA	Drainage Line Treatment	BCD	**21.1.1**
			LBCD	**21.1.2**
			GC	**21.1.3**
			GCD	**21.1.4**
		Water Harvesting Structures	PR	**21.2.1**
	MATHA	Drainage Line Treatment	GC	**22.1.1**
		Water Harvesting Structures	PR	**22.2.1**
	MATHA P.F.	Drainage Line Treatment	LBCD	**23.1.1**
			GC	22.1.1
	PARDIH	Drainage Line Treatment	BCD	**24.1.1**
			LBCD	**24.1.2**
			GC	**24.1.3**
		Water Harvesting Structures	PR	**24.2.1**

(1) AJODHYA BEAT (Ajodhya range)

Drainage Line Treatment Measures

Open Map

1.1.1 Brushwood Check Dam-AJODHYA BEAT (Ajodhya range)

Open Design Detailed Excel File

Survey No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
158	D2	2 A 2 B 5 m 9	2	23.22631	86.15775	2.0	0.5	0.3	0.50	1442.30
159	D3	2 A 2 B 5 m 9	1	23.22657	86.15794	2.0	0.5	0.3	0.50	1442.30
163	D7	2 A 2 B 5 m 9	2	23.22537	86.15666	1.5	0.8	0.5	0.50	1526.92
164	D8	2 A 2 B 5 m 9	1	23.21778	86.13264	2.0	0.6	0.4	0.50	1547.41
165	D9	2 A 2 B 5 m 9	1	23.21859	86.14623	1.5	0.5	0.3	0.50	1241.16
172	D16	2 A 2 B 5 f 7	1	23.22884	86.11475	1.5	0.8	0.5	0.50	1526.92
174	D18	2 A 2 B 5 m 9	2	23.21601	86.14239	2.5	1.2	0.7	0.50	2808.10
182	D26	2 A 2 B 5 m 2	1	23.23352	86.14202	1.5	0.8	0.5	0.50	1526.92
189	D33	2 A 2 B 5 m 2	1	23.23117	86.13106	1.0	0.5	0.3	0.50	1040.02
190	D34	2 A 2 B 5 m 2	1	23.23135	86.13082	1.0	0.5	0.3	0.50	1040.02
191	D35	2 A 2 B 5 m 2	1	23.23127	86.13094	1.0	0.8	0.5	0.50	1227.43
192	D36	2 A 2 B 5 m 2	1	23.23146	86.13068	1.0	0.8	0.5	0.50	1227.43
193	D37	2 A 2 B 5 m 9	2	23.21561	86.14191	1.0	0.8	0.5	0.50	1227.43
211	D55	2 A 2 B 5 k 3	3	23.25929	86.12175	1.5	0.8	0.5	0.50	1526.92
212	D56	2 A 2 B 5 k 3	3	23.25927	86.12144	1.0	0.8	0.5	0.50	1227.43
215	D59	2 A 2 B 5 k 3	1	23.25601	86.11224	1.0	0.8	0.5	0.50	1227.43
216	D60	2 A 2 B 5 k 3	1	23.25605	86.11225	1.0	0.8	0.5	0.50	1227.43
228	D72	2 A 2 B 5 m 8	1	23.20027	86.16464	3.0	0.8	0.5	0.75	3041.33
229	D73	2 A 2 B 5 m 7	1	23.20032	86.16467	1.5	1.0	0.6	0.50	1769.17
230	D74*	2 A 2 B 5 m 7	1	23.20036	86.16472	2.0	1.0	0.6	0.50	2105.40
238	D82	2 A 2 B 5 m 8	1	23.19095	86.14137	2.5	0.8	0.5	0.50	2125.89
245	D89	2 A 2 B 5 m 8	1	23.19155	86.13831	2.5	1.3	0.8	0.50	2924.09
248	D92	4 H 3 C 4 h 5	1	23.19608	86.13326	2.0	0.8	0.5	0.50	1826.41

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

1.1.2 Loose Boulder Check Dam- AJODHYA BEAT (Ajodhya range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
157	D1	2 A 2 B 5 m 9	2	23.22593	86.1572	5.0	0.75	0.4	1.5	0.2	14911.79
161	D5	2 A 2 B 5 m 9	2	23.22551	86.15683	3.5	0.75	0.4	1.5	0.2	10460.69
168	D12	2 A 2 B 5 m 2	1	23.22694	86.13492	7.0	0.75	0.4	1.5	0.2	20876.51
169	D13	2 A 2 B 5 m 2	2	23.22771	86.14017	6.0	0.75	0.4	1.5	0.2	17932.61
171	D15	2 A 2 B 5 m 2	1	23.23382	86.14231	2.5	0.75	0.4	1.5	0.2	7471.92
173	D17	2 A 2 B 5 f 7	1	23.22913	86.11464	3.5	0.75	0.4	1.5	0.2	10460.69
175	D19	2 A 2 B 5 m 9	1	23.22811	86.11868	4.5	0.75	0.4	1.5	0.2	13420.61
176	D20	2 A 2 B 5 m 9	1	23.22794	86.11873	4.0	0.75	0.4	1.5	0.2	11929.43
177	D21	2 A 2 B 5 m 9	1	23.224	86.1256	9.0	1.20	0.6	2.4	0.4	73194.54
178	D22	2 A 2 B 5 m 9	1	23.22381	86.12536	7.0	1.00	0.5	2.0	0.3	38152.49
183	D27	2 A 2 B 5 m 2	1	23.23109	86.13604	6.0	1.00	0.5	2.0	0.3	32779.05
184	D28	2 A 2 B 5 m 2	1	23.23101	86.13222	6.0	0.75	0.4	1.5	0.2	17894.15
185	D29	2 A 2 B 5 m 2	1	23.23141	86.13074	4.0	0.60	0.4	1.3	0.2	9097.20
186	D30	2 A 2 B 5 m 2	1	23.23122	86.13094	4.5	0.75	0.4	1.5	0.2	13420.61
187	D31	2 A 2 B 5 m 2	1	23.23127	86.13094	3.5	0.60	0.4	1.3	0.2	7960.05
188	D32	2 A 2 B 5 m 2	1	23.23108	86.13117	3.0	0.75	0.4	1.5	0.2	8947.07
194	D38	2 A 2 B 5 k 4	1	23.24363	86.12585	7.0	0.75	0.4	1.5	0.2	20921.38
195	D39	2 A 2 B 5 k 4	1	23.24495	86.12612	6.5	0.75	0.4	1.5	0.2	19427.00
196	D40	2 A 2 B 5 k 4	1	23.24665	86.12641	6.5	0.75	0.4	1.5	0.2	19427.00
197	D41	2 A 2 B 5 k 4	1	23.2474	86.12682	8.0	0.75	0.4	1.5	0.2	23858.87
198	D42	2 A 2 B 5 k 4	1	23.2473	86.12668	5.0	0.75	0.4	1.5	0.2	14911.79
200	D44	2 A 2 B 5 k 4	1	23.25132	86.12813	7.0	0.50	0.4	1.2	0.2	13239.45
201	D45	2 A 2 B 5 k 4	1	23.24434	86.12393	7.0	0.75	0.4	1.5	0.2	20876.51
205	D49	2 A 2 B 5 k 3	2	23.2588	86.11593	5.0	0.75	0.4	1.5	0.2	14911.79
206	D50	2 A 2 B 5 k 3	1	23.25948	86.1162	6.5	0.75	0.4	1.5	0.2	19385.33
207	D51	2 A 2 B 5 k 3	1	23.2597	86.11631	5.5	0.75	0.4	1.5	0.2	16402.97

210	D54	2 A 2 B 5 k 3	3	23.25926	86.12114	6.5	0.75	0.4	1.5	0.2	19385.33
218	D62	2 A 2 B 5 k 3	2	23.25696	86.1126	7.0	1.00	0.5	2.0	0.3	38152.49
220	D64	2 A 2 B 5 m 4	2	23.24181	86.16026	6.0	0.75	0.4	1.5	0.2	17932.61
221	D65	2 A 2 B 5 m 4	2	23.23926	86.16026	6.0	0.75	0.4	1.5	0.2	17894.15
226	D70	2 A 2 B 3 m 5	2	23.19539	86.1807	6.0	0.75	0.4	1.5	0.2	17932.61
227	D71	2 A 2 B 3 m 5	2	23.1977	86.18464	5.0	0.75	0.4	1.5	0.2	14911.79
231	D75	2 A 2 B 5 m 7	1	23.20042	86.16479	4.5	1.00	0.5	2.0	0.3	24584.29
232	D76	2 A 2 B 5 m 7	1	23.20059	86.1649	3.0	0.75	0.4	1.5	0.2	8966.31
233	D77	2 A 2 B 5 m 7	1	23.20068	86.16494	3.5	0.75	0.4	1.5	0.2	10460.69
237	D81	2 A 2 B 3 m 5	1	23.20422	86.18546	6.0	0.75	0.4	1.5	0.2	17932.61
239	D83	2 A 2 B 5 m 8	1	23.1909	86.14121	3.0	0.75	0.4	1.5	0.2	8966.31
240	D84	2 A 2 B 5 m 8	1	23.19083	86.14101	5.0	1.00	0.5	2.0	0.3	27251.78
242	D86	2 A 2 B 5 m 8	1	23.19095	86.14069	4.0	0.75	0.4	1.5	0.2	11955.07
243	D87	2 A 2 B 5 m 8	1	23.19097	86.14041	4.0	0.75	0.4	1.5	0.2	11929.43
244	D88	2 A 2 B 5 m 8	1	23.19079	86.13955	4.0	0.50	0.4	1.2	0.2	7565.40
246	D90	2 A 2 B 5 m 8	1	23.1912	86.13799	6.0	0.75	0.4	1.5	0.2	17894.15
249	D93	4 H 3 C 4 h 5	1	23.19618	86.13377	3.0	1.00	0.5	2.0	0.3	16389.53
250	D94	4 H 3 C 4 h 5	1	23.196	86.13182	6.0	1.20	0.6	2.4	0.4	48919.44
251	D95	4 H 3 C 4 h 5	1	23.19578	86.13087	4.5	0.75	0.4	1.5	0.2	13449.46

1.1.3 Gabion Check-AJODHYA BEAT (Ajodhya range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
160	D4	2 A 2 B 5 m 9	2	23.22568	86.15698	4	1	0.40	24505.37
162	D6	2 A 2 B 5 m 9	1	23.22581	86.1587	3	1	0.40	18379.03
166	D10	2 A 2 B 5 m 9	2	23.21721	86.14666	5	1	0.40	30631.72
167	D11	2 A 2 B 5 m 2	1	23.22695	86.13451	9	1	0.40	55060.17
199	D43	2 A 2 B 5 k 4	2	23.24771	86.12679	4	1	0.40	24505.37
202	D46	2 A 2 B 5 k 3	2	23.25841	86.11236	6	1.2	0.40	41231.01
203	D47	2 A 2 B 5 k 3	2	23.25844	86.11318	5	1	0.40	30588.98
208	D52	2 A 2 B 5 k 3	1	23.25944	86.11662	6	1.2	0.40	41231.01
213	D57 *	2 A 2 B 5 k 3	3	23.25969	86.12394	4	1	0.40	24505.37
222	D66	2 A 2 B 5 m 4	2	23.23907	86.16009	6	1	0.40	36706.78
223	D67	2 A 2 B 5 m 4	2	23.24204	86.15983	8	1	0.40	48942.37
225	D69	2 A 2 B 5 m 4	2	23.23791	86.15698	7	1	0.40	42884.40
235	D79	2 A 2 B 5 m 6	1	23.2066	86.18314	8	1.2	0.40	55043.05
236	D80	2 A 2 B 3 m 5	1	23.20419	86.18494	8	1	0.40	49010.75
241	D85	2 A 2 B 5 m 8	1	23.19089	86.14089	6	1	0.40	36758.06
247	D91	2 A 2 B 5 m 8	2	23.19113	86.1372	4	1	0.40	24505.37

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

1.1.4 Gabion Check Dam-AJODHYA BEAT (Ajodhya range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD(m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
170	D14	2 A 2 B 5 m 2	2	23.22782	86.14134	10.5	1.0	1.0	0.40	5	2.00	1.0	0.40	355370.53
181	D25	2 A 2 B 5 m 9	3	23.22796	86.15465	7.5	1.0	1.0	0.40	3	2.00	1.0	0.40	286600.71
209	D53	2 A 2 B 5 k 3	1	23.25931	86.1179	6.5	1.0	1.0	0.40	3	2.00	1.0	0.40	269758.11
214	D58 *	2 A 2 B 5 k 3	3	23.25971	86.12421	8.5	1.0	1.0	0.40	4	2.00	1.0	0.40	311959.38
217	D61	2 A 2 B 5 k 3	1	23.25628	86.11228	6.5	1.5	1.0	0.50	3	2.50	1.0	0.50	276942.22
219	D63	2 A 2 B 5 k 3	2	23.2572	86.11336	9.5	1.8	1.0	0.60	5	2.80	1.0	0.60	365160.40
224	D68	2 A 2 B 5 m 4	3	23.2428	86.15995	6.5	1.0	1.0	0.40	3	2.00	1.0	0.40	269758.11

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

1.1.5 Random Rubble Masonry Check Dam-AJODHYA BEAT (Ajodhya range)

Open Design Detailed Excel File

Catchment ID	Survey Sr_No	Beat	Map Id	Watershed Code	Gully Order	Latitude	Longitude	Catchment Area (ha)	Length of weir, L (m)	Height of dam, F	Depth of flow (including freeboard), h	Total Estimated Cost (in lakh ₹)
1	180	Ajodhya	D24	2 A 2 B 5 m 9	1	23.223861	86.148819	362.21	19.00	3.00	1.20	16.80

Water Harvesting Structure Measures-AJODHYA BEAT (Ajodhya range)

Open Map

1.2.1Embankment Pond- AJODHYA BEAT (Ajodhya range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
62	W1	2 A 2 B 5 m 2	1	23.22701	86.13577	52.82
63	W2	2 A 2 B 5 k 4	1	23.25484	86.11847	47.41
64	W3	2 A 2 B 5 k 4	2	23.25197	86.1251	328.62
65	W4	2 A 2 B 5 k 4	2	23.24852	86.12554	204.70
66	W5	2 A 2 B 5 k 3	2	23.25703	86.11196	395.28
67	W6	2 A 2 B 5 m 4	2	23.24023	86.16039	363.50
68	W7	2 A 2 B 5 m 4	2	23.2345	86.15488	341.52
71	W10	2 A 2 B 5 m 9	2	23.22741	86.11917	68.82

1.2.2Pond Renovation- AJODHYA BEAT (Ajodhya range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
69	W8	2 A 2 B 5 m 4	1	23.23249	86.15329	48.40
70	W9 **	2 A 2 B 5 f 7	1	23.22881	86.11462	75.22

**No existing Pond at Given Coordinates

1.3.1 Land Treatment and Forest Plantation measures- AJODHYA BEAT (Ajodhya range)

Open Map Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
35	L1	CST	NFP	0.46	5	20	320	3×0.45×0.30	5187.22	100	NFP
36	L2	CST	NFP	0.68	5	20	320	3×0.45×0.30	7657.34	100	NFP
37	L3	CST	GF	0.17	5	20	320	3×0.45×0.30	1940.80	100	NFP
65	L1	CST	NFP	0.50	5.2	19	304	3×0.45×0.30	5363.66	100	NFP
108	L1	CST	NFP	0.41	5.5	18	288	3×0.45×0.30	4199.18	100	NFP
109	L2	CST	NFP	0.93	5.5	18	288	3×0.45×0.30	9456.98	100	NFP
110	L3	CST	GF	0.88	5.5	18	288	3×0.45×0.30	8962.96	100	NFP
111	L5	CST	GF	1.56	5.5	18	288	3×0.45×0.30	15879.27	100	NFP
164	L2	CST	NFP	0.98	5.8	17	272	3×0.45×0.30	9386.41	100	NFP
165	L3	CST	GF	0.31	5.8	17	272	3×0.45×0.30	2928.84	100	NFP
166	L5	CST	GF	0.29	5.8	17	272	3×0.45×0.30	2752.41	100	NFP
167	L7	CST	NFP	0.12	5.8	17	272	3×0.45×0.30	1164.48	100	NFP
211	L2	CST	NFP	0.68	6.5	15	240	3×0.45×0.30	5751.82	100	NFP
380	L1	CST	NFP	11.05	5	20	320	3×0.45×0.30	124810.99	50	GF
381	L2	CST	NFP	2.81	5	20	320	3×0.45×0.30	31687.95	50	GF
382	L3	CST	GF	1.01	5	20	320	3×0.45×0.30	11433.07	50	GF
383	L7	CST	NFP	5.21	5	20	320	3×0.45×0.30	58859.13	50	GF
438	L1	CST	NFP	5.14	5.2	19	304	3×0.45×0.30	55118.68	50	GF
439	L2	CST	NFP	3.16	5.2	19	304	3×0.45×0.30	33875.75	50	GF
440	L3	CST	GF	0.22	5.2	19	304	3×0.45×0.30	2364.24	50	GF
441	L4	CST	GF	0.18	5.2	19	304	3×0.45×0.30	1940.80	50	GF
442	L5	CST	GF	0.64	5.2	19	304	3×0.45×0.30	6845.73	50	GF
443	L6	CST	GF	0.10	5.2	19	304	3×0.45×0.30	1058.62	50	GF
444	L7	CST	NFP	5.77	5.2	19	304	3×0.45×0.30	61929.12	50	GF
506	L1	CST	NFP	21.78	5.5	18	288	3×0.45×0.30	221356.88	50	GF

507	L2	CST	NFP	23.63	5.5	18	288	3×0.45×0.30	240164.99	50	GF
508	L3	CST	GF	5.63	5.5	18	288	3×0.45×0.30	57235.91	50	GF
509	L4	CST	GF	1.30	5.5	18	288	3×0.45×0.30	13232.72	50	GF
510	L5	CST	GF	7.19	5.5	18	288	3×0.45×0.30	73115.18	50	GF
511	L6	CST	GF	4.19	5.5	18	288	3×0.45×0.30	42591.71	50	GF
512	L7	CST	NFP	39.60	5.5	18	288	3×0.45×0.30	402415.74	50	GF
576	L1	CST	NFP	5.00	5.8	17	272	3×0.45×0.30	47990.65	50	GF
577	L2	CST	NFP	3.74	5.8	17	272	3×0.45×0.30	35887.13	50	GF
578	L3	CST	GF	1.40	5.8	17	272	3×0.45×0.30	13444.44	50	GF
579	L4	CST	GF	1.03	5.8	17	272	3×0.45×0.30	9915.72	50	GF
580	L5	CST	GF	1.01	5.8	17	272	3×0.45×0.30	9704.00	50	GF
581	L6	CST	GF	0.66	5.8	17	272	3×0.45×0.30	6351.70	50	GF
582	L7	CST	NFP	13.92	5.8	17	272	3×0.45×0.30	133597.51	50	GF
639	L1	CST	NFP	0.24	6.5	15	240	3×0.45×0.30	2081.95	50	GF
640	L2	CST	NFP	0.42	6.5	15	240	3×0.45×0.30	3528.72	50	GF
641	L3	CST	GF	0.08	6.5	15	240	3×0.45×0.30	670.46	50	GF
642	L5	CST	GF	1.10	6.5	15	240	3×0.45×0.30	9280.54	50	GF
643	L7	CST	NFP	2.73	6.5	15	240	3×0.45×0.30	23077.86	50	GF

(2) RANGA BEAT (Ajodhya range)

Drainage Line Treatment Measures Open Map

2.1.1 Brushwood Check Dam-RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
307	D56	4 H 3 C 4 m 9	2	23.22928	86.06072	6.0	0.8	0.5	1.00	6459.21
365	D114	4 H 3 C 4 m 9	1	23.23397	86.05983	2.5	1.3	0.8	0.50	2924.09
366	D115	4 H 3 C 4 m 9	1	23.23421	86.06001	2.5	1.0	0.6	0.50	2492.36
391	D140	4 H 3 C 4 m 8	1	23.27285	86.03894	1.5	1.0	0.6	0.50	1769.17
393	D142	4 H 3 C 4 m 8	1	23.26395	86.04711	1.5	1.1	0.7	0.50	1812.68

2.1.2Loose Boulder Check Dam-RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
252	D1 ***	4 H 3 C 4 j 1	1	23.1258	86.07484	5.5	0.75	0.4	1.50	0.20	16402.97
253	D2	2 A 2 B 5 f 7	1	23.23883	86.07322	3.0	0.75	0.4	1.50	0.20	8947.07
254	D3	2 A 2 B 5 f 7	1	23.24131	86.07592	2.0	0.75	0.4	1.50	0.20	5964.72
256	D5 **	4 H 3 C 4 m 9	1	23.26289	86.05449	4.5	0.75	0.4	1.50	0.20	13449.46
257	D6	4 H 3 C 4 m 9	2	23.26367	86.05447	4.5	0.75	0.4	1.50	0.20	13420.61
258	D7	4 H 3 C 4 m 9	1	23.26314	86.05334	4.0	0.90	0.5	1.90	0.30	19447.49
259	D8 **	4 H 3 C 4 m 9	1	23.26351	86.05408	6.0	0.90	0.5	1.90	0.30	29171.24
260	D9	2 A 2 B 5 f 5	1	23.26497	86.05235	6.0	0.75	0.4	1.50	0.20	17894.15
261	D10	2 A 2 B 5 f 5	1	23.26525	86.05295	5.0	0.75	0.4	1.50	0.20	14911.79
262	D11	2 A 2 B 5 f 5	1	23.26573	86.05343	7.5	0.90	0.5	1.90	0.30	36464.04
263	D12 **	2 A 2 B 5 f 6	1	23.27037	86.08911	4.0	0.75	0.4	1.50	0.20	11929.43

264	D13	2 A 2 B 5 f 5	2	23.26519	86.05463	6.0	1.00	0.5	2.00	0.30	32702.13
265	D14	2 A 2 B 5 f 5	1	23.26569	86.05733	4.5	0.75	0.4	1.50	0.20	13420.61
266	D15	2 A 2 B 5 f 5	1	23.26592	86.05689	4.5	0.60	0.4	1.30	0.20	10209.36
267	D16	2 A 2 B 5 f 5	1	23.26592	86.05689	5.0	0.75	0.4	1.50	0.20	14911.79
268	D17	2 A 2 B 5 f 5	1	23.27783	86.05981	4.0	0.75	0.4	1.50	0.20	11929.43
272	D21	2 A 2 B 5 f 6	1	23.25423	86.06625	5.5	1.00	0.5	2.00	0.30	29976.95
273	D22 **	2 A 2 B 5 f 6	1	23.26544	86.08434	3.5	0.75	0.4	1.50	0.20	10438.25
274	D23 **	2 A 2 B 5 f 6	1	23.26648	86.08147	4.0	0.75	0.4	1.50	0.20	11929.43
276	D25	2 A 2 B 5 f 6	1	23.26089	86.07861	5.0	0.75	0.4	1.50	0.20	14911.79
277	D26	2 A 2 B 5 f 6	1	23.25878	86.06671	4.0	1.00	0.5	2.00	0.30	21801.42
279	D28	2 A 2 B 5 f 6	1	23.25941	86.06974	4.0	0.75	0.4	1.50	0.20	11929.43
280	D29	2 A 2 B 5 f 6	1	23.25933	86.0695	5.0	1.00	0.5	2.00	0.30	27251.78
285	D34	2 A 2 B 5 f 6	1	23.26325	86.0602	3.5	0.75	0.4	1.50	0.20	10438.25
286	D35	2 A 2 B 5 f 6	1	23.2626	86.06273	6.5	1.00	0.5	2.00	0.30	35427.31
287	D36	2 A 2 B 5 f 6	1	23.26294	86.06267	3.0	0.75	0.4	1.50	0.20	8947.07
288	D37	2 A 2 B 5 f 6	2	23.26303	86.06229	4.0	0.75	0.4	1.50	0.20	11929.43
289	D38	2 A 2 B 5 f 6	1	23.26417	86.06293	3.0	0.90	0.5	1.90	0.30	14585.62
290	D39	2 A 2 B 5 f 6	1	23.26366	86.06293	3.5	0.90	0.5	1.90	0.30	17016.55
294	D43	2 A 2 B 5 f 6	2	23.26327	86.06481	5.5	0.75	0.4	1.50	0.20	16402.97
295	D44	2 A 2 B 5 f 6	2	23.25756	86.06154	8.5	0.75	0.4	1.50	0.20	25350.05
296	D45	2 A 2 B 5 f 6	1	23.25678	86.06146	3.0	1.00	0.5	2.00	0.30	16389.53
297	D46	2 A 2 B 5 f 6	1	23.25622	86.05878	4.5	0.75	0.4	1.50	0.20	13420.61
298	D47	4 H 3 C 4 m 9	1	23.23486	86.06264	4.5	0.75	0.4	1.50	0.20	13420.61
299	D48	4 H 3 C 4 m 9	1	23.23472	86.06247	4.0	0.50	0.4	1.20	0.20	7544.89
300	D49	4 H 3 C 4 m 9	1	23.23434	86.0618	4.0	1.00	0.5	2.00	0.30	21852.70
301	D50	4 H 3 C 4 m 9	1	23.23427	86.06167	3.5	0.90	0.5	1.90	0.30	17059.18
302	D51	4 H 3 C 4 m 9	1	23.23386	86.06134	5.0	0.75	0.4	1.50	0.20	14911.79
303	D52	4 H 3 C 4 h 9	1	23.2313	86.07128	4.5	0.75	0.4	1.50	0.20	13449.46
304	D53 *	4 H 3 C 4 h 4	1	23.2127	86.09144	3.0	0.75	0.4	1.50	0.20	8966.31
305	D54	4 H 3 C 4 m 9	1	23.23164	86.0592	4.0	0.75	0.4	1.50	0.20	11955.07
308	D57	4 H 3 C 4 m 9	1	23.23272	86.06187	5.5	0.75	0.4	1.50	0.20	16402.97
309	D58	4 H 3 C 4 m 9	1	23.23266	86.06226	3.0	0.75	0.4	1.50	0.20	8966.31

310	D59	4 H 3 C 4 h 9	3	23.22556	86.06289	2.5	0.75	0.4	1.50	0.20	7471.92
311	D60	4 H 3 C 4 m 9	1	23.23277	86.06435	6.5	0.75	0.4	1.50	0.20	19385.33
312	D61	4 H 3 C 4 h 9	1	23.2362	86.0708	4.5	0.60	0.4	1.30	0.20	10234.36
313	D62	4 H 3 C 4 h 9	1	23.23472	86.07059	7.0	0.75	0.4	1.50	0.20	20876.51
314	D63	4 H 3 C 4 h 9	1	23.235	86.07075	4.0	0.75	0.4	1.50	0.20	11929.43
315	D64	4 H 3 C 4 h 9	1	23.23165	86.06934	3.5	0.75	0.4	1.50	0.20	10438.25
316	D65	4 H 3 C 4 h 9	2	23.23044	86.0706	5.0	1.00	0.5	2.00	0.30	27251.78
317	D66	4 H 3 C 4 h 9	1	23.2334	86.07617	6.0	1.00	0.5	2.00	0.30	32702.13
318	D67	4 H 3 C 4 m 8	1	23.27283	86.03814	4.0	0.75	0.4	1.50	0.20	11929.43
319	D68	4 H 3 C 4 m 9	1	23.25656	86.05245	4.0	0.75	0.4	1.50	0.20	11929.43
320	D69	4 H 3 C 4 m 9	1	23.2566	86.05241	8.0	1.00	0.5	2.00	0.30	43602.84
321	D70	4 H 3 C 4 m 9	1	23.25626	86.05002	3.5	0.75	0.4	1.50	0.20	10438.25
322	D71	4 H 3 C 4 m 9	1	23.25581	86.04881	9.0	1.00	0.5	2.00	0.30	49053.20
323	D72	4 H 3 C 4 m 9	1	23.25758	86.04814	5.5	0.75	0.4	1.50	0.20	16438.23
324	D73	4 H 3 C 4 m 9	1	23.25866	86.04856	4.5	0.75	0.4	1.50	0.20	13420.61
325	D74	4 H 3 C 4 m 9	1	23.25857	86.04795	5.0	0.75	0.4	1.50	0.20	14943.84
326	D75	4 H 3 C 4 m 9	1	23.25833	86.04731	3.0	0.75	0.4	1.50	0.20	8947.07
327	D76	4 H 3 C 4 m 9	1	23.25826	86.04712	4.0	0.75	0.4	1.50	0.20	11929.43
328	D77	4 H 3 C 4 m 8	1	23.26571	86.04513	2.5	0.75	0.4	1.50	0.20	7471.92
329	D78	4 H 3 C 4 m 8	1	23.26553	86.0448	2.0	0.75	0.4	1.50	0.20	5977.54
330	D79	4 H 3 C 4 m 8	1	23.26547	86.0446	2.0	0.75	0.4	1.50	0.20	5977.54
331	D80	4 H 3 C 4 m 9	1	23.23514	86.05879	4.0	1.00	0.5	2.00	0.30	21801.42
332	D81	4 H 3 C 4 m 9	1	23.23512	86.05863	5.0	0.75	0.4	1.50	0.20	14911.79
333	D82	4 H 3 C 4 h 9	1	23.23306	86.0777	4.5	0.75	0.4	1.50	0.20	13420.61
334	D83	4 H 3 C 4 m 9	1	23.23531	86.05654	4.0	0.75	0.4	1.50	0.20	11955.07
335	D84	4 H 3 C 4 m 9	1	23.23532	86.05711	4.5	0.75	0.4	1.50	0.20	13420.61
336	D85	4 H 3 C 4 h 9	3	23.2336	86.07246	3.5	0.75	0.4	1.50	0.20	10460.69
337	D86	4 H 3 C 4 h 9	1	23.23617	86.07452	6.0	0.75	0.4	1.50	0.20	17932.61
338	D87	4 H 3 C 4 h 9	1	23.2358	86.07447	6.5	1.00	0.5	2.00	0.30	35427.31
339	D88	4 H 3 C 4 h 9	2	23.23568	86.07569	8.0	0.75	0.4	1.50	0.20	23858.87
340	D89	4 H 3 C 4 h 9	2	23.23594	86.07584	5.5	1.00	0.5	2.00	0.30	29976.95
341	D90	4 H 3 C 4 h 9	2	23.23641	86.07575	6.0	1.00	0.5	2.00	0.30	32779.05

342	D91	4 H 3 C 4 h 9	2	23.23681	86.07582	4.5	0.90	0.5	1.90	0.30	21933.23
343	D92 **	4 H 3 C 4 h 9	1	23.23763	86.07551	4.0	1.00	0.5	2.00	0.30	21852.70
344	D93	4 H 3 C 4 h 9	1	23.23797	86.07492	4.0	0.90	0.5	1.90	0.30	19496.21
345	D94	2 A 2 B 5 f 7	1	23.2383	86.07679	4.5	0.75	0.4	1.50	0.20	13449.46
346	D95	2 A 2 B 5 f 7	1	23.23891	86.07729	5.0	1.05	0.6	2.20	0.30	31373.08
347	D96	2 A 2 B 5 f 7	1	23.24083	86.07847	8.5	1.20	0.6	2.40	0.40	69302.53
348	D97	2 A 2 B 5 f 7	1	23.24567	86.07754	7.0	0.75	0.4	1.50	0.20	20921.38
349	D98	2 A 2 B 5 f 7	1	23.2439	86.07926	4.5	0.75	0.4	1.50	0.20	13420.61
350	D99	2 A 2 B 5 f 7	1	23.24381	86.07905	6.0	0.75	0.4	1.50	0.20	17894.15
351	D100 **	2 A 2 B 5 f 7	1	23.24816	86.07765	6.5	0.75	0.4	1.50	0.20	19427.00
352	D101	2 A 2 B 5 f 7	1	23.24796	86.07803	4.0	0.75	0.4	1.50	0.20	11955.07
353	D102	2 A 2 B 5 f 7	1	23.24795	86.07857	3.5	1.00	0.5	2.00	0.30	19121.11
354	D103	2 A 2 B 5 f 7	1	23.23912	86.07992	6.0	0.75	0.4	1.50	0.20	17894.15
355	D104 **	2 A 2 B 5 f 6	1	23.24876	86.06735	5.0	0.75	0.4	1.50	0.20	14911.79
356	D105	2 A 2 B 5 f 7	1	23.24004	86.08065	5.5	0.75	0.4	1.50	0.20	16402.97
357	D106	4 H 3 C 4 m 9	1	23.23584	86.05993	3.5	0.75	0.4	1.50	0.20	10438.25
358	D107	4 H 3 C 4 m 9	1	23.23561	86.05963	4.5	1.00	0.5	2.00	0.30	24584.29
359	D108	4 H 3 C 4 m 9	1	23.23781	86.06941	4.0	0.75	0.4	1.50	0.20	11929.43
360	D109	4 H 3 C 4 m 9	1	23.23614	86.05973	4.5	1.00	0.5	2.00	0.30	24584.29
361	D110	4 H 3 C 4 m 9	1	23.23618	86.057	4.0	0.90	0.5	1.90	0.30	19496.21
362	D111	4 H 3 C 4 h 9	1	23.23729	86.07906	4.0	0.75	0.4	1.50	0.20	11955.07
363	D112	4 H 3 C 4 h 9	1	23.23746	86.07931	3.0	1.00	0.5	2.00	0.30	16351.07
364	D113	4 H 3 C 4 m 9	1	23.23473	86.06059	2.5	1.00	0.5	2.00	0.30	13625.89
367	D116	4 H 3 C 4 m 9	1	23.23311	86.0592	4.0	0.75	0.4	1.50	0.20	11929.43
368	D117	4 H 3 C 4 m 9	1	23.23286	86.0591	3.5	0.90	0.5	1.90	0.30	17059.18
369	D118	4 H 3 C 4 m 9	1	23.23248	86.05886	3.0	0.75	0.4	1.50	0.20	8966.31
378	D127	4 H 3 C 4 m 9	1	23.26228	86.05119	5.0	1.00	0.5	2.00	0.30	27315.88
379	D128	2 A 2 B 5 f 6	1	23.26171	86.05957	3.0	0.75	0.4	1.50	0.20	8947.07
380	D129	4 H 3 C 4 m 9	1	23.26065	86.05309	3.5	0.75	0.4	1.50	0.20	10460.69
381	D130	4 H 3 C 4 m 9	1	23.26042	86.05284	4.0	1.00	0.5	2.00	0.30	21852.70
382	D131	4 H 3 C 4 m 8	1	23.26418	86.04534	4.0	0.75	0.4	1.50	0.20	11929.43
383	D132	4 H 3 C 4 m 8	1	23.26409	86.04515	3.5	0.75	0.4	1.50	0.20	10438.25

384	D133	4 H 3 C 4 m 8	1	23.26405	86.04493	5.0	1.00	0.5	2.00	0.30	27315.88
385	D134	4 H 3 C 4 m 8	1	23.26448	86.04464	4.0	0.75	0.4	1.50	0.20	11929.43
386	D135	4 H 3 C 4 m 8	1	23.26459	86.04472	4.0	0.75	0.4	1.50	0.20	11929.43
387	D136	4 H 3 C 4 m 8	1	23.26505	86.04519	3.5	0.75	0.4	1.50	0.20	10438.25
388	D137	4 H 3 C 4 m 8	1	23.26513	86.04541	4.0	0.75	0.4	1.50	0.20	11929.43
389	D138	4 H 3 C 4 m 8	1	23.27096	86.0375	4.5	0.90	0.5	1.90	0.30	21878.43
390	D139	4 H 3 C 4 m 8	1	23.27033	86.04228	5.0	1.00	0.5	2.00	0.30	27251.78
392	D141	4 H 3 C 4 m 8	1	23.26372	86.04678	2.5	0.75	0.4	1.50	0.20	7471.92
394	D143	4 H 3 C 4 m 8	1	23.27096	86.0375	3.5	0.75	0.4	1.50	0.20	10438.25
395	D144	4 H 3 C 4 m 8	1	23.27096	86.0375	3.0	0.75	0.4	1.50	0.20	8947.07
396	D145	4 H 3 C 4 m 8	2	23.26465	86.04712	3.0	0.75	0.4	1.50	0.20	8947.07
397	D146	2 A 2 B 5 f 6	1	23.24791	86.07224	4.0	0.75	0.4	1.50	0.20	11929.43
401	D150	2 A 2 B 5 f 5	1	23.2606	86.05879	5.5	1.00	0.5	2.00	0.30	29976.95
402	D151	2 A 2 B 5 f 6	1	23.26058	86.05908	5.0	0.75	0.4	1.50	0.20	14943.84
403	D152	4 H 3 C 4 m 8	1	23.27096	86.0375	5.5	1.00	0.5	2.00	0.30	30047.47
404	D153	2 A 2 B 5 f 6	1	23.25999	86.05881	6.5	0.90	0.5	1.90	0.30	31681.34
405	D154	2 A 2 B 5 f 6	2	23.26068	86.06075	7.5	1.00	0.5	2.00	0.30	40877.66
406	D155	2 A 2 B 5 f 6	2	23.26095	86.06225	5.5	0.75	0.4	1.50	0.20	16402.97
407	D156	2 A 2 B 5 f 6	2	23.26091	86.06241	7.0	0.75	0.4	1.50	0.20	20876.51
410	D159	2 A 2 B 5 f 6	2	23.25815	86.06327	3.0	0.75	0.4	1.50	0.20	8947.07

* Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

** Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

*** Given coordinates fall outside of Range/Beat Boundary. Coordinates need to be rechecked carefully by physical verification of this point.

2.1.3 Gabion Check-RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
270	D19 *	2 A 2 B 5 f 5	1	23.27756	86.06194	8	1.5	0.50	67141.85
275	D24	2 A 2 B 5 f 6	1	23.25701	86.07089	4	1	0.40	24471.19
281	D30 **	2 A 2 B 5 f 6	2	23.26387	86.0702	7	1.8	0.60	72244.00
282	D31	2 A 2 B 5 f 6	1	23.2636	86.07185	4	1	0.40	24471.19
370	D119 **	4 H 3 C 4 h 9	1	23.22794	86.07064	7	1	0.40	42884.40
373	D122	4 H 3 C 4 m 9	1	23.23138	86.06367	5	1	0.40	30631.72
374	D123 *	4 H 3 C 4 h 9	1	23.21521	86.06596	3	1	0.40	18379.03
375	D124 **	2 A 2 B 5 f 7	1	23.23796	86.08327	7	1	0.40	42824.57
376	D125	4 H 3 C 4 h 9	1	23.23697	86.07989	5	1	0.40	30588.98
377	D126	4 H 3 C 4 h 9	1	23.23761	86.07949	4	1	0.40	24471.19
398	D147	2 A 2 B 5 f 6	2	23.25177	86.0709	9	1	0.40	55137.09
399	D148	2 A 2 B 5 f 6	2	23.25158	86.07078	4	1.2	0.40	27487.34
408	D157	2 A 2 B 5 f 6	2	23.25827	86.06449	9	1.2	0.40	61846.51
409	D158	2 A 2 B 5 f 6	2	23.25828	86.06416	7	1	0.40	42824.57

* Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

** Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

2.1.4 Gabion Check Dam -RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
269	D18	2 A 2 B 5 f 5	3	23.26732	86.05561	7.5	1.5	1.0	0.50	3	2.50	1.0	0.50	294450.22
278	D27	2 A 2 B 5 f 6	1	23.25927	86.0693	8.5	2.1	1.0	0.70	4	3.10	1.0	0.70	341834.95
284	D33	2 A 2 B 5 f 5	1	23.26323	86.05871	7.5	1.8	1.0	0.60	3	2.80	1.0	0.60	295444.12
291	D40	2 A 2 B 5 f 6	1	23.26324	86.06294	7.0	1.5	1.0	0.50	3	2.50	1.0	0.50	284034.25
292	D41	2 A 2 B 5 f 6	2	23.26323	86.06337	7.5	1.8	1.0	0.60	3	2.80	1.0	0.60	305623.65
293	D42	2 A 2 B 5 f 6	2	23.26319	86.06306	6.5	1.8	1.0	0.60	3	2.80	1.0	0.60	287200.96
306	D55	4 H 3 C 4 m 9	1	23.23131	86.05893	7.5	2.1	1.0	0.70	3	3.10	1.0	0.70	311187.96

2.1.5 Random Rubble Masonry Check Dam- RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Catchment ID 2 Catchment ID 3 Catchment ID 4

Catchment ID	Survey Sr_No	Beat	Map Id	Watershed Code	Gully Order	Latitude	Longitude	Catchment Area (ha)	Length of weir, L (m)	Height of dam, F	Depth of flow (including freeboard), h	Total Estimated Cost (in lakh ₹)
2	371	Ranga	D120	4 H 3 C 4 m 9	2	23.230483	86.059209	22.69	6.00	2.00	0.60	4.00
3	372	Ranga	D121	4 H 3 C 4 m 9	2	23.2298	86.05942	26.78	5.00	1.50	0.80	2.82
4	400	Ranga	D149	2 A 2 B 5 f 6	1	23.251947	86.071067	85.57	6.00	3.00	1.50	9.04

Water Harvesting Structure MeasuresRANGA BEAT (Ajodhya range) Open Map

2.2.1Embankment Pond-RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
75	W4	2 A 2 B 5 f 6	1	23.26141	86.06408	34.13
81	W10	2 A 2 B 5 f 6	1	23.24719	86.07143	247.65

2.2.2Percolation Pond-RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
73	W2	2 A 2 B 5 f 5	2	23.26518	86.05466	182.47
74	W3	2 A 2 B 5 f 5	3	23.26615	86.05514	1385.79

2.2.3Pond Renovation-RANGA BEAT (Ajodhya range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
72	W1	2 A 2 B 5 f 7	1	23.24064	86.07422	42.72
76	W5	2 A 2 B 5 f 6	2	23.26089	86.06208	1943.39
77	W6 *	2 A 2 B 5 f 6	2	23.26322	86.0655	3277.25
78	W7	4 H 3 C 4 h 9	1	23.22847	86.07686	2537.55
79	W8 **	4 H 3 C 4 m 9	1	23.23851	86.07246	366.35
80	W9	2 A 2 B 5 f 7	1	23.25587	86.09136	30.35
82	W11	2 A 2 B 5 f 6	1	23.24807	86.07181	243.32

* No existing Pond at Given Coordinates

** Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

2.3.1 Land Treatment and Forest Plantation-RANGA BEAT (Ajodhya range)

Open Map Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
66	L4	CST	NIL	1.03	5.2	19	304	3×0.45×0.30	11080.2	100	NFP
112	L4	CST	NIL	6.41	5.5	18	288	3×0.45×0.30	65175.54	100	NFP
113	L6	CST	NIL	0.59	5.5	18	288	3×0.45×0.30	5963.549	100	NFP
168	L4	CST	NIL	3.65	5.8	17	272	3×0.45×0.30	35004.94	100	NFP
212	L4	CST	NIL	1.10	6.5	15	240	3×0.45×0.30	9351.122	100	NFP
384	L1	CST	NIL	0.31	5	20	320	3×0.45×0.30	3528.725	50	GF
385	L2	CST	NIL	0.34	5	20	320	3×0.45×0.30	3811.028	50	GF
386	L3	CST	NIL	1.61	5	20	320	3×0.45×0.30	18137.65	50	GF
387	L4	CST	NIL	7.29	5	20	320	3×0.45×0.30	82254.56	50	GF
388	L6	CST	NIL	0.47	5	20	320	3×0.45×0.30	5257.802	50	GF
445	L1	CST	NIL	0.72	5.2	19	304	3×0.45×0.30	7763.196	50	GF
446	L3	CST	NIL	0.93	5.2	19	304	3×0.45×0.30	9951.008	50	GF
447	L4	CST	NIL	8.14	5.2	19	304	3×0.45×0.30	87265.35	50	GF
448	L6	CST	NIL	1.73	5.2	19	304	3×0.45×0.30	18525.8	50	GF
513	L1	CST	NIL	3.85	5.5	18	288	3×0.45×0.30	39098.27	50	GF
514	L2	CST	NIL	1.09	5.5	18	288	3×0.45×0.30	11080.2	50	GF
515	L3	CST	NIL	2.56	5.5	18	288	3×0.45×0.30	26041.98	50	GF
516	L4	CST	NIL	60.60	5.5	18	288	3×0.45×0.30	615903.6	50	GF
517	L5	CST	NIL	0.92	5.5	18	288	3×0.45×0.30	9351.122	50	GF
518	L6	CST	NIL	4.13	5.5	18	288	3×0.45×0.30	41956.53	50	GF
583	L1	CST	NIL	0.41	5.8	17	272	3×0.45×0.30	3881.598	50	GF
584	L4	CST	NIL	26.52	5.8	17	272	3×0.45×0.30	254526.9	50	GF
585	L5	CST	NIL	0.13	5.8	17	272	3×0.45×0.30	1270.343	50	GF
586	L6	CST	NIL	0.41	5.8	17	272	3×0.45×0.30	3952.169	50	GF
644	L1	CST	NIL	0.08	6.5	15	240	3×0.45×0.30	705.747	50	GF
645	L4	CST	NIL	2.15	6.5	15	240	3×0.45×0.30	18172.93	50	GF

(3) ARSHA BEAT (Arsha Range)

Drainage Line Treatment Measures Open Map

3.1.1Brushwood Check Dam-ARSHA BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
411	D-1	2 A 2 B 5 d 4	2	23.30058	86.08936	6.0	0.9	0.5	1.00	7133.05
417	D-7	2 A 2 B 5 d 4	1	23.30119	86.09119	6.0	1.0	0.6	1.00	7600.56
425	D-15	2 A 2 B 5 d 5	2	23.30836	86.08531	6.0	0.9	0.5	1.00	7133.05
426	D-16	2 A 2 B 5 d 5	2	23.30656	86.08503	4.0	0.9	0.5	0.75	4206.31
430	D-20	2 A 2 B 5 d 5	1	23.30925	86.08589	4.0	0.9	0.5	0.75	4206.31
431	D-21	2 A 2 B 5 d 5	1	23.30836	86.08611	2.0	0.9	0.5	0.50	2000.29
432	D-22	2 A 2 B 5 d 5	1	23.30833	86.08619	2.0	0.8	0.5	0.50	1826.41
438	D-28	2 A 2 B 5 d 5	1	23.31339	86.08603	4.5	0.8	0.5	0.75	4191.05
439	D-29	2 A 2 B 5 d 5	1	23.31194	86.08658	3.0	0.8	0.5	0.75	3041.33
461	D-51	2 A 2 B 5 k 7	1	23.28588	86.09292	3.0	0.9	0.5	0.75	3337.37
468	D-58	2 A 2 B 5 k 1	1	23.29478	86.14161	3.0	0.9	0.5	0.75	3337.37

3.1.2 Loose Boulder Check Dam- ARSHA BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
418	D-8	2 A 2 B 5 d 4	1	23.30158	86.09303	9.0	0.75	0.4	1.50	0.20	26841.22
419	D-9	2 A 2 B 5 d 2	2	23.29586	86.09806	9.0	0.75	0.4	1.50	0.20	26898.92
420	D-10	2 A 2 B 5 d 2	2	23.29553	86.09786	9.0	0.75	0.4	1.50	0.20	26898.92

421	D-11	2 A 2 B 5 d 2	1	23.29647	86.09867	9.0	0.75	0.4	1.50	0.20	26898.92
427	D-17	2 A 2 B 5 d 5	2	23.30942	86.08547	5.0	0.75	0.4	1.50	0.20	14911.79
428	D-18	2 A 2 B 5 d 5	1	23.30908	86.08547	5.0	0.75	0.4	1.50	0.20	14943.84
429	D-19	2 A 2 B 5 d 5	1	23.30922	86.08578	7.0	0.75	0.4	1.50	0.20	20921.38
434	D-24	2 A 2 B 5 d 5	1	23.31106	86.08672	7.0	0.75	0.4	1.50	0.20	20876.51
435	D-25	2 A 2 B 5 d 5	1	23.31122	86.08667	7.0	0.75	0.4	1.50	0.20	20876.51
440	D-30	2 A 2 B 5 d 5	1	23.31177	86.0866	8.0	0.75	0.4	1.50	0.20	23858.87
443	D-33	2 A 2 B 5 k 7	1	23.28531	86.08067	7.0	0.75	0.4	1.50	0.20	20876.51
444	D-34	2 A 2 B 5 k 7	1	23.28528	86.08114	6.5	0.75	0.4	1.50	0.20	19385.33
445	D-35	2 A 2 B 5 k 7	1	23.28578	86.08161	7.0	0.75	0.4	1.50	0.20	20921.38
446	D-36	2 A 2 B 5 k 7	1	23.28586	86.08197	7.0	0.75	0.4	1.50	0.20	20921.38
447	D-37	2 A 2 B 5 k 7	1	23.28622	86.08256	9.0	0.75	0.4	1.50	0.20	26898.92
450	D-40	2 A 2 B 5 k 7	2	23.28561	86.08331	8.0	0.75	0.4	1.50	0.20	23910.15
451	D-41	2 A 2 B 5 k 7	2	23.28539	86.08375	9.0	0.75	0.4	1.50	0.20	26841.22
455	D-45	2 A 2 B 5 k 7	2	23.28325	86.08422	9.0	0.75	0.4	1.50	0.20	26841.22
456	D-46	2 A 2 B 5 k 7	2	23.28342	86.08464	9.0	0.75	0.4	1.50	0.20	26898.92
459	D-49	2 A 2 B 5 k 7	2	23.28404	86.08746	8.0	0.75	0.4	1.50	0.20	23910.15
462	D-52	2 A 2 B 5 d 2	1	23.29339	86.09781	7.0	0.75	0.4	1.50	0.20	20921.38
463	D-53	2 A 2 B 5 d 2	1	23.29378	86.09775	7.0	0.75	0.4	1.50	0.20	20921.38
464	D-54	2 A 2 B 5 d 2	1	23.29408	86.09781	7.0	0.75	0.4	1.50	0.20	20921.38
465	D-55	2 A 2 B 5 d 2	1	23.29478	86.09878	9.0	0.75	0.4	1.50	0.20	26841.22
466	D-56	2 A 2 B 5 d 2	1	23.29478	86.09853	9.0	0.75	0.4	1.50	0.20	26841.22
467	D-57	2 A 2 B 5 d 2	1	23.29475	86.09822	9.0	0.75	0.4	1.50	0.20	26841.22
469	D-59	2 A 2 B 5 k 1	1	23.29456	86.14161	3.5	0.75	0.4	1.50	0.20	10460.69
472	D-62 *	2 A 2 B 5 k 1	1	23.29389	86.14431	3.0	0.75	0.4	1.50	0.20	8966.31
474	D-64	2 A 2 B 5 k 5	1	23.27447	86.13619	3.0	0.60	0.4	1.30	0.20	6806.24
475	D-65	2 A 2 B 5 k 5	1	23.27444	86.13625	3.0	0.60	0.4	1.30	0.20	6806.24

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

3.1.3Gabion Check measures-ARSHA BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
412	D-2	2 A 2 B 5 d 5	1	23.29961	86.08686	6	1	0.40	36758.06
433	D-23	2 A 2 B 5 d 5	1	23.30831	86.08642	5	1	0.40	26892.29
436	D-26 *	2 A 2 B 5 d 5	1	23.31183	86.08406	8	1.5	0.50	67056.38
441	D-31	2 A 2 B 5 d 5	1	23.31163	86.0872	6	1	0.40	36758.06
470	D-60	2 A 2 B 5 k 1	1	23.29425	86.14172	5	1	0.40	30588.98
471	D-61	2 A 2 B 5 k 1	1	23.29399	86.14163	6	1	0.40	36706.78
476	D-66 *	2 A 2 B 5 k 5	2	23.27555	86.14069	6	1	0.40	36706.78

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

3.1.4 Gabion Check Dam measures-ARSHA BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
422	D-12	2 A 2 B 5 d 2	1	23.29667	86.09842	9.5	1.0	1.0	0.40	5	2.00	1.0	0.40	337923.00
442	D-32	2 A 2 B 5 k 7	1	23.28558	86.07908	9.5	1.0	1.0	0.40	5	2.00	1.0	0.40	337923.00
448	D-38	2 A 2 B 5 k 7	1	23.28628	86.08281	9.5	1.2	1.0	0.40	5	2.20	1.0	0.40	341205.38
452	D-42	2 A 2 B 5 k 7	2	23.28469	86.08442	10.5	1.0	1.0	0.40	5	2.00	1.0	0.40	355370.53
453	D-43	2 A 2 B 5 k 7	2	23.28389	86.08428	10.5	1.2	1.0	0.40	5	2.20	1.0	0.40	358819.11
454	D-44	2 A 2 B 5 k 7	2	23.28356	86.084	10.5	1.2	1.0	0.40	5	2.20	1.0	0.40	358819.11

3.1.5 Random Rubble Masonry Check Dam measures-ARSHA BEAT (Arsha Range) Open Design Detailed Excel File

Catchment ID 5 Catchment ID 6 Catchment ID 7

Catchment ID	Survey Sr_No	Beat	Map Id	Watershed Code	Gully Order	Latitude	Longitude	Catchment Area (ha)	Length of weir, L (m)	Height of dam, F	Depth of flow (including freeboard), h	Total Estimated Cost (in lakh ₹)
5	416	Arsha	D-6	2 A 2 B 5 d 4	3	23.301389	86.090167	136.39	16.00	1.50	0.70	6.01
6	457	Arsha	D-47	2 A 2 B 5 k 7	2	23.283833	86.085611	95.73	12.00	1.50	0.80	4.99
7	473	Arsha	D-63	2 A 2 B 5 k 1	3	23.293389	86.141722	146.28	7.00	1.50	1.20	3.71

Water Harvesting Structure Measures-ARSHA BEAT (Arsha Range) Open Map

3.2.1Pond Renovation- ARSHA BEAT (Arsha Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
83	W-1	2 A 2 B 5 d 4	1	23.30139	86.09017	159.13
84	W-2*	2 A 2 B 5 d 2	2	23.29871	86.09853	1596.42
85	W-3*	2 A 2 B 5 d 2	2	23.29871	86.09853	1774.51

*Given Coordinates Duplicate

3.3.1 Land Treatment and Forest Plantation-ARSHA BEAT (Arsha Range)

Open Map

Open Design Detailed Excel File

DOBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
38	L-2	CST	SGP/NFP	1.00	5	20	320	3×0.45×0.30	11327.20	100	NFP
39	L-3	RT	NFP	0.01	5	20	320	3×0.45×0.30	141.15	100	NFP
40	L-6	CST	GF-40%	1.32	5	20	320	3×0.45×0.30	14891.22	100	NFP
67	L-2	CST	SGP/NFP	0.50	5.2	19	304	3×0.45×0.30	5328.37	100	NFP
68	L-6	CST	GF-40%	1.47	5.2	19	304	3×0.45×0.30	15808.68	100	NFP
114	L-1	CCT	NFP	0.01	5.5	18	288	3×0.45×0.30	141.15	100	NFP
115	L-2	CST	SGP/NFP	2.48	5.5	18	288	3×0.45×0.30	25230.38	100	NFP
116	L-3	RT	NFP	0.91	5.5	18	288	3×0.45×0.30	9245.26	100	NFP
117	L-6	CST	GF-40%	1.63	5.5	18	288	3×0.45×0.30	16514.43	100	NFP
169	L-2	CST	SGP/NFP	2.71	5.8	17	272	3×0.45×0.30	25971.41	100	NFP
170	L-6	CST	GF-40%	0.32	5.8	17	272	3×0.45×0.30	3034.70	100	NFP
213	L-2	CST	SGP/NFP	0.14	6.5	15	240	3×0.45×0.30	1199.76	100	NFP
214	L-3	RT	NFP	0.12	6.5	15	240	3×0.45×0.30	988.04	100	NFP
389	L-1	CCT	NFP	2.62	5	20	320	3×0.45×0.30	29606.00	50	GF
390	L-2	CST	SGP/NFP	5.87	5	20	320	3×0.45×0.30	66304.74	50	GF
391	L-3	RT	NFP	0.56	5	20	320	3×0.45×0.30	6351.70	50	GF
392	L-4	CCT	Bamboo	0.19	5	20	320	3×0.45×0.30	2117.23	50	GF
393	L-5	CST	Bamboo	1.32	5	20	320	3×0.45×0.30	14855.93	50	GF
394	L-6	CST	GF-40%	3.26	5	20	320	3×0.45×0.30	36769.31	50	GF
395	L-7	No Land Treatment Required	GF-40%	1.51	-	-	-	-	-	50	GF
449	L-1	CCT	NFP	0.35	5.2	19	304	3×0.45×0.30	3811.03	50	GF
450	L-2	CST	SGP/NFP	0.57	5.2	19	304	3×0.45×0.30	6139.98	50	GF
451	L-3	RT	NFP	0.88	5.2	19	304	3×0.45×0.30	9456.98	50	GF

452	L-4	CCT	Bamboo	0.51	5.2	19	304	3×0.45×0.30	5504.81	50	GF
453	L-5	CST	Bamboo	3.02	5.2	19	304	3×0.45×0.30	32428.98	50	GF
454	L-6	CST	GF-40%	2.58	5.2	19	304	3×0.45×0.30	27629.91	50	GF
455	L-7	No Land Treatment Required	GF-40%	1.97	-	-	-	-	-	50	GF
519	L-1	CCT	NFP	6.83	5.5	18	288	3×0.45×0.30	69374.73	50	GF
520	L-2	CST	SGP/NFP	4.61	5.5	18	288	3×0.45×0.30	46896.75	50	GF
521	L-3	RT	NFP	5.30	5.5	18	288	3×0.45×0.30	53918.91	50	GF
522	L-4	CCT	Bamboo	4.56	5.5	18	288	3×0.45×0.30	46367.44	50	GF
523	L-5	CST	Bamboo	6.21	5.5	18	288	3×0.45×0.30	63093.60	50	GF
524	L-6	CST	GF-40%	7.89	5.5	18	288	3×0.45×0.30	80243.19	50	GF
525	L-7	No Land Treatment Required	GF-40%	5.21	-	-	-	-	-	50	GF
587	L-1	CCT	NFP	1.16	5.8	17	272	3×0.45×0.30	11115.48	50	GF
588	L-2	CST	SGP/NFP	2.17	5.8	17	272	3×0.45×0.30	20819.47	50	GF
589	L-3	RT	NFP	2.84	5.8	17	272	3×0.45×0.30	27241.76	50	GF
590	L-4	CCT	Bamboo	0.23	5.8	17	272	3×0.45×0.30	2258.38	50	GF
591	L-5	CST	Bamboo	1.91	5.8	17	272	3×0.45×0.30	18349.37	50	GF
592	L-6	CST	GF-40%	1.13	5.8	17	272	3×0.45×0.30	10797.90	50	GF
593	L-7	No Land Treatment Required	GF-40%	0.58	-	-	-	-	-	50	GF
646	L-7	No Land Treatment Required	GF-40%	0.12	-	-	-	-	-	50	GF

(4) KANTADIH BEAT (Arsha Range)

Drainage Line Treatment Measures Open Map

4.1.1 Brushwood Check Dam-KANTADIH BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
512	D-4 *	2 A 2 B 5 h 5	1	23.24659	86.22012	4.0	1.0	0.6	0.75	4467.25

* Wrong latitude and longitude are given. Same Forest Range but fall in the Beat other than mentioned one.

4.1.2 Loose Boulder Check Dam-KANTADIH BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
510	D-2 *	2 A 2 B 5 h 5	1	23.246984	86.220123	6.0	0.75	0.4	1.50	0.20	17932.61
511	D-3 *	2 A 2 B 5 h 5	1	23.246857	86.220136	6.0	0.75	0.4	1.50	0.20	17894.15
513	D-5 *	2 A 2 B 5 h 5	1	23.245444	86.219	8.0	1.00	0.5	2.00	0.30	43602.84
516	D-8 *	2 A 2 B 5 h 5	2	23.243515	86.213694	6.0	0.75	0.4	1.50	0.20	17932.61
518	D-10 *	2 A 2 B 5 h 5	2	23.243111	86.212639	7.0	0.75	0.4	1.50	0.20	20921.38
519	D-11 *	2 A 2 B 5 h 5	1	23.240105	86.210331	4.0	0.75	0.4	1.50	0.20	11955.07
520	D-12 *	2 A 2 B 5 h 5	2	23.239768	86.208011	4.0	0.75	0.4	1.50	0.20	11955.07
521	D-13 *	2 A 2 B 5 h 5	1	23.239681	86.210265	5.0	0.75	0.4	1.50	0.20	14943.84
523	D-15 *	2 A 2 B 5 h 4	2	23.223699	86.22512	5.0	0.75	0.4	1.50	0.20	14943.84
524	D-16 *	2 A 2 B 5 h 4	2	23.223889	86.225131	6.0	0.75	0.4	1.50	0.20	17932.61
533	D-25 *	2 A 2 B 3 m 9	1	23.222333	86.228861	7.0	0.75	0.4	1.50	0.20	20921.38
534	D-26 *	2 A 2 B 3 m 9	1	23.216028	86.231	8.0	0.75	0.4	1.50	0.20	23910.15

535	D-27 *	2 A 2 B 3 m 9	1	23.215889	86.23125	9.0	0.75	0.4	1.50	0.20	26898.92
536	D-28 *	2 A 2 B 3 m 9	1	23.216684	86.232494	6.0	0.75	0.4	1.50	0.20	17932.61
537	D-29 *	2 A 2 B 3 m 9	1	23.21722	86.232099	6.0	0.75	0.4	1.50	0.20	17932.61
539	D-31 *	2 A 2 B 3 m 9	1	23.216809	86.232366	7.0	0.75	0.4	1.50	0.20	20876.51
540	D-32 *	2 A 2 B 3 m 9	1	23.216298	86.232931	6.0	0.75	0.4	1.50	0.20	17932.61
541	D-33 *	2 A 2 B 3 m 9	1	23.217694	86.231917	8.0	0.75	0.4	1.50	0.20	23858.87

*Same Forest Range but given coordinates fall in the Beat other than mentioned in the proposed data.

4.1.3Gabion Check measures-KANTADIH BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
509	D-1 *	2 A 2 B 5 h 5	1	23.24719	86.2201	8	1	0.40	48942.37
517	D-9 *	2 A 2 B 5 h 5	3	23.24309	86.21394	9	1	0.40	55137.09
525	D-17 *	2 A 2 B 5 h 4	2	23.22403	86.22512	8	1	0.40	49010.75
526	D-18 *	2 A 2 B 5 h 4	3	23.22431	86.22514	9	1	0.40	55137.09
528	D-20 *	2 A 2 B 5 h 4	2	23.22453	86.22214	7	1.2	0.40	48162.67
529	D-21 *	2 A 2 B 5 h 4	3	23.22525	86.22519	9	1	0.40	55137.09
530	D-22 *	2 A 2 B 5 h 4	3	23.22572	86.22511	9	1.2	0.40	61846.51
532	D-24 *	2 A 2 B 3 m 9	1	23.22225	86.22861	9	1	0.40	55137.09
538	D-30 *	2 A 2 B 3 m 9	1	23.21693	86.23224	9	1	0.40	55137.09

* Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

4.1.4 Gabion Check Dam measures-KANTADIH BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
514	D-6 *	2 A 2 B 5 h 5	2	23.24472	86.21331	12.5	1.5	1.0	0.50	6	2.50	1.0	0.50	414210.87
515	D-7 *	2 A 2 B 5 h 5	1	23.2466	86.21425	8.5	1.2	1.0	0.40	4	2.20	1.0	0.40	321598.78

* Given coordinates fall in Forest Range and Beat other than mentioned one,

4.1.5 Random Rubble Masonry Check Dam measures- KANTADIH BEAT (Arsha Range)

Open Design Detailed Excel File

Catchment ID 9 Catchment ID 10

Catchment ID	Survey Sr_No	Beat	Map Id	Watershed Code	Gully Order	Latitude	Longitude	Catchment Area (ha)	Length of weir, L (m)	Height of dam, F	Depth of flow (including freeboard), h	Total Estimated Cost (in lakh ₹)
9	522	Kantadih	D-14	2 A 2 B 5 h 5	3	23.2385	86.21175	114.73	25.00	2.50	0.50	12.75
10	531	Kantadih	D-23	2 A 2 B 5 h 4	1	23.226167	86.225111	191.33	15.00	3.00	1.00	11.75

Water Harvesting Structure Measures-KANTADIH BEAT (Arsha Range) Open Map

4.2.1Pond Renovation-KANTADIH BEAT (Arsha Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
88	W-1***	2 A 2 B 5 h 5	2	23.24617	86.2205	2166.76
89	W-2***	2 A 2 B 5 h 5	2	23.23881	86.2085	1795.97
90	W-3***	2 A 2 B 5 h 4	1	23.22806	86.22772	2290.36
91	W-4***	2 A 2 B 3 m 9	1	23.22967	86.23625	1425.18
92	W-5***@	2 A 2 B 5 h 4	1	23.22219	86.22219	293.98

***Point fall in correct Range/Beat Boundary but Beat name change.

***@Point fall in correct Range/Beat Boundary but Beat name change with No existing Pond at Given Coordinates

4.3.1 Land Treatment and Forest Plantation-KANTADIH BEAT (Arsha Range)

Open Map

Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
19	L-4	CST	GF 40%	0.55	5	20	320	3×0.45×0.45	9262.9005	100	NFP
20	L-5	CST	GF 40%	0.69	5	20	320	3×0.45×0.45	11750.655	100	NFP
43	L-1	CST	GF 40%	0.27	5	20	320	3×0.45×0.30	3069.99	100	NFP
44	L-2	CST	NFP	0.73	5	20	320	3×0.45×0.30	8257.2105	100	NFP
45	L-3	CST	NFP	0.65	5	20	320	3×0.45×0.30	7375.032	100	NFP
46	L-4	CST	GF 40%	0.08	5	20	320	3×0.45×0.30	882.1785	100	NFP
53	L-4	CST	GF 40%	0.11	5.2	19	304	3×0.45×0.45	1746.717	100	NFP
54	L-5	CST	GF 40%	0.58	5.2	19	304	3×0.45×0.45	9368.7615	100	NFP

71	L-1	CST	GF 40%	0.20	5.2	19	304	3×0.45×0.30	2152.521	100	NFP
72	L-3	CST	NFP	0.72	5.2	19	304	3×0.45×0.30	7692.615	100	NFP
73	L-4	CST	GF 40%	0.10	5.2	19	304	3×0.45×0.30	1129.191	100	NFP
86	L-4	CST	GF 40%	1.00	5.5	18	288	3×0.45×0.45	15191.159	100	NFP
87	L-5	CST	GF 40%	3.07	5.5	18	288	3×0.45×0.45	46790.888	100	NFP
122	L-1	CST	GF 40%	1.26	5.5	18	288	3×0.45×0.30	12738.695	100	NFP
123	L-2	CST	NFP	1.56	5.5	18	288	3×0.45×0.30	15843.975	100	NFP
124	L-3	CST	NFP	1.93	5.5	18	288	3×0.45×0.30	19584.422	100	NFP
125	L-4	CST	GF 40%	0.30	5.5	18	288	3×0.45×0.30	3069.99	100	NFP
126	L-5	CST	GF 40%	0.18	5.5	18	288	3×0.45×0.30	1799.6475	100	NFP
142	L-4	CST	GF 40%	0.18	5.8	17	272	3×0.45×0.45	2540.685	100	NFP
143	L-5	CST	GF 40%	11.05	5.8	17	272	3×0.45×0.45	159163.12	100	NFP
173	L-1	CST	GF 40%	0.94	5.8	17	272	3×0.45×0.30	9068.8185	100	NFP
174	L-2	CST	NFP	0.77	5.8	17	272	3×0.45×0.30	7375.032	100	NFP
175	L-3	CST	NFP	0.21	5.8	17	272	3×0.45×0.30	2011.3695	100	NFP
176	L-5	CST	GF 40%	0.37	5.8	17	272	3×0.45×0.30	3599.295	100	NFP
191	L-5	CST	GF 40%	7.71	6.5	15	240	3×0.45×0.45	97922.108	100	NFP
217	L-1	CST	GF 40%	1.02	6.5	15	240	3×0.45×0.30	8645.3745	100	NFP
218	L-2	CST	NFP	0.12	6.5	15	240	3×0.45×0.30	988.0395	100	NFP
219	L-4	CST	GF 40%	0.39	6.5	15	240	3×0.45×0.30	3281.712	100	NFP
220	L-5	CST	GF 40%	0.68	6.5	15	240	3×0.45×0.30	5787.1065	100	NFP
275	L-5	CST	GF 40%	0.23	5.5	18	288	3×0.45×0.45	3493.434	80	GF
357	L-4	CST	GF 40%	6.05	5	20	320	3×0.45×0.45	102527.09	50	GF
358	L-5	CST	GF 40%	3.50	5	20	320	3×0.45×0.45	59282.57	50	GF
399	L-1	CST	GF 40%	14.53	5	20	320	3×0.45×0.30	164050.4	50	GF
400	L-2	CST	NFP	9.51	5	20	320	3×0.45×0.30	107343.8	50	GF
401	L-3	CST	NFP	8.65	5	20	320	3×0.45×0.30	97675.095	50	GF
402	L-4	CST	GF 40%	2.68	5	20	320	3×0.45×0.30	30276.456	50	GF
403	L-5	CST	GF 40%	1.42	5	20	320	3×0.45×0.30	16020.407	50	GF
416	L-4	CST	GF 40%	2.68	5.2	19	304	3×0.45×0.45	43138.662	50	GF
417	L-5	CST	GF 40%	2.91	5.2	19	304	3×0.45×0.45	46737.957	50	GF
459	L-1	CST	GF 40%	5.15	5.2	19	304	3×0.45×0.30	55259.831	50	GF

460	L-2	CST	NFP	7.27	5.2	19	304	3×0.45×0.30	77949.522	50	GF
461	L-3	CST	NFP	5.51	5.2	19	304	3×0.45×0.30	59106.138	50	GF
462	L-4	CST	GF 40%	1.08	5.2	19	304	3×0.45×0.30	11574.213	50	GF
463	L-5	CST	GF 40%	0.55	5.2	19	304	3×0.45×0.30	5963.5485	50	GF
478	L-4	CST	GF 40%	2.59	5.5	18	288	3×0.45×0.45	39486.426	50	GF
479	L-5	CST	GF 40%	4.81	5.5	18	288	3×0.45×0.45	73309.247	50	GF
530	L-1	CST	GF 40%	13.48	5.5	18	288	3×0.45×0.30	136949.8	50	GF
531	L-2	CST	NFP	14.43	5.5	18	288	3×0.45×0.30	146653.79	50	GF
532	L-3	CST	NFP	5.80	5.5	18	288	3×0.45×0.30	58964.987	50	GF
533	L-4	CST	GF 40%	2.47	5.5	18	288	3×0.45×0.30	25089.236	50	GF
534	L-5	CST	GF 40%	1.77	5.5	18	288	3×0.45×0.30	17925.926	50	GF
548	L-4	CST	GF 40%	0.20	5.8	17	272	3×0.45×0.45	2911.1985	50	GF
549	L-5	CST	GF 40%	4.49	5.8	17	272	3×0.45×0.45	64628.592	50	GF
596	L-1	CST	GF 40%	3.82	5.8	17	272	3×0.45×0.30	36698.739	50	GF
597	L-2	CST	NFP	7.04	5.8	17	272	3×0.45×0.30	67575.071	50	GF
598	L-3	CST	NFP	0.07	5.8	17	272	3×0.45×0.30	635.166	50	GF
599	L-5	CST	GF 40%	0.16	5.8	17	272	3×0.45×0.30	1552.635	50	GF
613	L-5	CST	GF 40%	1.11	6.5	15	240	3×0.45×0.45	14079.608	50	GF
650	L-2	CST	NFP	0.11	6.5	15	240	3×0.45×0.30	952.7595	50	GF
651	L-3	CST	NFP	0.35	6.5	15	240	3×0.45×0.30	2964.129	50	GF

(5) SIRKABAD BEAT (Arsha Range)

Drainage Line Treatment Measures Open Map

5.1.1 Brushwood Check Dam-SIRKABAD BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
479	D-3	2 A 2 B 5 m 5	3	23.24232	86.19204	4.5	0.8	0.5	0.75	4191.05
482	D-6	2 A 2 B 5 m 5	3	23.24275	86.19138	4.0	0.9	0.5	0.75	4206.31
483	D-7	2 A 2 B 5 m 5	3	23.24319	86.19072	4.0	0.8	0.5	0.75	3807.81
500	D-24	2 A 2 B 5 m 5	1	23.24206	86.18864	4.0	0.9	0.5	0.75	4206.31
502	D-26	2 A 2 B 5 m 5	1	23.24242	86.1885	3.0	0.8	0.5	0.75	3041.33
505	D-29	2 A 2 B 5 m 5	1	23.24319	86.18822	3.0	0.8	0.5	0.75	3041.33
507	D-31	2 A 2 B 5 m 5	1	23.24353	86.18792	4.0	1.0	0.6	0.75	4467.25

5.1.2 Loose Boulder Check Dam-SIRKABAD BEAT (Arsha Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
477	D-1	2 A 2 B 5 m 5	3	23.24207	86.19244	9.0	0.75	0.4	1.50	0.20	26898.92
478	D-2	2 A 2 B 5 m 5	3	23.24222	86.19224	5.0	0.75	0.4	1.50	0.20	14943.84
491	D-15	2 A 2 B 5 m 5	3	23.23939	86.18978	9.0	0.75	0.4	1.50	0.20	26898.92
492	D-16	2 A 2 B 5 m 5	3	23.23947	86.18917	9.0	0.75	0.4	1.50	0.20	26898.92
493	D-17	2 A 2 B 5 m 5	3	23.23964	86.18797	9.0	0.75	0.4	1.50	0.20	26898.92
494	D-18	2 A 2 B 5 m 5	3	23.24121	86.18599	9.0	0.75	0.4	1.50	0.20	26898.92
496	D-20	2 A 2 B 5 m 5	1	23.24175	86.18864	7.0	0.75	0.4	1.50	0.20	20921.38
497	D-21	2 A 2 B 5 m 5	1	23.24164	86.18864	6.0	0.75	0.4	1.50	0.20	17932.61
498	D-22	2 A 2 B 5 m 5	1	23.24197	86.18872	5.0	0.75	0.4	1.50	0.20	14943.84
508	D-32	2 A 2 B 5 m 5	1	23.24378	86.18792	4.0	0.75	0.4	1.50	0.20	11929.43

5.1.3 Gabion Check measures

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
480	D-4	2 A 2 B 5 m 5	3	23.24239	86.19192	9	1	0.40	55137.09
481	D-5	2 A 2 B 5 m 5	3	23.24257	86.19165	9	1	0.40	55060.17
484	D-8	2 A 2 B 5 m 5	3	23.24328	86.19069	8	1	0.40	49010.75
485	D-9	2 A 2 B 5 m 5	3	23.24386	86.19025	8	1	0.40	48942.37
486	D-10	2 A 2 B 5 m 5	3	23.24425	86.19	9	1.2	0.40	61846.51
487	D-11	2 A 2 B 5 m 5	3	23.24444	86.18949	9	1	0.40	58799.59
488	D-12	2 A 2 B 5 m 5	3	23.24447	86.18914	6	1	0.40	36706.78
489	D-13 *	2 A 2 B 5 m 5	3	23.24399	86.18713	9	1.8	0.60	86038.81
499	D-23	2 A 2 B 5 m 5	1	23.24203	86.18867	5	1	0.40	30588.98
501	D-25	2 A 2 B 5 m 5	1	23.24231	86.18853	6	1.2	0.40	41231.01
503	D-27	2 A 2 B 5 m 5	1	23.2427	86.18845	9	1	0.40	55060.17
504	D-28	2 A 2 B 5 m 5	1	23.24289	86.18836	5	1	0.40	30588.98

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

5.1.4Random Rubble Masonry Check Dam measures - SIRKABAD BEAT (Arsha Range)

Open Design Detailed Excel File

Catchment ID	Survey Sr_No	Beat	Map Id	Watershed Code	Gully Order	Latitude	Longitude	Catchment Area (ha)	Length of weir, L (m)	Height of dam, F	Depth of flow (including freeboard), h	Total Estimated Cost (in lakh ₹)
8	490	Sirkabad	D-14	2 A 2 B 5 m 5	1	23.239306	86.190556	248.15	18.00	1.80	1.00	8.00

Water Harvesting Structure Measures-SIRKABAD BEAT (Arsha Range) Open Map

5.2.1Pond Renovation- SIRKABAD BEAT (Arsha Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
86	W-1	2 A 2 B 5 m 5	3	23.24392	86.18772	957.76
87	W-2	2 A 2 B 5 m 5	1	23.25206	86.18297	438.71

5.3.1 Land Treatment and Forest Plantation-SIRKABAD BEAT (Arsha Range)

Open Map Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
41	L-2	CST	GF 40%	1.07	5	20	320	3×0.45×0.30	12068.24	100	NFP
42	L-3	CST	GF 40%	0.54	5	20	320	3×0.45×0.30	6104.69	100	NFP
69	L-2	CST	GF 40%	0.19	5.2	19	304	3×0.45×0.30	1976.09	100	NFP
70	L-3	CST	GF 40%	0.83	5.2	19	304	3×0.45×0.30	8927.678	100	NFP
118	L-1	CST	GF 40%	0.26	5.5	18	288	3×0.45×0.30	2611.256	100	NFP
119	L-2	CST	GF 40%	1.24	5.5	18	288	3×0.45×0.30	12562.26	100	NFP
120	L-3	CST	GF 40%	0.22	5.5	18	288	3×0.45×0.30	2223.092	100	NFP
121	L-4	CST	GF 40%	1.42	5.5	18	288	3×0.45×0.30	14397.2	100	NFP
171	L-1	CST	GF 40%	0.54	5.8	17	272	3×0.45×0.30	5187.221	100	NFP
172	L-4	CST	GF 40%	2.21	5.8	17	272	3×0.45×0.30	21207.64	100	NFP
215	L-1	CST	GF 40%	0.84	6.5	15	240	3×0.45×0.30	7092.74	100	NFP
216	L-4	CST	GF 40%	0.41	6.5	15	240	3×0.45×0.30	3493.434	100	NFP

396	L-1	CST	GF 40%	1.92	5	20	320	3×0.45×0.30	21736.94	50	GF
397	L-2	CST	GF 40%	1.96	5	20	320	3×0.45×0.30	22089.82	50	GF
398	L-3	CST	GF 40%	3.07	5	20	320	3×0.45×0.30	34687.36	50	GF
456	L-1	CST	GF 40%	0.26	5.2	19	304	3×0.45×0.30	2822.978	50	GF
457	L-2	CST	GF 40%	0.24	5.2	19	304	3×0.45×0.30	2540.685	50	GF
458	L-3	CST	GF 40%	0.38	5.2	19	304	3×0.45×0.30	4022.75	50	GF
526	L-1	CST	GF 40%	1.04	5.5	18	288	3×0.45×0.30	10550.88	50	GF
527	L-2	CST	GF 40%	2.47	5.5	18	288	3×0.45×0.30	25159.81	50	GF
528	L-3	CST	GF 40%	0.31	5.5	18	288	3×0.45×0.30	3211.142	50	GF
529	L-4	CST	GF 40%	2.34	5.5	18	288	3×0.45×0.30	23748.31	50	GF
594	L-1	CST	GF 40%	0.25	5.8	17	272	3×0.45×0.30	2399.534	50	GF
595	L-4	CST	GF 40%	1.37	5.8	17	272	3×0.45×0.30	13126.86	50	GF
647	L-1	CST	GF 40%	0.03	6.5	15	240	3×0.45×0.30	282.303	50	GF
648	L-3	CST	GF 40%	0.19	6.5	15	240	3×0.45×0.30	1587.926	50	GF
649	L-4	CST	GF 40%	0.15	6.5	15	240	3×0.45×0.30	1270.343	50	GF

(6) BAGHMUNDI BEAT (Baghmundi Range)

Drainage Line Treatment Measures Open Map

6.1.1 Brushwood Check Dam-BAGHMUNDI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
546	D 005	4 H 3 C 4 h 3	1	23.17977	86.09472	2.5	0.9	0.5	0.50	2325.65
549	D 008	4 H 3 C 4 h 3	1	23.1805	86.09353	2.5	1.0	0.6	0.50	2492.36
550	D 009	4 H 3 C 4 h 3	1	23.18076	86.09296	2.5	0.8	0.5	0.50	2125.89
551	D 010	4 H 3 C 4 h 3	1	23.18093	86.09258	3.0	0.6	0.4	0.75	2556.83
555	D 014 *	4 H 3 C 4 h 3	1	23.1812	86.09198	3.0	0.7	0.4	0.75	2852.87
556	D 015 *	4 H 3 C 4 h 3	1	23.18145	86.09129	3.0	0.9	0.5	0.75	3337.37
562	D 021	4 H 3 C 4 h 7	1	23.2129	86.05011	4.0	1.0	0.6	0.75	4467.25
568	D 027	4 H 3 C 4 h 7	1	23.21277	86.04851	2.5	1.1	0.7	0.50	2608.35
598	D 057	4 H 3 C 4 m 3	1	23.21469	86.04523	2.0	0.8	0.5	0.50	1826.41
685	D 144	4 H 3 C 4 m 3	1	23.21732	86.03908	4.0	0.6	0.4	0.75	3148.36
703	D 162	4 H 3 C 4 m 3	1	23.22054	86.03681	2.5	0.8	0.5	0.50	2125.89
721	D 180	4 H 3 C 4 m 3	1	23.21431	86.03228	1.5	0.5	0.3	0.50	1241.16
744	D 203	4 H 3 C 4 m 3	1	23.22596	86.03758	4.5	1.3	0.8	0.75	5956.70
756	D 215	4 H 3 C 4 m 5	1	23.23124	86.0368	3.0	0.6	0.4	0.75	2556.83
794	D 253 *	4 H 3 C 4 m 5	1	23.23548	86.02589	2.5	0.6	0.4	0.50	1810.15
845	D 304	4 H 3 C 4 m 5	2	23.22842	86.01273	1.0	0.6	0.4	0.50	1072.65
853	D 312	4 H 3 C 4 m 6	3	23.22675	86.00997	2.5	0.8	0.5	0.50	2125.89
878	D 337	4 H 3 C 4 m 6	1	23.23503	86.0133	2.5	0.9	0.5	0.50	2325.65
879	D 338	4 H 3 C 4 m 6	1	23.23488	86.01334	3.0	0.9	0.5	0.75	3337.37
893	D 352	4 H 3 C 4 m 6	1	23.23421	86.01118	3.0	0.9	0.5	0.75	3337.37
894	D 353	4 H 3 C 4 m 6	1	23.23403	86.0109	2.5	0.7	0.4	0.50	2009.91

926	D 385	4 H 3 C 4 m 6	1	23.23566	86.01037	2.5	0.8	0.5	0.50	2125.89
927	D 386	4 H 3 C 4 m 6	1	23.23553	86.01126	2.5	0.8	0.5	0.50	2125.89
930	D 389	4 H 3 C 4 m 6	1	23.23393	86.01076	2.5	0.8	0.5	0.50	2125.89
931	D 390	4 H 3 C 4 m 6	1	23.23375	86.01061	3.0	0.9	0.5	0.75	3337.37
979	D 391	4 H 3 C 4 m 3	1	23.22516	86.04309	2.5	1.3	0.8	0.50	2924.09

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

6.1.2 Loose Boulder Check Dam-BAGHMUNDI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
542	D 001	4 H 3 C 4 h 3	1	23.18001	86.09716	5.0	0.75	0.4	1.50	0.20	14911.79
543	D 002 *	4 H 3 C 4 h 3	1	23.17968	86.09687	4.5	0.90	0.5	1.90	0.30	21878.43
544	D 003	4 H 3 C 4 h 3	1	23.18022	86.09537	3.0	0.90	0.5	1.90	0.30	14585.62
545	D 004	4 H 3 C 4 h 3	1	23.17987	86.09493	4.0	0.90	0.5	1.90	0.30	19447.49
547	D 006	4 H 3 C 4 h 3	1	23.18012	86.09378	4.0	0.90	0.5	1.90	0.30	19447.49
548	D 007	4 H 3 C 4 h 3	1	23.1805	86.09353	4.5	0.90	0.5	1.90	0.30	21933.23
552	D 011	4 H 3 C 4 h 3	1	23.18084	86.09279	2.5	0.75	0.4	1.50	0.20	7471.92
553	D 012 **	4 H 3 C 4 h 3	1	23.18106	86.09227	8.5	0.90	0.5	1.90	0.30	41429.44
554	D 013 **	4 H 3 C 4 h 3	1	23.18099	86.09245	4.0	0.90	0.5	1.90	0.30	19447.49
557	D 016 **	4 H 3 C 4 h 3	1	23.18163	86.0911	4.0	0.75	0.4	1.50	0.20	11929.43
558	D 017 **	4 H 3 C 4 h 3	1	23.18174	86.09094	4.0	1.00	0.5	2.00	0.30	21801.42
559	D 018 **	4 H 3 C 4 h 3	1	23.18163	86.0911	5.0	0.90	0.5	1.90	0.30	24309.36
561	D 020 **	4 H 3 C 4 h 3	1	23.18214	86.09038	6.0	0.75	0.4	1.50	0.20	17894.15
563	D 022	4 H 3 C 4 h 7	1	23.21276	86.04975	4.0	0.75	0.4	1.50	0.20	11955.07
564	D 023	4 H 3 C 4 m 3	4	23.21277	86.03301	6.5	0.75	0.4	1.50	0.20	19385.33
565	D 024	4 H 3 C 4 h 7	1	23.21241	86.04938	8.5	0.75	0.4	1.50	0.20	25350.05
566	D 025	4 H 3 C 4 h 7	1	23.21258	86.04922	3.0	0.90	0.5	1.90	0.30	14622.16
569	D 028	4 H 3 C 4 h 7	1	23.21303	86.04871	5.5	0.90	0.5	1.90	0.30	26740.30
570	D 029	4 H 3 C 4 h 7	1	23.2126	86.04853	3.5	1.20	0.6	2.40	0.40	28464.54
571	D 030	4 H 3 C 4 h 7	2	23.21203	86.04821	5.5	0.75	0.4	1.50	0.20	16438.23
572	D 031	4 H 3 C 4 h 7	2	23.21179	86.04765	4.5	0.90	0.5	1.90	0.30	21878.43
575	D 034	4 H 3 C 4 h 7	1	23.21219	86.04725	3.5	0.90	0.5	1.90	0.30	17016.55
578	D 037	4 H 3 C 4 h 7	1	23.21301	86.04741	3.5	0.75	0.4	1.50	0.20	10438.25

579	D 038	4 H 3 C 4 h 7	1	23.21325	86.04739	3.5	0.75	0.4	1.50	0.20	10438.25
580	D 039	4 H 3 C 4 h 7	1	23.21383	86.04749	4.0	0.90	0.5	1.90	0.30	19496.21
581	D 040	4 H 3 C 4 h 7	1	23.21346	86.04742	2.5	0.75	0.4	1.50	0.20	7455.90
582	D 041	4 H 3 C 4 h 7	1	23.21267	86.04731	3.0	0.75	0.4	1.50	0.20	8947.07
583	D 042	4 H 3 C 4 h 7	1	23.21115	86.04854	5.5	0.60	0.4	1.30	0.20	12508.66
584	D 043	4 H 3 C 4 h 7	3	23.20823	86.0487	5.0	0.60	0.4	1.30	0.20	11371.51
586	D 045	4 H 3 C 4 h 7	1	23.21104	86.04492	4.0	0.75	0.4	1.50	0.20	11955.07
587	D 046	4 H 3 C 4 h 7	1	23.21151	86.04494	4.0	0.75	0.4	1.50	0.20	11929.43
588	D 047	4 H 3 C 4 h 7	1	23.21168	86.04495	4.0	0.75	0.4	1.50	0.20	11929.43
589	D 048	4 H 3 C 4 h 7	1	23.21257	86.04553	4.0	0.60	0.4	1.30	0.20	9074.98
590	D 049	4 H 3 C 4 h 7	1	23.2128	86.0457	3.0	0.75	0.4	1.50	0.20	8947.07
591	D 050	4 H 3 C 4 h 7	1	23.21291	86.04579	4.0	0.75	0.4	1.50	0.20	11929.43
592	D 051	4 H 3 C 4 h 7	1	23.21291	86.04579	2.5	0.75	0.4	1.50	0.20	7455.90
593	D 052	4 H 3 C 4 h 7	1	23.21323	86.04612	4.0	0.75	0.4	1.50	0.20	11929.43
594	D 053	4 H 3 C 4 h 7	1	23.21344	86.04634	4.0	0.75	0.4	1.50	0.20	11929.43
595	D 054	4 H 3 C 4 m 3	1	23.21441	86.04492	3.0	0.75	0.4	1.50	0.20	8966.31
596	D 055	4 H 3 C 4 m 3	1	23.21457	86.04512	2.5	0.90	0.5	1.90	0.30	12185.13
597	D 056	4 H 3 C 4 m 3	1	23.21478	86.04532	6.0	0.75	0.4	1.50	0.20	17932.61
600	D 059	4 H 3 C 4 h 7	1	23.21424	86.04666	6.0	0.75	0.4	1.50	0.20	17932.61
601	D 060	4 H 3 C 4 h 7	1	23.21445	86.0468	5.0	0.75	0.4	1.50	0.20	14943.84
602	D 061	4 H 3 C 4 h 7	1	23.21487	86.0472	4.5	0.75	0.4	1.50	0.20	13449.46
603	D 062	4 H 3 C 4 h 7	1	23.21478	86.04712	4.5	0.75	0.4	1.50	0.20	13449.46
604	D 063	4 H 3 C 4 h 7	1	23.21465	86.047	4.5	0.75	0.4	1.50	0.20	13449.46
606	D 065	4 H 3 C 4 m 3	1	23.21548	86.0459	4.5	0.90	0.5	1.90	0.30	21933.23
609	D 068	4 H 3 C 4 m 3	1	23.21561	86.04601	4.5	0.90	0.5	1.90	0.30	21933.23
610	D 069	4 H 3 C 4 m 3	1	23.21577	86.04538	7.0	0.75	0.4	1.50	0.20	20876.51
611	D 070	4 H 3 C 4 m 3	1	23.21588	86.0455	4.0	0.90	0.5	1.90	0.30	19447.49
612	D 071	4 H 3 C 4 m 3	1	23.21571	86.04535	4.0	1.00	0.5	2.00	0.30	21852.70
613	D 072	4 H 3 C 4 m 3	1	23.21577	86.04538	4.5	0.75	0.4	1.50	0.20	13420.61
614	D 073	4 H 3 C 4 m 3	1	23.2156	86.0453	2.0	0.75	0.4	1.50	0.20	5964.72
615	D 074	4 H 3 C 4 m 3	1	23.21547	86.04523	3.5	0.75	0.4	1.50	0.20	10438.25
616	D 075	4 H 3 C 4 m 3	1	23.21534	86.04517	5.0	1.00	0.5	2.00	0.30	27315.88
617	D 076	4 H 3 C 4 m 3	1	23.21507	86.04494	3.5	0.75	0.4	1.50	0.20	10460.69
618	D 077	4 H 3 C 4 m 3	1	23.21488	86.04477	3.5	0.75	0.4	1.50	0.20	10460.69
619	D 078	4 H 3 C 4 m 3	1	23.21512	86.04498	4.5	0.75	0.4	1.50	0.20	13449.46
620	D 079	4 H 3 C 4 m 3	1	23.21499	86.04487	5.5	0.75	0.4	1.50	0.20	16438.23
621	D 080	4 H 3 C 4 m 3	1	23.21565	86.04416	5.5	0.75	0.4	1.50	0.20	16438.23

622	D 081	4 H 3 C 4 m 3	1	23.21579	86.04436	4.0	0.75	0.4	1.50	0.20	11955.07
625	D 084	4 H 3 C 4 m 3	1	23.21664	86.04472	3.0	0.75	0.4	1.50	0.20	8947.07
626	D 085	4 H 3 C 4 m 3	1	23.21699	86.04459	4.5	0.75	0.4	1.50	0.20	13420.61
628	D 087	4 H 3 C 4 m 3	1	23.21679	86.04443	2.0	0.75	0.4	1.50	0.20	5977.54
629	D 088	4 H 3 C 4 m 3	1	23.21669	86.0444	3.0	0.75	0.4	1.50	0.20	8947.07
630	D 089	4 H 3 C 4 m 3	2	23.2165	86.04434	4.0	1.00	0.5	2.00	0.30	21801.42
634	D 093	4 H 3 C 4 m 3	2	23.21572	86.04328	2.5	0.75	0.4	1.50	0.20	7455.90
635	D 094	4 H 3 C 4 m 3	2	23.21587	86.04349	2.5	1.00	0.5	2.00	0.30	13625.89
636	D 095	4 H 3 C 4 m 3	2	23.21576	86.04335	3.5	1.00	0.5	2.00	0.30	19076.24
637	D 096	4 H 3 C 4 m 3	2	23.21583	86.04343	2.0	0.75	0.4	1.50	0.20	5964.72
639	D 098	4 H 3 C 4 m 3	1	23.21815	86.0429	5.0	0.75	0.4	1.50	0.20	14911.79
640	D 099	4 H 3 C 4 m 3	1	23.21798	86.04269	3.5	0.75	0.4	1.50	0.20	10438.25
641	D 100	4 H 3 C 4 m 3	1	23.21781	86.04257	5.0	0.75	0.4	1.50	0.20	14911.79
642	D 101	4 H 3 C 4 m 3	1	23.21778	86.04246	2.0	0.75	0.4	1.50	0.20	5964.72
643	D 102	4 H 3 C 4 m 3	1	23.21734	86.04191	4.0	0.75	0.4	1.50	0.20	11929.43
644	D 103	4 H 3 C 4 m 3	1	23.21721	86.0417	3.0	1.00	0.5	2.00	0.30	16351.07
646	D 105	4 H 3 C 4 m 3	1	23.21642	86.04106	4.0	0.75	0.4	1.50	0.20	11929.43
647	D 106	4 H 3 C 4 m 3	1	23.2161	86.04098	4.0	0.75	0.4	1.50	0.20	11929.43
654	D 113	4 H 3 C 4 m 3	1	23.21598	86.03957	3.0	0.90	0.5	1.90	0.30	14585.62
656	D 115	4 H 3 C 4 m 3	1	23.21643	86.03997	3.0	0.75	0.4	1.50	0.20	8947.07
657	D 116	4 H 3 C 4 m 3	1	23.21665	86.03967	3.0	0.75	0.4	1.50	0.20	8947.07
658	D 117	4 H 3 C 4 m 3	1	23.21702	86.03988	2.5	0.75	0.4	1.50	0.20	7455.90
659	D 118	4 H 3 C 4 m 3	3	23.21467	86.03781	5.0	0.75	0.4	1.50	0.20	14943.84
666	D 125	4 H 3 C 4 m 3	3	23.21324	86.03464	4.0	0.75	0.4	1.50	0.20	11955.07
667	D 126	4 H 3 C 4 m 3	3	23.21329	86.03517	4.0	1.00	0.5	2.00	0.30	21852.70
682	D 141	4 H 3 C 4 m 3	1	23.21647	86.03871	4.0	0.75	0.4	1.50	0.20	11929.43
683	D 142	4 H 3 C 4 m 3	1	23.21676	86.03424	4.0	0.75	0.4	1.50	0.20	11955.07
684	D 143	4 H 3 C 4 m 3	1	23.21718	86.03895	3.5	0.75	0.4	1.50	0.20	10438.25
686	D 145	4 H 3 C 4 m 3	1	23.21876	86.03983	4.5	0.75	0.4	1.50	0.20	13420.61
687	D 146	4 H 3 C 4 m 3	1	23.21837	86.03928	3.5	0.75	0.4	1.50	0.20	10460.69
688	D 147	4 H 3 C 4 m 3	1	23.21808	86.03889	4.0	0.75	0.4	1.50	0.20	11955.07
689	D 148	4 H 3 C 4 m 3	1	23.21807	86.03827	5.0	0.75	0.4	1.50	0.20	14943.84
690	D 149	4 H 3 C 4 m 3	1	23.21828	86.03764	5.5	0.75	0.4	1.50	0.20	16438.23
691	D 150	4 H 3 C 4 m 3	1	23.21774	86.03716	3.5	0.60	0.4	1.30	0.20	7960.05
695	D 154	4 H 3 C 4 m 3	3	23.21628	86.03507	3.0	0.75	0.4	1.50	0.20	8966.31
696	D 155	4 H 3 C 4 m 3	3	23.21579	86.03486	3.0	0.75	0.4	1.50	0.20	8966.31
697	D 156	4 H 3 C 4 m 3	2	23.21487	86.0342	5.0	1.00	0.5	2.00	0.30	27315.88

698	D 157	4 H 3 C 4 m 3	3	23.21428	86.03419	3.5	0.75	0.4	1.50	0.20	10460.69
699	D 158	4 H 3 C 4 m 3	2	23.21974	86.03566	4.5	0.75	0.4	1.50	0.20	13449.46
700	D 159	4 H 3 C 4 m 3	2	23.21974	86.03566	3.0	0.75	0.4	1.50	0.20	8966.31
701	D 160	4 H 3 C 4 m 3	2	23.21966	86.03564	3.0	0.75	0.4	1.50	0.20	8966.31
702	D 161	4 H 3 C 4 m 3	1	23.22046	86.03648	3.0	0.75	0.4	1.50	0.20	8966.31
704	D 163	4 H 3 C 4 m 3	1	23.22075	86.03728	4.0	1.20	0.6	2.40	0.40	32612.96
705	D 164	4 H 3 C 4 m 3	1	23.22078	86.03756	4.5	0.75	0.4	1.50	0.20	13449.46
706	D 165	4 H 3 C 4 m 3	1	23.22095	86.03784	3.0	0.75	0.4	1.50	0.20	8947.07
707	D 166	4 H 3 C 4 m 3	1	23.2212	86.03907	4.0	0.75	0.4	1.50	0.20	11955.07
708	D 167	4 H 3 C 4 m 3	1	23.22139	86.03935	5.0	1.00	0.5	2.00	0.30	27315.88
709	D 168	4 H 3 C 4 m 3	1	23.22144	86.03958	5.5	1.00	0.5	2.00	0.30	30047.47
710	D 169	4 H 3 C 4 m 3	1	23.22156	86.03982	4.0	1.00	0.5	2.00	0.30	21852.70
711	D 170	4 H 3 C 4 m 3	1	23.22314	86.03733	4.5	0.75	0.4	1.50	0.20	13420.61
713	D 172	4 H 3 C 4 m 3	1	23.22201	86.0361	3.5	0.75	0.4	1.50	0.20	10438.25
714	D 173	4 H 3 C 4 m 3	1	23.22139	86.03592	3.5	0.75	0.4	1.50	0.20	10460.69
715	D 174	4 H 3 C 4 m 3	1	23.22169	86.03593	5.5	0.75	0.4	1.50	0.20	16438.23
716	D 175	4 H 3 C 4 m 3	1	23.22047	86.03569	5.5	0.75	0.4	1.50	0.20	16438.23
718	D 177	4 H 3 C 4 m 3	1	23.21528	86.0325	4.0	0.75	0.4	1.50	0.20	11955.07
719	D 178	4 H 3 C 4 m 4	1	23.22537	86.02778	3.5	0.75	0.4	1.50	0.20	10460.69
720	D 179	4 H 3 C 4 m 3	1	23.21472	86.03222	2.0	0.60	0.4	1.30	0.20	4548.60
722	D 181	4 H 3 C 4 m 3	1	23.21397	86.03234	4.0	0.60	0.4	1.30	0.20	9097.20
723	D 182	4 H 3 C 4 m 3	1	23.22475	86.03721	3.0	0.75	0.4	1.50	0.20	8966.31
724	D 183	4 H 3 C 4 m 3	1	23.22336	86.03762	4.0	0.75	0.4	1.50	0.20	11955.07
725	D 184	4 H 3 C 4 m 3	1	23.22481	86.03653	3.5	0.60	0.4	1.30	0.20	7960.05
726	D 185	4 H 3 C 4 m 3	1	23.22487	86.03696	6.5	0.75	0.4	1.50	0.20	19427.00
727	D 186	4 H 3 C 4 m 3	1	23.22471	86.03603	5.5	0.75	0.4	1.50	0.20	16402.97
728	D 187	4 H 3 C 4 m 3	1	23.22472	86.03534	4.5	0.75	0.4	1.50	0.20	13420.61
729	D 188	4 H 3 C 4 m 3	1	23.22493	86.03467	3.0	0.75	0.4	1.50	0.20	8947.07
730	D 189	4 H 3 C 4 m 3	1	23.22522	86.03503	4.0	0.75	0.4	1.50	0.20	11929.43
731	D 190	4 H 3 C 4 m 3	1	23.2241	86.03406	4.0	0.75	0.4	1.50	0.20	11929.43
732	D 191	4 H 3 C 4 m 3	1	23.22373	86.034	5.0	0.75	0.4	1.50	0.20	14911.79
734	D 193	4 H 3 C 4 m 3	1	23.22337	86.03414	3.0	0.75	0.4	1.50	0.20	8966.31
735	D 194	4 H 3 C 4 m 3	1	23.22337	86.0362	4.0	0.75	0.4	1.50	0.20	11955.07
736	D 195	4 H 3 C 4 m 3	1	23.22321	86.03595	5.0	0.75	0.4	1.50	0.20	14911.79
737	D 196	4 H 3 C 4 m 3	1	23.22304	86.03544	4.0	0.75	0.4	1.50	0.20	11929.43
738	D 197	4 H 3 C 4 m 3	1	23.22283	86.03506	3.0	0.60	0.4	1.30	0.20	6822.90
741	D 200	4 H 3 C 4 m 3	1	23.21772	86.0362	4.5	0.75	0.4	1.50	0.20	13420.61

742	D 201	4 H 3 C 4 m 3	1	23.22556	86.03685	6.5	0.75	0.4	1.50	0.20	19385.33
743	D 202	4 H 3 C 4 m 3	1	23.2259	86.03711	6.0	1.00	0.5	2.00	0.30	32702.13
745	D 204	4 H 3 C 4 m 3	1	23.2288	86.03625	5.0	0.75	0.4	1.50	0.20	14911.79
746	D 205	4 H 3 C 4 m 3	2	23.22674	86.03643	4.5	0.75	0.4	1.50	0.20	13420.61
749	D 208	4 H 3 C 4 m 3	2	23.22673	86.03616	5.0	0.75	0.4	1.50	0.20	14911.79
750	D 209	4 H 3 C 4 m 3	1	23.2281	86.03596	6.5	0.75	0.4	1.50	0.20	19385.33
751	D 210	4 H 3 C 4 m 3	1	23.22781	86.03564	5.5	0.75	0.4	1.50	0.20	16402.97
752	D 211	4 H 3 C 4 m 3	1	23.22728	86.03471	5.0	0.60	0.4	1.30	0.20	11343.73
753	D 212 **	4 H 3 C 4 m 3	1	23.22755	86.03524	7.0	1.00	0.5	2.00	0.30	38152.49
754	D 213	4 H 3 C 4 m 3	1	23.22924	86.03646	4.0	0.75	0.4	1.50	0.20	11929.43
755	D 214	4 H 3 C 4 m 3	1	23.22559	86.03668	3.5	0.75	0.4	1.50	0.20	10438.25
757	D 216	4 H 3 C 4 m 3	1	23.22059	86.03701	4.0	0.75	0.4	1.50	0.20	11929.43
758	D 217	4 H 3 C 4 m 5	1	23.23159	86.03626	4.5	0.75	0.4	1.50	0.20	13420.61
759	D 218 **	4 H 3 C 4 m 5	1	23.23176	86.03606	3.0	0.75	0.4	1.50	0.20	8947.07
760	D 219	4 H 3 C 4 m 5	1	23.23206	86.03566	3.5	0.75	0.4	1.50	0.20	10438.25
761	D 220	4 H 3 C 4 m 5	1	23.23234	86.0356	4.0	0.75	0.4	1.50	0.20	11929.43
763	D 222	4 H 3 C 4 m 3	2	23.21699	86.03506	4.5	0.75	0.4	1.50	0.20	13420.61
764	D 223	4 H 3 C 4 m 5	2	23.23397	86.03495	7.0	0.60	0.4	1.30	0.20	15881.22
765	D 224	4 H 3 C 4 m 5	2	23.23364	86.03421	5.0	0.60	0.4	1.30	0.20	11343.73
767	D 226	4 H 3 C 4 m 5	1	23.23602	86.02981	3.5	0.75	0.4	1.50	0.20	10438.25
768	D 227	4 H 3 C 4 m 5	1	23.23578	86.0298	6.5	0.75	0.4	1.50	0.20	19385.33
769	D 228	4 H 3 C 4 m 5	1	23.23588	86.02976	4.0	0.75	0.4	1.50	0.20	11929.43
771	D 230	4 H 3 C 4 m 5	1	23.2354	86.02984	5.0	0.75	0.4	1.50	0.20	14911.79
772	D 231 **	4 H 3 C 4 m 5	1	23.23556	86.02978	7.0	0.75	0.4	1.50	0.20	20876.51
773	D 232 **	4 H 3 C 4 m 5	1	23.23587	86.02884	4.0	1.00	0.5	2.00	0.30	21801.42
774	D 233 **	4 H 3 C 4 m 5	1	23.23549	86.02874	3.5	0.75	0.4	1.50	0.20	10438.25
775	D 234 **	4 H 3 C 4 m 5	1	23.23567	86.02882	5.5	1.00	0.5	2.00	0.30	29976.95
776	D 235 **	4 H 3 C 4 m 5	1	23.23519	86.02862	3.0	0.75	0.4	1.50	0.20	8947.07
777	D 236 **	4 H 3 C 4 m 5	1	23.23495	86.02846	3.5	0.60	0.4	1.30	0.20	7940.61
779	D 238 **	4 H 3 C 4 m 5	1	23.23428	86.02771	6.5	1.00	0.5	2.00	0.30	35427.31
780	D 239 **	4 H 3 C 4 m 5	1	23.23496	86.02759	4.5	0.75	0.4	1.50	0.20	13420.61
781	D 240 **	4 H 3 C 4 m 5	1	23.23531	86.0276	4.0	0.75	0.4	1.50	0.20	11929.43
782	D 241	4 H 3 C 4 m 5	1	23.23556	86.01794	4.0	0.75	0.4	1.50	0.20	11929.43
783	D 242 **	4 H 3 C 4 m 5	1	23.23572	86.02787	3.0	0.75	0.4	1.50	0.20	8947.07
784	D 243 **	4 H 3 C 4 m 5	1	23.23608	86.02778	4.0	0.75	0.4	1.50	0.20	11929.43
785	D 244 **	4 H 3 C 4 m 5	1	23.23623	86.02771	3.0	0.60	0.4	1.30	0.20	6806.24
786	D 245 **	4 H 3 C 4 m 5	1	23.23639	86.02765	3.0	0.75	0.4	1.50	0.20	8947.07

788	D 247	4 H 3 C 4 m 5	1	23.23701	86.02796	4.0	0.75	0.4	1.50	0.20	11929.43
789	D 248	4 H 3 C 4 m 5	1	23.23692	86.0279	4.0	0.75	0.4	1.50	0.20	11929.43
790	D 249 **	4 H 3 C 4 m 5	1	23.23683	86.02782	3.5	0.75	0.4	1.50	0.20	10438.25
791	D 250 **	4 H 3 C 4 m 5	1	23.23671	86.0261	4.0	0.75	0.4	1.50	0.20	11929.43
792	D 251	4 H 3 C 4 m 5	1	23.23636	86.02617	3.5	0.75	0.4	1.50	0.20	10438.25
793	D 252 **	4 H 3 C 4 m 5	1	23.23595	86.02596	2.5	0.60	0.4	1.30	0.20	5671.86
802	D 261	4 H 3 C 4 m 5	1	23.23482	86.02251	3.5	0.75	0.4	1.50	0.20	10438.25
803	D 262	4 H 3 C 4 m 5	1	23.2381	86.02107	3.5	1.20	0.6	2.40	0.40	28464.54
804	D 263	4 H 3 C 4 m 5	1	23.23766	86.02138	5.0	0.60	0.4	1.30	0.20	11343.73
805	D 264	4 H 3 C 4 m 5	1	23.23695	86.02119	3.5	0.50	0.4	1.20	0.20	6601.77
806	D 265	4 H 3 C 4 m 5	1	23.23511	86.01969	2.5	0.60	0.4	1.30	0.20	5671.86
807	D 266	4 H 3 C 4 m 5	1	23.23491	86.01887	5.5	0.60	0.4	1.30	0.20	12478.10
808	D 267	4 H 3 C 4 m 5	1	23.23531	86.01828	4.0	0.60	0.4	1.30	0.20	9074.98
809	D 268	4 H 3 C 4 m 5	1	23.23572	86.0187	4.0	0.60	0.4	1.30	0.20	9074.98
810	D 269	4 H 3 C 4 m 5	1	23.23604	86.01926	4.0	0.75	0.4	1.50	0.20	11929.43
811	D 270	4 H 3 C 4 m 5	1	23.23504	86.01812	5.0	0.60	0.4	1.30	0.20	11343.73
812	D 271	4 H 3 C 4 m 5	1	23.23516	86.01795	3.5	0.60	0.4	1.30	0.20	7940.61
816	D 275	4 H 3 C 4 m 5	1	23.23508	86.01593	3.0	0.75	0.4	1.50	0.20	8947.07
817	D 276	4 H 3 C 4 m 5	1	23.23519	86.01594	2.0	0.75	0.4	1.50	0.20	5964.72
818	D 277	4 H 3 C 4 m 5	1	23.23558	86.01624	2.5	0.60	0.4	1.30	0.20	5671.86
819	D 278	4 H 3 C 4 m 6	1	23.23978	86.01547	3.5	0.75	0.4	1.50	0.20	10460.69
824	D 283	4 H 3 C 4 m 5	2	23.23428	86.01567	3.0	0.75	0.4	1.50	0.20	8947.07
825	D 284	4 H 3 C 4 m 5	1	23.23369	86.0194	2.0	0.60	0.4	1.30	0.20	4537.49
826	D 285	4 H 3 C 4 m 5	1	23.23333	86.01897	3.5	0.75	0.4	1.50	0.20	10438.25
827	D 286	4 H 3 C 4 m 5	1	23.23307	86.01867	4.0	0.75	0.4	1.50	0.20	11929.43
828	D 287	4 H 3 C 4 m 5	1	23.23263	86.01836	4.0	0.60	0.4	1.30	0.20	9074.98
829	D 288	4 H 3 C 4 m 5	1	23.23192	86.01807	6.0	1.00	0.5	2.00	0.30	32702.13
831	D 290	4 H 3 C 4 m 5	2	23.23163	86.01766	3.5	0.50	0.4	1.20	0.20	6601.77
833	D 292	4 H 3 C 4 m 5	2	23.23124	86.01663	3.5	0.50	0.4	1.20	0.20	6601.77
834	D 293	4 H 3 C 4 m 5	2	23.23097	86.01641	4.0	0.50	0.4	1.20	0.20	7544.89
835	D 294	4 H 3 C 4 m 5	2	23.2306	86.01601	5.0	0.75	0.4	1.50	0.20	14911.79
837	D 296	4 H 3 C 4 m 5	1	23.23016	86.01482	3.5	0.60	0.4	1.30	0.20	7940.61
838	D 297	4 H 3 C 4 m 5	1	23.23068	86.01501	2.5	0.75	0.4	1.50	0.20	7455.90
839	D 298	4 H 3 C 4 m 5	1	23.23088	86.01506	4.5	0.75	0.4	1.50	0.20	13420.61
846	D 305	4 H 3 C 4 m 5	2	23.22804	86.01252	4.0	0.50	0.4	1.20	0.20	7544.89
850	D 309	4 H 3 C 4 m 6	3	23.22722	86.01059	3.0	0.60	0.4	1.30	0.20	6806.24
851	D 310	4 H 3 C 4 m 6	3	23.22716	86.01064	5.0	0.75	0.4	1.50	0.20	14911.79

852	D 311	4 H 3 C 4 m 6	3	23.22675	86.00997	4.0	0.75	0.4	1.50	0.20	11929.43
855	D 314	4 H 3 C 4 m 6	3	23.22736	86.01048	2.5	0.60	0.4	1.30	0.20	5671.86
856	D 315	4 H 3 C 4 m 6	3	23.22746	86.01047	3.5	0.60	0.4	1.30	0.20	7940.61
858	D 317	4 H 3 C 4 m 6	3	23.2282	86.01066	2.5	0.60	0.4	1.30	0.20	5671.86
860	D 319	4 H 3 C 4 m 6	3	23.22915	86.01104	3.5	0.90	0.5	1.90	0.30	17016.55
862	D 321	4 H 3 C 4 m 6	3	23.23074	86.01187	2.5	0.60	0.4	1.30	0.20	5671.86
863	D 322	4 H 3 C 4 m 6	3	23.23086	86.01171	4.0	0.75	0.4	1.50	0.20	11929.43
864	D 323	4 H 3 C 4 m 6	1	23.23173	86.012	5.0	0.75	0.4	1.50	0.20	14911.79
865	D 324	4 H 3 C 4 m 6	1	23.23227	86.01254	5.0	0.75	0.4	1.50	0.20	14911.79
866	D 325	4 H 3 C 4 m 6	1	23.23234	86.01253	6.0	0.75	0.4	1.50	0.20	17894.15
867	D 326	4 H 3 C 4 m 6	1	23.23344	86.01211	2.5	0.75	0.4	1.50	0.20	7455.90
868	D 327	4 H 3 C 4 m 6	1	23.23376	86.01209	4.5	0.75	0.4	1.50	0.20	13420.61
869	D 328	4 H 3 C 4 m 6	1	23.23391	86.01224	5.5	0.60	0.4	1.30	0.20	12478.10
870	D 329	4 H 3 C 4 m 6	1	23.23469	86.01239	2.5	0.75	0.4	1.50	0.20	7455.90
871	D 330	4 H 3 C 4 m 6	1	23.23481	86.01235	3.5	0.75	0.4	1.50	0.20	10438.25
872	D 331	4 H 3 C 4 m 6	1	23.23494	86.01236	3.5	0.75	0.4	1.50	0.20	10438.25
873	D 332	4 H 3 C 4 m 6	1	23.23504	86.01239	3.0	0.90	0.5	1.90	0.30	14585.62
874	D 333	4 H 3 C 4 m 6	1	23.23543	86.01248	3.5	0.75	0.4	1.50	0.20	10438.25
875	D 334	4 H 3 C 4 m 6	1	23.2352	86.01241	5.0	0.75	0.4	1.50	0.20	14911.79
876	D 335	4 H 3 C 4 m 6	1	23.23603	86.0117	3.5	0.75	0.4	1.50	0.20	10438.25
877	D 336	4 H 3 C 4 m 6	1	23.23602	86.01266	5.0	0.75	0.4	1.50	0.20	14911.79
880	D 339	4 H 3 C 4 m 6	1	23.2345	86.01338	3.5	0.75	0.4	1.50	0.20	10438.25
881	D 340	4 H 3 C 4 m 5	1	23.23387	86.01403	4.5	0.75	0.4	1.50	0.20	13420.61
882	D 341	4 H 3 C 4 m 6	1	23.23424	86.01232	4.0	0.75	0.4	1.50	0.20	11929.43
883	D 342	4 H 3 C 4 m 6	1	23.2339	86.0135	4.5	0.75	0.4	1.50	0.20	13420.61
884	D 343	4 H 3 C 4 m 6	1	23.23349	86.01348	4.5	0.90	0.5	1.90	0.30	21878.43
885	D 344	4 H 3 C 4 m 6	1	23.23281	86.01322	4.0	0.75	0.4	1.50	0.20	11929.43
890	D 349 **	4 H 3 C 4 m 5	1	23.22528	86.01474	4.0	0.75	0.4	1.50	0.20	11929.43
892	D 351	4 H 3 C 4 m 6	3	23.23132	86.01208	6.5	0.75	0.4	1.50	0.20	19385.33
895	D 354	4 H 3 C 4 m 6	1	23.23332	86.01019	3.5	0.75	0.4	1.50	0.20	10438.25
896	D 355	4 H 3 C 4 m 6	1	23.23353	86.01032	3.5	0.75	0.4	1.50	0.20	10438.25
897	D 356	4 H 3 C 4 m 6	1	23.23282	86.00992	3.5	0.75	0.4	1.50	0.20	10438.25
898	D 357	4 H 3 C 4 m 6	1	23.23207	86.00928	5.0	0.75	0.4	1.50	0.20	14911.79
899	D 358	4 H 3 C 4 m 6	1	23.23242	86.00958	4.0	0.75	0.4	1.50	0.20	11929.43
900	D 359	4 H 3 C 4 m 6	1	23.23177	86.00916	4.0	0.75	0.4	1.50	0.20	11929.43
901	D 360	4 H 3 C 4 m 6	1	23.23083	86.00893	4.5	0.75	0.4	1.50	0.20	13420.61
902	D 361	4 H 3 C 4 m 6	1	23.23041	86.00865	4.0	0.75	0.4	1.50	0.20	11929.43

903	D 362	4 H 3 C 4 m 6	1	23.23003	86.00783	4.5	0.75	0.4	1.50	0.20	13420.61
905	D 364	4 H 3 C 4 m 6	1	23.22942	86.00636	5.0	0.75	0.4	1.50	0.20	14911.79
906	D 365	4 H 3 C 4 m 6	1	23.22913	86.00624	5.0	0.75	0.4	1.50	0.20	14911.79
907	D 366	4 H 3 C 4 m 6	3	23.22854	86.00618	5.0	0.75	0.4	1.50	0.20	14911.79
909	D 368	4 H 3 C 4 m 6	3	23.22926	86.00533	5.5	0.75	0.4	1.50	0.20	16402.97
910	D 369	4 H 3 C 4 m 6	3	23.23007	86.00596	6.0	0.75	0.4	1.50	0.20	17894.15
912	D 371 ***	4 H 3 C 4 m 6	3	23.23177	86.00731	4.5	0.75	0.4	1.50	0.20	13420.61
913	D 372 ***	4 H 3 C 4 m 6	2	23.23291	86.00749	5.0	0.75	0.4	1.50	0.20	14911.79
916	D 375	4 H 3 C 4 m 6	1	23.2345	86.00874	6.0	0.75	0.4	1.50	0.20	17894.15
918	D 377	4 H 3 C 4 m 6	1	23.23473	86.01004	3.0	0.75	0.4	1.50	0.20	8947.07
919	D 378	4 H 3 C 4 m 6	1	23.23495	86.00995	4.0	0.75	0.4	1.50	0.20	11929.43
920	D 379	4 H 3 C 4 m 6	1	23.23534	86.00995	4.5	0.75	0.4	1.50	0.20	13420.61
921	D 380	4 H 3 C 4 m 6	1	23.23584	86.01031	5.5	0.75	0.4	1.50	0.20	16402.97
922	D 381	4 H 3 C 4 m 6	1	23.23631	86.0103	5.5	0.75	0.4	1.50	0.20	16402.97
923	D 382 ***	4 H 3 C 4 m 6	1	23.23657	86.01031	4.5	0.75	0.4	1.50	0.20	13420.61
924	D 383	4 H 3 C 4 m 6	1	23.23706	86.01068	3.5	0.75	0.4	1.50	0.20	10438.25
925	D 384	4 H 3 C 4 m 6	1	23.23594	86.0104	3.0	0.75	0.4	1.50	0.20	8947.07
928	D 387 ***	4 H 3 C 4 m 6	1	23.23523	86.00934	3.5	0.75	0.4	1.50	0.20	10438.25
929	D 388	4 H 3 C 4 m 6	1	23.23488	86.01115	2.5	0.75	0.4	1.50	0.20	7455.90
932	D 391	4 H 3 C 4 m 6	1	23.2336	86.01054	3.0	0.60	0.4	1.30	0.20	6806.24
933	D 392	4 H 3 C 4 m 6	3	23.22539	86.00265	3.0	0.75	0.4	1.50	0.20	8947.07
934	D 393 ***	4 H 3 C 4 m 6	3	23.22648	86.00399	3.0	0.75	0.4	1.50	0.20	8947.07
936	D 395	4 H 3 C 4 m 6	3	23.2277	86.00494	3.5	0.60	0.4	1.30	0.20	7940.61
937	D 396 ***	4 H 3 C 4 m 6	3	23.22786	86.00521	3.5	0.75	0.4	1.50	0.20	10438.25
942	D 401	4 H 3 C 4 m 6	4	23.22114	86.00063	6.5	0.75	0.4	1.50	0.20	19385.33
944	D 403	4 H 3 C 4 m 6	4	23.22126	86.00288	3.5	0.60	0.4	1.30	0.20	7940.61
945	D 404 **	4 H 3 C 4 m 4	1	23.21739	86.00324	4.5	0.75	0.4	1.50	0.20	13420.61
948	D 407	4 H 3 C 4 m 6	4	23.22381	86.0067	3.0	0.75	0.4	1.50	0.20	8947.07
949	D 408	4 H 3 C 4 m 6	4	23.22461	86.00753	5.0	0.75	0.4	1.50	0.20	14911.79
950	D 409	4 H 3 C 4 m 6	4	23.22505	86.00834	3.5	0.75	0.4	1.50	0.20	10438.25
951	D 410	4 H 3 C 4 m 6	3	23.22574	86.00876	7.0	0.90	0.5	1.90	0.30	34033.11
952	D 411	4 H 3 C 4 m 6	3	23.22608	86.00906	3.0	0.75	0.4	1.50	0.20	8947.07
953	D 412	4 H 3 C 4 m 6	3	23.2263	86.00943	3.0	0.90	0.5	1.90	0.30	14585.62
957	D 416	4 H 3 C 4 m 5	3	23.22603	86.011	4.0	0.75	0.4	1.50	0.20	11929.43
958	D 417	4 H 3 C 4 m 5	3	23.2267	86.0123	5.0	0.75	0.4	1.50	0.20	14911.79
959	D 418	4 H 3 C 4 m 6	3	23.22726	86.00441	5.0	0.75	0.4	1.50	0.20	14911.79
960	D 419	4 H 3 C 4 m 5	3	23.22775	86.01431	6.0	0.75	0.4	1.50	0.20	17894.15

961	D 420	4 H 3 C 4 m 5	3	23.2283	86.0157	3.0	0.75	0.4	1.50	0.20	8947.07
962	D 421	4 H 3 C 4 m 5	3	23.22869	86.01615	3.5	0.75	0.4	1.50	0.20	10438.25
963	D 422	4 H 3 C 4 m 5	3	23.22884	86.01637	4.0	0.75	0.4	1.50	0.20	11929.43
964	D 423	4 H 3 C 4 m 5	3	23.22879	86.0166	4.0	0.75	0.4	1.50	0.20	11929.43
965	D 424	4 H 3 C 4 m 5	3	23.22875	86.0167	8.5	1.00	0.5	2.00	0.30	46328.02
966	D 425	4 H 3 C 4 m 5	3	23.22868	86.01696	3.5	0.75	0.4	1.50	0.20	10438.25
967	D 426	4 H 3 C 4 m 5	1	23.22953	86.01701	3.0	0.75	0.4	1.50	0.20	8947.07
968	D 427	4 H 3 C 4 m 5	3	23.22883	86.01735	4.0	0.75	0.4	1.50	0.20	11929.43
969	D 428	4 H 3 C 4 m 5	3	23.229	86.01757	4.5	0.75	0.4	1.50	0.20	13420.61
970	D 429	4 H 3 C 4 m 5	3	23.22921	86.01782	4.5	0.75	0.4	1.50	0.20	13420.61
971	D 430	4 H 3 C 4 m 4	1	23.21875	86.00314	3.0	0.75	0.4	1.50	0.20	8947.07
972	D 431	4 H 3 C 4 m 5	1	23.21903	86.00255	6.0	0.75	0.4	1.50	0.20	17894.15
973	D 432	4 H 3 C 4 m 5	1	23.21931	86.00194	5.5	0.75	0.4	1.50	0.20	16402.97
974	D 433	4 H 3 C 4 m 6	1	23.21965	86.00145	3.5	0.75	0.4	1.50	0.20	10438.25
975	D 434	4 H 3 C 4 m 6	1	23.21901	86.00005	5.0	0.75	0.4	1.50	0.20	14911.79
976	D 435	4 H 3 C 4 m 1	1	23.21854	86.00003	4.5	0.75	0.4	1.50	0.20	13420.61
977	D 436	4 H 3 C 4 m 6	1	23.21841	86.00074	4.0	0.75	0.4	1.50	0.20	11929.43
978	D 437	4 H 3 C 4 m 4	1	23.2181	86.00122	4.5	0.75	0.4	1.50	0.20	13420.61
980	D 392	4 H 3 C 4 m 1	1	23.20542	85.99202	3.5	0.90	0.5	1.90	0.30	17016.55
981	D 393	4 H 3 C 4 m 3	1	23.21726	86.04286	6.0	1.00	0.5	2.00	0.30	32702.13
982	D 394	4 H 3 C 4 m 3	1	23.21712	86.04283	3.0	0.75	0.4	1.50	0.20	8947.07
983	D 395	4 H 3 C 4 m 3	1	23.21669	86.04299	3.5	1.00	0.5	2.00	0.30	19076.24
985	D 397	4 H 3 C 4 m 3	2	23.21558	86.04218	4.0	0.75	0.4	1.50	0.20	11929.43
987	D 399	4 H 3 C 4 m 3	3	23.21486	86.04155	3.5	0.60	0.4	1.30	0.20	7940.61

* Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

** Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

*** Same Forest Range but given coordinates fall in the Beat other than mentioned in the proposed data.

6.1.3 Gabion Check measures-BAGHMUNDI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
567	D 026	4 H 3 C 4 h 7	2	23.212359	86.048671	5	1	0.40	30588.98
573	D 032	4 H 3 C 4 h 7	1	23.211547	86.047022	6	1	0.40	36758.06
574	D 033	4 H 3 C 4 h 7	1	23.211983	86.047292	5	1	0.40	30588.98
576	D 035	4 H 3 C 4 h 7	1	23.212389	86.047233	5	1	0.40	30631.72
577	D 036	4 H 3 C 4 h 7	1	23.212665	86.048955	4	1	0.40	24505.37
585	D 044	4 H 3 C 4 h 7	3	23.20792	86.04823	7	0.6	0.30	29613.95
599	D 058	4 H 3 C 4 m 3	1	23.214975	86.045502	6	1	0.40	36758.06
605	D 064	4 H 3 C 4 h 7	1	23.214543	86.046893	7	1	0.40	42884.40
607	D 066	4 H 3 C 4 m 3	1	23.215316	86.045844	5	1	0.40	30631.72
608	D 067	4 H 3 C 4 m 3	1	23.215208	86.045699	4	1	0.40	24471.19
623	D 082	4 H 3 C 4 m 3	1	23.216186	86.044935	3	1	0.40	18379.03
624	D 083	4 H 3 C 4 m 3	1	23.216723	86.045	3	0.6	0.30	12691.69
627	D 086	4 H 3 C 4 m 3	1	23.216831	86.044506	5	1	0.40	30588.98
631	D 090	4 H 3 C 4 m 3	2	23.216442	86.04425	6	1	0.40	36758.06
632	D 091	4 H 3 C 4 m 3	2	23.216203	86.043975	6	1	0.40	36758.06
633	D 092	4 H 3 C 4 m 3	2	23.21594	86.043587	7	1	0.40	42824.57
638	D 097	4 H 3 C 4 h 7	1	23.215656	86.059361	5	1	0.40	30588.98
645	D 104	4 H 3 C 4 m 3	1	23.216739	86.041196	5	1	0.40	30588.98
648	D 107	4 H 3 C 4 m 3	1	23.215425	86.040428	4	1	0.40	24471.19
649	D 108	4 H 3 C 4 m 3	1	23.215056	86.039851	4	1.2	0.40	27487.34
650	D 109	4 H 3 C 4 m 3	1	23.215028	86.039486	4	1	0.40	24471.19

651	D 110	4 H 3 C 4 m 3	2	23.215085	86.038995	4	1	0.40	24471.19
652	D 111	4 H 3 C 4 m 3	1	23.215256	86.039183	4	1	0.40	24471.19
653	D 112	4 H 3 C 4 m 3	1	23.215548	86.039359	5	1	0.40	30588.98
655	D 114	4 H 3 C 4 m 3	1	23.216197	86.039708	3	1	0.40	16109.74
660	D 119	4 H 3 C 4 m 3	3	23.214786	86.038392	4	1.2	0.40	27487.34
661	D 120	4 H 3 C 4 m 3	2	23.215006	86.037772	5	1.2	0.40	34359.17
662	D 121	4 H 3 C 4 m 3	2	23.214806	86.037385	7	1.2	0.40	48102.84
663	D 122	4 H 3 C 4 m 3	3	23.214719	86.037661	7	1.2	0.40	48102.84
664	D 123	4 H 3 C 4 m 3	1	23.215836	86.038656	5	1	0.40	30631.72
665	D 124	4 H 3 C 4 m 3	1	23.215676	86.039553	4	1	0.40	24505.37
668	D 127	4 H 3 C 4 m 3	3	23.213747	86.035908	5	1.2	0.40	34359.17
669	D 128	4 H 3 C 4 m 3	3	23.214314	86.036667	7	1	0.40	42884.40
670	D 129	4 H 3 C 4 m 3	2	23.214267	86.034977	6	1	0.40	39251.01
671	D 130	4 H 3 C 4 m 3	2	23.214378	86.035296	4	1	0.40	24471.19
672	D 131	4 H 3 C 4 m 3	2	23.214729	86.035551	4	1	0.40	24471.19
673	D 132	4 H 3 C 4 m 3	2	23.214762	86.036025	5	1	0.40	30631.72
674	D 133	4 H 3 C 4 m 3	2	23.215205	86.036634	5	1	0.40	30631.72
675	D 134	4 H 3 C 4 m 3	2	23.21533	86.036792	4	1	0.40	24471.19
676	D 135	4 H 3 C 4 m 3	1	23.215718	86.037316	6	1	0.40	36706.78
677	D 136	4 H 3 C 4 m 3	1	23.216233	86.037292	5	1	0.40	30631.72
678	D 137	4 H 3 C 4 m 3	1	23.216511	86.037308	5	1	0.40	30631.72
679	D 138	4 H 3 C 4 m 3	1	23.21597	86.037295	4	1	0.40	24505.37
680	D 139	4 H 3 C 4 m 3	1	23.215901	86.037985	4	1.2	0.40	27487.34
681	D 140	4 H 3 C 4 m 3	1	23.216042	86.038198	5	1	0.40	30588.98
692	D 151	4 H 3 C 4 m 3	1	23.217167	86.036432	6	1.2	0.40	41282.29

693	D 152	4 H 3 C 4 m 3	1	23.217164	86.036067	4	1	0.40	24471.19
694	D 153	4 H 3 C 4 m 3	2	23.21662	86.035218	9	1.2	0.40	61923.43
712	D 171	4 H 3 C 4 m 3	1	23.222611	86.036682	9	1	0.40	55060.17
717	D 176	4 H 3 C 4 m 3	2	23.220009	86.035836	9	1	0.40	55137.09
733	D 192	4 H 3 C 4 m 3	1	23.223594	86.033994	8	1	0.40	48942.37
739	D 198	4 H 3 C 4 m 3	1	23.222872	86.034528	3	1	0.40	16109.74
740	D 199	4 H 3 C 4 m 3	1	23.222717	86.033933	6	1	0.40	36706.78
747	D 206	4 H 3 C 4 m 3	2	23.226264	86.034875	7	1	0.40	42824.57
748	D 207	4 H 3 C 4 m 3	2	23.226069	86.0341	5	1	0.40	30588.98
762	D 221 *	4 H 3 C 4 m 5	1	23.232642	86.035347	4	1	0.40	24471.19
766	D 225	4 H 3 C 4 m 5	1	23.233663	86.035346	9	1	0.40	55060.17
770	D 229	4 H 3 C 4 m 5	1	23.23511	86.029505	4	1.2	0.40	27487.34
778	D 237 *	4 H 3 C 4 m 5	1	23.2344	86.028436	5	1	0.40	30588.98
787	D 246 *	4 H 3 C 4 m 5	1	23.236678	86.027678	4	1	0.40	24471.19
795	D 254	4 H 3 C 4 m 5	1	23.234909	86.025824	4	1	0.40	24471.19
796	D 255	4 H 3 C 4 m 5	1	23.234311	86.025648	3	1	0.40	18353.39
797	D 256	4 H 3 C 4 m 5	1	23.232228	86.022139	4	1	0.40	24471.19
798	D 257	4 H 3 C 4 m 5	1	23.232989	86.022889	6	1	0.40	36706.78
799	D 258	4 H 3 C 4 m 5	1	23.233422	86.023512	3	1	0.40	18353.39
800	D 259	4 H 3 C 4 m 5	1	23.233615	86.023884	8	1.2	0.40	54974.68
801	D 260	4 H 3 C 4 m 5	1	23.233753	86.024181	8	0.6	0.30	33844.51
813	D 272	4 H 3 C 4 m 5	2	23.234393	86.017653	5	1	0.40	30588.98
814	D 273	4 H 3 C 4 m 5	2	23.233985	86.016556	5	1	0.40	30588.98
815	D 274	4 H 3 C 4 m 5	2	23.234691	86.015711	5	1	0.40	32666.44
820	D 279	4 H 3 C 4 m 5	1	23.236767	86.015525	6	1	0.40	36758.06

821	D 280	4 H 3 C 4 m 5	1	23.235763	86.015456	7	1	0.40	42824.57
822	D 281	4 H 3 C 4 m 5	1	23.235204	86.015617	5	0.6	0.30	21184.87
823	D 282	4 H 3 C 4 m 5	2	23.234162	86.015633	4	1	0.40	24505.37
830	D 289	4 H 3 C 4 m 5	1	23.232294	86.018178	3	1	0.40	18353.39
832	D 291	4 H 3 C 4 m 5	2	23.231589	86.017247	6	1	0.40	36706.78
836	D 295	4 H 3 C 4 m 5	1	23.230024	86.01467	6	0.6	0.30	25383.39
840	D 299	4 H 3 C 4 m 5	1	23.229825	86.014453	5	0.6	0.30	21152.82
841	D 300	4 H 3 C 4 m 5	2	23.229519	86.014467	3	0.6	0.30	12691.69
842	D 301	4 H 3 C 4 m 5	1	23.22939	86.014026	7	0.6	0.30	26705.51
843	D 302	4 H 3 C 4 m 5	2	23.229179	86.013473	6	0.6	0.30	25383.39
844	D 303	4 H 3 C 4 m 5	2	23.228672	86.012853	6	1	0.40	36706.78
847	D 306	4 H 3 C 4 m 5	2	23.227478	86.0121	8	1	0.40	48942.37
848	D 307	4 H 3 C 4 m 5	2	23.227247	86.011826	6	1	0.40	36706.78
849	D 308	4 H 3 C 4 m 6	2	23.226988	86.011109	7	1	0.40	42824.57
854	D 313	4 H 3 C 4 m 6	3	23.226865	86.010324	6	1	0.40	36706.78
857	D 316	4 H 3 C 4 m 6	3	23.227636	86.010475	9	1	0.40	55060.17
859	D 318	4 H 3 C 4 m 6	3	23.228714	86.010739	6	1	0.40	36706.78
861	D 320	4 H 3 C 4 m 6	3	23.230003	86.011444	9	1	0.40	55060.17
886	D 345	4 H 3 C 4 m 6	3	23.232408	86.013117	8	1	0.40	48942.37
887	D 346	4 H 3 C 4 m 6	2	23.232664	86.0136	7	1	0.40	42824.57
888	D 347	4 H 3 C 4 m 5	3	23.232675	86.014261	6	1	0.40	39199.73
889	D 348	4 H 3 C 4 m 5	3	23.233047	86.014758	5	1	0.40	30588.98
891	D 350	4 H 3 C 4 m 6	3	23.231864	86.012794	7	1	0.40	42824.57
904	D 363	4 H 3 C 4 m 6	1	23.229764	86.006868	7	1	0.40	42824.57
908	D 367	4 H 3 C 4 m 6	3	23.228236	86.006053	8	1	0.40	48942.37

911	D 370 **	4 H 3 C 4 m 6	3	23.231008	86.006732	6	1	0.40	36706.78
914	D 373	4 H 3 C 4 m 6	2	23.233389	86.008033	5	1	0.40	30588.98
915	D 374 **	4 H 3 C 4 m 6	2	23.234025	86.008328	5	1	0.40	30588.98
917	D 376 **	4 H 3 C 4 m 6	1	23.234511	86.0096	5	1	0.40	30588.98
935	D 394	4 H 3 C 4 m 6	3	23.226944	86.004212	7	1	0.40	42824.57
938	D 397 **	4 H 3 C 4 m 6	3	23.224678	86.001258	9	1	0.40	55137.09
939	D 398 *	4 H 3 C 4 m 5	1	23.223106	86.015486	9	1	0.40	55137.09
940	D 399	4 H 3 C 4 m 6	3	23.222237	85.998357	7	1	0.40	42824.57
941	D 400	4 H 3 C 4 m 6	4	23.220792	85.999442	7	1	0.40	42824.57
943	D 402	4 H 3 C 4 m 6	4	23.221578	86.001186	7	1.2	0.40	48102.84
946	D 405	4 H 3 C 4 m 6	4	23.222339	86.004836	9	1	0.40	55060.17
947	D 406	4 H 3 C 4 m 6	4	23.223317	86.005447	8	1	0.40	48942.37
954	D 413	4 H 3 C 4 m 6	3	23.226314	86.009772	8	1	0.40	49010.75
955	D 414	4 H 3 C 4 m 5	1	23.225328	86.010126	6	1	0.40	36706.78
956	D 415	4 H 3 C 4 m 5	3	23.225858	86.010558	7	1.2	0.40	48102.84
984	D 396	4 H 3 C 4 m 3	2	23.2162	86.042567	4	1	0.40	24471.19
986	D 398	4 H 3 C 4 m 3	2	23.215403	86.042231	5	1	0.40	30588.98

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

** Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

Water Harvesting Structure Measures- BAGHMUNDI BEAT (Baghmundi Range) Open Map

6.2.1 Dugout Pond-BAGHMUNDI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
93	W 01 **	4 H 3 C 4 h 3	1	23.18038	86.09166	398.77
94	W 02	4 H 3 C 4 h 3	1	23.19076	86.08003	1336.63
95	W 03	4 H 3 C 4 h 7	1	23.21184	86.04881	398.77

** Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

6.2.2Pond Renovation-BAGHMUNDI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
96	W 04	4 H 3 C 4 h 7	1	23.21314	86.04918	213.07

(7) BURDA BEAT (Baghmundi Range)

Drainage Line Treatment Measures Open Map

7.1.1 Brushwood Check Dam-BURDA BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
1018	D 031	4 H 3 C 4 m 6	2	23.23667	86.00363	2.0	0.8	0.5	0.50	1826.41
1031	D 044	4 H 3 C 4 m 6	2	23.23756	86.00622	3.0	0.9	0.5	0.75	3337.37
1053	D 066	4 H 3 C 4 m 6	1	23.23495	86.00544	2.0	0.8	0.5	0.50	1826.41
1055	D 068	4 H 3 C 4 m 6	1	23.23504	86.00213	4.0	1.0	0.6	0.75	4467.25
1056	D 069	4 H 3 C 4 m 6	1	23.23588	86.00173	3.0	0.8	0.5	0.75	3041.33
1060	D 073	4 H 3 C 4 m 6	2	23.2341	85.99856	4.0	1.1	0.7	0.75	4728.20
1074	D 087	4 H 3 C 4 m 6	1	23.24472	86.00275	1.5	0.8	0.5	0.50	1526.92
1166	D 179	4 H 3 C 4 m 7	1	23.26713	86.0098	4.0	1.1	0.7	0.75	4728.20

7.1.2 Loose Boulder Check Dam-BURDA BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
988	D 001	4 H 3 C 4 m 6	2	23.22294	85.99804	7.5	0.90	0.5	1.90	0.30	36464.04
989	D 002	4 H 3 C 4 m 6	2	23.22397	85.99772	5.0	0.90	0.5	1.90	0.30	24309.36
990	D 003	4 H 3 C 4 m 6	2	23.22426	85.99843	6.5	0.90	0.5	1.90	0.30	31602.17
991	D 004	4 H 3 C 4 m 6	2	23.2253	85.99898	7.5	0.90	0.5	1.90	0.30	36464.04
992	D 005	4 H 3 C 4 m 6	1	23.22684	85.99947	4.5	0.75	0.4	1.50	0.20	13420.61
993	D 006	4 H 3 C 4 m 6	1	23.22666	85.99946	6.0	0.90	0.5	1.90	0.30	29171.24
994	D 007	4 H 3 C 4 m 6	1	23.22756	85.99938	4.0	0.75	0.4	1.50	0.20	11929.43
995	D 008	4 H 3 C 4 m 6	2	23.22726	85.99995	4.0	0.75	0.4	1.50	0.20	11929.43
996	D 009	4 H 3 C 4 m 6	2	23.22738	85.99999	4.0	0.75	0.4	1.50	0.20	11929.43

997	D 010	4 H 3 C 4 m 6	2	23.22779	86.00028	8.0	0.75	0.4	1.50	0.20	23858.87
998	D 011	4 H 3 C 4 m 6	2	23.2293	86.00078	4.5	0.75	0.4	1.50	0.20	13420.61
1000	D 013	4 H 3 C 4 m 6	1	23.22993	86.00092	5.5	0.75	0.4	1.50	0.20	16402.97
1001	D 014	4 H 3 C 4 m 6	1	23.23017	86.00112	5.0	0.75	0.4	1.50	0.20	14911.79
1002	D 015	4 H 3 C 4 m 6	2	23.23006	86.00141	8.5	1.00	0.5	2.00	0.30	46328.02
1003	D 016	4 H 3 C 4 m 6	2	23.23064	86.00185	4.0	0.75	0.4	1.50	0.20	11929.43
1005	D 018	4 H 3 C 4 m 6	2	23.23066	86.00226	5.0	0.75	0.4	1.50	0.20	14911.79
1006	D 019	4 H 3 C 4 m 6	1	23.23101	86.00286	6.0	0.75	0.4	1.50	0.20	17894.15
1007	D 020	4 H 3 C 4 m 6	2	23.23173	86.00331	6.0	0.75	0.4	1.50	0.20	17894.15
1008	D 021	4 H 3 C 4 m 6	2	23.23214	86.00341	5.5	0.75	0.4	1.50	0.20	16402.97
1009	D 022	4 H 3 C 4 m 6	2	23.23267	86.00364	5.0	0.75	0.4	1.50	0.20	14911.79
1010	D 023	4 H 3 C 4 m 6	1	23.23305	86.00111	5.0	0.60	0.4	1.30	0.20	11343.73
1011	D 024	4 H 3 C 4 m 6	2	23.23385	86.00374	4.5	0.75	0.4	1.50	0.20	13420.61
1012	D 025	4 H 3 C 4 m 6	1	23.23391	86.00393	4.5	0.75	0.4	1.50	0.20	13420.61
1013	D 026	4 H 3 C 4 m 6	2	23.23404	86.00377	3.5	0.75	0.4	1.50	0.20	10438.25
1014	D 027	4 H 3 C 4 m 6	2	23.23442	86.00358	4.5	0.75	0.4	1.50	0.20	13420.61
1015	D 028	4 H 3 C 4 m 6	2	23.23548	86.00366	5.5	0.75	0.4	1.50	0.20	16402.97
1016	D 029	4 H 3 C 4 m 6	2	23.23588	86.00411	4.5	0.75	0.4	1.50	0.20	13420.61
1017	D 030	4 H 3 C 4 m 6	2	23.23648	86.00371	5.5	0.75	0.4	1.50	0.20	16402.97
1019	D 032	4 H 3 C 4 m 6	2	23.23696	86.00378	6.5	0.75	0.4	1.50	0.20	19385.33
1020	D 033	4 H 3 C 4 m 6	2	23.23726	86.00364	6.0	0.75	0.4	1.50	0.20	17894.15
1021	D 034	4 H 3 C 4 m 6	2	23.23835	86.00293	4.5	0.75	0.4	1.50	0.20	13420.61
1022	D 035	4 H 3 C 4 m 6	2	23.23911	86.00308	3.5	0.60	0.4	1.30	0.20	7940.61
1023	D 036	4 H 3 C 4 m 6	2	23.23937	86.00313	5.0	0.75	0.4	1.50	0.20	14911.79
1024	D 037	4 H 3 C 4 m 6	2	23.23969	86.00332	3.0	0.75	0.4	1.50	0.20	8947.07
1026	D 039	4 H 3 C 4 m 6	1	23.2403	86.00409	4.5	0.75	0.4	1.50	0.20	13420.61
1027	D 040	4 H 3 C 4 m 6	1	23.23951	86.00577	7.0	0.75	0.4	1.50	0.20	20876.51
1029	D 042	4 H 3 C 4 m 6	1	23.23879	86.00676	8.5	0.75	0.4	1.50	0.20	25350.05
1030	D 043	4 H 3 C 4 m 6	1	23.23826	86.00637	4.0	0.75	0.4	1.50	0.20	11929.43
1032	D 045	4 H 3 C 4 m 6	1	23.23786	86.00666	7.5	0.75	0.4	1.50	0.20	22367.69
1033	D 046	4 H 3 C 4 m 6	2	23.23713	86.00631	4.5	1.05	0.6	2.20	0.30	28235.77
1034	D 047	4 H 3 C 4 m 6	2	23.23689	86.00644	4.5	0.75	0.4	1.50	0.20	13420.61

1035	D 048	4 H 3 C 4 m 6	2	23.23659	86.00664	7.0	0.75	0.4	1.50	0.20	20876.51
1036	D 049	4 H 3 C 4 m 6	2	23.2363	86.00683	2.5	0.75	0.4	1.50	0.20	7455.90
1037	D 050	4 H 3 C 4 m 6	2	23.23578	86.00669	3.5	0.75	0.4	1.50	0.20	10438.25
1038	D 051	4 H 3 C 4 m 6	1	23.23562	86.00686	5.0	0.75	0.4	1.50	0.20	14911.79
1039	D 052	4 H 3 C 4 m 6	1	23.23589	86.00714	4.5	0.60	0.4	1.30	0.20	10209.36
1040	D 053	4 H 3 C 4 m 6	1	23.23638	86.00745	5.0	0.75	0.4	1.50	0.20	14911.79
1041	D 054	4 H 3 C 4 m 6	1	23.23652	86.00767	4.0	0.75	0.4	1.50	0.20	11929.43
1042	D 055	4 H 3 C 4 m 6	1	23.23852	86.0089	4.0	0.75	0.4	1.50	0.20	11929.43
1043	D 056	4 H 3 C 4 m 6	1	23.23791	86.00852	4.5	0.75	0.4	1.50	0.20	13420.61
1044	D 057	4 H 3 C 4 m 6	1	23.23764	86.00846	3.5	0.75	0.4	1.50	0.20	10438.25
1045	D 058	4 H 3 C 4 m 6	1	23.2372	86.00862	5.0	0.75	0.4	1.50	0.20	14911.79
1046	D 059	4 H 3 C 4 m 6	1	23.23572	86.00858	5.5	0.75	0.4	1.50	0.20	16402.97
1048	D 061	4 H 3 C 4 m 6	1	23.23495	86.0088	5.0	0.75	0.4	1.50	0.20	14911.79
1049	D 062	4 H 3 C 4 m 6	2	23.23496	86.00709	3.0	0.75	0.4	1.50	0.20	8947.07
1050	D 063	4 H 3 C 4 m 6	2	23.23451	86.00679	5.0	0.75	0.4	1.50	0.20	14911.79
1051	D 064	4 H 3 C 4 m 6	2	23.23381	86.00671	6.0	0.90	0.5	1.90	0.30	29171.24
1052	D 065	4 H 3 C 4 m 6	2	23.23415	86.00675	5.0	0.75	0.4	1.50	0.20	14911.79
1054	D 067	4 H 3 C 4 m 6	1	23.23452	86.00518	4.5	0.75	0.4	1.50	0.20	13420.61
1057	D 070	4 H 3 C 4 m 6	1	23.23624	86.00001	4.5	0.75	0.4	1.50	0.20	13420.61
1058	D 071	4 H 3 C 4 m 6	2	23.2352	85.99966	4.0	0.75	0.4	1.50	0.20	11929.43
1059	D 072	4 H 3 C 4 m 6	2	23.23474	85.99924	5.0	0.75	0.4	1.50	0.20	14911.79
1061	D 074	4 H 3 C 4 m 6	2	23.23111	85.99706	6.0	0.90	0.5	1.90	0.30	29171.24
1062	D 075	4 H 3 C 4 m 6	2	23.23051	85.99638	6.0	0.75	0.4	1.50	0.20	17894.15
1063	D 076	4 H 3 C 4 m 6	2	23.22989	85.99607	4.0	0.75	0.4	1.50	0.20	11929.43
1064	D 077	4 H 3 C 4 m 6	2	23.22901	85.99543	7.0	1.00	0.5	2.00	0.30	38152.49
1065	D 078	4 H 3 C 4 m 6	1	23.22884	85.99534	5.0	0.75	0.4	1.50	0.20	14911.79
1066	D 079	4 H 3 C 4 m 6	1	23.22841	85.99642	4.0	0.75	0.4	1.50	0.20	11929.43
1068	D 081	4 H 3 C 4 m 6	3	23.23243	85.99564	7.5	1.00	0.5	2.00	0.30	40877.66
1069	D 082	4 H 3 C 4 m 6	3	23.23319	85.99596	8.5	0.90	0.5	1.90	0.30	41325.92
1070	D 083	4 H 3 C 4 m 6	3	23.23286	85.99588	4.0	0.75	0.4	1.50	0.20	11929.43
1072	D 085	4 H 3 C 4 m 6	1	23.2443	86.00344	6.0	0.60	0.4	1.30	0.20	13612.47
1073	D 086	4 H 3 C 4 m 6	1	23.24453	86.00307	5.0	0.75	0.4	1.50	0.20	14911.79

1075	D 088	4 H 3 C 4 m 6	1	23.24469	86.00257	4.0	0.75	0.4	1.50	0.20	11929.43
1076	D 089	4 H 3 C 4 m 6	1	23.2454	86.00241	4.0	0.60	0.4	1.30	0.20	9074.98
1077	D 090	4 H 3 C 4 m 6	1	23.24555	86.00204	5.0	0.75	0.4	1.50	0.20	14911.79
1078	D 091	4 H 3 C 4 m 6	1	23.24576	86.00134	6.0	0.75	0.4	1.50	0.20	17894.15
1079	D 092	4 H 3 C 4 m 6	1	23.24601	85.99679	4.0	0.60	0.4	1.30	0.20	9074.98
1081	D 094	4 H 3 C 4 m 7	3	23.25805	85.99856	4.5	0.75	0.4	1.50	0.20	13420.61
1082	D 095	4 H 3 C 4 m 7	3	23.25794	85.99831	5.0	0.75	0.4	1.50	0.20	14911.79
1083	D 096	4 H 3 C 4 m 7	3	23.25806	85.99879	5.5	0.75	0.4	1.50	0.20	16402.97
1084	D 097 *	4 H 3 C 4 m 7	3	23.25934	85.99919	5.0	0.75	0.4	1.50	0.20	14911.79
1085	D 098	4 H 3 C 4 m 7	3	23.26155	86.00113	6.0	0.75	0.4	1.50	0.20	17894.15
1086	D 099	4 H 3 C 4 m 7	1	23.26144	86.00261	3.0	0.75	0.4	1.50	0.20	8947.07
1087	D 100	4 H 3 C 4 m 7	1	23.26139	86.0029	3.5	0.75	0.4	1.50	0.20	10438.25
1088	D 101	4 H 3 C 4 m 7	1	23.26136	86.00334	5.0	0.75	0.4	1.50	0.20	14911.79
1089	D 102	4 H 3 C 4 m 7	1	23.26055	86.00363	4.0	0.75	0.4	1.50	0.20	11929.43
1090	D 103	4 H 3 C 4 m 7	1	23.26031	86.00392	4.5	0.75	0.4	1.50	0.20	13420.61
1091	D 104	4 H 3 C 4 m 7	1	23.26013	86.00415	3.0	0.60	0.4	1.30	0.20	6806.24
1092	D 105	4 H 3 C 4 m 7	1	23.25978	86.00436	3.5	0.75	0.4	1.50	0.20	10438.25
1093	D 106	4 H 3 C 4 m 7	1	23.25994	86.00427	4.0	0.75	0.4	1.50	0.20	11929.43
1094	D 107	4 H 3 C 4 m 7	1	23.25954	86.00448	3.5	0.75	0.4	1.50	0.20	10438.25
1095	D 108	4 H 3 C 4 m 7	1	23.25964	86.00555	3.5	0.75	0.4	1.50	0.20	10438.25
1096	D 109	4 H 3 C 4 m 7	1	23.2595	86.0054	3.0	0.75	0.4	1.50	0.20	8947.07
1097	D 110	4 H 3 C 4 m 7	1	23.2584	86.00429	4.0	0.75	0.4	1.50	0.20	11929.43
1098	D 111	4 H 3 C 4 m 7	1	23.2582	86.00415	4.0	0.75	0.4	1.50	0.20	11929.43
1099	D 112	4 H 3 C 4 m 7	1	23.25847	86.00354	5.0	0.75	0.4	1.50	0.20	14911.79
1100	D 113	4 H 3 C 4 m 7	1	23.2586	86.00268	5.0	0.75	0.4	1.50	0.20	14911.79
1101	D 114	4 H 3 C 4 m 7	1	23.25848	86.00237	5.0	0.75	0.4	1.50	0.20	14911.79
1102	D 115	4 H 3 C 4 m 7	1	23.25829	86.00182	4.5	0.75	0.4	1.50	0.20	13420.61
1103	D 116	4 H 3 C 4 m 7	2	23.25757	86.00173	4.0	0.75	0.4	1.50	0.20	11929.43
1104	D 117	4 H 3 C 4 m 7	2	23.25726	86.00173	3.5	0.75	0.4	1.50	0.20	10438.25
1105	D 118	4 H 3 C 4 m 7	2	23.2567	86.00156	4.0	0.75	0.4	1.50	0.20	11929.43
1106	D 119	4 H 3 C 4 m 7	2	23.25564	86.00151	4.0	0.75	0.4	1.50	0.20	11929.43
1107	D 120	4 H 3 C 4 m 7	2	23.25594	86.00183	3.5	0.75	0.4	1.50	0.20	10438.25

1108	D 121	4 H 3 C 4 m 7	2	23.25627	86.00213	4.0	0.75	0.4	1.50	0.20	11929.43
1109	D 122	4 H 3 C 4 m 7	2	23.25641	86.00291	3.5	0.75	0.4	1.50	0.20	10438.25
1110	D 123	4 H 3 C 4 m 7	2	23.25645	86.00303	3.0	0.75	0.4	1.50	0.20	8947.07
1111	D 124	4 H 3 C 4 m 7	2	23.25675	86.00408	3.0	0.75	0.4	1.50	0.20	8947.07
1112	D 125	4 H 3 C 4 m 7	2	23.25716	86.00396	5.5	0.75	0.4	1.50	0.20	16402.97
1113	D 126	4 H 3 C 4 m 7	2	23.25779	86.00385	4.0	0.75	0.4	1.50	0.20	11929.43
1114	D 127	4 H 3 C 4 m 7	1	23.26066	86.00218	6.0	0.75	0.4	1.50	0.20	17894.15
1115	D 128	4 H 3 C 4 m 7	1	23.26132	86.00464	3.5	0.75	0.4	1.50	0.20	10438.25
1116	D 129	4 H 3 C 4 m 7	1	23.26197	86.00527	4.5	0.75	0.4	1.50	0.20	13420.61
1118	D 131	4 H 3 C 4 m 7	1	23.26189	86.00611	3.5	0.75	0.4	1.50	0.20	10438.25
1119	D 132	4 H 3 C 4 m 7	2	23.26086	86.00746	6.0	0.75	0.4	1.50	0.20	17894.15
1120	D 133	4 H 3 C 4 m 7	2	23.26046	86.00752	4.0	0.75	0.4	1.50	0.20	11929.43
1121	D 134	4 H 3 C 4 m 7	2	23.25976	86.00777	6.5	1.00	0.5	2.00	0.30	35427.31
1122	D 135	4 H 3 C 4 m 7	2	23.25869	86.00816	4.0	0.75	0.4	1.50	0.20	11929.43
1123	D 136	4 H 3 C 4 m 7	2	23.25817	86.00842	4.0	0.75	0.4	1.50	0.20	11929.43
1124	D 137	4 H 3 C 4 m 7	2	23.25763	86.00868	4.5	0.75	0.4	1.50	0.20	13420.61
1125	D 138	4 H 3 C 4 m 7	2	23.25695	86.00903	4.5	0.75	0.4	1.50	0.20	13420.61
1126	D 139	4 H 3 C 4 m 7	2	23.25638	86.0094	4.0	0.75	0.4	1.50	0.20	11929.43
1127	D 140	4 H 3 C 4 m 7	1	23.25646	86.00981	5.5	0.75	0.4	1.50	0.20	16402.97
1128	D 141	4 H 3 C 4 m 7	1	23.25645	86.01043	4.5	0.75	0.4	1.50	0.20	13420.61
1129	D 142	4 H 3 C 4 m 7	1	23.25639	86.01092	5.0	0.75	0.4	1.50	0.20	14911.79
1130	D 143	4 H 3 C 4 m 7	1	23.25636	86.01125	4.0	0.75	0.4	1.50	0.20	11929.43
1131	D 144	4 H 3 C 4 m 7	1	23.25546	86.00965	5.0	0.75	0.4	1.50	0.20	14911.79
1132	D 145	4 H 3 C 4 m 7	1	23.25823	86.00648	5.0	0.75	0.4	1.50	0.20	14911.79
1133	D 146	4 H 3 C 4 m 7	1	23.26006	86.00583	5.0	0.75	0.4	1.50	0.20	14911.79
1134	D 147	4 H 3 C 4 m 7	3	23.26215	86.00274	4.0	0.75	0.4	1.50	0.20	11929.43
1135	D 148	4 H 3 C 4 m 7	3	23.26222	86.0028	5.0	0.75	0.4	1.50	0.20	14911.79
1136	D 149	4 H 3 C 4 m 7	3	23.26299	86.00282	5.0	0.75	0.4	1.50	0.20	14911.79
1137	D 150	4 H 3 C 4 m 7	3	23.2632	86.00314	4.0	0.75	0.4	1.50	0.20	11929.43
1138	D 151	4 H 3 C 4 m 7	3	23.26275	86.00247	5.5	0.75	0.4	1.50	0.20	16402.97
1141	D 154	4 H 3 C 4 m 7	3	23.26213	86.00172	6.0	0.75	0.4	1.50	0.20	17894.15
1143	D 156	4 H 3 C 4 m 7	1	23.26159	86.00202	5.0	0.75	0.4	1.50	0.20	14911.79

1144	D 157	4 H 3 C 4 m 7	1	23.26187	86.00087	4.5	0.75	0.4	1.50	0.20	13420.61
1146	D 159 *	4 H 3 C 4 m 7	1	23.26864	86.0151	5.0	0.75	0.4	1.50	0.20	14911.79
1147	D 160 *	4 H 3 C 4 m 7	1	23.26886	86.01475	4.0	0.75	0.4	1.50	0.20	11929.43
1148	D 161 *	4 H 3 C 4 m 7	1	23.26847	86.01439	3.5	0.75	0.4	1.50	0.20	10438.25
1149	D 162 *	4 H 3 C 4 m 7	1	23.26853	86.01457	4.0	0.75	0.4	1.50	0.20	11929.43
1150	D 163 *	4 H 3 C 4 m 7	2	23.26831	86.0141	4.5	0.75	0.4	1.50	0.20	13420.61
1151	D 164 *	4 H 3 C 4 m 7	2	23.26853	86.01399	3.0	0.75	0.4	1.50	0.20	8947.07
1152	D 165 *	4 H 3 C 4 m 7	1	23.26845	86.01361	3.5	0.75	0.4	1.50	0.20	10438.25
1153	D 166 *	4 H 3 C 4 m 7	1	23.26826	86.01349	4.0	0.75	0.4	1.50	0.20	11929.43
1154	D 167 *	4 H 3 C 4 m 7	1	23.26793	86.0127	4.5	0.90	0.5	1.90	0.30	21878.43
1155	D 168 *	4 H 3 C 4 m 7	1	23.2677	86.01388	4.0	0.75	0.4	1.50	0.20	11929.43
1156	D 169 *	4 H 3 C 4 m 7	1	23.26777	86.01391	8.0	0.75	0.4	1.50	0.20	23858.87
1157	D 170 *	4 H 3 C 4 m 7	1	23.26757	86.01377	2.5	0.75	0.4	1.50	0.20	7455.90
1158	D 171 *	4 H 3 C 4 m 7	1	23.2675	86.01369	3.5	0.75	0.4	1.50	0.20	10438.25
1160	D 173 *	4 H 3 C 4 m 7	2	23.26776	86.01263	3.5	0.75	0.4	1.50	0.20	10438.25
1161	D 174 *	4 H 3 C 4 m 7	1	23.2678	86.01246	3.5	0.75	0.4	1.50	0.20	10438.25
1162	D 175 *	4 H 3 C 4 m 7	2	23.26745	86.01244	5.0	0.75	0.4	1.50	0.20	14911.79
1163	D 176 *	4 H 3 C 4 m 7	2	23.26734	86.01201	3.5	0.75	0.4	1.50	0.20	10438.25
1164	D 177	4 H 3 C 4 m 7	2	23.26709	86.01151	5.0	0.75	0.4	1.50	0.20	14911.79
1165	D 178	4 H 3 C 4 m 7	2	23.26701	86.01131	3.0	0.75	0.4	1.50	0.20	8947.07
1167	D 180	4 H 3 C 4 m 7	1	23.26732	86.00999	4.0	0.75	0.4	1.50	0.20	11929.43
1168	D 181	4 H 3 C 4 m 7	1	23.26756	86.00957	3.5	0.90	0.5	1.90	0.30	17016.55
1170	D 183	4 H 3 C 4 m 7	1	23.26699	86.00673	5.0	0.75	0.4	1.50	0.20	14911.79
1171	D 184	4 H 3 C 4 m 7	1	23.26637	86.00474	4.0	0.75	0.4	1.50	0.20	11929.43
1172	D 185	4 H 3 C 4 t 7	1	23.26614	85.99133	5.5	0.75	0.4	1.50	0.20	16402.97
1173	D 186	4 H 3 C 4 t 7	1	23.26565	85.99154	4.5	0.75	0.4	1.50	0.20	13420.61
1174	D 187	4 H 3 C 4 t 7	1	23.26576	85.99027	4.0	0.75	0.4	1.50	0.20	11929.43
1175	D 188	4 H 3 C 4 t 7	1	23.26492	85.98972	5.0	0.75	0.4	1.50	0.20	14911.79
1176	D 189	4 H 3 C 4 t 7	1	23.26379	85.98885	4.0	0.75	0.4	1.50	0.20	11929.43
1177	D 190	4 H 3 C 4 t 7	1	23.26401	85.9884	4.5	0.75	0.4	1.50	0.20	13420.61
1178	D 191	4 H 3 C 4 t 7	1	23.26394	85.98756	5.5	0.75	0.4	1.50	0.20	16402.97
1179	D 192	4 H 3 C 4 t 7	1	23.26375	85.98759	5.0	0.75	0.4	1.50	0.20	14911.79

1180	D 193	4 H 3 C 4 t 7	1	23.26339	85.98618	4.5	0.75	0.4	1.50	0.20	13420.61
1181	D 194	4 H 3 C 4 t 7	1	23.26311	85.98584	3.5	0.75	0.4	1.50	0.20	10438.25
1182	D 195	4 H 3 C 4 t 7	1	23.26301	85.98513	3.0	0.75	0.4	1.50	0.20	8947.07
1183	D 196	4 H 3 C 4 t 7	1	23.26298	85.98487	3.5	0.75	0.4	1.50	0.20	10438.25
1184	D 197	4 H 3 C 4 t 7	1	23.26278	85.98461	5.0	0.75	0.4	1.50	0.20	14911.79
1185	D 198	4 H 3 C 4 t 7	1	23.26325	85.98361	4.0	0.75	0.4	1.50	0.20	11929.43
1186	D 199	4 H 3 C 4 t 7	1	23.26353	85.98368	4.0	0.75	0.4	1.50	0.20	11929.43
1187	D 200	4 H 3 C 4 m 7	1	23.26388	85.99926	5.0	0.75	0.4	1.50	0.20	14911.79
1188	D 201	4 H 3 C 4 m 7	1	23.2638	85.99871	5.5	0.75	0.4	1.50	0.20	16402.97
1189	D 202	4 H 3 C 4 m 7	1	23.26346	85.99827	5.5	0.75	0.4	1.50	0.20	16402.97
1190	D 203	4 H 3 C 4 m 7	1	23.26338	85.99808	5.0	0.75	0.4	1.50	0.20	14911.79
1191	D 204	4 H 3 C 4 m 7	1	23.26371	85.99746	5.0	0.75	0.4	1.50	0.20	14911.79
1192	D 205	4 H 3 C 4 m 6	1	23.26366	85.99718	3.5	0.75	0.4	1.50	0.20	10438.25
1196	D 209	4 H 3 C 4 m 7	1	23.25876	86.01857	5.0	0.75	0.4	1.50	0.20	14911.79
1197	D 210	4 H 3 C 4 m 7	1	23.25929	86.01871	6.5	0.75	0.4	1.50	0.20	19385.33
1198	D 211	4 H 3 C 4 m 7	1	23.26002	86.01884	6.0	0.90	0.5	1.90	0.30	29171.24
1199	D 212	4 H 3 C 4 m 7	1	23.26057	86.00188	6.0	0.75	0.4	1.50	0.20	17894.15
1200	D 213	4 H 3 C 4 m 7	1	23.25371	86.00869	4.5	0.75	0.4	1.50	0.20	13420.61
1202	D 215	4 H 3 C 4 m 7	2	23.2532	86.01021	8.0	0.60	0.4	1.30	0.20	18149.97
1203	D 216	4 H 3 C 4 m 7	1	23.25287	86.0112	6.0	0.75	0.4	1.50	0.20	17894.15
1205	D 218	4 H 3 C 4 m 7	1	23.25229	86.01167	4.0	0.75	0.4	1.50	0.20	11929.43
1206	D 219	4 H 3 C 4 m 7	1	23.25215	86.01204	5.0	0.75	0.4	1.50	0.20	14911.79
1207	D 220	4 H 3 C 4 m 7	1	23.25235	86.01254	4.5	0.75	0.4	1.50	0.20	13420.61
1208	D 221	4 H 3 C 4 m 7	1	23.25269	86.01251	6.0	0.75	0.4	1.50	0.20	17894.15
1209	D 222	4 H 3 C 4 m 7	1	23.25302	86.0118	4.5	0.75	0.4	1.50	0.20	13420.61
1210	D 223	4 H 3 C 4 m 7	1	23.25457	86.01375	4.0	0.75	0.4	1.50	0.20	11929.43
1211	D 224	4 H 3 C 4 m 7	1	23.25466	86.01165	6.0	0.75	0.4	1.50	0.20	17894.15
1212	D 225	4 H 3 C 4 m 7	1	23.25518	86.01172	3.5	0.75	0.4	1.50	0.20	10438.25
1213	D 226	4 H 3 C 4 m 7	1	23.2555	86.01178	7.0	0.90	0.5	1.90	0.30	34033.11
1214	D 227	4 H 3 C 4 m 8	1	23.27596	86.02803	8.0	0.75	0.4	1.50	0.20	23858.87

** Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

7.1.3 Gabion Check measures-BURDA BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
999	D 012	4 H 3 C 4 m 6	2	23.22986	86.00103	6	1	0.40	36706.78
1004	D 017	4 H 3 C 4 m 6	2	23.23061	86.00196	5	1	0.40	30588.98
1025	D 038	4 H 3 C 4 m 6	1	23.23997	86.00361	5	1	0.40	30631.72
1028	D 041	4 H 3 C 4 m 6	1	23.23856	86.00669	6	1	0.40	36706.78
1047	D 060	4 H 3 C 4 m 6	1	23.23541	86.00854	6	1.2	0.40	41231.01
1067	D 080	4 H 3 C 4 m 6	3	23.2316	85.9948	8	1.2	0.40	54974.68
1071	D 084	4 H 3 C 4 m 1	1	23.21743	85.99623	8	1.5	0.50	67056.38
1080	D 093 *	4 H 3 C 4 m 7	1	23.25591	85.99828	8	1.2	0.40	54974.68
1117	D 130	4 H 3 C 4 m 7	1	23.26198	86.00555	5	1	0.40	30588.98
1139	D 152	4 H 3 C 4 m 7	3	23.26259	86.00223	5	1	0.40	30588.98
1140	D 153	4 H 3 C 4 m 7	3	23.26233	86.00192	4	1	0.40	24471.19
1142	D 155	4 H 3 C 4 m 7	3	23.26188	86.00147	4	1	0.40	24471.19
1145	D 158	4 H 3 C 4 m 7	1	23.26232	86.0013	6	1	0.40	36706.78
1159	D 172 *	4 H 3 C 4 m 7	1	23.26709	86.01366	4	1	0.40	24471.19
1169	D 182	4 H 3 C 4 m 7	1	23.26818	86.00888	6	1	0.40	36706.78
1193	D 206	4 H 3 C 4 m 8	2	23.26434	86.02633	7	1.2	0.40	48102.84
1194	D 207	4 H 3 C 4 m 8	2	23.26366	86.02587	8	1.2	0.40	54974.68
1195	D 208 *	4 H 3 C 4 m 8	1	23.26174	86.02549	7	1	0.40	42824.57
1201	D 214	4 H 3 C 4 m 7	3	23.25316	86.00881	9	1	0.40	55060.17
1204	D 217	4 H 3 C 4 m 7	2	23.25243	86.0113	6	1	0.40	36706.78

1215	D 228	4 H 3 C 8 f 9	1	23.27634	86.02847	3	1	0.40	18353.39
1216	D 229	4 H 3 C 8 f 9	1	23.27646	86.02859	4	1	0.40	24471.19
1217	D 230 *	4 H 3 C 8 f 9	1	23.27734	86.03024	4	1	0.40	24471.19
1218	D 231 *	4 H 3 C 8 f 9	1	23.27745	86.03011	5	1	0.40	30588.98
1219	D 232 *	4 H 3 C 8 f 9	1	23.27777	86.03013	3	1	0.40	18353.39
1220	D 233 *	4 H 3 C 8 f 9	1	23.27803	86.03014	4	1	0.40	21479.65
1221	D 234 *	4 H 3 C 8 f 9	1	23.2783	86.03039	4	1	0.40	21479.65
1222	D 235 *	4 H 3 C 8 f 9	1	23.27871	86.03053	5	1	0.40	26849.56
1223	D 236	4 H 3 C 8 f 8	1	23.28145	86.01462	4	1	0.40	21479.65

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

Water Harvesting Structure Measures-BURDA BEAT (Baghmundi Range) Open Map

7.2.1 Dugout Pond-BURDA BEAT (Baghmundi Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
98	W 02	4 H 3 C 4 m 6	1	23.24089	86.00478	1016.05
108	W 12	4 H 3 C 4 m 7	4	23.25452	85.99765	1336.63
110	W 14	4 H 3 C 4 m 7	3	23.26132	86.00171	1559.38
113	W 17	4 H 3 C 4 t 7	1	23.26238	85.98165	398.77
114	W 18 **	4 H 3 C 4 m 8	1	23.2629	86.02496	1322.41
119	W 23	4 H 3 C 8 f 8	1	23.28164	86.01534	3833.37

** Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

7.2.2Pond Renovation-BURDA BEAT (Baghmundi Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
97	W 01	4 H 3 C 4 m 6	1	23.2327	86.00227	374.89
99	W 03	4 H 3 C 4 m 6	1	23.23939	86.00836	267.01
100	W 04	4 H 3 C 4 m 6	1	23.23646	86.00852	1522.71
101	W 05	4 H 3 C 4 m 6	1	23.23684	86.00119	374.89
102	W 06	4 H 3 C 4 m 6	2	23.23319	85.99878	976.19
103	W 07	4 H 3 C 4 m 6	2	23.23203	85.99787	213.07
104	W 08	4 H 3 C 4 m 6	1	23.23055	86.00307	465.68
105	W 09	4 H 3 C 4 m 6	1	23.23551	85.99863	399.46
106	W 10	4 H 3 C 4 m 6	3	23.23594	85.99778	213.07
107	W 11	4 H 3 C 4 m 6	2	23.24395	86.00463	213.07
109	W 13	4 H 3 C 4 m 7	1	23.25697	85.99809	213.07
111	W 15	4 H 3 C 4 t 7	1	23.2636	85.99376	839.56
112	W 16****	4 H 3 C 4 t 7	1	23.26533	85.99154	1075.96
115	W 19**	4 H 3 C 4 m 7	1	23.25818	86.02193	374.89
116	W 20	4 H 3 C 4 m 8	1	23.27516	86.02708	957.76
117	W 21	4 H 3 C 8 f 8	1	23.28045	86.01794	374.89
118	W 22	4 H 3 C 4 m 7	1	23.27873	86.01858	1386.08

**No existing Pond at Given Coordinates

****Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

(8) KALIMATI BEAT (Baghmundi Range)

Drainage Line Treatment Measures Open Map

8.1.1 Brushwood Check Dam-KALIMATI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
1224	D 001	4 H 3 C 4 t 3	1	23.25356	85.9149	3.0	1.3	0.8	0.75	4249.53
1235	D 012	4 H 3 C 4 t 3	1	23.25684	85.91683	2.0	0.6	0.4	0.50	1547.41
1236	D 013	4 H 3 C 4 t 3	1	23.25706	85.91684	2.0	0.8	0.5	0.50	1826.41
1237	D 014	4 H 3 C 4 t 3	1	23.24138	85.91671	2.5	1.0	0.6	0.50	2492.36
1267	D 044	4 H 3 C 4 t 2	1	23.24131	85.89533	2.0	0.5	0.3	0.50	1442.30

8.1.2 Loose Boulder Check Dam-KALIMATI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1225	D 002	4 H 3 C 4 t 3	2	23.25324	85.91458	6.0	1.20	0.6	2.40	0.40	48796.36
1226	D 003	4 H 3 C 4 t 3	2	23.25262	85.91444	6.0	1.00	0.5	2.00	0.30	32702.13
1227	D 004	4 H 3 C 4 t 3	2	23.25191	85.91416	5.5	1.00	0.5	2.00	0.30	30047.47
1228	D 005	4 H 3 C 4 t 3	2	23.25121	85.91419	4.0	0.75	0.4	1.50	0.20	11929.43
1229	D 006	4 H 3 C 4 t 3	2	23.25268	85.91695	4.0	0.75	0.4	1.50	0.20	11929.43
1230	D 007	4 H 3 C 4 t 3	2	23.25228	85.91651	4.5	0.75	0.4	1.50	0.20	13420.61
1231	D 008	4 H 3 C 4 t 3	2	23.25176	85.91596	4.0	0.75	0.4	1.50	0.20	11929.43
1232	D 009	4 H 3 C 4 t 3	2	23.25124	85.91552	3.5	0.90	0.5	1.90	0.30	17016.55
1233	D 010	4 H 3 C 4 t 3	2	23.25082	85.91483	4.0	1.00	0.5	2.00	0.30	21801.42

1234	D 011	4 H 3 C 4 t 3	3	23.25031	85.91436	5.0	1.00	0.5	2.00	0.30	27251.78
1238	D 015	4 H 3 C 4 t 3	1	23.2416	85.91684	5.0	1.00	0.5	2.00	0.30	27251.78
1239	D 016	4 H 3 C 4 t 3	1	23.24153	85.91676	6.0	0.75	0.4	1.50	0.20	17894.15
1240	D 017	4 H 3 C 4 t 3	1	23.24155	85.91733	5.0	0.90	0.5	1.90	0.30	24309.36
1241	D 018	4 H 3 C 4 t 3	1	23.24788	85.91813	4.0	0.75	0.4	1.50	0.20	11955.07
1242	D 019	4 H 3 C 4 t 3	1	23.24738	85.91824	5.0	1.00	0.5	2.00	0.30	27251.78
1243	D 020	4 H 3 C 4 t 3	1	23.24671	85.9183	5.5	1.00	0.5	2.00	0.30	29976.95
1246	D 023	4 H 3 C 8 a 4	1	23.27351	85.93356	7.0	0.75	0.4	1.50	0.20	20876.51
1247	D 024	4 H 3 C 8 a 4	1	23.27373	85.93363	5.0	0.75	0.4	1.50	0.20	14911.79
1248	D 025	4 H 3 C 8 a 4	1	23.27472	85.93368	9.0	1.00	0.5	2.00	0.30	49053.20
1249	D 026	4 H 3 C 8 a 4	1	23.27494	85.93358	7.0	0.75	0.4	1.50	0.20	20876.51
1250	D 027	4 H 3 C 8 a 4	1	23.27473	85.93181	8.0	1.00	0.5	2.00	0.30	43602.84
1251	D 028	4 H 3 C 8 a 4	1	23.27487	85.93238	5.0	0.75	0.4	1.50	0.20	14911.79
1252	D 029	4 H 3 C 8 a 4	1	23.27506	85.93264	8.0	1.00	0.5	2.00	0.30	43602.84
1253	D 030	4 H 3 C 4 t 3	1	23.23914	85.9171	6.0	0.75	0.4	1.50	0.20	17894.15
1254	D 031	4 H 3 C 4 t 3	1	23.23924	85.91789	8.0	0.75	0.4	1.50	0.20	23858.87
1255	D 032	4 H 3 C 4 t 3	1	23.24156	85.91981	6.0	0.75	0.4	1.50	0.20	17894.15
1256	D 033	4 H 3 C 4 t 3	1	23.23934	85.91799	7.0	1.20	0.6	2.40	0.40	56929.09
1257	D 034	4 H 3 C 4 t 3	2	23.23878	85.91825	9.0	1.00	0.5	2.00	0.30	49053.20
1258	D 035	4 H 3 C 4 t 3	1	23.2403	85.91823	7.0	1.00	0.5	2.00	0.30	38152.49
1259	D 036	4 H 3 C 4 t 3	2	23.24009	85.91907	6.0	0.90	0.5	1.90	0.30	29171.24
1260	D 037	4 H 3 C 4 t 3	2	23.24045	85.91939	6.0	1.00	0.5	2.00	0.30	32702.13
1261	D 038	4 H 3 C 4 t 3	2	23.24089	85.91924	7.0	1.00	0.5	2.00	0.30	38152.49
1262	D 039	4 H 3 C 4 t 3	2	23.24145	85.91888	7.0	0.75	0.4	1.50	0.20	20876.51
1263	D 040	4 H 3 C 4 t 3	2	23.2419	85.91865	8.0	1.00	0.5	2.00	0.30	43602.84
1268	D 045	4 H 3 C 4 t 2	1	23.24091	85.89513	4.5	0.75	0.4	1.50	0.20	13420.61
1269	D 046	4 H 3 C 4 t 2	1	23.2418	85.89707	9.0	0.75	0.4	1.50	0.20	26841.22
1270	D 047	4 H 3 C 4 t 2	1	23.24141	85.89758	6.0	0.75	0.4	1.50	0.20	17894.15
1271	D 048	4 H 3 C 4 t 3	1	23.23667	85.91006	4.5	0.75	0.4	1.50	0.20	13420.61
1272	D 049	4 H 3 C 4 t 3	1	23.23623	85.91022	5.0	0.75	0.4	1.50	0.20	14911.79

8.1.3 Gabion Check Dam measures-KALIMATI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
1244	D 021	4 H 3 C 4 t 3	1	23.24616	85.91807	6.5	1.5	1.0	0.50	3	2.50	1.0	0.50	276942.22
1245	D 022	4 H 3 C 4 t 3	1	23.24543	85.91835	7.5	1.5	1.0	0.50	3	2.50	1.0	0.50	294450.22
1264	D 041	4 H 3 C 4 t 3	2	23.2423	85.91866	7.5	1.5	1.0	0.50	3	2.50	1.0	0.50	294450.22
1265	D 042	4 H 3 C 4 t 3	2	23.24277	85.91887	6.5	1.2	1.0	0.40	3	2.20	1.0	0.40	271877.12
1266	D 043	4 H 3 C 4 t 3	2	23.24339	85.91904	7.5	1.5	1.0	0.50	3	2.50	1.0	0.50	294450.22

Water Harvesting Structure Measures-KALIMATI BEAT (Baghmundi Range)

Open Map

8.2.1 Dugout Pond- KALIMATI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
127	W 08	4 H 3 C 4 t 4	2	23.25939	85.93823	590.16

8.2.2 Embankment Pond-KALIMATI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
121	W 02	4 H 3 C 4 t 3	1	23.23158	85.91357	54.88
123	W 04	4 H 3 C 8 a 4	1	23.27433	85.93377	46.76
124	W 05	4 H 3 C 4 t 3	1	23.24199	85.91848	53.26
129	W 10	4 H 3 C 4 t 2	1	23.24033	85.89498	54.88
130	W 11	4 H 3 C 4 t 2	1	23.24108	85.89837	54.88
131	W 12	4 H 3 C 4 t 3	3	23.23602	85.91018	46.76

8.2.3Pond Renovation-KALIMATI BEAT (Baghmundi Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
120	W 01	4 H 3 C 4 t 3	1	23.24326	85.91469	63.54
122	W 03	4 H 3 C 4 t 3	4	23.23124	85.9136	63.54
125	W 06	4 H 3 C 4 t 3	2	23.23808	85.91853	184.22
126	W 07	4 H 3 C 4 t 4	1	23.25917	85.93995	49.56
128	W 09	4 H 3 C 8 a 1	1	23.24168	85.87511	63.54
132	W 13	4 H 3 C 4 t 2	3	23.25181	85.91099	203.19

(9) BALARAMPUR BEAT (Balarampur Range)

Drainage Line Treatment Measures Open Map

9.1.1Loose Boulder Check Dam - BALARAMPUR BEAT (Balarampur Range) Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
153	DL1	4 H 3 C 1 y 2	1	23.07846	86.15416	3.5	0.60	0.4	1.30	0.20	7940.61
154	DL2	4 H 3 C 1 y 2	1	23.07818	86.15391	6.0	0.75	0.4	1.50	0.20	17932.61
155	DL3	4 H 3 C 1 y 2	1	23.07773	86.15393	6.0	0.60	0.4	1.30	0.20	13645.81
156	DL4	4 H 3 C 1 y 2	1	23.07797	86.15395	5.0	0.50	0.4	1.20	0.20	9456.75

Water Harvesting Structure Measures - BALARAMPUR BEAT (Balarampur Range) Open Map

9.2.1 Dugout Pond-- BALARAMPUR BEAT (Balarampur Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
58	W1	4 H 3 C 1 u 6	1	23.06003	86.15294	2134.04
59	W2	4 H 3 C 1 y 2	2	23.07882	86.15381	5758.91

(10) BERSA BEAT (Balarampur Range)

Drainage Line Treatment Measures

Open Map

10.1.1 Loose Boulder Check Dam - BERSA BEAT (Balarampur Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
150	DL 2	4 H 3 C 1 y 6	1	23.14069	86.1977	5.0	0.75	0.4	1.50	0.20	14911.79
151	DL 3	4 H 3 C 1 y 6	1	23.14025	86.20083	6.0	0.75	0.4	1.50	0.20	17894.15
152	DL 4	4 H 3 C 1 y 6	1	23.13981	86.20114	6.0	0.75	0.4	1.50	0.20	17894.15

10.1.2 Gabion Check measures- BERSA BEAT (Balarampur Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
149	DL 1	4 H 3 C 1 y 5	3	23.14944	86.16236	9	1.8	0.60	92769.76

Water Harvesting Structure Measures - BERSA BEAT (Balarampur Range)

Open Map

10.2.1 Dugout Pond- BERSA BEAT (Balarampur Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
57	W1	4 H 3 C 1 y 6	1	23.14078	86.19858	1919.92

(11) GHATBERA BEAT (Balarampur Range)

Water Harvesting Structure Measures- GHATBERA BEAT (Balarampur Range) Open Map

11.1.1 Dugout Pond- GHATBERA BEAT (Balarampur Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
61	W2	2 A 2 B 3 j 9	1	23.16393	86.19729	3132.38

11.1.2 Pond Renovation-- GHATBERA BEAT (Balarampur Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
60	W1	2 A 2 B 3 m 8	2	23.20247	86.23026	1951.52

(12) JHALDA BEAT (Jhalda Range)

Drainage Line Treatment Measures Open Map

12.1.1Brushwood Check Dam -JHALDA BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
90	D4	2 A 2 B 5 f 3	1	23.311484	86.033512	3.0	0.8	0.5	0.75	3041.33
94	D8	2 A 2 B 5 f 3	1	23.312331	86.033303	6.0	1.5	0.9	1.00	10350.75
106	D20	2 A 2 B 5 f 4	1	23.313618	86.034712	6.0	1.3	0.8	1.00	9209.40
115	D29	4 H 3 C 8 g 6	1	23.364553	85.933936	4.0	0.5	0.3	0.75	2887.42
116	D30	4 H 3 C 8 g 5	2	23.361475	85.9342	4.0	0.5	0.3	0.75	2887.42

12.1.2 Loose Boulder Check Dam- JHALDA BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
87	D1	2 A 2 B 5 f 4	1	23.31068	86.03426	7.0	1.00	0.5	2.00	0.30	38152.49
88	D2	2 A 2 B 5 f 4	1	23.31089	86.03415	5.5	1.00	0.5	2.00	0.30	30047.47
89	D3	2 A 2 B 5 f 4	1	23.31103	86.03402	5.5	1.00	0.5	2.00	0.30	30047.47
93	D7	2 A 2 B 5 f 4	1	23.31023	86.03328	4.0	0.60	0.4	1.30	0.20	9097.20
98	D12	2 A 2 B 5 f 4	1	23.31224	86.03558	4.0	1.35	0.6	2.60	0.40	37710.75
99	D13	2 A 2 B 5 f 4	1	23.31219	86.03549	9.0	0.75	0.4	1.50	0.20	26898.92
100	D14	2 A 2 B 5 f 4	1	23.31268	86.03516	5.0	1.20	0.6	2.40	0.40	40663.63
102	D16	2 A 2 B 5 f 3	1	23.31282	86.03438	8.0	1.50	0.6	2.90	0.50	96066.04
103	D17	2 A 2 B 5 f 3	1	23.31317	86.0354	7.0	1.50	0.6	2.90	0.50	84274.67

104	D18	2 A 2 B 5 f 4	1	23.31336	86.03513	5.0	1.50	0.6	2.90	0.50	60196.19
107	D21	2 A 2 B 5 f 3	1	23.31431	86.03405	6.0	1.35	0.6	2.60	0.40	56699.46
108	D22	2 A 2 B 5 f 3	1	23.31489	86.03361	8.0	0.75	0.4	1.50	0.20	23910.15
109	D23	2 A 2 B 5 f 3	1	23.3142	86.02829	6.0	1.00	0.5	2.00	0.30	32702.13
110	D24	2 A 2 B 5 f 3	1	23.31387	86.02793	5.0	1.00	0.5	2.00	0.30	27251.78
112	D26	2 A 2 B 5 f 3	2	23.31349	86.02707	8.0	1.35	0.6	2.60	0.40	75421.50
114	D28	4 H 3 C 8 g 6	1	23.36405	85.9341	4.0	0.60	0.4	1.30	0.20	9097.20
117	D31	4 H 3 C 8 h 7	1	23.3412	85.99507	5.0	0.75	0.4	1.50	0.20	14943.84
118	D32	4 H 3 C 8 h 7	1	23.33951	85.99507	4.0	0.75	0.4	1.50	0.20	11955.07
119	D33	4 H 3 C 8 h 7	2	23.33918	85.99727	5.0	0.75	0.4	1.50	0.20	14943.84
120	D34	4 H 3 C 8 h 5	1	23.33912	85.98031	5.0	1.00	0.5	2.00	0.30	27315.88
121	D35	4 H 3 C 8 h 5	1	23.33948	85.99259	4.0	0.75	0.4	1.50	0.20	11955.07
122	D36	4 H 3 C 8 h 5	1	23.33996	85.99181	4.0	0.75	0.4	1.50	0.20	11955.07
123	D37	4 H 3 C 8 h 5	1	23.34063	85.99172	5.0	0.75	0.4	1.50	0.20	14943.84
124	D38	4 H 3 C 8 h 5	1	23.34174	85.99169	5.0	0.75	0.4	1.50	0.20	14943.84

12.1.3Gabion Check measures- JHALDA BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
92	D6	2 A 2 B 5 f 4	1	23.31024	86.03382	7	1	0.40	42824.57
95	D9 *	2 A 2 B 5 f 4	1	23.31119	86.03655	5	1.2	0.40	34359.17
96	D10 *	2 A 2 B 5 f 4	1	23.31151	86.03675	7	1.5	0.50	58674.33
101	D15	2 A 2 B 5 f 4	1	23.31268	86.03537	9	1.8	0.60	86038.81
105	D19	2 A 2 B 5 f 4	1	23.31327	86.03527	8	1.8	0.60	76581.50
113	D27	4 H 3 C 8 g 6	1	23.36001	85.9369	6	1	0.40	36758.06

12.1.4 Gabion Check Dam measures- JHALDA BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
97	D11 *	2 A 2 B 5 f 4	1	23.31137	86.03668	6.5	2.1	1.0	0.70	3	3.10	1.0	0.70	292266.07

Water Harvesting Structure Measures - JHALDA BEAT (Jhalda Range)

Open Map

12.2.1 Dugout Pond- JHALDA BEAT (Jhalda Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
45	W 9 *	4 H 3 C 8 h 3	2	23.33417	85.97529	580.93

* Forest area missing in shapefile. Fall outside current boundary but within boundary of Range/Beat.

12.2.2 Embankment Pond- JHALDA BEAT (Jhalda Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
38	W 2	2 A 2 B 5 f 3	1	23.31151	86.03612	46.97
40	W 4	2 A 2 B 5 f 3	1	23.31385	86.03438	55.53
41	W 5	2 A 2 B 5 f 3	2	23.31403	86.02754	416.68
42	W 6	2 A 2 B 5 f 3	2	23.31534	86.0279	54.88
44	W 8	4 H 3 C 8 g 6	1	23.36543	85.93494	50.84
46	W 10**	4 H 3 C 8 h 3	1	23.32568	85.97511	427.19
47	W 11**	4 H 3 C 8 h 3	1	23.32367	85.9776	50.76

**Forest area missing in shapefile. Fall outside current boundary but within boundary of Range/Beat.

12.2.3 Pond Renovation- JHALDA BEAT (Jhalda Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
37	W 1	2 A 2 B 5 f 3	1	23.31297	86.03288	213.07
39	W 3	2 A 2 B 5 f 3	1	23.31256	86.0364	36.64
43	W 7	2 A 2 B 5 f 3	2	23.3161	86.02837	76.28

12.3.1 Land Treatment and Forest Plantation- JHALDA BEAT (Jhalda Range)

Open Map

Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
100	L3	CST	Nil	0.11	5.5	18	288	3×0.45×0.30	1093.90	100	NFP
135	L5	CST	GF	1.37	5.8	17	272	3×0.45×0.45	19743.21	100	NFP
156	L1	CST	GF	0.90	5.8	17	272	3×0.45×0.30	8645.37	100	NFP
157	L3	CST	Nil	1.49	5.8	17	272	3×0.45×0.30	14291.33	100	NFP
158	L5	CST	GF	0.39	5.8	17	272	3×0.45×0.30	3740.45	100	NFP
184	L5	CST	GF	0.42	6.5	15	240	3×0.45×0.45	5293.09	100	NFP
204	L1	CST	GF	0.58	6.5	15	240	3×0.45×0.30	4940.22	100	NFP
205	L3	CST	Nil	1.00	6.5	15	240	3×0.45×0.30	8468.94	100	NFP
206	L5	CST	GF	0.02	6.5	15	240	3×0.45×0.30	211.72	100	NFP
225	L4	CST	GF	0.32	5	20	320	3×0.45×0.45	5451.88	80	GF
237	L4	CST	GF	1.31	5	20	320	3×0.45×0.30	14855.93	80	GF
246	L4	CST	GF	0.37	5.2	19	304	3×0.45×0.45	6034.12	80	GF
256	L4	CST	GF	0.01	5.2	19	304	3×0.45×0.30	105.86	80	GF
267	L4	CST	GF	0.25	5.5	18	288	3×0.45×0.45	3863.96	80	GF
268	L5	CST	GF	0.13	5.5	18	288	3×0.45×0.45	2011.37	80	GF
269	L6	CST	Nil	0.18	5.5	18	288	3×0.45×0.45	2699.48	80	GF

286	L4	CST	GF	0.15	5.5	18	288	3×0.45×0.30	1587.93	80	GF
297	L4	CST	GF	0.54	5.8	17	272	3×0.45×0.45	7727.91	80	GF
298	L5	CST	GF	1.23	5.8	17	272	3×0.45×0.45	17625.98	80	GF
299	L6	CST	Nil	0.11	5.8	17	272	3×0.45×0.45	1587.93	80	GF
316	L4	CST	GF	0.53	5.8	17	272	3×0.45×0.30	5116.65	80	GF
325	L4	CST	GF	1.79	6.5	15	240	3×0.45×0.45	22760.27	80	GF
326	L5	CST	GF	4.22	6.5	15	240	3×0.45×0.45	53618.96	80	GF
327	L6	CST	Nil	0.15	6.5	15	240	3×0.45×0.45	1852.58	80	GF
343	L4	CST	GF	1.03	6.5	15	240	3×0.45×0.30	8715.95	80	GF
354	L4	CST	GF	1.02	5	20	320	3×0.45×0.45	17255.46	50	GF
372	L4	CST	GF	0.25	5	20	320	3×0.45×0.30	2822.98	50	GF
373	L6	CST	Nil	0.10	5	20	320	3×0.45×0.30	1093.90	50	GF
411	L4	CST	GF	0.61	5.2	19	304	3×0.45×0.45	9845.15	50	GF
412	L5	CST	GF	0.01	5.2	19	304	3×0.45×0.45	211.72	50	GF
413	L6	CST	Nil	0.10	5.2	19	304	3×0.45×0.45	1640.86	50	GF
430	L4	CST	GF	0.02	5.2	19	304	3×0.45×0.30	282.30	50	GF
431	L6	CST	Nil	2.71	5.2	19	304	3×0.45×0.30	29076.69	50	GF
472	L4	CST	GF	1.54	5.5	18	288	3×0.45×0.45	23395.44	50	GF
473	L5	CST	GF	1.19	5.5	18	288	3×0.45×0.45	18049.43	50	GF
474	L6	CST	Nil	0.93	5.5	18	288	3×0.45×0.45	14132.54	50	GF
495	L1	CST	GF	4.28	5.5	18	288	3×0.45×0.30	43544.46	50	GF
496	L3	CST	Nil	0.02	5.5	18	288	3×0.45×0.30	211.72	50	GF
497	L4	CST	GF	2.78	5.5	18	288	3×0.45×0.30	28265.09	50	GF
498	L6	CST	Nil	16.98	5.5	18	288	3×0.45×0.30	172589.92	50	GF
541	L4	CST	GF	9.00	5.8	17	272	3×0.45×0.45	129521.84	50	GF
542	L5	CST	GF	2.09	5.8	17	272	3×0.45×0.45	30064.73	50	GF
543	L6	CST	Nil	0.46	5.8	17	272	3×0.45×0.45	6616.35	50	GF
565	L1	CST	GF	4.75	5.8	17	272	3×0.45×0.30	45626.41	50	GF
566	L3	CST	Nil	1.22	5.8	17	272	3×0.45×0.30	11750.66	50	GF
567	L4	CST	GF	2.09	5.8	17	272	3×0.45×0.30	20007.87	50	GF
568	L6	CST	Nil	8.69	5.8	17	272	3×0.45×0.30	83419.05	50	GF
607	L4	CST	GF	7.18	6.5	15	240	3×0.45×0.45	91199.88	50	GF
608	L5	CST	GF	0.62	6.5	15	240	3×0.45×0.45	7886.70	50	GF
629	L1	CST	GF	2.98	6.5	15	240	3×0.45×0.30	25195.10	50	GF
630	L3	CST	Nil	0.31	6.5	15	240	3×0.45×0.30	2611.26	50	GF
631	L4	CST	GF	2.12	6.5	15	240	3×0.45×0.30	17925.93	50	GF
632	L6	CST	Nil	0.90	6.5	15	240	3×0.45×0.30	7657.34	50	GF

(13) KALMA BEAT (Jhalda Range)

Drainage Line Treatment Measures Open Map

13.1.1Loose Boulder Check Dam- KALMA BEAT (Jhalda Range) Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
125	D1	4 H 3 C 8 s 4	1	23.47252	85.91719	4.0	1.50	0.6	2.90	0.50	48156.95
126	D2	4 H 3 C 8 s 4	2	23.47203	85.91707	7.0	1.50	0.6	2.90	0.50	84274.67
127	D3	4 H 3 C 8 s 4	2	23.47203	85.91707	7.0	1.50	0.6	2.90	0.50	84274.67
130	D6	4 H 3 C 8 s 4	1	23.4715	85.91757	5.0	1.20	0.6	2.40	0.40	40766.20
133	D9	4 H 3 C 8 s 4	3	23.47273	85.91317	6.0	1.00	0.5	2.00	0.30	32779.05
135	D11	4 H 3 C 8 s 3	1	23.47455	85.89885	5.0	0.75	0.4	1.50	0.20	14943.84
136	D12	4 H 3 C 8 s 3	1	23.47496	85.89875	6.0	0.75	0.4	1.50	0.20	17932.61
137	D13	4 H 3 C 8 s 3	1	23.47555	85.89797	4.0	0.75	0.4	1.50	0.20	11955.07
138	D14	4 H 3 C 8 s 3	2	23.47463	85.89776	4.0	0.50	0.4	1.20	0.20	7565.40
139	D15	4 H 3 C 8 s 3	1	23.47246	85.89174	4.0	0.75	0.4	1.50	0.20	11955.07
143	D19	4 H 3 C 8 s 4	3	23.47243	85.9158	4.0	0.75	0.4	1.50	0.20	11929.43
144	D20	4 H 3 C 8 s 5	1	23.45805	85.93166	6.0	1.00	0.5	2.00	0.30	32702.13
145	D21	4 H 3 C 8 s 5	1	23.45751	85.93147	5.0	0.75	0.4	1.50	0.20	14911.79
147	D23	4 H 3 C 8 j 4	1	23.39688	85.936	3.0	0.50	0.4	1.20	0.20	5658.66
148	D24	4 H 3 C 8 j 4	1	23.39603	85.93166	4.0	1.20	0.6	2.40	0.40	32530.91

13.1.2 Gabion Check measures- KALMA BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
129	D5	4 H 3 C 8 s 4	1	23.47117	85.91791	5	1.8	0.60	51602.86
134	D10	4 H 3 C 8 s 4	3	23.4728	85.9141	7	1.8	0.60	72244.00
140	D16	4 H 3 C 8 s 3	1	23.472	85.89125	6	1.5	0.50	50356.39
141	D17	4 H 3 C 8 s 6	1	23.47328	85.88637	6	1	0.40	36758.06
142	D18	4 H 3 C 8 s 6	1	23.47316	85.88578	6	0.6	0.30	25421.85
146	D22	4 H 3 C 8 s 5	1	23.45713	85.93123	6	1	0.40	36706.78

13.1.3 Gabion Check Dam measures - KALMA BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
128	D4	4 H 3 C 8 s 4	1	23.4712	85.91703	10.5	1.5	1.0	0.50	5	2.50	1.0	0.50	367244.78
131	D7	4 H 3 C 8 s 4	1	23.4715	85.91757	7.5	1.5	1.0	0.50	3	2.50	1.0	0.50	294450.22
132	D8	4 H 3 C 8 s 4	1	23.47188	85.91508	7.5	1.5	1.0	0.50	3	2.50	1.0	0.50	294450.22

Water Harvesting Structure Measures - KALMA BEAT (Jhalda Range) Open Map

13.2.1 Dugout Pond- KALMA BEAT (Jhalda Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
56	W9	4 H 3 C 8 s 5	1	23.44859	85.93406	7615.19

13.2.2 Embankment Pond- KALMA BEAT (Jhalda Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
48	W1**	4 H 3 C 8 t 1	1	23.47352	85.87153	47.41
49	W2	4 H 3 C 8 s 6	1	23.47071	85.87425	256.18
50	W3***	4 H 3 C 8 s 6	1	23.47002	85.87362	420.99
51	W4	4 H 3 C 8 s 4	3	23.47289	85.91387	624.65
54	W7	4 H 3 C 8 s 5	3	23.45487	85.9311	401.90
55	W8	4 H 3 C 8 s 5	1	23.45646	85.93196	47.41

**Forest area missing in shapefile. Fall outside current boundary but within boundary of Range/Beat.

***Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

13.2.3Pond Renovation- KALMA BEAT (Jhalda Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
52	W5	4 H 3 C 8 s 3	2	23.47574	85.90111	333.23
53	W6	4 H 3 C 8 s 3	1	23.47212	85.89339	281.41

13.3.1 Land Treatment and Forest Plantation- KALMA BEAT (Jhalda Range)

Open Map

Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
17	L2	CST	Nil	0.04	5	20	320	3×0.45×0.45	688.10	100	NFP
18	L4	No Land Treatment Required	GF 40%	0.48	-	-	-	-	-	100	NFP
31	L1	CCT	GF 40%	0.73	5	20	320	3×0.45×0.30	8257.21	100	NFP
32	L3	No Land Treatment Required	GF 40%	2.84	-	-	-	-	-	100	NFP
33	L5	CST	GF 40%	0.01	5	20	320	3×0.45×0.30	105.86	100	NFP
34	L6	CST	Nil	0.22	5	20	320	3×0.45×0.30	2470.10	100	NFP
51	L1	CCT	GF 40%	0.57	5.2	19	304	3×0.45×0.45	9157.04	100	NFP
52	L4	No Land Treatment Required	GF 40%	0.53	-	-	-	-	-	100	NFP
62	L1	CCT	GF 40%	1.00	5.2	19	304	3×0.45×0.30	10692.03	100	NFP
63	L3	No Land Treatment Required	GF 40%	1.48	-	-	-	-	-	100	NFP
64	L6	CST	Nil	0.20	5.2	19	304	3×0.45×0.30	2117.23	100	NFP
80	L1	CCT	GF 40%	0.61	5.5	18	288	3×0.45×0.45	9262.90	100	NFP
81	L2	CST	Nil	3.49	5.5	18	288	3×0.45×0.45	53248.45	100	NFP
82	L3	No Land Treatment Required	GF 40%	0.02	-	-	-	-	-	100	NFP
83	L4	No Land	GF 40%	0.90	-	-	-	-	-	100	NFP

		Treatment Required									
84	L5	CST	GF 40%	0.27	5.5	18	288	3×0.45×0.45	4181.54	100	NFP
85	L7	CST	GF 40%	0.64	5.5	18	288	3×0.45×0.45	9686.34	100	NFP
101	L1	CCT	GF 40%	1.02	5.5	18	288	3×0.45×0.30	10409.74	100	NFP
102	L2	CST	Nil	0.03	5.5	18	288	3×0.45×0.30	317.58	100	NFP
103	L3	No Land Treatment Required	GF 40%	9.68	-	-	-	-	-	100	NFP
104	L4	No Land Treatment Required	GF 40%	0.02	-	-	-	-	-	100	NFP
105	L5	CST	GF 40%	1.43	5.5	18	288	3×0.45×0.30	14538.34	100	NFP
106	L6	CST	Nil	4.52	5.5	18	288	3×0.45×0.30	45908.71	100	NFP
107	L7	CST	GF 40%	3.58	5.5	18	288	3×0.45×0.30	36345.87	100	NFP
136	L1	CCT	GF 40%	1.12	5.8	17	272	3×0.45×0.45	16143.92	100	NFP
137	L2	CST	Nil	4.12	5.8	17	272	3×0.45×0.45	59282.57	100	NFP
138	L3	No Land Treatment Required	GF 40%	4.83	-	-	-	-	-	100	NFP
139	L4	No Land Treatment Required	GF 40%	4.69	-	-	-	-	-	100	NFP
140	L5	CST	GF 40%	4.39	5.8	17	272	3×0.45×0.45	63252.39	100	NFP
141	L7	CST	GF 40%	9.41	5.8	17	272	3×0.45×0.45	135555.96	100	NFP
159	L1	CCT	GF 40%	1.54	5.8	17	272	3×0.45×0.30	14750.06	100	NFP
160	L3	No Land Treatment Required	GF 40%	2.87	-	-	-	-	-	100	NFP
161	L5	CST	GF 40%	8.65	5.8	17	272	3×0.45×0.30	83030.89	100	NFP
162	L6	CST	Nil	6.43	5.8	17	272	3×0.45×0.30	61752.68	100	NFP
163	L7	CST	GF 40%	15.04	5.8	17	272	3×0.45×0.30	144395.40	100	NFP
185	L1	CCT	GF 40%	1.75	6.5	15	240	3×0.45×0.45	22178.04	100	NFP
186	L2	CST	Nil	1.82	6.5	15	240	3×0.45×0.45	23077.86	100	NFP

187	L3	No Land Treatment Required	GF 40%	2.83	-	-	-	-	-	100	NFP
188	L4	No Land Treatment Required	GF 40%	2.87	-	-	-	-	-	100	NFP
189	L5	CST	GF 40%	4.10	6.5	15	240	3×0.45×0.45	52136.90	100	NFP
190	L7	CST	GF 40%	5.20	6.5	15	240	3×0.45×0.45	66110.66	100	NFP
207	L1	CCT	GF 40%	0.53	6.5	15	240	3×0.45×0.30	4481.48	100	NFP
208	L5	CST	GF 40%	10.11	6.5	15	240	3×0.45×0.30	85606.86	100	NFP
209	L6	CST	Nil	2.09	6.5	15	240	3×0.45×0.30	17714.19	100	NFP
210	L7	CST	GF 40%	10.23	6.5	15	240	3×0.45×0.30	86630.19	100	NFP
226	L3	No Land Treatment Required	GF 40%	0.48	-	-	-	-	-	80	GF
227	L4	No Land Treatment Required	GF 40%	4.05	-	-	-	-	-	80	GF
228	L5	CST	GF 40%	4.15	5	20	320	3×0.45×0.45	70239.26	80	GF
238	L1	CCT	GF 40%	6.36	5	20	320	3×0.45×0.30	71774.25	80	GF
239	L2	CST	Nil	0.01	5	20	320	3×0.45×0.30	105.86	80	GF
240	L3	No Land Treatment Required	GF 40%	14.73	-	-	-	-	-	80	GF
241	L4	No Land Treatment Required	GF 40%	8.02	-	-	-	-	-	80	GF
242	L5	CST	GF 40%	3.59	5	20	320	3×0.45×0.30	40509.76	80	GF
243	L6	CST	Nil	1.25	5	20	320	3×0.45×0.30	14114.90	80	GF
247	L4	No Land Treatment Required	GF 40%	2.84	-	-	-	-	-	80	GF
248	L5	CST	GF 40%	1.14	5.2	19	304	3×0.45×0.45	18419.94	80	GF
257	L1	CCT	GF 40%	1.11	5.2	19	304	3×0.45×0.30	11891.81	80	GF
258	L3	No Land	GF 40%	6.85	-	-	-	-	-	80	GF

		Treatment Required									
259	L4	No Land Treatment Required	GF 40%	2.05	-	-	-	-	-	80	GF
260	L5	CST	GF 40%	0.35	5.2	19	304	3×0.45×0.30	3775.74	80	GF
270	L2	CST	Nil	0.22	5.5	18	288	3×0.45×0.45	3281.71	80	GF
271	L3	No Land Treatment Required	GF 40%	4.11	-	-	-	-	-	80	GF
272	L4	No Land Treatment Required	GF 40%	6.65	-	-	-	-	-	80	GF
273	L5	CST	GF 40%	9.76	5.5	18	288	3×0.45×0.45	148841.60	80	GF
274	L7	CST	GF 40%	0.75	5.5	18	288	3×0.45×0.45	11433.07	80	GF
287	L1	CCT	GF 40%	4.49	5.5	18	288	3×0.45×0.30	45626.41	80	GF
288	L3	No Land Treatment Required	GF 40%	13.65	-	-	-	-	-	80	GF
289	L4	No Land Treatment Required	GF 40%	2.40	-	-	-	-	-	80	GF
290	L5	CST	GF 40%	4.84	5.5	18	288	3×0.45×0.30	49225.71	80	GF
291	L6	CST	Nil	2.23	5.5	18	288	3×0.45×0.30	22689.70	80	GF
292	L7	CST	GF 40%	1.09	5.5	18	288	3×0.45×0.30	11044.91	80	GF
300	L1	CCT	GF 40%	0.43	5.8	17	272	3×0.45×0.45	6192.91	80	GF
301	L2	CST	Nil	0.76	5.8	17	272	3×0.45×0.45	10903.76	80	GF
302	L3	No Land Treatment Required	GF 40%	4.70	-	-	-	-	-	80	GF
303	L4	No Land Treatment Required	GF 40%	3.69	-	-	-	-	-	80	GF
304	L5	CST	GF 40%	7.95	5.8	17	272	3×0.45×0.45	114489.47	80	GF
305	L7	CST	GF 40%	2.33	5.8	17	272	3×0.45×0.45	33558.17	80	GF

317	L1	CCT	GF 40%	3.40	5.8	17	272	3×0.45×0.30	32605.42	80	GF
318	L3	No Land Treatment Required	GF 40%	3.83	-	-	-	-	-	80	GF
319	L4	No Land Treatment Required	GF 40%	0.25	-	-	-	-	-	80	GF
320	L5	CST	GF 40%	12.16	5.8	17	272	3×0.45×0.30	116730.21	80	GF
321	L6	CST	Nil	2.83	5.8	17	272	3×0.45×0.30	27171.18	80	GF
322	L7	CST	GF 40%	3.51	5.8	17	272	3×0.45×0.30	33664.03	80	GF
328	L1	CCT	GF 40%	0.46	6.5	15	240	3×0.45×0.45	5875.33	80	GF
329	L2	CST	Nil	0.03	6.5	15	240	3×0.45×0.45	317.58	80	GF
330	L3	No Land Treatment Required	GF 40%	0.19	-	-	-	-	-	80	GF
331	L4	No Land Treatment Required	GF 40%	0.95	-	-	-	-	-	80	GF
332	L5	CST	GF 40%	4.76	6.5	15	240	3×0.45×0.45	60447.05	80	GF
333	L7	CST	GF 40%	1.43	6.5	15	240	3×0.45×0.45	18155.29	80	GF
344	L1	CCT	GF 40%	1.18	6.5	15	240	3×0.45×0.30	10021.58	80	GF
345	L3	No Land Treatment Required	GF 40%	0.44	-	-	-	-	-	80	GF
346	L5	CST	GF 40%	3.85	6.5	15	240	3×0.45×0.30	32570.13	80	GF
347	L6	CST	Nil	0.72	6.5	15	240	3×0.45×0.30	6069.41	80	GF
348	L7	CST	GF 40%	2.04	6.5	15	240	3×0.45×0.30	17255.46	80	GF
355	L2	CST	Nil	0.24	5	20	320	3×0.45×0.45	4022.75	50	GF
356	L5	CST	GF 40%	3.05	5	20	320	3×0.45×0.45	51607.59	50	GF
374	L1	CCT	GF 40%	1.62	5	20	320	3×0.45×0.30	18314.08	50	GF
375	L2	CST	Nil	0.56	5	20	320	3×0.45×0.30	6281.13	50	GF
376	L3	No Land Treatment Required	GF 40%	11.23	-	-	-	-	-	50	GF
377	L4	No Land	GF 40%	7.17	-	-	-	-	-	50	GF

		Treatment Required									
378	L5	CST	GF 40%	5.51	5	20	320	3×0.45×0.30	62281.99	50	GF
379	L6	CST	Nil	3.82	5	20	320	3×0.45×0.30	43191.59	50	GF
414	L2	CST	Nil	0.42	5.2	19	304	3×0.45×0.45	6775.15	50	GF
415	L5	CST	GF 40%	0.87	5.2	19	304	3×0.45×0.45	14079.61	50	GF
432	L1	CCT	GF 40%	1.21	5.2	19	304	3×0.45×0.30	13021.00	50	GF
433	L2	CST	Nil	0.20	5.2	19	304	3×0.45×0.30	2117.23	50	GF
434	L3	No Land Treatment Required	GF 40%	4.47	-	-	-	-	-	50	GF
435	L4	No Land Treatment Required	GF 40%	7.26	-	-	-	-	-	50	GF
436	L5	CST	GF 40%	1.54	5.2	19	304	3×0.45×0.30	16514.43	50	GF
437	L6	CST	Nil	5.16	5.2	19	304	3×0.45×0.30	55365.69	50	GF
475	L2	CST	Nil	6.53	5.5	18	288	3×0.45×0.45	99510.03	50	GF
476	L5	CST	GF 40%	3.35	5.5	18	288	3×0.45×0.45	51078.29	50	GF
477	L7	CST	GF 40%	1.06	5.5	18	288	3×0.45×0.45	16196.85	50	GF
499	L1	CCT	GF 40%	7.62	5.5	18	288	3×0.45×0.30	77455.51	50	GF
500	L2	CST	Nil	3.68	5.5	18	288	3×0.45×0.30	37439.77	50	GF
501	L3	No Land Treatment Required	GF 40%	6.17	-	-	-	-	-	50	GF
502	L4	No Land Treatment Required	GF 40%	14.46	-	-	-	-	-	50	GF
503	L5	CST	GF 40%	2.93	5.5	18	288	3×0.45×0.30	29782.43	50	GF
504	L6	CST	Nil	18.63	5.5	18	288	3×0.45×0.30	189386.64	50	GF
505	L7	CST	GF 40%	5.06	5.5	18	288	3×0.45×0.30	51448.80	50	GF
544	L1	CCT	GF 40%	0.09	5.8	17	272	3×0.45×0.45	1323.27	50	GF
545	L2	CST	Nil	2.80	5.8	17	272	3×0.45×0.45	40280.39	50	GF
546	L5	CST	GF 40%	1.03	5.8	17	272	3×0.45×0.45	14873.58	50	GF
547	L7	CST	GF 40%	6.94	5.8	17	272	3×0.45×0.45	99827.62	50	GF

569	L1	CCT	GF 40%	8.32	5.8	17	272	3×0.45×0.30	79855.03	50	GF
570	L2	CST	Nil	1.53	5.8	17	272	3×0.45×0.30	14714.78	50	GF
571	L3	No Land Treatment Required	GF 40%	1.39	-	-	-	-	-	50	GF
572	L4	No Land Treatment Required	GF 40%	4.36	-	-	-	-	-	50	GF
573	L5	CST	GF 40%	0.85	5.8	17	272	3×0.45×0.30	8186.64	50	GF
574	L6	CST	Nil	11.97	5.8	17	272	3×0.45×0.30	114859.98	50	GF
575	L7	CST	GF 40%	32.04	5.8	17	272	3×0.45×0.30	307493.06	50	GF
609	L1	CCT	GF 40%	0.27	6.5	15	240	3×0.45×0.45	3440.50	50	GF
610	L2	CST	Nil	0.09	6.5	15	240	3×0.45×0.45	1217.41	50	GF
611	L5	CST	GF 40%	1.32	6.5	15	240	3×0.45×0.45	16779.08	50	GF
612	L7	CST	GF 40%	5.70	6.5	15	240	3×0.45×0.45	72409.43	50	GF
633	L1	CCT	GF 40%	4.12	6.5	15	240	3×0.45×0.30	34863.80	50	GF
634	L2	CST	Nil	0.18	6.5	15	240	3×0.45×0.30	1517.36	50	GF
635	L4	No Land Treatment Required	GF 40%	0.91	-	-	-	-	-	50	GF
636	L5	CST	GF 40%	0.96	6.5	15	240	3×0.45×0.30	8151.35	50	GF
637	L6	CST	Nil	2.75	6.5	15	240	3×0.45×0.30	23324.87	50	GF
638	L7	CST	GF 40%	51.64	6.5	15	240	3×0.45×0.30	437314.83	50	GF

(14) KHAMAR BEAT (Jhalda Range)

Drainage Line Treatment Measures Open Map

14.1.1 Brushwood Check Dam- KHAMAR BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
512	D-4 *	2 A 2 B 5 h 5	1	23.24659	86.22012	4.0	1.0	0.6	0.75	4467.25

14.1.2 Loose Boulder Check Dam- KHAMAR BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1	D1	4 H 3 C 8 f 6	1	23.29267	85.97689	7.0	1.50	0.6	2.90	0.50	84057.79
2	D2	4 H 3 C 8 f 6	1	23.2929	85.97733	7.0	1.50	0.6	2.90	0.50	84057.79
3	D3 *	4 H 3 C 8 h 2	1	23.29989	85.97723	5.0	1.20	0.6	2.40	0.40	40766.20
4	D4	4 H 3 C 8 h 2	1	23.29886	85.97372	8.0	1.50	0.6	2.90	0.50	96313.90
5	D5 *	4 H 3 C 8 f 6	2	23.29108	85.97276	7.5	1.50	0.6	2.90	0.50	90061.91
6	D6 *	4 H 3 C 8 f 6	2	23.29137	85.97343	5.0	1.50	0.6	2.90	0.50	60041.28
8	D8	4 H 3 C 8 f 6	1	23.29022	85.97545	9.0	1.50	0.6	2.90	0.50	108353.14
9	D9	4 H 3 C 8 f 6	1	23.29018	85.97531	9.0	1.50	0.6	2.90	0.50	108353.14
10	D10 *	4 H 3 C 8 h 2	1	23.29989	85.97723	8.0	1.50	0.6	2.90	0.50	96066.04
11	D11 *	4 H 3 C 8 h 2	1	23.29989	85.97723	7.0	1.50	0.6	2.90	0.50	84057.79
12	D12 *	4 H 3 C 8 h 2	1	23.29989	85.97723	8.0	1.35	0.6	2.60	0.40	75421.50
13	D13	4 H 3 C 8 f 7	3	23.29041	85.98383	9.0	1.50	0.6	2.90	0.50	108074.30

14	D14 *	4 H 3 C 8 f 6	2	23.29062	85.97224	5.0	1.20	0.6	2.40	0.40	40663.63
16	D16	4 H 3 C 8 f 7	1	23.29049	85.97988	9.0	1.20	0.6	2.40	0.40	73194.54
17	D17	4 H 3 C 8 f 6	1	23.29045	85.97967	9.0	1.20	0.6	2.40	0.40	73379.15
18	D18	4 H 3 C 8 f 6	1	23.29014	85.97839	9.0	1.20	0.6	2.40	0.40	73194.54
19	D19 *	4 H 3 C 8 h 2	1	23.2994	85.97518	7.0	1.20	0.6	2.40	0.40	56929.09
20	D20 *	4 H 3 C 8 h 2	1	23.29922	85.97723	8.0	1.35	0.6	2.60	0.40	75421.50
21	D21	4 H 3 C 8 h 2	1	23.30141	85.97113	5.0	1.20	0.6	2.40	0.40	40663.63
22	D22	4 H 3 C 8 h 2	1	23.3	85.97372	5.0	1.50	0.6	2.90	0.50	60041.28
23	D23	4 H 3 C 8 f 6	2	23.29798	85.96822	9.0	1.20	0.6	2.40	0.40	73379.15
24	D24	4 H 3 C 8 f 6	2	23.29798	85.96822	7.5	1.20	0.6	2.40	0.40	61149.30
25	D25	4 H 3 C 8 f 6	2	23.29632	85.96775	9.0	1.50	0.6	2.90	0.50	108353.14
26	D26 *	4 H 3 C 8 h 2	1	23.29989	85.97723	8.0	1.50	0.6	2.90	0.50	96066.04
27	D27 *	4 H 3 C 8 f 6	2	23.29551	85.96795	7.0	1.35	0.6	2.60	0.40	65993.81
29	D29	4 H 3 C 8 h 2	1	23.30299	85.98204	6.0	1.35	0.6	2.60	0.40	56566.13
30	D30	4 H 3 C 8 h 2	1	23.30298	85.98227	5.0	1.35	0.6	2.60	0.40	47138.44
31	D31	4 H 3 C 8 h 2	1	23.30279	85.98261	6.0	1.20	0.6	2.40	0.40	48796.36
32	D32	4 H 3 C 8 h 2	1	23.30241	85.98307	7.0	1.35	0.6	2.60	0.40	65993.81
33	D33	4 H 3 C 8 h 2	1	23.30238	85.98395	6.0	1.20	0.6	2.40	0.40	48796.36
34	D34	4 H 3 C 8 h 2	1	23.30275	85.98408	5.0	1.35	0.6	2.60	0.40	47138.44
35	D35	4 H 3 C 8 h 2	1	23.30288	85.98382	5.0	1.35	0.6	2.60	0.40	47138.44
36	D36	4 H 3 C 8 h 2	1	23.30147	85.98782	6.0	1.35	0.6	2.60	0.40	56566.13
37	D37	4 H 3 C 8 h 2	1	23.30128	85.98805	6.0	1.35	0.6	2.60	0.40	56566.13
38	D38	4 H 3 C 8 f 7	1	23.29304	85.98803	6.0	1.35	0.6	2.60	0.40	56699.46
39	D39	4 H 3 C 8 h 2	2	23.30838	85.98763	5.0	1.35	0.6	2.60	0.40	47138.44
40	D40	4 H 3 C 8 h 2	3	23.30539	85.98795	5.0	1.35	0.6	2.60	0.40	47138.44
41	D41	4 H 3 C 8 h 2	1	23.30102	85.98761	6.0	1.35	0.6	2.60	0.40	56566.13
42	D42	4 H 3 C 8 h 2	1	23.30139	85.9874	5.0	1.50	0.6	2.90	0.50	60041.28
44	D44	4 H 3 C 8 h 2	2	23.30155	85.98532	6.0	1.35	0.6	2.60	0.40	56566.13
45	D45	4 H 3 C 8 f 7	1	23.2775	85.98886	5.0	1.35	0.6	2.60	0.40	47138.44
47	D47	4 H 3 C 8 f 7	1	23.27786	85.98814	6.0	1.35	0.6	2.60	0.40	56566.13
48	D48	4 H 3 C 8 f 7	1	23.27779	85.98794	4.0	1.35	0.6	2.60	0.40	37710.75
49	D49	4 H 3 C 8 f 7	1	23.27793	85.98785	6.0	1.35	0.6	2.60	0.40	56566.13

50	D50	4 H 3 C 8 f 6	1	23.27743	85.97641	6.0	1.35	0.6	2.60	0.40	56566.13
51	D51	4 H 3 C 8 f 6	1	23.27765	85.9764	7.0	1.35	0.6	2.60	0.40	65993.81
52	D52	4 H 3 C 8 f 7	1	23.28238	85.99623	6.0	1.35	0.6	2.60	0.40	56566.13
54	D54 *	4 H 3 C 8 f 5	1	23.28012	85.93809	6.5	1.35	0.6	2.60	0.40	61279.97
55	D55	4 H 3 C 8 f 7	2	23.28042	85.99357	6.5	1.35	0.6	2.60	0.40	61279.97
56	D56	4 H 3 C 8 f 7	2	23.28044	85.99324	5.0	1.35	0.6	2.60	0.40	47138.44
57	D57	4 H 3 C 8 f 7	2	23.28044	85.99291	5.0	1.35	0.6	2.60	0.40	47138.44
58	D58	4 H 3 C 8 f 7	1	23.27914	85.99257	6.5	1.35	0.6	2.60	0.40	61279.97
59	D59	4 H 3 C 8 f 7	1	23.279	85.99264	8.0	1.35	0.6	2.60	0.40	75421.50
60	D60	4 H 3 C 8 f 7	1	23.27889	85.99269	4.0	1.20	0.6	2.40	0.40	32530.91
61	D61	4 H 3 C 8 f 7	1	23.27843	85.99287	6.0	1.35	0.6	2.60	0.40	56566.13
62	D62	4 H 3 C 8 f 7	1	23.27866	85.99278	5.0	1.35	0.6	2.60	0.40	47138.44
63	D63	4 H 3 C 8 f 7	1	23.2788	85.99273	5.0	1.20	0.6	2.40	0.40	40663.63
64	D64	4 H 3 C 8 f 7	1	23.27856	85.99282	5.0	1.20	0.6	2.40	0.40	40663.63
65	D65 *	4 H 3 C 8 f 7	1	23.2772	85.99315	5.0	1.20	0.6	2.40	0.40	40663.63
66	D66 *	4 H 3 C 8 f 7	1	23.27725	85.99312	5.0	1.20	0.6	2.40	0.40	40663.63
67	D67 *	4 H 3 C 8 f 7	1	23.2773	85.99309	5.0	1.20	0.6	2.40	0.40	40663.63
68	D68 *	4 H 3 C 8 f 7	1	23.27753	85.993	4.0	1.50	0.6	2.90	0.50	48033.02
69	D69 *	4 H 3 C 8 f 7	1	23.27741	85.99302	4.0	1.50	0.6	2.90	0.50	48033.02
70	D70 *	4 H 3 C 8 f 7	1	23.27736	85.99305	4.0	1.20	0.6	2.40	0.40	32530.91
71	D71	4 H 3 C 8 f 7	1	23.27961	85.99449	5.0	1.35	0.6	2.60	0.40	47138.44
72	D72	4 H 3 C 8 f 7	1	23.27971	85.99457	4.5	1.35	0.6	2.60	0.40	42424.59
73	D73	4 H 3 C 8 f 7	1	23.27981	85.9946	4.0	1.20	0.6	2.40	0.40	32530.91
74	D74 *	4 H 3 C 8 f 7	1	23.2773	85.99309	5.5	1.35	0.6	2.60	0.40	51852.28
75	D75	4 H 3 C 8 h 2	1	23.31314	85.97114	6.0	1.35	0.6	2.60	0.40	56566.13
76	D76	4 H 3 C 8 h 2	1	23.3134	85.97103	6.0	1.35	0.6	2.60	0.40	56566.13
77	D77	4 H 3 C 8 h 2	1	23.31364	85.97115	8.0	1.35	0.6	2.60	0.40	75421.50
78	D78	4 H 3 C 8 h 2	1	23.31365	85.97128	5.0	1.35	0.6	2.60	0.40	47138.44
79	D79	4 H 3 C 8 h 2	1	23.31367	85.97146	5.0	1.35	0.6	2.60	0.40	47138.44
80	D80	4 H 3 C 8 h 2	1	23.31236	85.96929	7.0	1.35	0.6	2.60	0.40	65993.81
81	D81 *	4 H 3 C 8 f 3	1	23.30589	85.95543	5.0	1.20	0.6	2.40	0.40	40663.63
82	D82	4 H 3 C 8 a 4	1	23.26067	85.90981	7.0	1.35	0.6	2.60	0.40	65993.81

83	D83	4 H 3 C 8 a 4	1	23.26128	85.91024	7.0	1.35	0.6	2.60	0.40	65993.81
85	D85	4 H 3 C 8 a 4	1	23.26143	85.91017	7.0	1.35	0.6	2.60	0.40	65993.81
86	D86 **	4 H 3 C 4 t 1	1	23.20303	85.91528	5.0	1.20	0.6	2.40	0.40	40663.63

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

** Given coordinates fall outside of Range/Beat Boundary. Coordinates need to be rechecked carefully by physical verification of this point.

14.1.3 Gabion Check measures- KHAMAR BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
46	D46	4 H 3 C 8 f 7	1	23.27769	85.98844	6	1.5	0.50	50292.28

14.1.4 Gabion Check Dam measures- KHAMAR BEAT (Jhalda Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
53	D53	4 H 3 C 8 f 7	1	23.28037	85.99596	6.5	2.1	1.0	0.70	3	3.10	1.0	0.70	292266.07
84	D84	4 H 3 C 8 a 4	1	23.26159	85.90997	7.5	2.1	1.0	0.70	3	3.10	1.0	0.70	311187.96

Water Harvesting Structure Measures- KHAMAR BEAT (Jhalda Range) Open Map

14.2.1 Dugout Pond- KHAMAR BEAT (Jhalda Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
3	W3 **	4 H 3 C 8 f 6	1	23.2998	85.97723	300.87
4	W4	4 H 3 C 8 h 2	1	23.29989	85.97273	181.51

** Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

14.2.2 Embankment Pond- KHAMAR BEAT (Jhalda Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
2	W2	4 H 3 C 8 f 6	1	23.29018	85.97531	32.93
5	W5	4 H 3 C 8 f 6	2	23.29005	85.97186	278.70
6	W6***	4 H 3 C 8 f 6	2	23.28895	85.97161	386.51
7	W7	4 H 3 C 8 h 2	1	23.30184	85.97221	51.06
13	W13	4 H 3 C 8 f 7	1	23.27689	85.98595	47.62
14	W14	4 H 3 C 8 f 7	1	23.27535	85.98311	54.88
20	W20***	4 H 3 C 8 f 7	1	23.27772	85.993	54.88
21	W21*	4 H 3 C 8 f 7	1	23.27808	85.99621	47.62
22	W22*	4 H 3 C 8 f 7	1	23.27806	85.99621	51.72
23	W23	4 H 3 C 8 f 7	1	23.28055	85.99688	47.62
28	W28	4 H 3 C 8 h 2	1	23.30849	85.96946	170.90
34	W34	4 H 3 C 8 f 5	2	23.28332	85.94365	392.32
35	W35	4 H 3 C 8 f 5	1	23.28242	85.9441	359.12

*Given coordinates Duplicate.

****Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

14.2.4 Pond Renovation- KHAMAR BEAT (Jhalda Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
1	W1	4 H 3 C 8 f 6	1	23.29232	85.9762	90.05
8	W8	4 H 3 C 8 f 7	3	23.30108	85.98406	193.30
10	W10	4 H 3 C 8 f 6	2	23.29664	85.98053	163.93
9	W9**	4 H 3 C 8 h 2	1	23.30688	85.9715	207.99
10	W10	4 H 3 C 8 f 6	2	23.29664	85.98053	163.93
11	W11	4 H 3 C 8 f 7	1	23.27831	85.98942	53.63
12	W12	4 H 3 C 8 f 7	1	23.27807	85.9863	222.67
15	W15	4 H 3 C 8 f 7	2	23.27559	85.98057	74.14
16	W16*	4 H 3 C 8 f 6	1	23.2765	85.97088	35.42
17	W17*	4 H 3 C 8 f 6	1	23.2765	85.97088	46.87
18	W18	4 H 3 C 8 f 6	1	23.27748	85.97676	40.18
19	W19	4 H 3 C 8 f 7	1	23.27896	85.99611	291.97
24	W24	4 H 3 C 8 h 2	1	23.31102	85.97473	163.93
25	W25	4 H 3 C 8 h 2	1	23.31127	85.97335	82.44
26	W26	4 H 3 C 8 h 2	1	23.31252	85.96933	193.30
27	W27	4 H 3 C 8 h 2	1	23.30855	85.9695	193.30
29	W29	4 H 3 C 8 h 2	1	23.30845	85.96949	46.87
30	W30	4 H 3 C 8 f 3	1	23.30587	85.95546	237.36
31	W31*@	4 H 3 C 8 f 3	1	23.30657	85.95722	86.97
32	W32*@	4 H 3 C 8 f 3	1	23.30657	85.95722	86.97
33	W33	4 H 3 C 8 a 3	1	23.26097	85.90932	178.62
36	W36	4 H 3 C 8 f 5	1	23.28084	85.93987	178.62

*Given Coordinates Duplicate

*@No existing Pond at Given Coordinates with Duplicate

**No existing Pond at Given Coordinates

14.3.1 Land Treatment and Forest Plantation- KHAMAR BEAT (Jhalda Range)

Open Map

Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
14	L4	CST	Nil	0.20	5	20	320	3×0.45×0.45	3440.5035	100	NFP
15	L5	CST	Nil	0.10	5	20	320	3×0.45×0.45	1693.7865	100	NFP
16	L6	No Land Treatment Required	GF	2.10	-	-	-	-	-	100	NFP
22	L1	CST	Nil	0.78	5	20	320	3×0.45×0.30	8821.8165	100	NFP
23	L2	CST	GF	0.07	5	20	320	3×0.45×0.30	776.3175	100	NFP
24	L4	CST	Nil	0.25	5	20	320	3×0.45×0.30	2858.268	100	NFP
25	L5	CST	Nil	0.07	5	20	320	3×0.45×0.30	811.608	100	NFP
26	L11	CST	Nil	0.14	5	20	320	3×0.45×0.30	1552.635	100	NFP
27	L13	CST	Nil	10.57	5	20	320	3×0.45×0.30	119341.47	100	NFP
28	L16	CST	Nil	0.49	5	20	320	3×0.45×0.30	5504.814	100	NFP
29	L17	CST	Nil	0.64	5	20	320	3×0.45×0.30	7198.6005	100	NFP
30	L18	CST	Nil	0.45	5	20	320	3×0.45×0.30	5116.65	100	NFP
48	L4	CST	Nil	0.26	5.2	19	304	3×0.45×0.45	4181.541	100	NFP
49	L5	CST	Nil	0.06	5.2	19	304	3×0.45×0.45	899.829	100	NFP
50	L6	No Land Treatment Required	GF	0.23	-	-	-	-	-	100	NFP
56	L1	CST	Nil	0.09	5.2	19	304	3×0.45×0.30	1023.33	100	NFP
57	L4	CST	Nil	0.11	5.2	19	304	3×0.45×0.30	1199.7615	100	NFP
58	L13	CST	Nil	3.97	5.2	19	304	3×0.45×0.30	42556.416	100	NFP
59	L16	CST	Nil	0.39	5.2	19	304	3×0.45×0.30	4128.6105	100	NFP
60	L17	CST	Nil	0.62	5.2	19	304	3×0.45×0.30	6704.5755	100	NFP
61	L18	CST	Nil	0.87	5.2	19	304	3×0.45×0.30	9315.831	100	NFP
75	L4	CST	Nil	0.73	5.5	18	288	3×0.45×0.45	11168.409	100	NFP
76	L5	CST	Nil	3.42	5.5	18	288	3×0.45×0.45	52189.841	100	NFP
77	L6	No Land	GF	4.27	-	-	-	-	-	100	NFP

		Treatment Required									
78	L17	CST	Nil	0.47	5.5	18	288	3×0.45×0.45	7198.6005	100	NFP
79	L18	CST	Nil	4.20	5.5	18	288	3×0.45×0.45	64046.346	100	NFP
90	L1	CST	Nil	1.21	5.5	18	288	3×0.45×0.30	12350.541	100	NFP
91	L2	CST	GF	2.91	5.5	18	288	3×0.45×0.30	29570.709	100	NFP
92	L4	CST	Nil	0.19	5.5	18	288	3×0.45×0.30	1976.0895	100	NFP
93	L11	CST	Nil	4.08	5.5	18	288	3×0.45×0.30	41462.516	100	NFP
94	L13	CST	Nil	13.77	5.5	18	288	3×0.45×0.30	139949.22	100	NFP
95	L14	CST	Nil	0.71	5.5	18	288	3×0.45×0.30	7233.8805	100	NFP
96	L15	No Land Treatment Required	GF	0.03	-	-	-	-	-	100	NFP
97	L16	CST	Nil	7.25	5.5	18	288	3×0.45×0.30	73644.48	100	NFP
98	L17	CST	Nil	8.27	5.5	18	288	3×0.45×0.30	84089.502	100	NFP
99	L18	CST	Nil	4.96	5.5	18	288	3×0.45×0.30	50390.183	100	NFP
130	L4	CST	Nil	2.06	5.8	17	272	3×0.45×0.45	29694.221	100	NFP
131	L5	CST	Nil	2.43	5.8	17	272	3×0.45×0.45	34934.372	100	NFP
132	L6	No Land Treatment Required	GF	7.27	-	-	-	-	-	100	NFP
133	L17	CST	Nil	2.98	5.8	17	272	3×0.45×0.45	42979.86	100	NFP
134	L18	CST	Nil	5.10	5.8	17	272	3×0.45×0.45	73415.118	100	NFP
145	L1	CST	Nil	3.03	5.8	17	272	3×0.45×0.30	29041.404	100	NFP
146	L2	CST	GF	5.23	5.8	17	272	3×0.45×0.30	50178.461	100	NFP
147	L4	CST	Nil	3.46	5.8	17	272	3×0.45×0.30	33170.015	100	NFP
148	L5	CST	Nil	0.24	5.8	17	272	3×0.45×0.30	2328.963	100	NFP
149	L11	CST	Nil	4.75	5.8	17	272	3×0.45×0.30	45626.406	100	NFP
150	L13	CST	Nil	12.48	5.8	17	272	3×0.45×0.30	119729.62	100	NFP
151	L14	CST	Nil	7.89	5.8	17	272	3×0.45×0.30	75726.431	100	NFP
152	L15	No Land Treatment Required	GF	6.24	-	-	-	-	-	100	NFP
153	L16	CST	Nil	39.25	5.8	17	272	3×0.45×0.30	376726.62	100	NFP
154	L17	CST	Nil	19.61	5.8	17	272	3×0.45×0.30	188257.45	100	NFP
155	L18	CST	Nil	11.63	5.8	17	272	3×0.45×0.30	111648.84	100	NFP

179	L4	CST	Nil	4.85	6.5	15	240	3×0.45×0.45	61664.463	100	NFP
180	L5	CST	Nil	4.21	6.5	15	240	3×0.45×0.45	53513.103	100	NFP
181	L6	No Land Treatment Required	GF	10.37	-	-	-	-	-	100	NFP
182	L17	CST	Nil	1.46	6.5	15	240	3×0.45×0.45	18525.801	100	NFP
183	L18	CST	Nil	0.14	6.5	15	240	3×0.45×0.45	1852.578	100	NFP
193	L1	CST	Nil	0.96	6.5	15	240	3×0.45×0.30	8116.0695	100	NFP
194	L2	CST	GF	2.10	6.5	15	240	3×0.45×0.30	17749.484	100	NFP
195	L4	CST	Nil	3.28	6.5	15	240	3×0.45×0.30	27806.352	100	NFP
196	L5	CST	Nil	0.42	6.5	15	240	3×0.45×0.30	3528.7245	100	NFP
197	L11	CST	Nil	1.56	6.5	15	240	3×0.45×0.30	13162.139	100	NFP
198	L13	CST	Nil	3.32	6.5	15	240	3×0.45×0.30	28159.226	100	NFP
199	L14	CST	Nil	14.28	6.5	15	240	3×0.45×0.30	120894.1	100	NFP
200	L15	No Land Treatment Required	GF	23.28	-	-	-	-	-	100	NFP
201	L16	CST	Nil	40.34	6.5	15	240	3×0.45×0.30	341651.11	100	NFP
202	L17	CST	Nil	11.43	6.5	15	240	3×0.45×0.30	96792.917	100	NFP
203	L18	CST	Nil	5.51	6.5	15	240	3×0.45×0.30	46649.736	100	NFP
223	L5	CST	Nil	0.16	5	20	320	3×0.45×0.45	2646.546	80	GF
224	L6	No Land Treatment Required	GF	0.05	-	-	-	-	-	80	GF
230	L1	CST	Nil	0.84	5	20	320	3×0.45×0.30	9456.9825	80	GF
231	L2	CST	GF	1.17	5	20	320	3×0.45×0.30	13162.139	80	GF
232	L5	CST	Nil	0.92	5	20	320	3×0.45×0.30	10374.452	80	GF
233	L7	CST	Nil	0.38	5	20	320	3×0.45×0.30	4234.4715	80	GF
234	L8	CST	Nil	0.11	5	20	320	3×0.45×0.30	1199.7615	80	GF
235	L13	CST	Nil	15.54	5	20	320	3×0.45×0.30	175448.19	80	GF
236	L18	CST	Nil	5.08	5	20	320	3×0.45×0.30	57341.771	80	GF
250	L1	CST	Nil	0.03	5.2	19	304	3×0.45×0.30	352.8735	80	GF
251	L2	CST	GF	0.16	5.2	19	304	3×0.45×0.30	1764.3675	80	GF
252	L5	CST	Nil	0.15	5.2	19	304	3×0.45×0.30	1623.216	80	GF
253	L7	CST	Nil	1.05	5.2	19	304	3×0.45×0.30	11221.34	80	GF
254	L13	CST	Nil	5.76	5.2	19	304	3×0.45×0.30	61752.684	80	GF

255	L18	CST	Nil	2.91	5.2	19	304	3×0.45×0.30	31229.216	80	GF
263	L5	CST	Nil	0.01	5.5	18	288	3×0.45×0.45	211.722	80	GF
264	L6	No Land Treatment Required	GF	0.17	-	-	-	-	-	80	GF
265	L17	CST	Nil	0.97	5.5	18	288	3×0.45×0.45	14714.784	80	GF
266	L18	CST	Nil	0.06	5.5	18	288	3×0.45×0.45	952.7595	80	GF
277	L1	CST	Nil	0.19	5.5	18	288	3×0.45×0.30	1940.799	80	GF
278	L2	CST	GF	3.75	5.5	18	288	3×0.45×0.30	38110.223	80	GF
279	L5	CST	Nil	0.34	5.5	18	288	3×0.45×0.30	3458.154	80	GF
280	L7	CST	Nil	0.71	5.5	18	288	3×0.45×0.30	7233.8805	80	GF
281	L8	CST	Nil	1.55	5.5	18	288	3×0.45×0.30	15773.394	80	GF
282	L11	CST	Nil	0.02	5.5	18	288	3×0.45×0.30	176.4315	80	GF
283	L13	CST	Nil	11.46	5.5	18	288	3×0.45×0.30	116518.48	80	GF
284	L17	CST	Nil	4.73	5.5	18	288	3×0.45×0.30	48096.51	80	GF
285	L18	CST	Nil	4.58	5.5	18	288	3×0.45×0.30	46579.166	80	GF
295	L17	CST	Nil	2.87	5.8	17	272	3×0.45×0.45	41339.004	80	GF
296	L18	CST	Nil	1.06	5.8	17	272	3×0.45×0.45	15244.089	80	GF
307	L1	CST	Nil	0.12	5.8	17	272	3×0.45×0.30	1129.191	80	GF
308	L2	CST	GF	2.90	5.8	17	272	3×0.45×0.30	27806.352	80	GF
309	L5	CST	Nil	0.16	5.8	17	272	3×0.45×0.30	1587.9255	80	GF
310	L8	CST	Nil	0.04	5.8	17	272	3×0.45×0.30	352.8735	80	GF
311	L11	CST	Nil	0.64	5.8	17	272	3×0.45×0.30	6175.2705	80	GF
312	L13	CST	Nil	2.41	5.8	17	272	3×0.45×0.30	23077.856	80	GF
313	L16	CST	Nil	0.77	5.8	17	272	3×0.45×0.30	7339.752	80	GF
314	L17	CST	Nil	9.52	5.8	17	272	3×0.45×0.30	91323.393	80	GF
315	L18	CST	Nil	1.65	5.8	17	272	3×0.45×0.30	15843.975	80	GF
335	L1	CST	Nil	0.25	6.5	15	240	3×0.45×0.30	2081.9505	80	GF
336	L2	CST	GF	0.33	6.5	15	240	3×0.45×0.30	2752.407	80	GF
337	L5	CST	Nil	0.50	6.5	15	240	3×0.45×0.30	4269.7515	80	GF
338	L11	CST	Nil	0.43	6.5	15	240	3×0.45×0.30	3599.295	80	GF
339	L13	CST	Nil	1.17	6.5	15	240	3×0.45×0.30	9915.717	80	GF
340	L16	CST	Nil	0.71	6.5	15	240	3×0.45×0.30	5963.5485	80	GF
341	L17	CST	Nil	7.93	6.5	15	240	3×0.45×0.30	67186.917	80	GF
342	L18	CST	Nil	0.41	6.5	15	240	3×0.45×0.30	3493.434	80	GF

350	L4	CST	Nil	0.67	5	20	320	3×0.45×0.45	11327.201	50	GF
351	L5	CST	Nil	4.24	5	20	320	3×0.45×0.45	71827.182	50	GF
352	L6	No Land Treatment Required	GF	5.38	-	-	-	-	-	50	GF
353	L18	CST	Nil	2.07	5	20	320	3×0.45×0.45	35093.163	50	GF
360	L1	CST	Nil	1.90	5	20	320	3×0.45×0.30	21454.65	50	GF
361	L2	CST	GF	3.06	5	20	320	3×0.45×0.30	34510.928	50	GF
362	L4	CST	Nil	20.48	5	20	320	3×0.45×0.30	231272.6	50	GF
363	L5	CST	Nil	10.62	5	20	320	3×0.45×0.30	119906.06	50	GF
364	L7	CST	Nil	4.52	5	20	320	3×0.45×0.30	51060.639	50	GF
365	L8	CST	Nil	1.42	5	20	320	3×0.45×0.30	16090.988	50	GF
366	L11	CST	Nil	0.04	5	20	320	3×0.45×0.30	423.444	50	GF
367	L12	CST	Nil	0.24	5	20	320	3×0.45×0.30	2752.407	50	GF
368	L13	CST	Nil	19.70	5	20	320	3×0.45×0.30	222486.08	50	GF
369	L16	CST	Nil	0.67	5	20	320	3×0.45×0.30	7622.0445	50	GF
370	L17	CST	Nil	10.36	5	20	320	3×0.45×0.30	116977.21	50	GF
371	L18	CST	Nil	9.34	5	20	320	3×0.45×0.30	105508.86	50	GF
407	L4	CST	Nil	0.49	5.2	19	304	3×0.45×0.45	7833.7665	50	GF
408	L5	CST	Nil	1.28	5.2	19	304	3×0.45×0.45	20537.181	50	GF
409	L6	No Land Treatment Required	GF	1.73	-	-	-	-	-	50	GF
410	L18	CST	Nil	1.36	5.2	19	304	3×0.45×0.45	21913.374	50	GF
419	L1	CST	Nil	1.70	5.2	19	304	3×0.45×0.30	18172.928	50	GF
420	L2	CST	GF	3.73	5.2	19	304	3×0.45×0.30	39980.451	50	GF
421	L4	CST	Nil	10.94	5.2	19	304	3×0.45×0.30	117330.09	50	GF
422	L5	CST	Nil	5.96	5.2	19	304	3×0.45×0.30	63975.776	50	GF
423	L7	CST	Nil	2.58	5.2	19	304	3×0.45×0.30	27700.491	50	GF
424	L8	CST	Nil	1.52	5.2	19	304	3×0.45×0.30	16302.71	50	GF
425	L12	CST	Nil	0.95	5.2	19	304	3×0.45×0.30	10233.3	50	GF
426	L13	CST	Nil	11.66	5.2	19	304	3×0.45×0.30	125093.28	50	GF
427	L16	CST	Nil	0.91	5.2	19	304	3×0.45×0.30	9774.5655	50	GF
428	L17	CST	Nil	9.73	5.2	19	304	3×0.45×0.30	104344.38	50	GF
429	L18	CST	Nil	7.39	5.2	19	304	3×0.45×0.30	79255.155	50	GF
467	L4	CST	Nil	0.65	5.5	18	288	3×0.45×0.45	9898.077	50	GF

468	L5	CST	Nil	1.52	5.5	18	288	3×0.45×0.45	23130.786	50	GF
469	L6	No Land Treatment Required	GF	2.66	-	-	-	-	-	50	GF
470	L17	CST	Nil	0.15	5.5	18	288	3×0.45×0.45	2381.8935	50	GF
471	L18	CST	Nil	4.53	5.5	18	288	3×0.45×0.45	69021.855	50	GF
481	L1	CST	Nil	14.78	5.5	18	288	3×0.45×0.30	150253.09	50	GF
482	L2	CST	GF	15.84	5.5	18	288	3×0.45×0.30	160945.12	50	GF
483	L4	CST	Nil	21.16	5.5	18	288	3×0.45×0.30	215005.18	50	GF
484	L5	CST	Nil	13.21	5.5	18	288	3×0.45×0.30	134267.96	50	GF
485	L7	CST	Nil	6.64	5.5	18	288	3×0.45×0.30	67433.93	50	GF
486	L8	CST	Nil	10.13	5.5	18	288	3×0.45×0.30	102897.61	50	GF
487	L10	CST	GF	3.84	5.5	18	288	3×0.45×0.30	39027.692	50	GF
488	L11	CST	Nil	1.49	5.5	18	288	3×0.45×0.30	15102.938	50	GF
489	L12	CST	Nil	4.54	5.5	18	288	3×0.45×0.30	46155.722	50	GF
490	L13	CST	Nil	14.71	5.5	18	288	3×0.45×0.30	149441.48	50	GF
491	L14	CST	Nil	0.13	5.5	18	288	3×0.45×0.30	1340.913	50	GF
492	L16	CST	Nil	4.10	5.5	18	288	3×0.45×0.30	41638.947	50	GF
493	L17	CST	Nil	74.36	5.5	18	288	3×0.45×0.30	755711.64	50	GF
494	L18	CST	Nil	27.18	5.5	18	288	3×0.45×0.30	276263.84	50	GF
538	L4	CST	Nil	1.29	5.8	17	272	3×0.45×0.45	18525.801	50	GF
539	L6	No Land Treatment Required	GF	2.86	-	-	-	-	-	50	GF
540	L18	CST	Nil	2.19	5.8	17	272	3×0.45×0.45	31546.799	50	GF
551	L1	CST	Nil	13.39	5.8	17	272	3×0.45×0.30	128480.86	50	GF
552	L2	CST	GF	10.58	5.8	17	272	3×0.45×0.30	101591.98	50	GF
553	L4	CST	Nil	6.72	5.8	17	272	3×0.45×0.30	64540.371	50	GF
554	L5	CST	Nil	4.43	5.8	17	272	3×0.45×0.30	42521.126	50	GF
555	L7	CST	Nil	0.08	5.8	17	272	3×0.45×0.30	811.608	50	GF
556	L8	CST	Nil	3.13	5.8	17	272	3×0.45×0.30	29994.164	50	GF
557	L10	CST	GF	8.54	5.8	17	272	3×0.45×0.30	82007.562	50	GF
558	L11	CST	Nil	4.84	5.8	17	272	3×0.45×0.30	46473.305	50	GF
559	L12	CST	Nil	10.82	5.8	17	272	3×0.45×0.30	103885.65	50	GF
560	L13	CST	Nil	0.89	5.8	17	272	3×0.45×0.30	8504.223	50	GF
561	L14	CST	Nil	2.81	5.8	17	272	3×0.45×0.30	26959.454	50	GF

562	L16	CST	Nil	21.46	5.8	17	272	3×0.45×0.30	205936.36	50	GF
563	L17	CST	Nil	64.28	5.8	17	272	3×0.45×0.30	616926.9	50	GF
564	L18	CST	Nil	27.72	5.8	17	272	3×0.45×0.30	266065.83	50	GF
603	L4	CST	Nil	1.41	6.5	15	240	3×0.45×0.45	17996.496	50	GF
604	L5	CST	Nil	0.02	6.5	15	240	3×0.45×0.45	211.722	50	GF
605	L6	No Land Treatment Required	GF	1.27	-	-	-	-	-	50	GF
606	L18	CST	Nil	0.02	6.5	15	240	3×0.45×0.45	211.722	50	GF
615	L1	CST	Nil	2.30	6.5	15	240	3×0.45×0.30	19443.27	50	GF
616	L2	CST	GF	0.46	6.5	15	240	3×0.45×0.30	3881.598	50	GF
617	L4	CST	Nil	3.79	6.5	15	240	3×0.45×0.30	32076.104	50	GF
618	L5	CST	Nil	1.26	6.5	15	240	3×0.45×0.30	10692.035	50	GF
619	L8	CST	Nil	3.99	6.5	15	240	3×0.45×0.30	33840.471	50	GF
620	L10	CST	GF	3.25	6.5	15	240	3×0.45×0.30	27524.049	50	GF
621	L11	CST	Nil	4.74	6.5	15	240	3×0.45×0.30	40121.603	50	GF
622	L12	CST	Nil	1.72	6.5	15	240	3×0.45×0.30	14608.923	50	GF
623	L13	CST	Nil	0.35	6.5	15	240	3×0.45×0.30	2928.8385	50	GF
624	L14	CST	Nil	1.39	6.5	15	240	3×0.45×0.30	11785.935	50	GF
625	L15	No Land Treatment Required	GF	0.49	-	-	-	-	-	50	GF
626	L16	CST	Nil	17.82	6.5	15	240	3×0.45×0.30	150958.84	50	GF
627	L17	CST	Nil	35.15	6.5	15	240	3×0.45×0.30	297647.91	50	GF
628	L18	CST	Nil	10.52	6.5	15	240	3×0.45×0.30	89135.582	50	GF

(15) BANGIDIRI BEAT (Bangidiri Range)

Drainage Line Treatment Measures Open Map

15.1.1Random Rubble Masonry Check Dam measures- BANGIDIRI BEAT (Bangidiri Range)

Open Design Detailed Excel File

Catchment ID	Survey Sr_No	Beat	Map Id	Watershed Code	Gully Order	Latitude	Longitude	Catchment Area (ha)	Length of weir, L (m)	Height of dam, F	Depth of flow (including freeboard), h	Total Estimated Cost (in lakh ₹)
12	1342	Bangidiri	Bangidiri 2	2 A 2 F 4 g 3	1	23.549906	86.142994	214.72	2.10	0.50	0.50	0.70

Water Harvesting Structure Measures- BANGIDIRI BEAT (Bangidiri Range) Open Map

15.2.1Pond Renovation BANGIDIRI BEAT (Bangidiri Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
153	Bangidiri 4	2 A 2 F 4 g 4	1	23.54152	86.13188	59.63

(16) JOYPUR BEAT (Joypur Range)

Water Harvesting Structure Measures- JOYPUR BEAT (Joypur Range) Open Map

16.1.1 Pond Renovation - JOYPUR BEAT (Joypur Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
149	Joypur 2	2 A 2 F 3 q 9	1	23.4291	86.15727	138.30

(17) TALMU BEAT (Talmu Range)

Drainage Line Treatment Measures- TALMU BEAT (Talmu Range) Open Map

17.1.1Loose Boulder Check Dam- TALMU BEAT (Talmu Range) Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1339	Damru 6	2 A 2 F 4 h 4	2	23.5463	86.03468	4.0	0.75	0.4	1.50	0.20	11929.43

Water Harvesting Structure Measures- TALMU BEAT (Talmu Range) Open Map

17.2.1Percolation Pond- TALMU BEAT (Talmu Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
151	Damru 5	2 A 2 F 4 h 4	1	23.54457	86.03289	666.32

17.2.2Pond Renovation- TALMU BEAT (Talmu Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)

150	Damru 4	2 A 2 F 4 h 4	2	23.54649	86.03437	37.65
152	Talmu 1	2 A 2 F 4 h 1	1	23.5196	86.06594	200.79

(18) MURGUMA BEAT (Murguma Range)

Drainage Line Treatment Measures Open Map

18.1.1 Loose Boulder Check Dam- MURGUMA BEAT (Murguma Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1312	D2	2 A 2 B 5 f 4	1	23.30047	86.06254	9.0	1.50	0.6	2.90	0.50	108074.30
1314	D4	2 A 2 B 5 f 4	1	23.29667	86.06479	9.0	1.50	0.6	2.90	0.50	108074.30
1315	D5	2 A 2 B 5 f 4	1	23.29635	86.06431	6.0	1.00	0.5	2.00	0.30	32702.13
1321	D11	2 A 2 B 5 f 4	1	23.29925	86.06218	9.0	1.20	0.6	2.40	0.40	73194.54
1322	D12	2 A 2 B 5 f 4	1	23.29971	86.06187	6.0	1.50	0.6	2.90	0.50	72049.53
1323	D13	2 A 2 B 5 f 4	1	23.29986	86.06177	5.0	1.20	0.6	2.40	0.40	40663.63
1324	D14	2 A 2 B 5 f 4	1	23.30008	86.06161	7.0	1.20	0.6	2.40	0.40	56929.09
1325	D15	2 A 2 B 5 f 4	1	23.29975	86.06336	6.0	1.00	0.5	2.00	0.30	32702.13
1326	D16	2 A 2 B 5 f 4	1	23.30019	86.06309	9.0	1.35	0.6	2.60	0.40	84849.19

18.1.2 Gabion Check Dam measures- MURGUMA BEAT (Murguma Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
1319	D9	2 A 2 B 5 f 4	1	23.29782	86.0619	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	370301.82
1320	D10	2 A 2 B 5 f 4	1	23.29818	86.06301	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	392613.70

Water Harvesting Structure Measures- MURGUMA BEAT (Murguma Range) Open Map

18.2.1Embankment Pond- MURGUMA BEAT (Murguma Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
139	W1	2 A 2 B 5 f 4	2	23.30139	86.06089	48.05
140	W2	2 A 2 B 5 f 4	1	23.29675	86.06283	46.76
143	W5	2 A 2 B 5 f 2	1	23.34563	86.04984	58.60

18.2.2 Pond Renovation- MURGUMA BEAT (Murguma Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
141	W3	2 A 2 B 5 f 4	2	23.30491	86.05422	57.62
142	W4	2 A 2 B 5 f 2	1	23.34624	86.04457	179.63

18.3.1 Land Treatment and Forest Plantation- MURGUMA BEAT (Murguma Range)

Open Map

Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
21	L1	No Land Treatment Required	GF - 60%	0.07	-	-	-	-	-	100	NFP
55	L1	No Land Treatment Required	GF - 60%	0.08	-	-	-	-	-	100	NFP
88	L1	No Land Treatment Required	GF - 60%	0.25	-	-	-	-	-	100	NFP
127	L1	No Land Treatment Required	GF - 60%	0.48	-	-	-	-	-	100	NFP
404	L1	No Land Treatment Required	GF - 60%	2.39	-	-	-	-	-	50	GF
464	L1	No Land Treatment Required	GF - 60%	0.16	-	-	-	-	-	50	GF
535	L1	No Land Treatment Required	GF - 60%	0.29	-	-	-	-	-	50	GF
600	L1	No Land Treatment Required	GF - 60%	0.16	-	-	-	-	-	50	GF

(19) NOWAHATU BEAT (Nowahatu Range)

Drainage Line Treatment Measures Open Map

19.1.1Loose Boulder Check Dam- NOWAHATU BEAT (Nowahatu Range) Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1331	D4 *	2 A 2 F 3 u 2	3	23.48444	86.0155	8.0	1.50	0.6	2.90	0.50	96313.90
1332	D5 *	2 A 2 F 3 u 2	2	23.48464	86.00878	8.0	1.50	0.6	2.90	0.50	96066.04
1335	D8	2 A 2 F 3 u 2	1	23.48216	86.01439	6.0	1.50	0.6	2.90	0.50	72049.53

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

19.1.2 Gabion Check Dam measures - NOWAHATU BEAT (Nowahatu Range) Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
1330	D3 *	2 A 2 B 5 g 8	1	23.47134	86.02649	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	392613.70
1333	D6	2 A 2 F 3 u 2	3	23.4835	86.00895	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	392613.70
1334	D7	2 A 2 F 3 u 2	2	23.48193	86.01213	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	392613.70
1336	D9	2 A 2 F 3 u 2	1	23.48221	86.01801	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	392613.70
1337	D10	2 A 2 F 3 u 2	1	23.4789	86.02602	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	392613.70
1338	D11	2 A 2 F 3 u 2	1	23.47926	86.02625	10.5	2.1	1.0	0.70	5	3.10	1.0	0.70	392613.70

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

Water Harvesting Structure Measures- NOWAHATU BEAT (Nowahatu Range) Open Map

19.2.1 Embankment Pond- NOWAHATU BEAT (Nowahatu Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
148	W5	2 A 2 F 3 u 2	1	23.4822	86.01791	87.79

19.2.2Pond Renovation- NOWAHATU BEAT (Nowahatu Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
144	W1	2 A 2 B 5 g 8	1	23.47439	86.02042	48.02
145	W2	2 A 2 F 3 u 2	1	23.47917	86.02728	374.89
146	W3	2 A 2 F 3 u 2	1	23.48023	86.02523	281.69
147	W4	2 A 2 F 3 u 2	1	23.48232	86.02488	480.37

(20) SIMNI BEAT (Simni Range)

Drainage Line Treatment Measures

Open Map

20.1.1Loose Boulder Check Dam- SIMNI BEAT (Simni Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1290	D18	2 A 2 B 5 g 7	1	23.4696	85.98043	8.0	0.75	0.4	1.50	0.20	23910.15
1298	D26	2 A 2 B 5 g 7	2	23.46943	85.98109	7.0	0.75	0.4	1.50	0.20	20921.38
1301	D29	2 A 2 B 5 g 7	2	23.47056	85.98123	6.0	1.20	0.6	2.40	0.40	48919.44
1303	D31	2 A 2 B 5 g 7	3	23.46994	85.98318	5.0	0.75	0.4	1.50	0.20	14911.79
1304	D32	2 A 2 F 3 u 3	1	23.47309	85.98161	7.0	1.20	0.6	2.40	0.40	57072.68
1307	D35	2 A 2 F 3 u 3	3	23.47174	85.9823	9.0	1.20	0.6	2.40	0.40	73194.54
1308	D36	2 A 2 F 3 u 3	1	23.47165	85.98349	7.0	1.00	0.5	2.00	0.30	38242.23

20.1.2 Gabion Check measures- SIMNI BEAT (Simni Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
1294	D22	2 A 2 B 5 g 7	2	23.46896	85.98057	9	1	0.40	55137.09
1302	D30	2 A 2 B 5 g 7	1	23.47076	85.98044	9	1	0.40	55137.09

20.1.3 Gabion Check Dam measures- SIMNI BEAT (Simni Range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
1275	D3	4 H 3 C 8 r 5	1	23.45724	85.96554	10.5	1.0	1.0	0.40	5	2.00	1.0	0.40	355370.53
1284	D12	4 H 3 C 8 r 5	2	23.46314	85.96488	12.5	2.1	1.0	0.70	6	3.10	1.0	0.70	444602.32
1287	D15	4 H 3 C 8 r 5	1	23.4594	85.96869	12.5	1.0	1.0	0.40	6	2.00	1.0	0.40	399991.54
1288	D16	4 H 3 C 8 r 5	1	23.45898	85.96868	12.5	1.8	1.0	0.60	6	2.80	1.0	0.60	434496.36
1291	D19	2 A 2 B 5 g 7	2	23.46921	85.98081	12.5	1.5	1.0	0.50	6	2.50	1.0	0.50	414210.87
1292	D20	2 A 2 B 5 g 7	2	23.4687	85.98031	9.5	1.0	1.0	0.40	5	2.00	1.0	0.40	337923.00
1293	D21	2 A 2 B 5 g 7	2	23.46905	85.98064	10.5	1.5	1.0	0.50	5	2.50	1.0	0.50	367244.78
1295	D23	2 A 2 B 5 g 7	1	23.46921	85.98098	12.5	1.0	1.0	0.40	6	2.00	1.0	0.40	399991.54
1296	D24	2 A 2 B 5 g 7	2	23.47092	85.98164	9.5	1.0	1.0	0.40	5	2.00	1.0	0.40	337923.00
1297	D25	2 A 2 B 5 g 7	2	23.47025	85.98108	12.5	1.0	1.0	0.40	6	2.00	1.0	0.40	399991.54
1300	D28	2 A 2 B 5 g 7	1	23.47099	85.98046	10.5	1.5	1.0	0.50	5	2.50	1.0	0.50	367244.78

20.1.4Random Rubble Masonry Check Dam measures- SIMNI BEAT (Simni Range)

Open Design Detailed Excel File

Catchment ID	Survey Sr_No	Beat	Map Id	Watershed Code	Gully Order	Latitude	Longitude	Catchment Area (ha)	Length of weir, L (m)	Height of dam, F	Depth of flow (including freeboard), h	Total Estimated Cost (in lakh ₹)
11	1310	Simni	D38	2 A 2 B 5 g 7	3	23.469423	85.987981	313.81	24.00	3.00	0.80	16.90

Water Harvesting Structure Measures- SIMNI BEAT (Simni Range)

Open Map

20.2.1Embankment Pond- SIMNI BEAT (Simni Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
133	W1	2 A 2 B 5 g 7	1	23.47061	85.96628	49.64
135	W3	4 H 3 C 8 r 5	4	23.45681	85.97163	864.38
137	W5	2 A 2 B 5 g 7	3	23.47009	85.98475	1248.30
138	W6	2 A 2 B 5 g 7	2	23.47014	85.99089	410.06

20.2.2Pond Renovation- SIMNI BEAT (Simni Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
136	W4	4 H 3 C 8 r 5	4	23.45641	85.97177	270.08

20.3.1 Land Treatment and Forest Plantation- SIMNI BEAT (Simni Range)

Open Map

Open Design Detailed Excel File

OBJECT ID	Map ID	Proposed Land Treatment Type	Proposed Forest Plantation Type	Area (ha)	Horizontal Interval (m)	No. of Lines of 100 m Length/ha	No. of Trenches/ha	Trench Dimensions	Total Estimated Cost (₹)	Recommended Plantation (%)	Recommended Plantation Type
47	L3	CCT, CST	Nil	1.13	5	20	320	3×0.45×0.30	12773.99	100	NFP
74	L3	CCT, CST	Nil	0.41	5.2	19	304	3×0.45×0.30	4375.623	100	NFP
89	L3	CCT, CST	Nil	0.22	5.5	18	288	3×0.45×0.45	3387.573	100	NFP
128	L1	No Land Treatment Required	GF - 70%	0.02	-	-	-	-	-	100	NFP
129	L3	CCT, CST	Nil	3.36	5.5	18	288	3×0.45×0.30	34158.05	100	NFP
144	L3	CCT, CST	Nil	10.16	5.8	17	272	3×0.45×0.45	146248	100	NFP
177	L1	No Land Treatment Required	GF - 70%	1.64	-	-	-	-	-	100	NFP
178	L3	CCT, CST	Nil	9.69	5.8	17	272	3×0.45×0.30	93017.18	100	NFP
192	L3	CCT, CST	Nil	31.99	6.5	15	240	3×0.45×0.45	406350.3	100	NFP
221	L1	No Land Treatment Required	GF - 70%	1.15	-	-	-	-	-	100	NFP
222	L3	CCT, CST	Nil	9.20	6.5	15	240	3×0.45×0.30	77878.95	100	NFP
229	L3	CCT, CST	Nil	1.18	5	20	320	3×0.45×0.45	20060.8	80	GF
244	L1	No Land Treatment Required	GF - 70%	1.25	-	-	-	-	-	80	GF
245	L3	CCT, CST	Nil	1.03	5	20	320	3×0.45×0.30	11644.79	80	GF
249	L3	CCT, CST	Nil	1.56	5.2	19	304	3×0.45×0.45	25142.17	80	GF
261	L1	No Land Treatment Required	GF - 70%	0.45	-	-	-	-	-	80	GF
262	L3	CCT, CST	Nil	0.29	5.2	19	304	3×0.45×0.30	3069.99	80	GF
276	L3	CCT, CST	Nil	6.56	5.5	18	288	3×0.45×0.45	99986.41	80	GF
293	L1	No Land Treatment Required	GF - 70%	0.26	-	-	-	-	-	80	GF

294	L3	CCT, CST	Nil	0.71	5.5	18	288	3×0.45×0.30	7198.601	80	GF
306	L3	CCT, CST	Nil	12.83	5.8	17	272	3×0.45×0.45	184675.8	80	GF
323	L1	No Land Treatment Required	GF - 70%	1.91	-	-	-	-	-	80	GF
324	L3	CCT, CST	Nil	0.07	5.8	17	272	3×0.45×0.30	705.747	80	GF
334	L3	CCT, CST	Nil	4.67	6.5	15	240	3×0.45×0.45	59335.5	80	GF
349	L1	No Land Treatment Required	GF - 70%	4.16	-	-	-	-	-	80	GF
359	L3	CCT, CST	Nil	1.71	5	20	320	3×0.45×0.45	28953.18	50	GF
405	L1	No Land Treatment Required	GF - 70%	14.85	-	-	-	-	-	50	GF
406	L3	CCT, CST	Nil	13.62	5	20	320	3×0.45×0.30	153781.8	50	GF
418	L3	CCT, CST	Nil	1.13	5.2	19	304	3×0.45×0.45	18208.22	50	GF
465	L1	No Land Treatment Required	GF - 70%	3.41	-	-	-	-	-	50	GF
466	L3	CCT, CST	Nil	9.71	5.2	19	304	3×0.45×0.30	104167.9	50	GF
480	L3	CCT, CST	Nil	4.68	5.5	18	288	3×0.45×0.45	71297.88	50	GF
536	L1	No Land Treatment Required	GF - 70%	12.85	-	-	-	-	-	50	GF
537	L3	CCT, CST	Nil	18.44	5.5	18	288	3×0.45×0.30	187410.6	50	GF
550	L3	CCT, CST	Nil	10.59	5.8	17	272	3×0.45×0.45	152440.9	50	GF
601	L1	No Land Treatment Required	GF - 70%	10.37	-	-	-	-	-	50	GF
602	L3	CCT, CST	Nil	9.45	5.8	17	272	3×0.45×0.30	90652.94	50	GF
614	L3	CCT, CST	Nil	5.53	6.5	15	240	3×0.45×0.45	70292.19	50	GF
652	L1	No Land Treatment Required	GF - 70%	2.70	-	-	-	-	-	50	GF
653	L3	CCT, CST	Nil	4.88	6.5	15	240	3×0.45×0.30	41356.65	50	GF

(21) KUDNA BEAT (Matha range)

Drainage Line Treatment Measures Open Map

21.1.1 Brushwood Check Dam- KUDNA BEAT (Matha range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
1352	DLT-10	4 H 3 C 4 j 5	1	23.15635	86.09472	3.0	0.8	0.5	0.75	3041.33

21.1.2 Loose Boulder Check Dam - KUDNA BEAT (Matha range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1363	DLT-21	4 H 3 C 4 j 3	1	23.17089	86.09881	4.5	0.50	0.4	1.20	0.20	8511.07

21.1.3 Gabion Check- KUDNA BEAT (Matha range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
1343	DLT-1	4 H 3 C 4 j 3	1	23.16073	86.10064	8	1	0.40	49010.75
1344	DLT-2	4 H 3 C 4 j 3	1	23.16084	86.10082	7	1	0.40	42824.57
1345	DLT-3	4 H 3 C 4 j 5	1	23.15358	86.09785	7	1	0.40	42824.57
1346	DLT-4	4 H 3 C 4 j 5	1	23.15289	86.0978	6	0.6	0.30	22890.44
1347	DLT-5	4 H 3 C 4 j 5	1	23.15316	86.09776	7	1	0.40	42824.57

1348	DLT-6	4 H 3 C 4 j 5	1	23.15083	86.09792	6	0.6	0.30	22890.44
1349	DLT-7	4 H 3 C 4 j 5	1	23.15108	86.09775	9	1	0.40	55060.17
1350	DLT-8	4 H 3 C 4 j 5	1	23.15128	86.09767	8	1	0.40	48942.37
1351	DLT-9	4 H 3 C 4 j 5	1	23.15652	86.09493	5	1	0.40	30588.98
1353	DLT-11	4 H 3 C 4 j 5	2	23.14907	86.09868	7	1	0.40	42824.57
1354	DLT-12	4 H 3 C 4 j 5	2	23.14873	86.10063	8	1	0.40	48942.37
1355	DLT-13	4 H 3 C 4 j 5	2	23.14886	86.0996	7	1	0.40	42824.57
1356	DLT-14	4 H 3 C 4 j 5	2	23.14925	86.09792	6	0.6	0.30	22890.44
1357	DLT-15	4 H 3 C 4 j 5	2	23.14942	86.09719	8	1	0.40	48942.37
1358	DLT-16	4 H 3 C 4 j 5	2	23.14953	86.09671	8	1	0.40	49010.75
1359	DLT-17	4 H 3 C 4 j 5	2	23.14967	86.09624	9	1	0.40	55060.17
1360	DLT-18	4 H 3 C 4 j 5	2	23.1497	86.09616	7	1	0.40	42824.57
1361	DLT-19	4 H 3 C 4 j 5	2	23.15002	86.09519	6	1	0.40	36706.78
1362	DLT-20	4 H 3 C 4 j 5	2	23.15015	86.09495	8	1	0.40	48942.37
1365	DLT-23	4 H 3 C 4 j 3	3	23.16844	86.10272	8	1	0.40	49010.75
1366	DLT-24	4 H 3 C 4 j 3	1	23.16873	86.10328	9	1	0.40	55060.17

21.1.4 Gabion Check Dam- KUDNA BEAT (Matha range)

Open Design Detailed Excel File

Sr. No.	Map ID	Watershed	Order of Gully	Latitude	Longitude	Head wall Design width (m)	Head wall Design Height (m)	Head wall Design breath (m)	Head wall FD (m)	Side wall Design Length (m)	Side wall Height (m)	Side wall Design breath (m)	Side wall FD(m)	Total Estimated Cost (₹)
1364	DLT-22	4 H 3 C 4 j 3	1	23.16881	86.10139	7.5	2.1	1.0	0.70	3	3.10	1.0	0.70	311187.96

Water Harvesting Structure Measures-KUDNA BEAT (Matha range) Open Map

21.2.1 Pond Renovation -KUDNA BEAT (Matha range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
154	PR-1	4 H 3 C 4 j 5	1	23.15761	86.09466	56.24
155	PR-2	4 H 3 C 4 j 3	1	23.16341	86.09938	45.33
156	PR-3	4 H 3 C 4 j 3	2	23.16072	86.10016	56.24
157	PR-4	4 H 3 C 4 j 5	1	23.15634	86.09453	50.78

(22) MATHA BEAT (Matha Range)

Drainage Line Treatment Measures Open Map

22.1.1 Gabion Check measures- MATHA BEAT (Matha Range) Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
1367	DLT-1	4 H 3 C 4 j 1	1	23.12672	86.07025	6	1	0.40	36706.78
1368	DLT-2	4 H 3 C 4 j 1	1	23.12659	86.07004	5	1	0.40	30588.98
1369	DLT-3	4 H 3 C 4 j 1	1	23.12654	86.06994	5	1	0.40	30588.98
1370	DLT-4 *	4 H 3 C 1 x 1	1	23.12096	86.07224	7	1	0.40	42824.57
1371	DLT-5	4 H 3 C 4 j 1	1	23.12683	86.07051	5	1	0.40	30588.98

* Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

Water Harvesting Structure Measures- MATHA BEAT (Matha Range) Open Map

22.2.1Pond Renovation- MATHA BEAT (Matha Range) Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
158	PR-1	4 H 3 C 1 x 1	1	23.12262	86.07285	73.53

(23) MATHA P.F. BEAT (Matha P.F. Range)

Drainage Line Treatment Measures

Open Map

23.1.1Loose Boulder Check Dam- MATHA P.F. BEAT (Matha P.F. Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1372	DLT-1 *	4 H 3 C 4 j 1	1	23.13214	86.07287	8.0	0.75	0.4	1.50	0.20	23858.87
1373	DLT-2 *	4 H 3 C 4 j 1	1	23.13184	86.07318	6.0	0.75	0.4	1.50	0.20	17894.15

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

23.1.2Gabion Check measures- MATHA P.F. BEAT (Matha P.F. Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
1374	DLT-3 *	4 H 3 C 4 j 1	1	23.13108	86.07244	6	1	0.40	36706.78
1375	DLT-4 *	4 H 3 C 4 j 1	1	23.1316	86.07378	6	1	0.40	36706.78
1376	DLT-5 *	4 H 3 C 4 j 1	1	23.13153	86.0725	8	1	0.40	48942.37
1377	DLT-6 *	4 H 3 C 4 j 1	1	23.13133	86.07248	8	1	0.40	48942.37

* Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

(24) PARDIH BEAT (PARDIH Range)

Drainage Line Treatment Measures Open Map

24.1.1 Brushwood Check Dam-PARDIH BEAT (PARDIH Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design Width (m)	Design Height (m)	Depth of driving Vertical Poles inside the earth(m)	Breath (m) Spacing between two rows	Cost (₹)
1381	DLT-4 *	4 H 3 C 1 x 4	1	23.126109	86.127168	6.0	0.5	0.3	1.00	4850.36

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

24.1.2Loose Boulder Check Dam-PARDIH BEAT (PARDIH Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design Height (m)	Top Width (m)	Bottom Width (m)	FD (m)	Cost (₹)
1378	DLT-1 *	4 H 3 C 1 x 4	1	23.12594	86.12743	4.5	0.75	0.4	1.50	0.20	13449.46
1379	DLT-2 *	4 H 3 C 1 x 4	1	23.12637	86.12774	5.0	0.75	0.4	1.50	0.20	14943.84
1380	DLT-3 *	4 H 3 C 1 x 4	1	23.12625	86.12743	6.0	0.75	0.4	1.50	0.20	17894.15
1382	DLT-5 *	4 H 3 C 1 x 4	2	23.12685	86.12822	7.0	0.75	0.4	1.50	0.20	20876.51
1383	DLT-6 *	4 H 3 C 1 x 4	2	23.12694	86.12848	4.5	0.75	0.4	1.50	0.20	13420.61
1384	DLT-7 *	4 H 3 C 1 x 4	2	23.12823	86.1308	7.5	0.75	0.4	1.50	0.20	22367.69

* Given coordinates fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

24.1.3 Gabion Check measures-PARDIH BEAT (PARDIH Range)

Open Design Detailed Excel File

Sr. No.	Map Id	Watershed	Order of Gully	Latitude	Longitude	Design width (m)	Design height (m)	FD (m)	Cost (₹)
1385	DLT-8 *	4 H 3 C 1 x 4	2	23.12808	86.13069	6	1	0.40	36706.78
1386	DLT-9 *	4 H 3 C 1 x 4	3	23.12826	86.13288	8	1	0.40	48942.37
1387	DLT-10 *	4 H 3 C 1 x 4	2	23.12875	86.13115	5	1	0.40	30588.98
1388	DLT-11 *	4 H 3 C 1 x 4	2	23.12848	86.13099	6	1	0.40	36706.78
1389	DLT-12 *	4 H 3 C 1 x 4	2	23.12875	86.13115	5	1	0.40	30588.98

* Given coordinates fall in Forest Range and Beat other than mentioned one, but in very near proximity of the concerned Range/Beat Boundary.

Water Harvesting Structure Measures- PARDIH BEAT (PARDIH Range)

Open Map

24.2.1Pond Renovation- PARDIH BEAT (PARDIH Range)

Open Design Detailed Excel File

Survey No.	Map ID	Watershed Code	Gully Order	LATITUDE	LONGITUDE	Estimated Cost (in Thousand ₹)
159	PR-1****	4 H 3 C 1 x 1	1	23.12282	86.07503	31.91

****Fall outside but in very near proximity of Range/Beat Boundary. Required Shapefile boundary reshape accordingly.

Consultancy Project on

Preparation of Catchment Area Treatment Plan (CAT Plans) for 13 Forest Divisions in West Bengal under JICA Funded WB-FBCCCR

Consultant

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