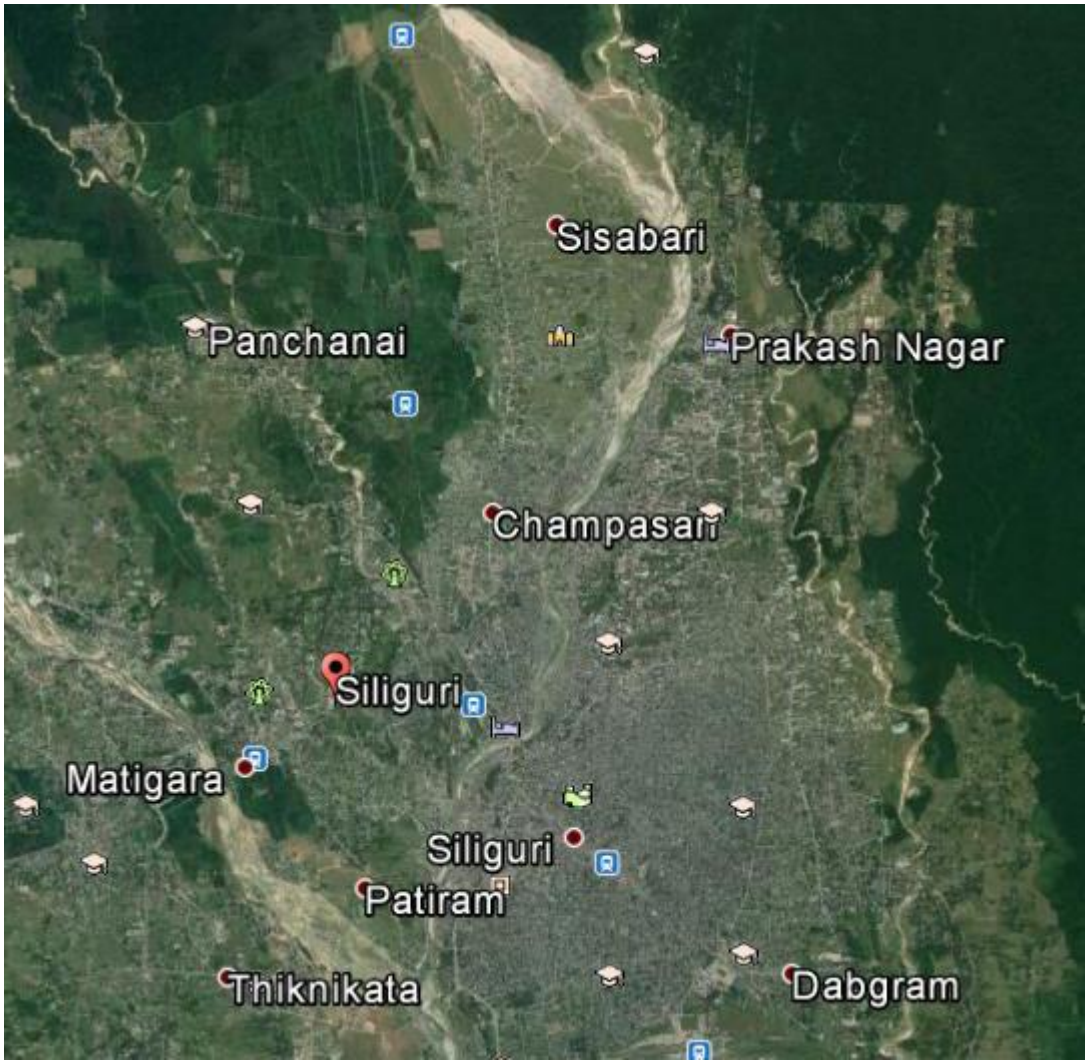

Proposed Action Plan for
rejuvenation of the polluting stretch of
river Mahananda

for placement before the Task Team for Scrutiny of Action Plans Submitted for Rejuvenation of Identified Polluted River Stretch (s) (i.e., P-I and P-II) in Compliance to Hon'ble NGT (PB) New Delhi Order dated 20.09.2018 and 19.12.2018 in OA No. 673/2018 in the matter of News Item published in 'The Hindu' titled "More River Stretches are Now Critically Polluted: CPCB"

Dated 12 July 2019
West Bengal Pollution Control Board

Contents

Executive Summary

Sl.	DESCRIPTION OF ITEM		Details
1.	Name of the identified polluted river and its tributaries	:	River Name: Mahananda Stretch: Siliguri to Binaguri Blocks covered: Siliguri MC and Phansideoa Block
2.	Is river is perineal and total length of the polluted river	:	Perennial, non-tidal and typically Himalayan. Length Approximately 20 KM
3.	No of drains contributing to pollution and names of major drains	:	Twenty (20) main drains. Details provided below.

Sl.	Name of main outfalls (drain) to river Mahananda	Discharge (Cum/day
1.	Baghajatin Colony (Ward No. 2)	823.95
2.	Rajendra Nagar Kulipada (Ward No. 1)	840.65
3.	Rajendra Nagar Kulipada (Ward No. 1)	772.05
4.	Rajendra Nagar Kulipada (Ward No. 10)	452.20
5.	South Bhagajatin Colony- near community development society no. 5 (Ward No. 3)	88.0
6.	Gurumbasti (near Ramnarayan Ground- Ward No. 3)	16.8
7.	Gurumbastu (near Durga Temple- Ward No. 3)	36.9
8.	Bhagajatin colony and Gurumbasti	137.6
9.	Paresh Nagar (Ward No. 44)	287.5
10.	Deshnath Pally (Ward No. 44)	230.1
11.	Mahakal Pally (near Surya Sen Pathagar- Ward No. 10)	654.0
12.	Mahakali Pally (near Mahananda Bidyamandir- Ward No. 10)	121.1
13	Jyotinagar- along Jyotinagar road (Ward No. 40)	1073.0
14	Jyotinagar - along (Vivekananda Road) Ward No. 4)	77.8
15	Ganga Nagar - along Natun Pada main Road (Ward No. 50)	582.0
16	Along Dada Bhai Road (near Shani Temple- Ward No. 42)	19.8
17	Lower Bhanu Nagar (Ward No. 43)	14.8
18	Lower Prakash Nagar (Ward No. 44)	7.0
19	Upper Prakash Nagar (ward No. 44)	23.3
20	Paresh Nagar, Dasarath Pally (Ward No. 44), Mahakali Pally (Ward No. 10) Jyotinagar and Ganganagar (Ward No. 10)	45

4.	Whether 'River Rejuvenation Committee (RRC) constituted by the State Govt./UT Administration and If so, Date of constitution of 'RRC'	:	Yes. 07th January 2019
5.	Major Towns on the banks of the river with population	:	The river runs through rural areas and passes through only one city – Siliguri of population 529059.
	a. Total water consumption and sewage generation in MLD	:	Total Water consumption _____71.4 MLD_____ Total Sewage generation _____44_____ in MLD
	b. Total no. of existing STPs and the total capacities in MLD	:	NIL
	c. Gaps in sewage treatment in MLD and no. of towns not having STPs	:	--44---- MLD. The action plan is for two STPs with capacity 47 MLD in total.

	d. Total MSW generation in TPA	:	MSW__264.5__in TPA
	e. Existing treatment and disposal facilities and total capacity	:	NIL
6.	Major industrial estates located with total no. of industries	:	Industrial Estate: NIL; No. of Industries: NIL
	a. Total water consumption and total industrial effluent generation in MLD	:	NIL
	b. No. of industries having captive ETPs and their treatment capacity in MLD	:	NIL
	c. No of CETP's and their treatment capacity	:	NIL
	d. Gaps in treatment of industrial effluent	:	NIL
	e. Total HW generation in TPA in the catchment area	:	NIL
	f. Existing HW Treatment and Disposal Facilities and total capacity with life span	:	NIL
7.	Action plan includes mainly covering aspect such as (Appropriate management of sewage and measures for regulating ground water use)	:	Yes
8.	Min. and Max. required time period for implementation of action plans		Min…1.5…….Years, Max…5 years…… _Years
9.	Total estimated budget in crores towards implementation of proposed action plans with break-up (e.g. No. of STPs, capacity, total cost; No of CETPs, total capacity, Cost towards interception and diversion of sewage/effluent to STPs/CETPs etc.,)	:	85 Crore
10.	Responsible Organisation(s) for implementation of proposed action plans (Please enclose details as annexure)	:	Attachment - 1

11.	Proposed Mechanism for execution of action plans:

This action plan implementation is to be monitored by the River Rejuvenation Committee (RRC) through meetings every tri-monthly. District level monitoring committees will be formed under the chairmanship of the respect District Magistrates for monitoring the district level implementation activities and submit reports to the RRC every three month.

12.	Expected deliverables w r to achieving Goals :

Considering the impact of this river water to the sensitive ecosystem of the foothills of the Himalayas and the livelihood of the people living on both sides of the river, revival of the water quality of this river is extremely important on context of its utility as it is a perennial River. The ultimate goal for beneficial use of rivers will determine the level of actions to be taken for maintaining the water quality. Under the present circumstances, it appears that river Mahananda serves the purpose of Outdoor bathing (Organised) as well as fishery, wild life propagation, irrigation and, most importantly, the health of the surrounding ecosystems. For achieving this objective, generated municipal sewage should be treated to meet the required standards of disposal. Also, the trade and other effluents generated within the catchment of river Mahananda which is ultimately joining and contributing to the pollution load in the river, should be treated to meet the effluent discharge standards stipulated under the GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART-A: EFFLUENTS of the Environment (Protection) Rules, 1986.

Therefore, the target of the action plan is to deliver quality of water of river Mahananda equivalent to that of use class "B" - Outdoor bathing (Organized).

Response of the RRC-WB

On

Comments of the Task Team for ensuring compliance to Hon'ble NGT (PB), New Delhi order dated 20.09.2018 and 19.12.2018 in OA No 673/2018 in the Matter of News Item Published in 'THE HINDU' Titled "More river stretches are now critically polluted: CPCB" held during 11.2.2019 to 12.02.2019 n Conference Room, 2nd Floor, Conference Hall CPCB, Delhi.

Comments of Task Team	Corresponding response(s) of RRC_West_Bengal
a) River Mahananda flows mostly on international boundary of India - Bangladesh. It is polluted due to industrial discharges from Bangladesh. Revised action plans submitted with approval of RRC	River Mahananda does not flow along India-Bangladesh border in the polluted stretch. The polluted stretch is very much within the territory of West Bengal in the Darjeeling District. In the identified polluted stretch, neither it receives any industrial wastewater from the Bangladesh. The untreated municipal wastewater discharge from the Siliguri City is the major source, if not exclusive polluting source for the river and the action plan has been prepared accordingly.

The Action Plan

1	Basic information about the stretch
	The river Mahananda originates from the Paglajhora Falls near Kurseong in Darjeeling District. With supply water from molten ice and water drained by a number of natural falls and jhoras in the district Darjeeling, the river flows due south-east and enters Siliguri town at Champasari area. The river is non-tidal in nature and receives wastewater from the Siliguri city area. Flow in the river receives enormous amount of discharge of municipal sewage round the year. BOD and Bacteriological count (Faecal Coliform) are the principal pollutants in this river stretch. The sources for this river is presented below.
i)	Polluted river stretch / length
	Polluted stretch of this river has been identified from Siliguri to Binaguri, which is approximately 15 km.
ii)	Major towns located on the bank between the stretch including population, water consumption details
	The only large town located in this stretch is Siliguri City. The Siliguri Municipal Corporation has an area of 260 squere kilometer with 47 wards and a population of 513264.
III)	Identified industrial estates/ areas
	There is only one industrial estate in Siliguri but that has no water polluting industry.
iv)	Stretch of river perennial on or non perennial / flow available / water usage in the stretch
	The stretch of the river is perennial and has flow round the year. Water in this stretch is used for fishing and abstraction for city supply after treatment and disinfection.
2	Water quality of river stretch / drains contributing pollution / ground water
	The water quality status of the river, as influenced by the discharges of the sources mentioned above is monitored on monthly basis at two water quality monitoring stations at up-stream at Champasari as the river approaches the Siliguri town and downstream at Ramghat, before river Balason confluences with Mahananda. On the basis of this data the stretch was identified as under priority II. During preparation of the current report, the water quality data of this stretch for last two years was analyzed using the latest "CRITERIAFOR PRIORITISATIONOF POLLUTEDRIVERLOCATION(DRAFT)" circulated by the Central Pollution Control Board (CPCB). Using data of last 24 determinations in two years (January 2017 to December 2019), the river stretch could be identified as Priority III (Moderately Polluted or Fair) with the last two years' average BOD data of 6.4 mg/L and Faecal Coliform value of 70000 MPN/100mL. Although this is the average data of two stations, the Ramghat data presents the actual extent of pollution in the river contributed by municipal sewage discharge with BOD value of 9.8 mg/L and FC value of 128000. Water quality data in this regard is presented below.

Month / Year	Location – Upstream of Siliguri		Location – Downstream of Siliguri	
	BOD (mg/L)	FC (MPN/100mL)	BOD (mg/L)	FC (MPN/100mL)
Jan-17	3.1	7000	8	60000
Feb-17	3.6	22000	5.3	80000
Mar-17	2.4	17000	6.5	170000
Apr-17	3.4	14000	6	140000
May-17	2.8	21000	8	210000
Jun-17	2.4	14000	6	170000
Jul-17	1.9	7000	8	90000
Aug-17	2.5	6000	4.6	110000
Sep-17	3.6	14000	23	170000
Oct-17	3.2	9000	6	90000

Nov-17	2.8	26000	23	140000
Dec-17	3.4	14000	13	170000
Jan-18	2.9	9000	14	130000
Feb-18	3.4	11000	18	170000
Mar-18	2.8	11000	12	140000
Apr-18	2.8	14000	14	130000
May-18	3.2	11000	12	140000
Jun-18	2.6	9000	4.8	110000
Jul-18	3.1	11000	4.3	170000
Aug-18	3.6	8000	4.6	110000
Sep-18	2.8	5000	3.8	90,000
Oct-18	3.4	7000	6	80000
Nov-18	3.1	8000	16	90000
Dec-18	2.8	11000	8	110000

i) Drains contributing to pollutions

Polluting sources of Mahananda

1. About 94 nos. of municipal sewage discharge points (Small and large put together) on the left bank of River Mahananda and 60 nos. on the right that drain untreated municipal sewage into the river.
2. Jorapani river at Fulbari and Fuleswari canal near NJP road carries the municipal sewage of associated municipal wards.
3. Apart from above, indiscriminating dumping of municipal solid waste also contributes to the worsening of the river water quality.

ii) Latest water quality current as per assessment target

The water quality of the river on an average over last two years data is presented below.

Average BOD for last two years (mg/L)	6.39
Average TC for last two years (MPN/100mL)	70000

Considering the impact of this river water to the sensitive ecosystem of the terai of the Himalayas and the livelihood of the people living on both sides of the river, revival of the water quality of this river is extremely important on context of its utility as it is a perennial River. The ultimate goal for beneficial use of rivers will determine the level of actions to be taken for maintaining the water quality. Under the present circumstances, it appears that river Mahananda serves the purpose of drinking water intake points (for supply after treatment and disinfection), fishery, irrigation and, most importantly, the health of the sensitive terai ecosystems. For achieving this objective, generated municipal sewage should be treated to meet the required standardsg. Also, the trade and other effluents generated within the catchment of river Mahananda which are ultimately joining and contributing to the pollution load in the river should be treated to meet the effluent discharge standards stipulated under the GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART-A: EFFLUENTS of the Environment (Protection) Rules, 1986.

The target water quality for this stretch is BOD, less than 3.0 mg/L and Faecal Coliform less than 5000 mg/L.

III) Characteristics of river and the major drains

More than hundred small and large drains carry municipal wastewater from both sides of the Mahananda as it runs through the city. General characteristics of such drainage water will be reported in 3 months time.

iv) Flow details of the polluted river stretch

The lean season flow (base flow) for the river is 5 cumec (cubic meter per second). Year wise details Will be reported in 3 weeks time.

v)	Charactertics of the major drains contributing to pollution
	More than hundred small and large drains carry municipal wastewater from both sides of the Mahananda as it runs through the city. General characteristics of the major drains are provided at Annexure-1.
vi)	Flow details of the major drains contributing to river pollution
	Provided in Annexure-1.
vii)	Ground water quality in the catchment of polluted river stretch
	The ground water quality of the area surrounding the polluted river stretch is provided at Annexure-2(A). From analysis of the data no problematic issue in the ground water quality could be identified. The West Bengal Pollution Control Board keeps a strict vigil over the metal contamination of the ground water in this region. The ground water data in respect of the heavy metals were screened for the ground water station(s) of this region for last three years and hardly any presence could be found excepting Zinc. Zinc, however, reported a maximum concentration of 130 microgram per cubic meter. This can easily be ignored as the drinking water standard for Zinc is 5000 microgram per cubic meter. The heavy metal concentrations in the ground water for last three years are provided in Table in Annexure-2(B).
viii)	Health status of the public in the catchment of polluted river stretch
	The health status of the public in the catchment of polluted river stretch is provided below.

Block	**IPD admission**	**OPD attendance**	**Live birth**	**Infant death**	**Maternal death**	**Major diseases**
Phansidewa	7063	188001	909	55	5	Kalazar, Dengue, Japanese Encephalitis, Malaria, Diabetes, Hypertension
SMC	58976	548474	5668	49	2	Dengue, Japanese Encephalitis, Malaria, Hypertension, Diabetes

3	Inventory sources of pollution and gaps identification	
(a)	Municipal sources / sewage management	
i)	Sewage generation from towns located on the banks of the polluted river	
	The main source of pollution of the river Mahananda is the discharge of untreated sewage from areas of the Siliguri Municipal Area. The main objective os this treatment proposal is to treat municipal sewage running down to rivers Mahananda, Jorapani and Fuleswari. Treatment of about 47 Million Liter per Day (MLD) of municipal sewage is required to be treated.	
ii)	Number of sewage treatment plants and treatment capacity. Actual sewage treatment and the gaps in treatment	
	DPR for treatment of the city sewage have been prepared and according to this two STPs are required to be implemented with capacities of 15 and 32 MLD. The estimate for such works has been finalized and the project will be submitted for departmental approval after the MCC for general elections is over.	
III)	Number of STPs proposed and capacity	
	Two, one at Noukaghat (32 MLD) and the other at Jorapani (15 MLD).	
iv)	Interception and diversion of drains / in situ treatment given	
	Households have septic tanks for the toilet flush as in situ treatment. All drains will be intercepted, diverted and treated before disposal and/or re-used following the ensuing policy for treated water usage.	
(b)	Drainage system / sewage network present / proposed	
	Details will be prepared in 6 months time.	
(c)	Industrial pollution control	
i)	Number of industries – category Red or water	nil

<table>
<tr><td></td><td>polluting / small scale</td><td></td></tr>
<tr><td>ii)</td><td>Industries without consent / authorization</td><td>nil</td></tr>
<tr><td>III)</td><td>Number of directions issued to industries</td><td>nil</td></tr>
<tr><td>iv)</td><td>Total water consumption and the waste water generation by the industries</td><td>Not Applicable</td></tr>
<tr><td>v)</td><td>Number of industries having captive ETPs and treatment capacity</td><td>Not Applicable</td></tr>
<tr><td>vi)</td><td>Number of industries those are members of the CETP</td><td>NO CETP</td></tr>
<tr><td>vii)</td><td>Number of CETPs existing in the catchment of polluted river stretch and the treatment capacity</td><td>Not Applicable</td></tr>
<tr><td>viii)</td><td>OCEMS installation status by industries</td><td>Not Applicable</td></tr>
<tr><td>ix)</td><td>Gaps in treatment of industrieal effluent</td><td>Not Applicable</td></tr>
<tr><td>x)</td><td>Present / proposed CETP capacity / member units</td><td>NIL</td></tr>
<tr><td>4</td><td colspan="2">Identification of major sources required to be controlled based on pollution load</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>a)</td><td colspan="2">Waste management status</td></tr>
<tr><td></td><td colspan="2">The status of biomedical waste management is provided below.

<table><tr><td colspan="3">Biomedical Waste Generation: 1100 kg/day (approx..)</td></tr><tr><td>Existing CBWTFs</td><td>Greenzen Bio Pvt. Ltd. Mouza. Binnaguri, PO. Fulbari, PS. Bhaktinagar, Dist. Jalpaiguri, PIN – 734015</td><td>In operation. Treatment capacity of CBWTSDF is 15,000 bed/day i.e. equivalent to 3750 kg/day (on the basis of 250 grams /bed/day)</td></tr></table>
So there is no gap in between the BMW generated and existing treatment capacity of common bio-medical waste treatment facility .</td></tr>
<tr><td>i)</td><td colspan="2">Industrial waste management</td></tr>
<tr><td></td><td colspan="2">No hazardous waste generating industry exists in the catchment area of the river in Siliguri. The rest of the industrial waste are treated along with solid waste.</td></tr>
<tr><td>ii)</td><td colspan="2">Solid waste management</td></tr>
<tr><td></td><td colspan="2">Generation of solid waste has been quantitated at 300 MT (approx.) from the city area.
A Manure Composting Plant was setup at 2007, with Hindusthan Joibo Rosayan Company in PPP mode, by joint venture. The manure was sold in several tea gardens. But, the company was not agreed to continue this project from 2012 due to some uncanny reason. Since then Siliguri MC have been continuing this project and the manure is being sold to various markets. A mechanical composter will be setup very shortly.
Besides, UD&MA Dept. had provided 3 nos. 14m^3 movable compactor, 1 no. Stationary Compactor etc., under Mission Nirmal Bangla (Urban) to strengthen the waste collection system in addition to existing facilities available within the Corporation area.</td></tr>
<tr><td>III)</td><td colspan="2">Gaps identified in waste management</td></tr>
<tr><td></td><td colspan="2">Whatever gap in waste management exists, it is for solid waste management. Although 100 percent door to door collection of solid waste has been achieved for entire municipal area, segregation at source is yet to be initiated. The action plan for initiation of such segregation at source activity followed by other processing and disposals are presented, along with timeline, at Annexure-2.</td></tr>
<tr><td>iv)</td><td colspan="2">Proposed actions for solid wastes, industrial waste and bio-medical waste management</td></tr>
<tr><td></td><td colspan="2">An integrated SWM project with processing facility of Waste to Compost, i.e. Compost Plant is prepared. The project may be implemented by 3 years from sanctioning of the project.</td></tr>
<tr><td>5</td><td colspan="2">Any other information</td></tr>
<tr><td>i)</td><td colspan="2">Remedial plans for control of ground water contamination</td></tr>
</table>

Major remedial measures to control ground water contamination has been taken in controlling Open defecation and construction drainage system and soak pits in panchayet (rural) areas

i) Construction of platform, pucca drain and soak pits for Tube-wells and compost/ azolla pit at household and cluster level.

ii) Providing access of twin leach pit safe and sanitary toilets to every eligible rural household thereby arresting the possibility of discharge of domestic black water to the adjacent or nearby water bodies including rivers. Present sanitation coverage in the rural areas of the state stands at **99.61%.**

A detailed account of sanitation project in this area is provided below.

SL	NAME OF THE DISTRICT	NAME OF THE BLOCK	TOTAL HOUSEHOLD TOILET CONSTRUCTED (FROM 2013-14 TILL DATE)
1	Darjeeling	PHANSIDEWA	46436

Following actions will be taken by the Panchayet Department with a time target of three (3) years.

1. In the jurisdiction of Phasideoa block, efforts would be made to improve water flow in Mahananda by taking recourse to catchment area treatment for which farm ponds would be excavated in a stretch of 1 KM from the river
2. Plantation in the catchment area will receive priority
3. **In sanitation**, solid waste management will be a priority, along with imposing ban on use of plastic carry bags <50 microns
4. A bio diversity park will be established to preserve bio diversity (Action MGNREGA)

Following are the initiatives from the Department of Agriculture for controlling the pollution of the river water.

The anti-pollution initiatives are divided into following four domains :

1. Increasing water use efficiency through good irrigation practices ;
2. Soil and water conservation ;
3. Cultivation of low water demanding crops ;
4. Propagation of eco-friendly agriculture.

Present Status	Action Plan
1. As per Dynamic Groundwater Resources Assessment & Categorization ALL blocks are in 'SAFE' Category. 2. Pilot Rainwater Harvesting Scheme are taken in the area for awareness of People.	• Groundwater Depth to Water Level Monitoring system on 5 X 5 Km^2 grid basis and as well as for multiple aquifer has been proposed. Due to increasing demand of Ground Water in the Corporation and Municipal areas , a Real Time Water level Monitoring system with telemetry for continues monitoring of the depth to water level (4 times in a day has been proposed. The said work plan will be executed within coming 5 years. • Each Grampanchyet Level Water Quality monitoring will be taken up in the state. The said work plan will be executed within coming 5 years. • Dynamic Groundwater Assessment (2017) according to GEC-2015 methodology is in progress and will be submitted within this year. • Excavation of Ponds proposes for water harvesting in each year according to the availability of fund. • Groundwater development scheme are being taken up in consultation with State Water Investigation Directorate.

		• Surface Water Development Schemes are taken up where ever feasible in agriculture.
ii)	Remedial plans for health impacts in the catchment of polluted river stretch	
	The Gap analysis done by the Health department identified irregularity of collection and disposal of Biomedical Wastes from the primary health centers as the reason for occasional health hazard incidents. As a remedial measure, development of Common Biomedical Waste Treatment Facility within 75 Kilometer of the sources of generation has been proposed.	
III)	Identified organizations responsible for preparation of and execution of action plans, with timeline and budgetary estimate.	Provided at Annexure - 4
iv)	Monitoring mechanism proposed for implementation of action plans	
	This action plan is to be monitored by the River Rejuvenation Committee (RRC) every tri-monthly. District level monitoring committees will be formed under the chairmanship of the respect District Magiatrates for monitoring the district level activities and submit reports to the RRC every three month.	
v)	Public mass awareness	
	5. Awareness trainings has been initiated by the Health department on Biomedical Waste Management	

Major drains discharging on right side of Mahananda River

SL. No.	Location	Discharge (Cum/ day)
1.	Baghajatin Colony (Ward No. 2)	823.95
2.	Rajendra Nagar Kulipada (Ward No. 1)	840.65
3.	Rajendra Nagar Kulipada (Ward No. 1)	772.05
4.	Rajendra Nagar Kulipada (Ward No. 10)	452.20
5.	South Bhagajatin Colony- near community development society no. 5 (Ward No. 3)	88.0
6.	Gurumbasti (near Ramnarayan Ground- Ward No. 3)	16.8
7.	Gurumbastu (near Durga Temple- Ward No. 3)	36.9
8.	Bhagajatin colony and Gurumbasti	137.6

Major drains discharging on left side of Mahananda River

SL. No.	Location	Discharge (Cum/ day)
1.	Paresh Nagar (Ward No. 44)	287.5
2.	Deshnath Pally (Ward No. 44)	230.1
3.	Mahakal Pally (near Surya Sen Pathagar- Ward No. 10)	654.0
4.	Mahakali Pally (near Mahananda Bidyamandir- Ward No. 10)	121.1
5.	Jyotinagar- along Jyotinagar road (Ward No. 40)	1073.0
6.	Jyotinagar - along (Vivekananda Road) Ward No. 4)	77.8
7.	Ganga Nagar - along Natun Pada main Road (Ward No. 50)	582.0
8.	Along Dada Bhai Road (near Shani Temple- Ward No. 42)	19.8
9.	Lower Bhanu Nagar (Ward No. 43)	14.8
10.	Lower Prakash Nagar (Ward No. 44)	7.0
11.	Upper Prakash Nagar (ward No. 44)	23.3
12.	Paresh Nagar, Dasarath Pally (Ward No. 44), Mahakali Pally (Ward No. 10) Jyotinagar and Ganganagar (Ward No. 10)	45

Annexure-2(A)

Ground water quality of the surrounding area of the polluted stretch of river Mahananda													
Sl. No.	PHS Nos.	Block	Location	Type of Source	pH	Sp. Conductance in micromohs/ cm at 25°C	Carbonate in ppm	Bi-Carbonate in ppm	Chloride in ppm	Total Hardness in ppm	Total Iron In ppm	TDS in ppm	Arsenic in ppm
30	34	Naxalbari	M.M. Terai, Opp. Ms Samaj	DW	7.4	86.0	NIL	20.0	16.0	56.0	2.0	55.9	ND
31	35	Naxalbari	Darjeeling Gorkha Hill Council, FD	DW	7.6	56.0	NIL	24.0	4.0	52.0	2.0	36.4	ND
32	36	Naxalbari	Santoshi Mata Temple	DW	7.5	100.0	NIL	48.0	12.0	76.0	0.3	65.0	ND
33	37	Naxalbari	Radhajote, Longia Pry. School	DW	7.1	461.0	NIL	76.0	68.0	128.0	0.5	299.0	ND
34	49	Naxalbari	H/O. Naresh Chandra Barman, Gosaipur GP, Nr. Sailbhita Pr. School	PT	7.2	262.0	NIL	72.0	28.0	104.0	0.8	170.3	ND
35	1	Phansidewa	Behind H/O Kandru Singh, Md. Baxa	DW	7.2	170.0	NIL	64.0	24.0	96.0	1.2	110.5	ND
36	2	Phansidewa	Near H/O Sani Orao	DW	7.3	136.0	NIL	48.0	20.0	56.0	2.0	88.4	ND
4		Phansidewa	Phansidewa P.S	DW	7.3	179.0	NIL	80.0	200.0	76.0	3.0	116.3	ND
38	5	Phansidewa	H/O. Kalipoda Roy, Kantivita More	DW	7.0	192.0	NIL	44.0	32.0	68.0	0.5	124.8	ND
39	6	Phansidewa	Bidhannagar P.S	PT	7.6	578.0	NIL	152.0	84.0	164.0	1.2	357.8	ND
40	8	Phansidewa	Madati High School	PT	X	X	X	X	X	X	X	X	X
41	9	Phansidewa	Office of the Ranger officer	DW	7.2	160.0	NIL	36.0	16.0	72.0	2.0	104.0	BDL
42	10	Phansidewa	H/O Dhirendranath Roy, Nr. A Bajar	PT	X	X	X	X	X	X	X	X	X
43	26	Phansidewa	Tepu Tea Estate (Hat)	DW	7.1	91.0	NIL	40.0	12.0	56.0	2.0	59.1	ND
44	27	Siliguri Corp	Hillcart Rd. Opp. Sarda Hotel	DW	7.5	496.0	NIL	140.0	76.0	184.0	2.0	322.4	ND
45	44	Siliguri	Sevok Rd Estn. Opp. Mahi. Rabi Auto	DW	7.6	324.0	NIL	136.0	12.0	180.0	0.5	210.6	ND
46	46	Siliguri	Laxmimaya CS Pr. School, W. No-43	PT	7.3	417.0	NIL	116.0	28.0	176.0	0.5	271.6	ND
47	47	Siliguri	Ramkrishna Bedanta Asram	PT	X	X	X	X	X	X	X	X	X
48	N1	Phansidewa	Chulkai. Vill- khudigach	DW	7.4	1123.0	NIL	212.0	188.0	204.0	1.2	729.9	ND
49	N2	Phansidewa	Khasturba Girls Hostel. Madati H. S	DW	7.3	564.0	NIL	128.0	72.0	164.0	0.5	366.6	ND
50	N3	Phansidewa	Near Amobari Bazar	DW	7.5	394.0	NIL	76.0	52.0	116.0	5.0	256.1	ND
51	N4	Matigara	Chameli Basti	DW	7.1	147.0	NIL	72.0	8.0	80.0	0.3	95.5	ND
53	N6	Phansidewa	K.B pry. school	DW	7.3	143.0	NIL	64.0	24.0	76.0	2.0	92.9	ND

Annexure-2(B)

Concentration of Heavy Metals (in µg/l) in groundwater of Mahananda catchment BDL: Below Detectable Limit								
:: Fulbari (Siliguri) Station ::								
Year	Arsenic	Cadmium	Chromium Total	Copper	Lead	Mercury	Nickel	Zinc
2016	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
2017	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.59
2018	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Annexure-3

Proposed Solid Waste Management Plan for Siliguri Municipal Corporation																				
District	**Sl. No.**	**Name of Urban Local Body**	**No. of Ward**	**Population (2011 census)**	**Door to door Collection**		**Segregation at source**		**Separate Transportation**		**Public area sweeping**		**MRF Faciliities**		**Wet waste processing**		**Dry waste processing**		**Activities of bulk waste generators**	
					Status	**Action Plan**	**Status**	**Action Plan**	**Status**	**Action Plan**	**Status**	**Action Plan**	**Status**	**Action Plan**	**Status**	**Action Plan**	**Status**	**Action Plan**	**Status**	**Action Plan**
Darjeeling	6	Siliguri Municipal Corporation	47	513264	100 %	NA	0%	100% to be achieved by Dec, 2022	0%	100% to be achieved by Dec, 2022	100 %	NA	0%	100% to be achieved by Dec, 2022	0%	100% to be achieved by Dec, 2022	0%	100% to be achieved by Dec, 2022	0%	100% to be achieved by Dec, 2022

Distribution of Organizational Responsibilities			
Departments / Agencies	*Actions to be taken*	*Targeted timeline*	*Budgetary Estimate*
PHED	1. Action Plans of distribution of treated river water to habitations traditionally using ground water. 2. Action plans for replacement of withdrawal of groundwater in Arsenic affected blocks of the State. Information to be incorporated: • Town wise consumption – Surface Water • Town wise consumption – Ground Water	Project preparation in planning stage	
SJDA	1. Action plans for management of municipal wastewater discharge for Siliguri Municipal Corporation including treatment and disposal septage generated within the corporation area. Detailed gap analysis w.r.t town-wise water consumption (including ground water consumption), sewage generation, existing infrastructure in the catchment area and the gap analysis. Information to be incorporated: • Town wise consumption – Surface Water • Town wise consumption – Ground Water • Town wise sewage generation • Town wise existing wastewater treatment infrastructure Town wise Gap analysis for wastewater treatment Wastewater management action plan has to mention the treated water discharge point. Best is to use the treated wastewater for agricultural purpose, which is possible for these towns.	Action plan prepared. Execution is to be initiated soon.	Rs. 130.5 Crore
Siliguri Municipal Corporation	Action plans for management of Municipal, Plastic, Hazardous, Bio-medical and Electrical and Electronic wastes the following rivers and towns.	Project under preparation.	
Panchayat & Rural Development Department	1. River specific action plans for black and grey liquor management, municipal solid waste management and surface water preservation programmes (e.g., Rainwater harvesting). 2. To coordinate with Forest Department for providing lands for tree plantation and development of biodiversity parks. 3. Watershed management programmes, IHHL activities etc. Special emphasis is required from the PNRD department for the cases of the following rivers as no urban wastewater reaches the rivers.	Action Plan Provided. Will GP level solid waste management units at 6 locations in the Blocks surrounding Mahananda . Time line – 3 Years. Plantation progrmmes during 2019 - 2010	Rs. 4.2 Crore. 27.0 Lakh

Water Resources Investigation & Development Department	River specific action plan on the following. (i) Periodic assessment of groundwater resources and regulation of ground water extraction by industries particularly in over exploited and critical zones/blocks. (ii) Ground water re-charging /rain water harvesting (iii) Periodic ground water quality assessment and remedial actions in case of contaminated groundwater tube wells/bore wells or hand pumps. (iv) Assessment of the need for regulating use of ground water for irrigation purposes.	Has provided action plan.	Will be taken care from State Budget Funding.
Irrigation Department	1. Protection to the eroding both bank of river Mahananda for a length of 1.400 km at Champasari Road Bridge, SMC Area, Dist. Darjeeling	March 2019	Rs. 3.6 Crore.
Agriculture Department	1. Watershed Development in total 219 ha of land. 2. Reclamation of sand laden -20 ha.,excavation /re-excavation of drainage/irrigation channel-200 RMTWater Harvesting Structure-2 Nos. Dug well – 4 Nos., Awareness Meeting- 3 nos.	2019 – 2020 2019-2020	8.78 Crore. 15.22 Lakh.
Forest Department	1. Plantation Works on banks of river 2. Development of Biodiversity Park	2019-2019 2020-2021	14.66 Crore 3.04 Crore for 100 ha

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