# Action Plan
# for
# Rejuvenation of River Dwarkeswar
# Bankura, West Bengal

## Priority – V

**Nodal Agency**
**Municipal Engineering Directorate**
**Department of Urban Development & Municipal Affairs**
**Government of West Bengal**

**Approved by**
**River Rejuvenation Committee, West Bengal**
***(constituted in compliance to the order of the Hon'ble National Green Tribunal)***

**Submitted to**
**Central Pollution Control Board, Delhi**

**SEPTEMBER, 2020**

# Executive Summary

| Sl. | Description of Item | | Details |
|---|---|---|---|
| 1. | Name of the identified polluted river | | RiverDwarkeswar |
| 2. | Identified polluted stretch of the river | | Bankura to Kushtia |
| 3. | Total length of the polluted river | | 20 KM (approximately) |
| 4. | Towns in the catchment of the polluted stretch of the river | | Bankura |
| 5. | Is river is perennial | | Non Perennial |
| 6. | No. of drains contributing to pollution and names of major drains | | Thirteen (13) |
| | (1)Lokepur Ghat, (2) Raja gram (3) Raja gram (4) Kankata (5)Patpur Power House (6) Minapur Sasan (7) Patpur Napopara (8) Kethardanga Patakola (9) Kethardanga Bagdipara (10) Kethardanga Chaitkali Ghat (11) Near Satighat (12) Opposite Lakhatora (13) Opposite Sukantapally Durga Mondap | | |
| 7. | Whether 'River Rejuvenation Committee' (RRC) constituted by the State Govt./UT Administration and If so, Date of constitution of 'RRC' | | Yes.<br>07.01.2019 |
| 8. | Major Towns on the banks of the river with population | | Bankura<br>Population = 1,37,386 (Census, 2011) |
| | a. | Total water consumption and sewage generation in MLD | Total water consumption =25.09 MLD<br>Total sewage generation = 15.10 MLD |
| | b. | Total no. of existing STPs and the totalcapacities in MLD | Nil |
| | c. | Gaps in sewage treatment in MLD and no. of towns not having STPs | Town=1, Gap=15.10 MLD |
| | d. | Total MSW generation in TPA | 23725 TPA |
| | e. | Existing treatment and disposal facilities and total capacity | NIL |
| 9. | Major industrial estates located with total no. of industries | | NIL |
| | a. | Total no. industries discharging wastewater directly/indirectly in to the river | NIL |
| | b. | Total water consumption | NIL |
| | c. | Total industrial effluent generation | NIL |
| | d. | No. of industries having captive ETPs and their treatment capacity | NIL |
| | e. | No. of CETP's and their treatment capacity | NIL |
| | f. | Gap in industrial wastewater treatment | NIL |
| | g. | Total HW generation in TPA in the catchment area | All hazardous waste generating industries are disposing their hazardous wastes through one (1) Common Hazardous Waste Treatment, Storage and Disposal Facility operating at Haldia. |
| | h. | Existing HW Treatment and Disposal Facilities and total capacity with life span | |
| 10. | Action plan includes mainly covering aspect such as appropriate management of sewage, rain water harvesting, measures for regulating ground water use, protection and management of flood plain zone, | | Whichever applicable has been taken into account. |

| | | |
|---|---|---|
| | plantation on both sides of the river, setting up of bio-diversity parks etc., as per Hon'ble NGT Orders dated 20.09.2018 and 19.12.2018 | |
| 11. | Responsible Organization (s) for implementation of proposed action plans (Please enclose details as annexure ) | Table-6 |
| 12. | Nodal Agency | Municipal Engineering Directorate<br>Department of Urban Development and Municipal Affairs, Govt. of West Bengal<br>BikashBhavan, Salt Lake, Kolkata-700091 |

## Proposed Mechanism for execution of action plans:

This action plan implementation is to be monitored by the River Rejuvenation Committee (RRC) through meetings every month. The Central Monitoring Committee constituted by the Hon'ble NGT under the Chairmanship of the Secretary, Ministry of Jal Shakti, GoIalso holds meeting in every month with the Chief Secretary/Principal Secretary, Environment of the State to assess progress of work. Every month Monthly Progress Report will be sent to Ministry of Jal Shakti, GoI.

An Environment Monitoring Cell in the Office of the Chief Secretary, WB has been constituted to oversee the progress of work.

## Expected deliverables with respect to achieving Goals :

Considering the importance of this river in the Bankura district with respect to the livelihood of the fishermen living on both sides of the river, rejuvenation of water quality of this river is extremely important as it is non perennial river. For achieving this objective, generated municipal sewage should be treated and discharged only when they comply with the prescribed standards.It has to be ensured that no industrial effluents are discharged without being properly treated and complying the discharged standards prescribed under the Environment (Protection) Rules, 1986. **The target for water quality for the stretch is to be fit at least for bathing purposes (i.e. BOD< 3 mg/l and FC < 500 MPN/100 ml).**

**Response of the RRC, WB on comments of the Task Team for ensuring compliance to Hon'ble NGT (PB), New Delhi in OA No 673/2018 held during 26.02.2020 and 11.06.2020**

| Comments of Task Team | Corresponding response(s) of RRC_West_Bengal |
|---|---|
| Latest water quality of PRS covering all parameters not provided | Monthly water quality data for BOD & FC for the years 2017, 2018 and 2019 provided. Moreover, latest water quality of river Dwarkeswar covering all parameters also provided for the months of Jan-May 2020. |
| Projected population not taken into account for assessment of sewage generation. | Projected population till 2022 considered for assessment of sewage generation |
| Detailed gap analysis (Town wise/ ULB wise) w.r.t sewage,<br>Industrial Effluent and Waste Management along with infrastructure available not included | Available information included in the report. |
| Aspects such as Utilization of treated waste water, Removal<br>of encroachments not covered in action plan | Department of Urban Development and Municipal Affairs, GoWB has prepared a policy on use of treated wastewater. The policy is in final stage of preparation. The same will be sent to CPCB for approval. |
| Timelines for construction of STPs is exceeding March, 2021 | Primary treatment of wastewater in the thirteen drains in Bankura town by providing screens, sedimentation tank, followed by disinfection by chlorination is proposed. The work will be completed by 30.06.2021. |
| Action plan to be revised adding latest water quality data for the polluted river, major drains with flow and other parameters. | Available information included in the report. |
| Map showing all the towns, tributaries, drains & industrial estates, contributing to pollution to be included | Available information included in the report. |
| Gap analysis with projection upto 15 years w.r.t sewage and Waste Management be included in action plan | 15.10 MLD |
| Actions be initiated against industries functioning without captive ETPs or connection with CETPs. | All GPIs and SPIs under consent administration of WBPCB are having captive ETPs. |
| Detailed gap analysis w.r.t present generation, projected generation existing infrastructure, existing capacity utilization, gap observed in the catchment for management of industrial effluent and waste management (solid waste, hazardous waste, C & D waste, bio-medical waste) need to be detailed in a separate table clearly. | Available information included in the report. |

**Background:**

The West Bengal is the land of rivers. An intricate network of three major river basins (the Ganga, Brahmaputra and Subarnarekha) drain this State. Human settlement and related activities on the banks of the rivers have gradually increased over the years. Considering very reach ecological diversities of the water resources and the benefits of river network, most of the industrial development in this State took place near the rivers and the population density is also very high in these areas. As a result, these rivers receive liquid wastes like industrial discharges and municipal sewage and solid wastes are also dumped near the banks of the rivers.

Since early eighties, the West Bengal Pollution Control Board (WBPCB), in collaboration with the Central Pollution Control Board (CPCB), initiated monitoring of water quality of all important rivers, canals, ponds and reservoirs. The CPCB conducted water quality assessment based on available data have collected till 2016 to identify polluted river stretches in the entire country.

An application was registered before the Hon'ble National Green Tribunal, Principal Bench, New Delhi as O.A. No. 673/2018 on the basis of a news item dated 17.09.2018 in 'The Hindu" under the heading "More river stretches are now critically polluted: CPCB". The Hon'ble Tribunal was pleased to pass an order on 20.09.2018identifying seventeen (17) polluted river stretches in the State of West Bengal and categorized these polluted stretches in five priority classes (Table-1). The Hon'ble Tribunal directed the State to prepare action plans for rejuvenation of these 17 polluted river stretches for bringing all the polluted river stretches to be fit at least for bathing purposes (i.e. BOD< 3 mg/l and FC < 500 MPN/100 ml). The Hon'ble NGT further directed on 19.12.2019 that action plans for rivers are to be reviewed by the CPCB before acceptance.

**Table 1: Polluted River Stretches in West Bengal**

| Sl. No. | Priority | River | Polluted Stretch identified | BOD (mg/L) when identified as polluted |
|---|---|---|---|---|
| 1 | I | Vindyadhari | Haroa Bridge to Malancha Burning Ghat | 26.7 – 45.0 |
| 2 | II | Mahananda | Siliguri to Binaguri | 6.5 – 25 |
| 3 | III | Churni | Santipur Town to Majhadia | 10.3 – 11.3 |
| 4 | III | Dwarka | Tarapith to SadhakBamdebGhat | 5.6 – 17.0 |
| 5 | III | Ganga | Tribeni to Diamond Harbour | 5.0 – 12.2 |
| 6 | IV | Damodar | Durgachak to Dishergarh | 4.4 – 8.2 |
| 7 | IV | Jalangi | Laal Dighi to Krishna Nagar | 8.3 |
| 8 | IV | Kansi | Midnapore to Ramnagar | 9.9 |
| 9 | IV | MathaBhanga | Madhupur to Gobindapur | 8.5 |
| 10 | V | Barakar | Kulti to Asansol | 5.7 |
| 11 | V | Dwarakeshwar | Bankura to Kushtia | 1 – 5.6 |
| 12 | V | Kaljani | Bitala to Alipurdwar | 6.0 |
| 13 | V | Karola | Jalpaiguri to ThakurerKamat | 3.9 |
| 14 | V | Mayurakshi | Suri to Durgapur | 5.2 |
| 15 | V | Rupnarayan | Kolaghat to Benapur | 3.1 – 5.8 |
| 16 | V | Silabati | Ghatal to Nischindipur | 3.8 |
| 17 | V | Teesta | Siliguri to Paharpur | 3.3 |

## River Rejuvenation Committee:

In compliance to the direction of Hon'ble National Green Tribunal, Principal Bench, New Delhi in respect of O.A. No. 673/2018, the Government of West Bengal constituted the River Rejuvenation Committee (RRC) for preparation of such action plans for effective abatement of pollution, rejuvenation, protection and management of the identified polluted River stretches, for bringing the polluted river stretches to be fit at least for bathing purposes and identified the following components for such action plan, although all the components may not be applicable for all the polluted river stretches:

1. Identification of polluting sources
2. Trade and Sewage Generated in the Catchment Area of Polluted River Stretch.
3. Functioning status of STPs/ETPs/CETP
4. Interception and Diversion of sewage carrying drains to the STP.
5. Solid Waste Management including quantification and characterisation of Solid Waste, Bio-Medical Waste Management, e-waste and processing facilities, quantification and characterisation of Solid Waste
6. Protection and management of Flood Plain Zones (FPZ)
7. Rain Water Harvesting, Ground Water Charging
8. Adopting good irrigation practices
9. Address issues relating to Ground Water Extraction
10. Maintaining minimum Environmental Flow of river and plantation on both sides of the river
11. Plantation on both sides of the river
12. Setting up of biodiversity parks on flood plains by removing encroachment.
13. Utilization of treated sewage so as to minimize extraction of Ground or Surface Water

The Member Secretary, West Bengal Pollution Control Board is the Chairman, RRC and the Chief Executive Officer, Kolkata Metropolitan Development Authority is the Member-Convenor, RRC. The Committee is functioning under the supervision and coordination of Principal Secretary, Environment Department, GoWB.

The main causes of the river water quality deterioration are (1) Discharge of industrial wastewater (2) Discharge of municipal wastewater and (3) Pollution from nonpoint sources. Any action plan for any river stretch to improve its water quality then is required to address these three issues and address them primarily. In West Bengal there are forty eight (48) Grossly Polluting Industries (GPIs) and four hundred (400) odd Seriously Polluting Industries (SPIs). All these industries are under Consent administration of the WBPCB. The WBPCB inspects the GPIs every month and SPIs periodically to assess the environmental performance of these industries. All these industries are having Effluent Treatment Plant(s) inside the premises and the industrial wastewater generated are treated in these ETPs before being discharged either in to the river / canal or to local water bodies (Ponds & Wetlands) or to municipal drains/public sewer those are channelized to the canals. The river stretches in the State run through habitations of wide varieties and human activities. The habitations on the banks of these rivers also generate large quantities of sewage water regularly which are also drained through various discharges channels in to these rivers. As the rivers are not of perennial nature, during lean periods the

water volume becomes less resulting in high pollution concentrations. Inadequacy in solid waste management facilities resulted in unscientific dumping of solid wastes on the banks and this is also a major source of river pollution.Since most of these rivers are having long stretches, agricultural runoffs also finally find their ways in to these rivers. The river water quality database of the WBPCB however shows no significant impact of such non-point source contribution in any of these river stretches.

Therefore, the action plan for river Dwarkeswar need to be prepared for its catchment areas considering the discharges from industrial source, discharges from municipal outfalls, interception and diversion of sewage carrying drains to the STP, solid waste management, Bio-medical waste management, e-waste management, ground water management, rain water harvesting, ground water charging, maintaining minimum environmental flow of river, protection and management of Flood Plain Zones (FPZ), adopting good irrigation practices, plantation on both sides of the river, setting up of biodiversity parks on flood plains etc.

The RRC, WB sent the Action Plan for rejuvenation of river Dwarkeswarto CPCB on 12.02.2020 and the Task Team in its 10$^{th}$ Meeting held on 26.02.2020 suggested some revision in the action. The RRC, WB approved the revised action in its 7$^{th}$ meeting held on 09.06.2020 and sent to CPCB on 09.06.2020 which was once again reviewed by the CPCB in its 12$^{th}$ Task Team meeting on 11.06.2020 and once again suggested some modifications.

Now, this action plan has been modified as per recommendation of the CPCB Task Team and the RRC, WB has approved this Action Plan in its 8$^{th}$ meeting held on 02.07.2020.

**The River Dwarkeswar:**

The river originates near Madhabpur in Purulia district and enters Bankura district near Chhatna. It cuts across the district flowing past the district headquarters and enters the southeastern tip of East Bardhaman District. The stretch of this river that has been identified as "Polluted" is within the stretch of the town and surrounded by two rivers, the Gandheswari river in the north-east, a tributary of Dwarkeswar river and the Dwarkeswar itself in the south-east. The two rivers confluences down east of the town after Bhutsahar. The river is non-tidal in nature and receives municipal wastewater from the Bankura town 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.

**Polluted stretch of river Dwarkeswar:**

The stretch of this river that has been identified as "Polluted" is Bankura to Kushtia, about 20.0 km in length. The river is tidal in nature and receives municipal wastewater from the Bankura town round the year. Bio-chemical Oxygen Demand (BOD) and Faecal Coliform (FC) are the principal pollutants in this river stretch. This river is strictly perennial. Usage of water in this stretch is mainly for purposes of agriculture and fishing.

**Table-2: Polluted stretch of river Dwarkeswar**

| SL. No. | Name of the rivers/streams | Details | Identified polluted stretches | BOD (mg/L) when identified | Prioritywise |
|---|---|---|---|---|---|
| 1. | Dwarkeswar | The river originates near Madhabpur in Purulia district and enters Bankura district near Chhatna. It cuts across the district flowing past the district headquarters and enters the southeastern tip of East Bardhaman District. The stretch of this river that has been identified as "Polluted" is within the stretch of the town and surrounded by two rivers, the Gandheswari river in the north-east, a tributary of Dwarkeswar river and the Dwarkeswar itself in the south-east. The two rivers confluences down east of the town after Bhutsahar. The river is non-tidal in nature and receives municipal wastewater from the Bankura town round the year. | Bankura to Kushtia, about 20.0 km in length | 1.0-5.6 mg/l | V |

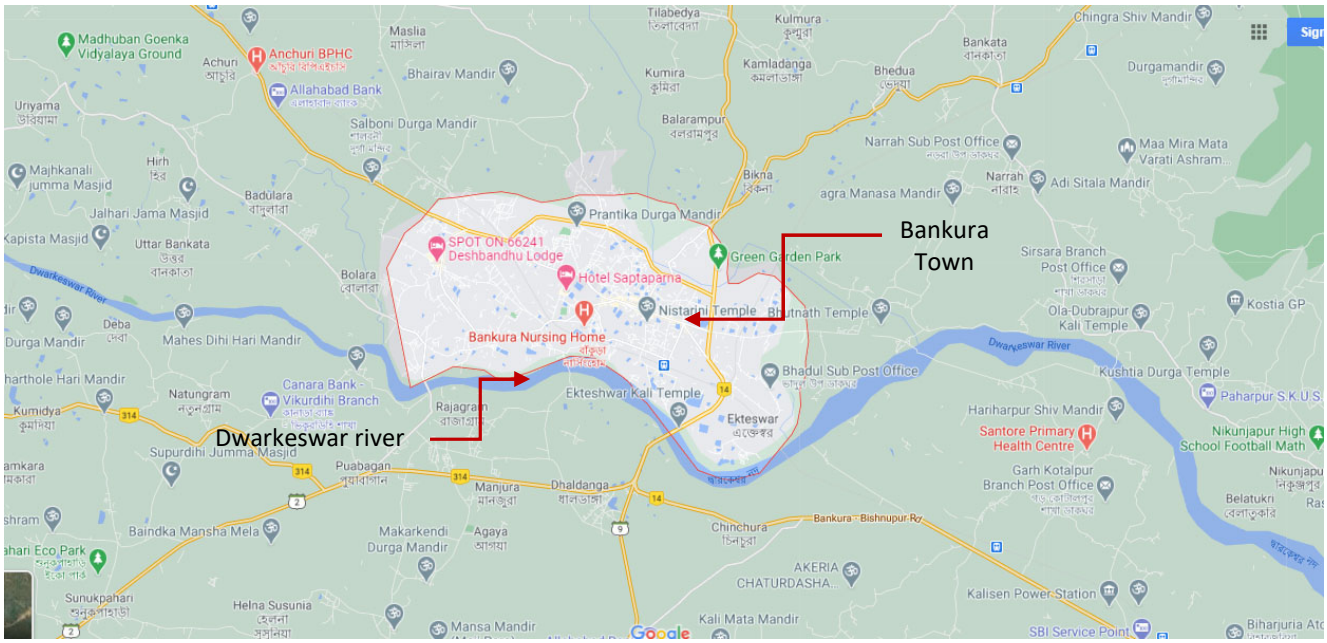


***Figure 1: Map showing the River Dwarkeswar and the Bankura Town***

## Major towns located on the bank of the polluted stretch:

Within the identified polluted river stretch, the major town located on the side of the river is the Bankura town. As of 2011 India census, Bankura had a population of 1,37,386. It is the largest town in Bankura district.

## Water quality assessment of river Dwarkeswar:

The water quality status of the river Dwarkeswar is monitored by the West Bengal Pollution Control Board under the National Water Monitoring Programme on monthly basis at one location at Water Intake Point for Bankura Town (CPCB Station Code: 2541). The water quality of the river Dwarkeswar during last three years (January 2017-December 2019) for two criteria pollutants (BOD & FC) is given in Table-3.

**Table-3: Water quality of river Dwarkeswar during 2017, 2018 & 2019**

| Sampling Location: River Dwarkeswar, Water Intake Point for Bankura Town | | | | | | |
|---|---|---|---|---|---|---|
| **Months** | **BOD (mg/l)** | | | **FC (MPN/100 ml)** | | |
| | **2017** | **2018** | **2019** | **2017** | **2018** | **2019** |
| January | 5.55 | 1.90 | 2.70 | 2100 | 1700 | 4600 |
| February | 1.25 | 1.95 | 3.75 | 700 | 2100 | 400 |
| March | 1.50 | 2.50 | 2.25 | 900 | 1700 | 6000 |
| April | 1.35 | 2.80 | 2.45 | 2100 | 17000 | 910 |
| May | 1.85 | 2.90 | 2.55 | 2200 | 2200 | 1100 |
| June | 1.85 | 2.75 | 2.85 | 3300 | 2600 | 1700 |
| July | 1.75 | 1.75 | 3.00 | 3000 | 13000 | 2100 |
| August | 1.70 | 1.75 | 2.85 | 2200 | 11000 | 1700 |
| September | 1.55 | 2.80 | 1.90 | 5000 | 7000 | 1400 |
| October | 2.25 | 1.55 | 1.75 | 3000 | 6000 | 930 |
| November | 2.75 | 1.90 | 1.90 | 2100 | 5000 | 2100 |
| December | 1.05 | 2.00 | 2.05 | 2200 | 5000 | 2400 |
| Range | 1.05-5.5 | 1.55-2.9 | 1.75-3.75 | 700-5000 | 1700-17000 | 400-6000 |
| Average | 2.03 | 2.21 | 2.50 | 2400.00 | 6191.67 | 2111.67 |

**Latest water quality of river Dwarkeswar:**

Considering the impact of this river water to the ecosystem of the Bankura district and the livelihood of the fishermen 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 Perennial River. The ultimate goal for beneficial use of rivers will determine the level of actions to be taken for maintaining the water quality. The water quality of river Dwarkeswar during the first five months in the year 2020 (Jan-May) are also depicted Table-4.

For achieving this objective, generated municipal sewage should be treated to meet the required standards for outdoor bathing as notified by the Ministry of Environment, Forests & Climate Change, GoI for "Primary Water Quality Criteria for Bathing Water" vide GSR 742I dated 25.09.2000. Also, the trade and other effluents generated within the catchment of river and generated from the catchment of the river which are ultimately joining and contributing to the pollution load in the river should be treated to meet the effluent discharge standards as stipulated above.

The target for water quality for the stretch is for organised outdoor bathing.

**Table-4: Water quality of river Dwarkeswar during Mar-Jul 2020**

| Sampling Location: River Dwarkeswar, Water Intake Point for Bankura Town | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Mar-2020** | **Apr-2020** | **May-2020** | **Jun-2020** | **Jul-2020** |
| Temperature (°C) | 28 | 30 | 27.5 | 35 | 33 |
| pH | 7.98 | 8.08 | 7.78 | 8.03 | 7.88 |
| Dissolved Oxygen (mg/l) | 8.2 | 8 | 8 | 8.1 | 8.2 |
| BOD (mg/l) | 3.1 | 2.75 | 2.95 | 2.8 | 2.75 |
| COD (mg/l) | 14.88 | 11.88 | 12.14 | 14.85 | 19.45 |
| Total Coliform (MPN/100 ml) | 3800 | 4000 | 4300 | 4100 | 3400 |
| Fecal Coliform (MPN/100 ml) | 2600 | 2400 | 3100 | 2700 | 2500 |
| Total Dissolved Solids (mg/l) | 204 | 272 | 218 | 196 | 196 |
| Total Fixed Solids (mg/l) | 188 | 176 | 146 | 124 | 140 |
| Total Suspended Solids (mg/l) | 12 | 12 | 18 | 10 | 14 |
| Turbidity (NTU) | 38.22 | 16.84 | 14.42 | 8.54 | 16.13 |
| Conductivity (µs/cm) | 323.2 | 368.1 | 231 | 287.9 | 242.9 |
| Calcium (mg/l) | 34.5 | 33.71 | 24.19 | 20.29 | 17.17 |
| Magnesium (mg/l) | 8.1 | 11.43 | 11.85 | 11.38 | 4.74 |
| Total Hardness as CaCO3 (mg/l) | 119.56 | 131.32 | 109.27 | 97.56 | 62.44 |
| Total Alkalinity (mg/l) | 102 | 98 | 110 | 102 | 88 |
| Phenolphthalein Alkalinity (mg/l) | NIL | 2 | Nil | 2 | Nil |
| Ammonia-N (mg/l) | 0.187 | 0.269 | 0.214 | 0.131 | 0.672 |
| Nitrate-N (mg/l) | 0.191 | 0.497 | 0.121 | 0.187 | 0.16 |
| Phosphate-P (mg/l) | 0.037 | 0.0895 | 0.016 | BDL | 1.016 |
| Sulphate (mg/l) | 32.243 | 31.4217 | 26.81 | 15.51 | 7.316 |
| Fluoride (mg/l) | 0.241 | 0.354 | 0.296 | 0.316 | 0.367 |
| Chloride (mg/l) | 31.43 | 12.17 | 9.78 | 16.14 | 11.15 |
| Boron (mg/l) | BDL | NT | BDL | BDL | 0.1667 |
| Potassium (mg/l) | 5.1 | 2.8 | 4.8 | 3.6 | 3.7 |
| Sodium (mg/l) | 27.4 | 17.2 | 18.1 | 30.4 | 22.6 |

**Polluting Sources of River Dwarkeswar:**

**Industrial wastewater treatment:**

There is no industrial estate in the catchment of river Dwarkeswar. There is no identified water polluting industry.However inventorisation of industries is under progress.

**Municipal wastewater treatment:**

The following 13 (thirteen) canals/drains are discharging large quantities of municipal wastewater in to the river.

(1)Lokepur Ghat, (2) Raja gram (3) Raja gram (4) Kankata (5)Patpur Power House (6) Minapur Sasan (7) Patpur Napopara (8) Kethardanga Patakola (9) Kethardanga Bagdipara (10) Kethardanga Chaitkali Ghat (11) Near Satighat (12) Opposite Lakhatora (13) Opposite Sukantapally Durga Mondap.

| | | |
|---|---|---|
| Name of the recipient water body | : | River Dwarkeswar |
| Name of the Municipal Town | : | Bankura Town |
| No. of drains discharging | : | 13 (thirteen) |
| No. of drains considered for treatment facility | : | 13 (thirteen) |
| Water consumption as on 2020 | : | 25.09 MLD |
| Wastewater generation as on 2020 | : | 15.10 MLD |
| Existing wastewater treatment facility | : | NIL |
| Gap in wastewater treatment | : | 15.10 MLD |
| Proposed Treatment system | : | Primary treatment with Sedimentation Tank & disinfection |
| Scheduled date of start of work for Primary treatment | : | 31.08.2020 |
| Scheduled date of completion of work for Primary treatment | : | 30.06.2021 |

Primary treatment at Bankura town for river Dwarkeswar by providing screens, sedimentation tank, followed by disinfection by chlorination at out falls of 4 nos. of drains is proposed. The tender is expected to be finalized by August2020.

**Municipal Solid Waste Management:**

Present generation of waste in Bankura town is 65 TPD. Door-to-Door collection of solid waste is expected to be achieved within Jan. 2021. Waste segregation at source is expected to be achieved within Mar. 2021. Establishment of waste processing facility including Sanitary Land Fill (SLF) for the town will be completed following the timeframe as stipulated in Rule 22 of SWM Rule 2016

**Hazardous Saste Management:**

In West Bengal, there is one (1) Common Hazardous Waste Treatment, Storage and Disposal Facility operating at Haldia. The facility is capable of disposing all hazardous wastes generated in the State. All hazardous waste generating industries are disposing their hazardous wastes through the CHWTSDFs located at Haldia.

**Bio-Medical Waste Management:**

In West Bengal, there are six (6) Common Bio-medical Waste Treatment, Storage and Disposal Facilities. All health care institutions within the catchment area of the river are disposing their bio-medical wastes through the Common Bio-medical Waste Treatment, Storage and Disposal Facility at Haldia, PurbaMedinipur district.

**Construction & Demolition Waste Management:**

Local ULB has been directed by the WBPCB and UD&MA Dept., GoWB to take necessary action as per C&D Waste Management Rules, 2016.

**Ecological/Environmental Flow (E-Flow):**

The river Dwarkeswar has sufficient freshwater supply from upstream source as well as tidal event. It receives runoff during monsoon and base flow is maintained from ground water pool and tidal flow during lean months including the up-stream flow. Afforestation, rainwater harvesting and reduction of ground water exploitation from flood plain could ensure the ecological flow in this river. At one location, i.e., downstream of the town, flow of the river should be measured and record maintained by State Irrigation department.

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**Table-6: Action Plan with agencies responsible, time target and budgetary estimates**

| ***Departments /Agencies*** | ***Actions to be taken*** | | ***Targeted timeline*** | ***Budgetary Estimate (Rs. In lakh)*** |
|---|---|---|---|---|
| **MED** | Action plans for Management of Municipal Waste Water discharge. | | 30.06.2021 | 131.49 |
| **WBPCB** | All industries are having treatment facilities in place and are being monitored on regular basis. | | Continuous process | - |
| **SUDA** | Action plans for management of Solid wastes & Plastic wastes in urban areas<br>• Door to Door collection of solid waste.<br>• Waste segregation at household source.<br>• Establishment of waste processing facility including SLF for the town will be completed following the timeframe as stipulated in Rule 22 of SWM Rule 2016<br>• Development of IEC activities & capacity buildings of different stakeholder.<br>• Draft Action Plan prepared to be ratified by State Level Technical Committee shortly | | 31.01.2021<br>31.03.2021 | 2226.00 |
| **WBPCB** | Action plans for management of Hazardous, Bio-medical and Electrical and Electronic wastes | | Continuous process | 0.00 |
| **DoIT** | Quantification and Characterization | Installation of e-waste bin, Categorizing and Disposal | 28.02.2021 | 2.767 |
| | Existing Infrastructure | Selection and Utilization of approved PROs for collection and Disposal | | |
| | Detailed Gap Analysis | Monitoring & Management | | |
| | Management Action Plan | Meeting with OEMs, other stake holders | | |
| | Promotional | Sensitization Training | | |
| | | Promotional Documents, Training Materials | | |

| | | | |
|---|---|---|---|
| | Hoardings at river stretch | | |
| **IRD** | **Protection and management of flood plain zones (FPZ)**<br><br>For river stretch Dwarkeswar along Bankura Protection of work for a length of 300 m along the right bank of river Darakeswar in Birsinghapur Mouza under Santore GP in P.S. Onda, Dist.-Bankura. | 31.12.2020 | 90.90 |
| **DoF** | Forestry Development for Stretch Identified Bankura to Kusthia of total 25.6 hec. area. | 31.03.2024 | 35.59 |
| **DoAg** | Good agricultural practice (Bio-village program, IPM demonstration etc.)<br>Crop diversification (Demonstration with low water requiring crops etc.)<br>Good irrigation practices (Micro irrigation with supplementary water management activities)<br>Soil and water conservation (water harvesting structure, dug well, Gully plugging, Check dam etc.) | 31.03.2022 | 200.0 |
| **P&RDD** | • Actions proposed for River stretch of Dwarkeswar.<br>• Orchard-153, Block plantation-140, Hopa-94, Pond-41, Desilting of jore-13, Re-excavation of pond-4, Social forestry-63, Strengthening embankment-2, SLWM-7, Boldar pitching-7, 30x40 model-1, Vermi composite pit-3, Goat shelter-1, roof top water harvesting-1, tube well soak pit-2, Nursary-2 | 31.03.2021 | 1376.764 |
| **SWID** | • GW Level & Quality Monitoring<br>• Real-Time GWL Monitoring through Installation of DWLR<br>• Roof top rainwater and surface runoff Harvesting for conservation on surface and artificial recharge to groundwater | | |
| **DoUD&MA** | Utilization of treated waste water | Policy has been notified by Govt. of West Bengal on 30-06-2020. Action will be taken accordingly. | |

*MED: Municipal Engineering Directorate, DoUD&MA, GoWB*
*SUDA: State Urban Development Agency, DoUD&MA, GoWB*
*WBPCB: West Bengal Pollution Control Board*
*DoIT: Department of Information Technology, GoWB*
*P&RDD: Panchayat & Rural Development Department, GoWB*
*SWID: State Water Investigation Directorate*
*IRD: Irrigation Department, GoWB*
*DoF: Forest Department, GoWB*
*DoAg: Agriculture Department, GoWB*
*DoUD&MA: Department of Urban Development & Municipal Affairs, GoWB*

24/08/2020
Additional Chief Engineer (South)
M. E. Directorate, Govt. of W.B.

24/08/2020
Secretary
M.E. Directorate
Deptt. of UD & MA
Govt. of West Bengal

## Compliance of RRC meeting held on 17/08/2020

| SL | Observation of RRC Meeting | Remarks |
|---|---|---|
| 1 | Water quality of the polluted river stretches for Fecal Streptococci (FSC) whereas water quality of all drains to be analyzed for general parameters, heavy metals and Fecal coliform as well as Fecal Streptococci (FSC) and included in the report. | Will be complied as per CPCB guideline |
| 2 | Water quality of groundwater in the catchment for relevant parameters to be included. | |
| 3 | Bio-mining of existing dumpsites in the catchment of polluted river stretches need to be elaborated. | |
| 4 | I & D of sewage from the identified drains to the nearby existing STPs or proposed STPs to be mentioned clearly in the report. | Not Applicable |
| 5 | Watershed management, flood plain protection, ground water recharge, greenery, rainwater harvesting apart from measures for discharge of stored water from U/s of dams to be included as a part of proposal for e-flow maintenance in all the polluted river stretches. | Will be complied as per CPCB guideline |
| 6 | Specific funding agency for each action point to be included. | Department of UD & MA |
| 7 | Short-term measures for drains such as phytoremediation/bio-remediation/nano bubbles treatment/aeration treatment and other options feasibility to be examined and adopted to improve water quality of polluted rivers depending on the local conditions. | Action already initiated. |
| 8 | Timelines to be revised as per Hon'ble NGT order for all the proposed action plan and PERT chart also be included. | To be completed by 30/06/2021, Revised PERT chart incorporated. |

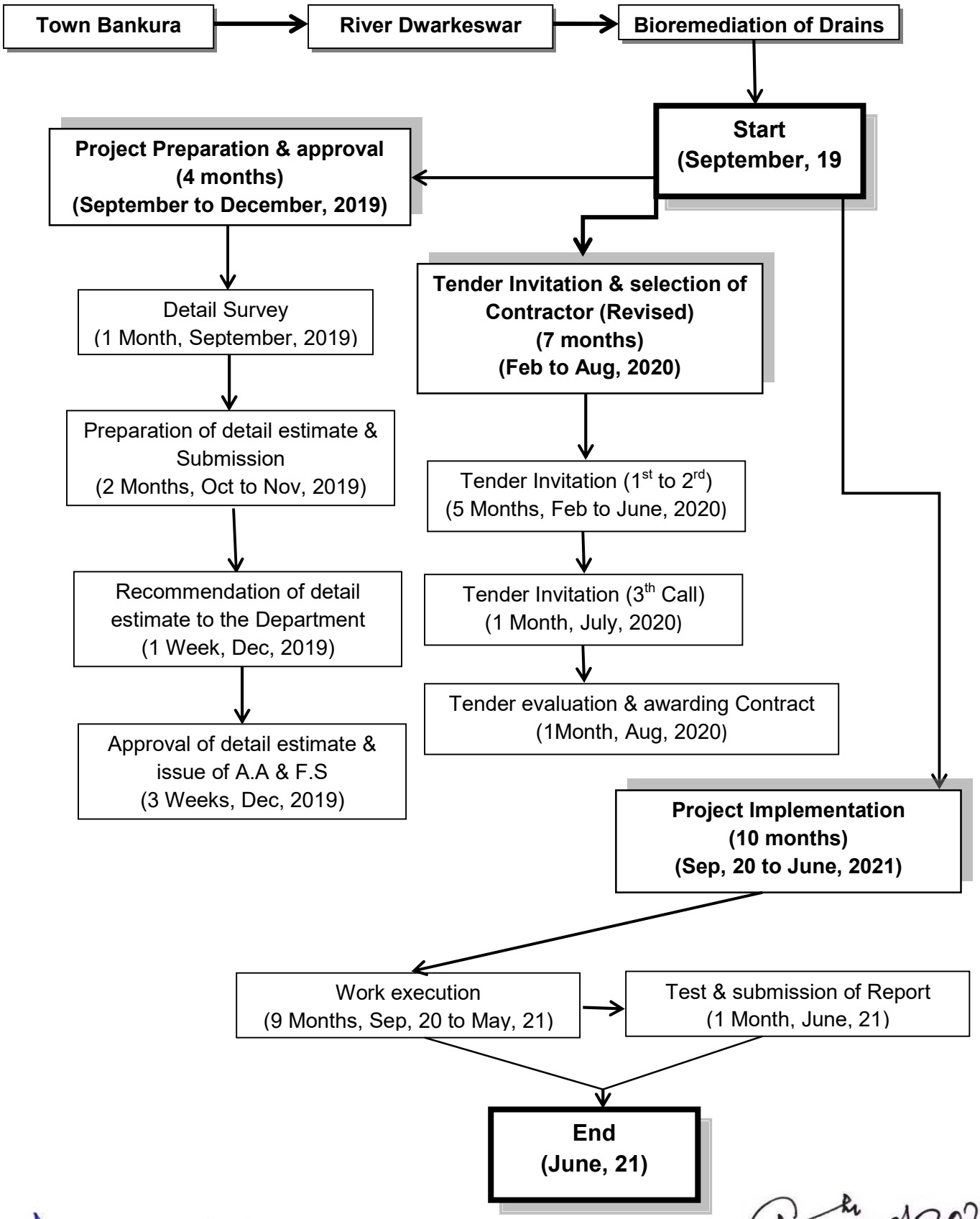
24/08/2020

Additional Chief Engineer (S)
Municipal Engineering Dte.

24/08/2020

Secretary
Municipal Engineering Dte.

## PERT Chart in respect of implementation of action plans for Dwarkeswar River stretch




24/08/2020

Additional Chief Engineer (S)
Municipal Engineering Dte.

24/08/2020

Secretary
Municipal Engineering Dte.

# Information on Drains. Sewage Treatment Plants in compliance to Hon'bie NGT order dated 22.08.2019

Annexure ME-1

| Sl | Name of River | City /town | Water Consumption data as on 2022 | | Waste Water Generation as on 2022 | Existing Waste Water Treatment Infrastructure | Gap analysis for Waste Water Treatment | Waste Water Management Action Plan | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Primary Treatment | | | | | | | | | | |
| | | | | | | | | Name of Drain | (Nos.) untapped Name of Drain | Total discharge capacity of drains | Provision of bioremediation for drain (Yes / No) | | Action Plan for Primart Treatment | | | | | |
| | | | | | | | | | | | | | Estimated Cost | Type of Structure proposed | Whether Tender Invited | Time period for finalization of Tender Process 8, awarding Work Order | Work Start date | Schedule dale of completion of work |
| | | | Source | Consumtion (MLD) | (MLD) | (MLD ) | | | | (MLD) | | | (Lakhs) | | | | | |
| 1 | Jalangi | Krishnagar | Surface | 28.61 | 17.45 | 0 | 17.45 | 8 | Enclosed in separate sheet | 17.45 | Yes | Action Taken | 18.34 | Screen bar, Cascade, Aeration & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 2 | Kansi | Medinipur | surface | 33.98 | 21.41 | 0 | 21.41 | 2 | NA | 21.41 | Yes | Action Taken | 55.66 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 3 | Darakeswar | Bankura | Surface | 25.09 | 15.10 | 0 | 15.10 | 13 | NA | 15.10 | Yes | Action Taken | 131.49 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 4 | kaljani | Alipurduar | Surface | 15.43 | 9.33 | 0 | 9.33 | 18 | NA | 9.33 | Yes | Action Taken | 22.25 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 5 | Karola | Jalpaiguri | Surface | 21.01 | 12.81 | 0 | 12.81 | 4 | NA | 12.81 | Yes | Action Taken | 36.56 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 6 | Rupnarayan | Tamluk | Surface | 13.24 | 8.37 | 0 | 8.37 | 4 | NA | 8.37 | Yes | Action Taken | 81.87 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 7 | Mayurakshi | Suri | Ground | 7.44 | 4.04 | 0 | 4.04 | 12 | NA | 4.04 | Yes | Action Taken | 78.97 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 8 | Mayurakshi | Sainthia | Ground | 5.02 | 2.68 | 0 | 2.68 | 14 | NA | 2.68 | Yes | Action Taken | 86.27 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |
| 9 | Silabati | Ghatal | Surface | 6.92 | 3.80 | 0 | 3.80 | 4 | NA | 3.80 | Yes | Action Taken | 134.37 | Sedimentation Tank & disinfection | Yes | 31.08.2020 | 01.09.2020 | 30.06.2021 |

11/02/2020
Additional Chief Engineer (South)
M. E. Directorate, Govt. of W.B.

ME - II

## NAME OF DRAINS FOR WHICH PROPOSAL OF PRIMARY TREATMENT PROPOSED

| Sl | Name of town | Nos.of Drains Identified | Name of Drains |
|---|---|---|---|
| 1 | Krishnagar | 8 | Haldar Para TD Banerjee Lane |
| | | | Kumar Para Ghat Lane |
| | | | Surkikal Ghat |
| | | | Ahibhusan Haldar Lane |
| | | | Amarbharati |
| | | | Momin Park |
| | | | Talikhola |
| | | | Sasan Kalibari |
| 2 | Medinipur | 28 | Daribandh Khal |
| | | | Jharna Khal & other small Drains |
| 3 | Bankura | 13 | Lokpur Ghat |
| | | | Raja gram-1 |
| | | | Raja gram-2 |
| | | | Kankata |
| | | | Patpur |
| | | | Minapur Samsan |
| | | | Patpur naopara |
| | | | Kedardanga Patakola |
| | | | Kedardanga B agdipara |
| | | | Kedardanga Ghat |
| | | | Satighat |
| | | | Lakhatora |
| 4 | Alipurduar | 18 | Arabindanagar |
| | | | Crematorium |
| | | | Dima Bridge |
| | | | Hatat Colony |
| | | | Bidhanpally |
| | | | Crematorium at ward 10 |
| | | | Uttarpara |
| | | | Asutosh Club |
| | | | Palas Bari |
| | | | Santidham Asram |
| | | | Babupara Rail Bridge |
| | | | BM Club |
| | | | Sanjay Colony |
| | | | Another 5 small stretches |
| 5 | Jalpaiguri | 4 | Dhardhara |
| | | | Maskalibari Crematorium Ghat |
| | | | District Hospital Road |
| | | | Dinbazar Drain |

| Sl | Name of town | Nos.of Drains Identified | Name of Drains |
|---|---|---|---|
| 6 | Tamluk | 4 | Drains adjoining to Sankarara Khal |
| | | | Drains adjoining to Narayanpur Khal |
| | | | Drains adjoining to Pairatunga Khal |
| 7 | Suri | 12 | NA |
| 8 | Sainthia | 14 | NA |
| 9 | Ghatal | 4 | NA |

11/02/2020

Additional Chief Engineer (South)
M. E. Directorate, Govt. of W.B.

Annexure - ME-IV

**Abstract of "Estimate for Proposed Sedimentation Tanks with Renovation of Drains for treatment of raw sewage discharge directly into the river Darakeswar to reduce polution of the river Within Bankura Municipal Area**

| Sl no. | Item | Amount in Rs. |
|---|---|---|
| 1 | Construction of 13 nos of Sedimentation Tanks for Collecting Sewage of Drain at outfalls to Darakeswar River | 5967088.00 |
| 2 | Renovation of 13 nos Drains | 7182319.00 |
| | Total Amount ( including GST & Contingency) | 13149407.00 |

( Rupees One Crore Thirty One Lakhs Forty Nine Thousand Four Hundred Seven only)

07/1/2020
Junior Engineer (Civil)
Bankura Divn. (Works)
M.E. Directorate
Govt. of West Bengal

7/1/2020
Assistant Engineer
Bankura Divn. (Works)
M.E. Directorate
Govt. of West Bengal

08/01/20
Executive Engineer
Bankura Divn. (Works)
M.E. Directorate
Govt. of West Bengal

MAY BE
**VETTED**

15.01.2020
JNIOR ENGINEER
outh Circle, M.E. Dte
ovt. of West Bengal

15/01/2020
*Assistant Engineer*
South Circle, M.E. Dte.
Govt. of West Bengal

15/01/2020
SUPERINTENDING ENGINEER
South Circle, M.E. Directorate
Deptt. of Municipal Affairs
Govt. of West Bengal

22/01/2020
Assistant Engineer (Civil)
Office of the Addl. C.E. (South)
M.E. Directorate
U.D. & M.A. Department
Govt. of West Bengal

22/01/2020
Additional Chief Engineer (South)
M. E. Directorate, Govt. of W.B.

## Annexure- SUDA-I

## SWM Action Plans for Bankura Municipality Dwarakeswar

| Sl. | Key Components of Proposed Action Plans for Restoration of Identified Polluted River Stretches- **DWARAKESWAR** | Proposed Achievable Target | Proposed Time Targets to achieve target | Remarks |
|---|---|---|---|---|
| | Municipal Solid Waste Management | | | |
| | Commissioning of Integrated Waste Management Facilities or Sanitary Land Fills or Bio manure or Pellets making or Waste to Energy Plants | ➢ Door to Door collection of solid waste.<br>➢ Waste segregation at household source.<br>➢ Establishment of waste processing facility including SLF.<br>➢ Development of IEC activities & capacity buildings of different Stack holders. | ➢ D 2 D collection of solid waste is expected to be achieved within March 2020.<br>➢ Waste segregation at source is expected to be achieved within Octo.2020<br>➢ Present generation of waste in town is 65 TPD. Establishment of waste processing facility including SLF for the town will be completed following the timeframe as stipulated in Rule 22 of SWM Rule 2016 | City specific Draft DPR have been prepared for implementation of SWM projects. Tentative cost is 22.26 Cr. that includes collection, transportation and Processing of Waste.<br>Litter bins are provided besides the River banks. Accumulated garbage have been removed from the river banks.<br>Intensive IEC activities including display of poster/banner, awareness campaign, capacity building of stakeholders are continuously organized by ULB. |

Annexure - PD - I

# Report of NGT

**Name of the District :- Bankura**

**Contact details of the Nodal Officer:- Palash Kumar Samanta, Mob No - 9477411338**

| Sl No | River | Activity to be monitored | | Timeline | Financial Outlay(in lakh) | Remarks |
|---|---|---|---|---|---|---|
| | | Type of Scheme | Total nos of scheme | | | |
| 1 | Dwarakeshwar | Orchard | 153 | 31st March, 2021 | 1376.76423 | Ongoing + new schemes |
| 2 | | Block plantation | 140 | | | |
| 3 | | Hapa | 94 | | | |
| 4 | | Pond | 41 | | | |
| 5 | | Desilting of Jore | 13 | | | |
| 6 | | Re- excavation of Pond | 4 | | | |
| 7 | | Social Forestry | 63 | | | |
| 8 | | Strengthening Embankment | 2 | | | |
| 9 | | SLWM | 7 | | | |
| 10 | | Bolder Pitching | 2 | | | |
| 11 | | 30x40 model | 1 | | | |
| 12 | | Vermi compost pit | 2 | | | |
| 13 | | vetiver plantation | 7 | | | |
| 14 | | Goat shelter | 1 | | | |
| 15 | | Roof top water hurvesting | 1 | | | |
| 16 | | Tube well Soak pit | 2 | | | |
| 17 | | Nursery | 2 | | | |
| | | Total | 535 | | 1375.26423 | |

8/2/2020

District Nodal Officer
Mahatma Gandhi NREGS Cell
Bankura

Annexure – ID-1

| Sl. No. | River Stretches | Key components of proposed action plans for restoration of identified polluted river stretches in States/Uts | Cost in Rs. Lakh | Proposed Achievable Target | Proposed Time Targets for compliance | Present Status and or pendency in terms of % |
|---|---|---|---|---|---|---|
| 11 | Hooghly/Ganga (Tribeni to Diamond Harbour) | Protection of Hooghly left embankment with Brick Block Pitching for a length of 250 M at Kanchantala Shasan Ghat kali Mandir within Ward No 140 of KMC in P.S – Nadial , Dist- South 24 Parganas | 195.00 | Erosion protection at Kanchantala Shasan Ghat kali Mandir within Ward No 140 of KMC in P.S – Nadial , Dist- South 24 Parganas. | 31.03.2023 | Approval Stage |
| 12 | Hooghly/Ganga (Tribeni to Diamond Harbour) | Protection to right embankment of Hooghly River at the confluence of Chapa Khal for a length of 210 m at Kalinagar in Block Uluberia -I, P.S. Uluberia, District Howrah. | 195.18 | Erosion protection at Kalinagar in Block Uluberia -I, P.S. Uluberia, District Howrah. | 31.12.2020 | Work started. |
| 13 | Hooghly/Ganga (Tribeni to Diamond Harbour) | Protection to right embankment of Hooghly River at Tetikhola for a length of 150 m in Block Shyampur-I, P.S Shyampur, District Howrah. | 112.92 | Erosion protection at Tetikhola in Block Shyampur-I, P.S Shyampur, District Howrah. | 31.12.2020 | Work started. |
| 14 | Hooghly/Ganga (Tribeni to Diamond Harbour) | Protection to right embankment of Hooghly River at the confluence of Gouriganga Khal at Chalkashi for a length of 240 m in Block Uluberia-I, PS Uluberia, District Howrah. | 156.72 | Erosion protection at Chalkashi in Block Uluberia-I, PS Uluberia, District Howrah. | 31.12.2020 | Work started. |
| 15 | Hooghly/Ganga (Tribeni to Diamond Harbour) | Protection of Hooghly right embankment for a length of 300 m at Sirishtala, Gadiara, in Block Shyampur-I, P.S Shyampur, District Howrah. | 156.40 | Erosion protection at Block Shyampur-I, P.S Shyampur, District Howrah. | 31.12.2020 | Work started. |
| 16 | Jalangi (Laal Dighi To Krishna Nagar) | Protection to the eroded left bank of river Jalangi at Village Bhandarkhola Mouza Java PS Kotwali Block Krishnanagar -I and right bank of river Jalangi at Village Srikrishnapur-Panditpur PS Dhubulia Block Krishnanagar -II for the total length of 1050m. | 305.00 | Erosion protection at Village Bhandarkhola Mouza Java PS Kotwali Block Krishnanagar -I | 31.03.2021 | Esimate Stage |
| 17 | Kansi (Midnapore To Ramnagar) | Protection and pitching work to the left bank of river Kangsabati for a length of 1500 m at Mouza Kankabati, Block Midnapore Sadar,P.S Kotowali, District Paschim Medinipur. | 361.66 | Erosion protection at Mouza Kankabati, Block Midnapore Sadar,P.S Kotowali, District Paschim Medinipur. | 31.06.2020 | Work started. |
| 18 | Dwarakeshwar (along Bankura) | Protection of work for a length of 300 m along the right bank of reiver Darakeswar in Birsinghapur Mouza under Santore GP in P.S. Onda, Dist.-Bankura. | 90.90 | Erosion protection at Birsinghapur Mouza under Santore GP in P.S. Onda, Dist.-Bankura. | 31.12.2020 | Under Tender stage |

## Financial Outlay of Action Plan in Polluted River Stretches

## Forestry Development, Forest Department Annexure- FD-I

| Sl. No. | River Name | District | Division | Stretch Identified | Town | Block/ Municipality | Mouza/ward | J.L. No. | Plot | Area in Hecture | Financial outlay | Time line |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Darakeswar | Bankura | Bankura South | Bankura to Kusthia | Bankura | Bankura II | Kankata- 215 | | | 3.6 | 5,00,495.40 | 2019-20 to 2023-24 |
| 2 | | | | Bankura to Kusthia | Bankura | Bankura II | Matranga- 280 | | | 4 | 5,56,106.00 | |
| 3 | | | | Bankura to Kusthia | Bankura | Bankura II | Pratapur- 282 | | | 4 | 5,56,106.00 | |
| 4 | | | | Bankura to Kusthia | Bankura | Onda | Ola- 109 | | | 4 | 5,56,106.00 | |
| 5 | | | Panchet | Bankura to Kusthia | Bankura | Onda | Nischintipur- 118 | | | 10 | 13,90,265.00 | |
| | | | | | **Sub Total** | | | | | **25.6** | **35,59,078.40** | |
| 6 | Jalangi | Nadia | NMD | Near Taranipur Ghat | Mayapur | Nabadwip | Ghasighata | 12 | 157/276, 157/277 | 1.15 | 1,59,850.00 | |
| 7 | | | | Near Bahadurpur Sambhunagar | Mayapur | Nabadwip | Sardanga | 11 | ,913, 915, 1122, 1123, 1124, 1125, 1126, 1157/1640, 1161/1646, 162/1647, 1190/1650, 1196, 1197, 702/1761, 702/1738, 702/1707, 702/1708, 1491/1709, 1491/1710 | 5.3 | 7,36,700.00 | |
| 8 | | | | Near Tarinipur Ghat | Mayapur | Nabadwip | Mollapara | 13 | 240/749, 622/739, 169/677 | 0.7 | 97,300.00 | |
| 9 | | | | Near Nabadwip BDO Office, Maheshgunj | Nabadwip | Nabadwip | Teorkhali | 15 | 11, 39/913, 39/914 | 0.28 | 38,920.00 | |
| 10 | | | | Near Mahesgunj Hospital | Nabadwip | Nabadwip | Maheshgunj | 16 | 141 | 0.76 | 1,05,640.00 | |
| 11 | | | | Hulorghat | Mayapur | Nabadwip | Rudrapara | 5 | 4540, 4537, 4539 | 0.3 | 41,700.00 | |
| | | | | | **Sub Total** | | | | | **8.49** | **11,80,306.81** | |
| 12 | Kansi (Kansai) | Paschim Medinipur | Medinipur | Jamsole and Lohatikri in between Midnapur to Ramnagar | Midnapur | Midnapur Sadar | Lohatikri and Jamsole | 136 and 137 | 371 and 654/695 | 10 | 13,90,265.00 | |
| | | | | | **Sub Total** | | | | | **10** | **13,90,265.00** | |
| 13 | Karala | Jalpaiguri | Jalpaiguri SF | Monthani to Moulabipara | Jalpaiguri | Sadar | Kharia & Patkata | 05 & 07 | | 30 | **44,15,685.00** | |
| 14 | Rupnarayan | Purba Medinipur | Purba Medinipur Forest | 1800 meter in to 570 meter | Kolaghat | Kolaghat | Amalhanda | 291 | River char | 10 | 13,90,265.00 | |
| 15 | | | | 2350 meter * 425 meter | Kolaghat | Kolaghat | Faridpur | 272 | River char | 10 | 13,90,265.00 | |
| | | | | | **Sub Total** | | | | | **20** | **27,80,530.00** | |

Annexure AD-I

Department of Agriculture

River Rejuvenation Action Plan of Polluted River Stretches of River Dwarakeshar

| ***Distribution of Organizational Responsibilities*** | | | | |
|---|---|---|---|---|
| | | | | |
| *Departments / Agencies* | *Actions to be taken* | *Targeted timeline* | *Budgetary Estimate* | *Remarks (Annexure)* |
| Agriculture Department | Good agricultural practices (Bio village Program,IPM Demonstration etc)<br><br>Crop Diversification (Demonstration with low water requiring crops etc.)<br><br>Good Irrigation Practices (Micro irrigation with supplementary water management activities0 | 2019-20<br><br>to<br><br>2021-22<br><br>(3-years) | Rs.2.0 crore | |

Annexure AD-I

Department of Agriculture

River Rejuvenation Action Plan of Polluted River Stretches of **River Dwarakeshar**

| ***Distribution of Organizational Responsibilities*** | | | | |
|---|---|---|---|---|
| *Departments / Agencies* | *Actions to be taken* | *Targeted timeline* | *Budgetary Estimate* | *Remarks (Annexure)* |
| Agriculture Department | Good agricultural practices (Bio village Program,IPM Demonstration etc)<br><br>Crop Diversification (Demonstration with low water requiring crops etc.)<br><br>Good Irrigation Practices (Micro irrigation with supplementary water management activities0 | 2019-20<br><br>to<br><br>2021-22<br><br>(3-years) | Rs.2.0 crore | |