ACTION PLAN FOR JHANJI RIVER AT NH CROSSING - PRIORITY V

1. Basic information about the Stretch

The Jhanji river is one of the south bank tributary of the mighty river Brahmaputra flowing along the border of Sibsagar and Jorhat districts of Assam. The river originates from the Naga hill range in the eastern part of Nagaland. It is surrounded by river Brahmaputra on the north, the Dikhow sub basin in the east, the Nagahill in the south and the Bhogdoi sub basin in the west. The sub basin is located between longitudes $94^0$18'27'' E to $94^0$45'E and latitudes $26^0$18'41''N to $26^0$58'N. The river is known as Malek near its origin. The total length of the Jhanji river is 108 km.

Jhanj is a small semi-rural area situated both in Sivasagar and Jorhat district. The river Jhanj divides these two districts. River Mitong is a tributary of the Jhanji River.

The total catchment area is about 1350 sq.km. Out of which 873 sq.km is in Nagaland and 477 sq.km. is in Assam. The discharge of Jhanji river as per the master plan of Brahmaputra Board is 643.77 Cum.

1 .1 Polluted river stretch/length

The length of the polluted stretch of Jhanji River is approximately 3.5 KM with an area of 1.8 sq.km. (Fig 1). The stretch identified as polluted is from Jhanji to Simaluguri gaon.

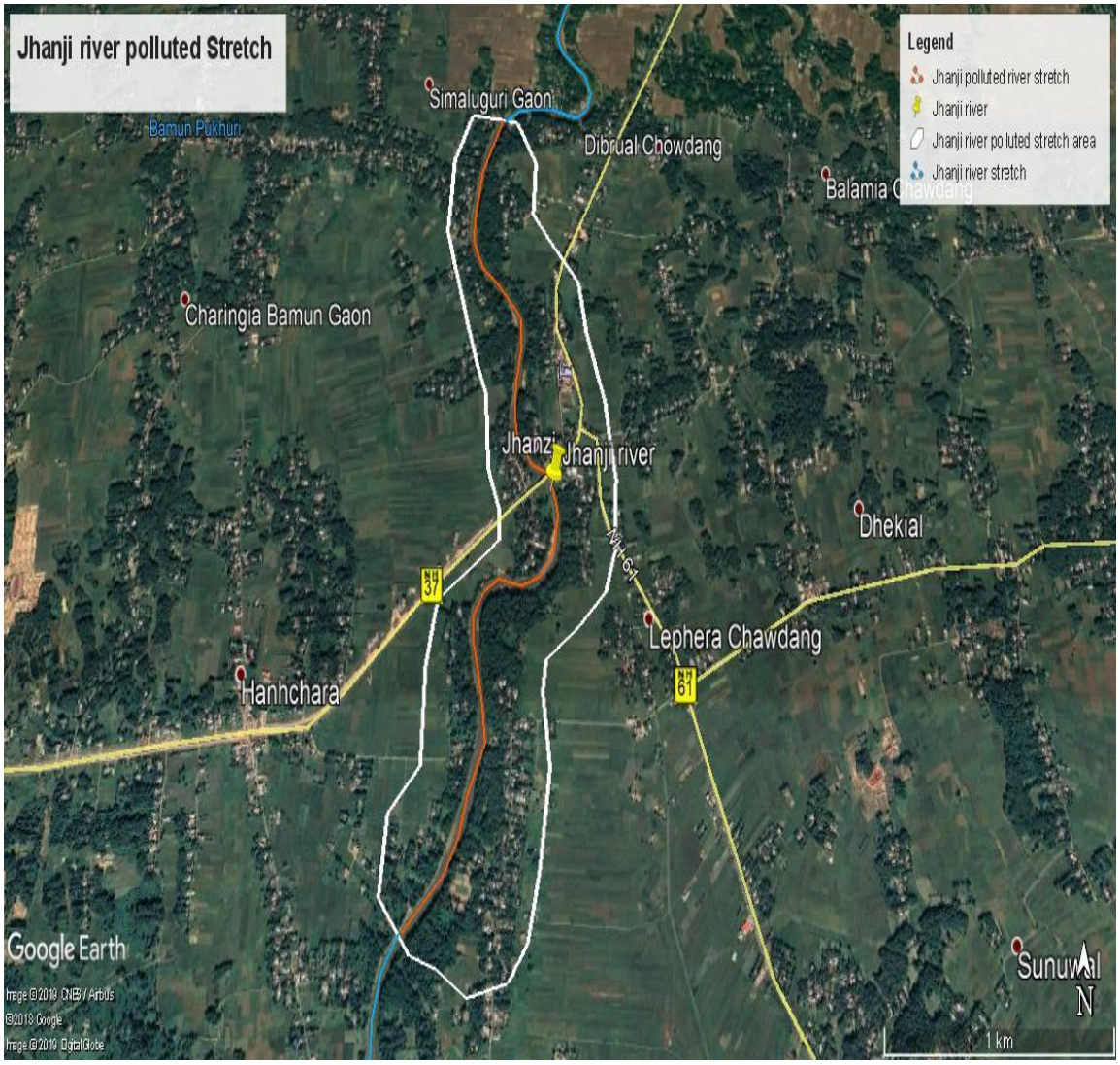

Fig 1: Map showing the polluted river stretch of Jhanji river at NH crossing

2. Background:

In compliance of the direction of Hon'ble National Green Tribunal, Principal Bench, New Delhi in the matter of news published in 'The Hindu' authored by Jacob Koshy, Titled 'More river stretches are now critically polluted CPCB', Government of Assam constituted River Rejuvenation Committee (RRC) vide memorandum 673/2018 dated 19/12/2018 for effective abatement of pollution, rejuvenation, protection and management of the identified polluted stretches, for bringing the polluted river stretches to be fit at least for bathing purposes within six months

3. Basis of Action Plan for Jhanji river at NH crossing polluted river stretch

The action plan for rejuvenation, protection and management of the identified polluted river stretch of Assam has been prepared based on the following

- As per direction of Hon'ble National Green Tribunal, Principal Bench, New Delhi in the matter of news published in 'The Hindu' authored by Jacob Koshy, Tiltled 'More river stretches are now critically polluted CPCB'
- Comprehensive report on Prevention and Control of Pollution in River Hindon: An Action Plan for Rejuvenation' [Submitted in compliance to Hon'ble National Green Tribunal]

4. Components of Action Plan

(a) Industrial Pollution Control

- Inventorisation of industries
- Categories of industry and effluent quality
- Treatment of effluents, compliance with standards and mode of disposal of effluents
- Regulatory regime.

(b) Identification, Channelization, Treatment and Utilization of Treated Domestic Sewage

- Identification of towns in the catchment of river
- Town-wise Estimation of quantity of sewage generated and existing sewage treatment capacities to arrive at the gap between the sewage generation and treatment capacities;
- Identification of towns for installing sewerage system and sewage treatment plants.
- Storm water drains now carrying sewage and sullage joining river and interception and diversion of sewage to STPs,
- Treatment and disposal of septage and controlling open defecation.

(c) River catchment/Basin Management-Controlled ground water extraction and periodic quality assessment

- Periodic assessment of groundwater resources and regulation of ground water extraction by industries particularly in over exploited and critical zones/blocks.
- Ground water re-charging /rain water harvesting
- Periodic ground water quality assessment and remedial actions in case of contaminated groundwater tube wells/bore wells or hand pumps.
- Assessment of the need for regulating use of ground water for irrigation purposes.

(d) Flood Plain Zone

- Regulating activities in flood plain zone.
- Management of Municipal, Plastic, Hazardous, Bio-medical and Electrical and Electronic wastes.
- Greenery development- Plantation plan.

(e) Ecological/Environmental Flow (E-Flow)

- Issues relating to E-Flow
- Irrigation practices

(d) Such other issues which may be found relevant for restoring water quality to the prescribed standard

5. **Action Plan as per direction of Hon'ble NGT**

The components to be discussed in the action plan for rejuvenation, protection and management of identified polluted stretch of Jhanji river at NH crossing are as follows

5.1. Industrial Pollution Control

No industrial estate/notified industrial area is located in the demarcated Jhanji river catchment area. However, few industries such as Brick klins, Tea Estates Stone Crushers units and Hotel industries etc, are scattered in the periphery of the demarcated river stretch. It was observed that no industry discharge their effluent directly into the river stretch. Moreover, directions were issued by the PCBA to all the defaulting industrial units to operate their ETPs. The details of the industrial units in the demarcated zone are presented in Table I below.

Table I: Industry details as per the following of the Jhanji Polluted stretch

Name of the Industry	Category	Total Water Consumption (KLD)		Waste water generation in KLD	Without consent/Directions issued	ETPs	CETPs		OCEMS	Gaps KLD
		GW	Supplied water				Existing	Proposed		
1. National Brick Field	Small	2	-	NIL	Not applied.	Not required	NIL	NIL	NIL	NIL
2. New Brick Field	Small	2	-	NIL	Not applied.	Not required				NIL
3. Axomi Brick Field	Small	2	-	NIL	Consent granted	Not required				NIL
4. Seleng Brick Field	Small	2	-	NIL	Consent granted	Not required				NIL
5. Borbam Tea Estate	Small	2	-	NIL	Consent granted	Functional				NIL
6. Seleng Tea Estate	Medium	2	-	1.5	Consent A/F	Under Construction				1.5
7. Amguri Tea Estate	Medium	2	-	1.5	Consent granted	Functional				NIL
8. Borsola Tea Estate	Medium	2	-	1.5	Consent granted	Functional				NIL
9. Bora Stone Crusher	Small	1	-	NIL	Consent granted	Not required				NIL

Name of the Industry	Category	Total Water Consumption (KLD)		Waste water generation in KLD	Without consent/Directions issued	ETPs	CETPs		OCEMS	Gaps KLD
		GW	Supplied water				Existing	Proposed		
10. Royal Furniture	Small	1	-	NIL	Not applied.	Not required				NIL
11. Nilakantha Dhaba	Small	2	-	1.5	Not applied.	Functional				NIL
12. Jhanji Dhaba	Small	2	-	1.5	Not applied.	Functional	NIL	NIL	NIL	NIL
13. Trinayan Dhaba	Small	2	-	1.5	Not applied.	Functional				NIL
14. Nandanbon resort	Medium	5	-	3	Direction Issued					3
15. Hornbil Dhaba	Small	2	-	1.5	Not applied.	Functional				NIL
Total		**31 KLD**		**13.5 KLD**			**NIL**	**NIL**	**NIL**	**4.5 KLD**

6. Identification, Channelisation, Treatment and Utilization of Treated Domestic Sewage

6.1. Major towns located on the bank

Jhanji, Simaluguri gaon are the small semi-rural town located on the bank of river Jhanji. Amguri town is situated 6 km away from Jhanji.

6.2. Town wise estimation of quantity of sewage generated and existing sewage treatment capacities

The population is very less in the catchment area of the river and are highly scattered. Approximate population of the jhanji locality is 6344 as per 2011 census of India. Nearest town is Amguri which is situated 6 km away from Jhanji. As the population is scattered and very less, the individual households construct their own soak pit, artificial pond for the sewage generated by them. Also the soil absorbs the sewage during its course.

There is no any existing sewage treatment Plant.

6.3. Identification of towns for installing sewerage system and sewage treatment plants.

There is no requirement of Sewage Treatment Plant at present as the locality is sparsely populated. However one No. of STP with capacity 1MLD can be initiated in consultation with the ULBs, Amguri Municipal body and district administration. The town for installing sewerage system and sewage treatment plants can be Amguri. The details are depicted in Table II below.

Table II: Sewage generation and gaps in treatment

S.N	Area (sq.km)	Population as per 2011 census (Jhanji Locality)	Water Consumption (KLD) @135 lpcd	Sewage Generation (KLD)	No. of STPs	Existing Treatment capacity (KLD)	Gaps in KLD
1	1.8	6344	856 KLD	685 KLD	NIL	NIL	685 KLD

6.4. Water Quality of the river stretch

There is one (01) sampling location of Jhanji River under NWMP as per the following.

Table III: Monitoring Locations Details

Sampling Location	Coordinates
Jhanji River at NH Crossing	26°50'48.24" N 94°29'32.84" E

The latest water quality trend of Jhanji river at NH crossing in terms of BOD value from January 2016 till April 2019 is presented in Table IV below.

Table IV: BOD value in mg/l of Jhanji river at NH crossing

Year	BOD Value (mg/l)	Year	BOD Value (mg/l)	Year	BOD Value (mg/l)	Year	BOD Value (mg/l)
Jan-16	1.1	Jan-17	1.4	Jan-18	3.8	Jan-19	0.6
Feb-16	1.5	Feb-17	1.1	Feb-18	1.0	Feb-19	1.2
Mar-16	1.3	Mar-17	2.0	Mar-18	2.1	Mar-19	1.4
Apr-16	1.5	Apr-17	1.6	Apr-18	1.9	Apr-19	1.3
May-16	1.3	May-17	2.5	May-18	2.2		
Jun-16	1.2	Jun-17	2.4	Jun-18	1.9		
Jul-16	3.8	Jul-17	1.3	Jul-18	1.2		
Aug-16	1.4	Aug-17	1.1	Aug-18	1.1		
Sep-16	1.2	Sep-17	1.1	Sep-18	2.6		
Oct-16	3.1	Oct-17	1.2	Oct-18	1.0		
Nov-16	2.7	Nov-17	1.0	Nov-18	1.0		
Dec-16	1.2	Dec-17	1.1	Dec-18	0.5		

The above data indicates that the BOD load is above 3 mg/l only on three (03) occasion out of Forty (40) samplings carried out from January 2016 till April 2019. The water quality of the river stretch is improving form February 2018 till date. This stretch can be omitted from the list of polluted river stretch.

Floods have been a never-ending sorrow for the people of Assam. In Assam, 40% of land area is flood prone. The flood water washes out the top soil layer along with the debris in the catchment area of the river which is having high organic load resulting in increase of BOD level beyond permissible limit at some occasion.

6.5. Drains contributing to pollution

There are no major outfall/drains in to the Jhanji river in the polluted stretch area. However small storm water drains are joining the river which carries the sewage along with the storm water runoff from the Amguri town and Jhanji locality.

6.6. Characteristics of the major drains

The *kucha nalas* (drains) mainly carries residential wastes along with the storm water runoff. Direct dumping of residential and commercial garbage into the drains is making it shallower and heavily silted. As a result, during rainy season water overflows and inundates the areas.

6.7. Flow details of the major drains contributing to river pollution

Action initiated to measure the flow of various out falling drains.

6.8. Sewage generation from the towns located on the banks of the polluted river

The main contributor of pollution in the river is municipal sewage. There are no treatment systems for the sewages which ultimately finds its way to water bodies without treatment. Moreover, Sewage treatment facility has not been set up yet in Assam.

However it was observed that, there is no any severe impact on Jhanji river due to BOD load. As the river is perennial and voluminous, the effect is negligible. However, in this regard a STP of 1 MLD capacity has been proposed for the Amguri area.

6.9. Number of Sewage treatment plants present and treatment capacity, and gaps

There is no any sewage treatment plant at present and the gap in treatment is 685 KLD.

6.10. Number of STPs proposed and capacity

As per Sewage generation one (01) number of STP has been proposed with 685 KLD capacity.

6.11. Interception and diversion of drains /in situ treatment given

One (01) number of STP has been proposed along with interceptor drains for in situ treatment before outfall.

6.11. Drainage system/ sewerage network present/proposed

In this project one (01) number of STP along with interceptor drains for collection of the sewage of the basin has been proposed. All the sewage of the catchment area of the river shall be collected by interceptor drains and shall be treated in the proposed STP and shall be reused for other activities.

6.12. Treatment and Disposal of Septage and controlling Open Defecation

Some of the households in the towns are equipped with septic tanks and some of the slum dwellers in the catchment areas of the river have kuccha latrines. However, around 281 toilets have been constructed in the Amguri (MB), Sibsagar district under the 'IHHL' mission which is an initiative of Swachh Bharat Abhiyan to achieve open defecation free area.

Following remedial actions will be taken in consideration of treatment and disposal of sewage

- Sewage Treatment plant should be installed for treatment
- Public awareness to control open defecation and understand the importance of toilets.

7. Controlled Ground water Extraction and quality Assessment

Ground water development in the district is still in nascent stage. As per Central Ground Water Board, The net ground water availability is estimated to be 1316.33 mcm. In Sibsagar district stage of ground water development is 14%, which shows under the SAFE category as reported by CGWB and sufficient resources are available for development. As long-term water level trend does not show any major change so the whole district may be considered as SAFE.

The details of estimated ground water resource in Sibsagar district is presented below

Table V: Estimation of ground water resource in the Sibsagar district

Net annual Ground Water Availability	**1,316.33 MCM**	**Ground water recharging mechanism**	**Rain water harvesting**
Net annual ground water draft	187.04	Recharging of groundwater are done by creation of Pond/lakes under government schemes.	The roof top rainwater harvesting is practiced.
Projected demand for domestic and industrial use up to 2025	36.23		
Stage of ground water development	14%		

Irrigation Practices in Amguri Town

Table VI: Newly proposed irrigation schemes under Amguri division (irrigation)

S. N	Name of scheme	Villages to be benefitted	Amount of scheme (in lakh)	Proposed under
1	Amguri DTW Scheme 14 Points)	Hatikhuli Pathar & Bailung Pathar in Hatikhuli GP; Kharadhara in Kawaimari GP; Napam, Bokajan & Chintamoni Pathar in Khanamukh GP; Duliabasti & Bangali Pathar in Pengera GP; Hatimuria Gharphalia in Lalim Chapari GP; Bhuyanhat Pathar in Bhuyanhat GP; Chetia Pathar in Morabazar GP; Namtidol Pathar in Namtidol GP; Bormukali Pathar & Maj Pathar in Charing GP	1000.00	RIDF-XX (NABARD)
	Solar Powered STW Scheme (20 Points) in Rupahimukh Area	No. 1 Rupahimukh, No. 2 Rupahimukh & Rupahimukh Mising Gaon under Dekhowmukh GP in Sivasagar Dev. Block	51.61	Mukhya Mantrir Minor Irrigation Scheme Achoni

List of present functional irrigation schemes Under Amguri division (irrigation), Sivasagar

S.N	Name of scheme	Hectares covered	
		Kharif	Rabi
1	Amguri DTW I.S. (3 Pts.)	20	15
2	DTW I.S. at Khelua (3 Pts.)	10	10

7.1. Status of Ground Water

The water quality data generated by CGWB indicated the sporadic occurrence of iron in some of the places. Whereas Fluoride content in ground water in the district is found to be within permissible limit. The water quality is found to be well within the permissible limit for drinking, irrigation and industrial purposes except high iron concentration in scattered patches, which can be removed through the process of aeration before use. There is no any major ground water issues except for higher concentration of Iron in some places.

7.2. Remedial Actions

The following remedial actions will be taken in consideration of contaminated ground water sources, controlled ground water extraction and periodic quality assessment

- Ground water of deeper aquifers should be analyzed for periodic assessment of Iron and Fluoride.
- Alternate sources of drinking water should be explored and prioritized.
- Survey should be conducted regarding ground water uses by different categories such as domestic, Industries etc and also to identify the over exploited and critical areas in the river stretches with respect to ground water extraction.
- Effective management of industrial effluent or sewage for preventing contamination of ground water sources.
- The industry that will extract groundwater for manufacturing process should not operate unless they possess valid permission for groundwater extraction from Central Ground Water Authority.
- Awareness campaigns about health hazards due to intake of excessive Iron is the need of the time.
- Role of pesticides used for agricultural activity should be carefully observed.
- Roof top rain water harvesting techniques should be encouraged for individual households and community.

8. Flood Plain Zone

The following are the identified flood prone area for the polluted Jhanji river stretch

Name of River	Flood plain areas
Jhanji River	Simaluguri gaon, Hahchara, Dibrual Chowdang, Lephera Chowdang

The Jhanji river embankment details are as follows

S.N	Embankment	Length (km)
1	Left bank	24.7
2	Right Bank	18.31

8.1. Regulating activities in the Flood Plain Zone

Further following activities need to be regulated in the flood plain zones.

S.No	Action points	Responsible authority
1	Plantation in the flood plain zone	Forest Department
2	Checking Encroachment	Local administration
3	Demarcation of the flood plain zone	Water Resource Department
4	Prohibition of disposal of all kinds of wastes	District Administration

8.2. Waste management status and proposed actions for Municipal solid waste, industrial waste and Bio medical waste management

Table VII: Waste management status and proposed actions

Type	Status	Proposed Action	Authority
Industrial Waste	➢ Authorisation have been granted to different industries in line with Water act 1974, Hazardous Waste (Management, Handling and Transboundary Movement) Rule, 2008 as amended. ➢ Regular monitoring by PCBA to ensure that the terms and conditions are strictly adhered in accordance with the prescribed standards.	➢ Direction issued to the industries to identify the non-point sources and arrest contamination of storm water. ➢ Directions to be issued to the defaulter units.	Pollution Control Board Assam
Municipal waste management	➢ Since the catchment area of the river does not fall under any municipal bodies, the villagers manage and treat their own solid wastes by constructing composting pit and other vermi composting practices etc in their household.	➢ Awareness generation regarding solid waste management rule.	Village Panchayat
Plastic waste	➢ Plastic wastes are being burnt by the villagers in their household	➢ Village panchayats to segregate and collect plastic waste and initiate necessary steps	Village Panchayat

Type	Status	Proposed Action	Authority
		to channelize the waste to authorized agencies for recycling and reprocessing. ➢ Awareness campaign regarding health and other issues related to burning of plastics.	
Hazardous waste	➢ No hazardous wastes are directly disposed in the river	➢ Awareness campaign regarding health and other issues related to Hazardous waste	Pollution Control Board Assam
Bio-Medical waste	➢ Segregation at the source under Biomedical waste Management Rules, 1998 as amended	➢ Direction issued to all HCF unit to implement the BMW Rules, 2016 as ammended in all HCF Units. (As per guidelines of CPCB)	HCF units, PCBA
E –waste	➢ No bulk consumers and generators have been identified.	➢ Not Applicable	Pollution Control Board Assam

8.3. Gaps identified in waste management

Around 4 MT of Municipal solids waste are being dumped unscientifically.

8.4 Greenery development - Plantation Plan

State has initiated afforestation in the degraded forestland, also raising roadside plantation besides creating check dams/embankments in the river catchment areas to combat erosion and soil conservation.

The following remedial actions has to be initiated in consideration of greenery development

- Raise plantation along the river bank to control the flow run off water directly to the river
- Bamboo species to be raised as it is a good soil binder thereby stabilize the banks of the river from erosion

9. Environmental Flow (E-Flow)

9.1. Stretch of river perennial or non- perennial/flow available/water usage in the stretch

The entire river stretch is perennial. The discharge of Jhanji river as per the master plan of Brahmaputra Board is 643.77 Cum. It is also observed that even during the dry season, the river maintains 50% of the average flow recorded.

9.2. Irrigation practices in the river

The high volume of discharge and water level of the river can be of great use for good irrigation practices for the people.

10. Identified organisations responsible for preparation and execution of the action plans

Organisations responsible for preparation and execution of the action plans are as follows:

- Secretary to the Govt. of Assam, Environment and Forest department
- Secretary to the Govt. of Assam, Urban Development department
- Commissioner, Industries and Commerce, Assam
- Member Secretary, Pollution Control Board Assam
- Commissioner, Guwahati Municipal Corporation
- Commissioner to the Govt. of Assam, Water Resource Department
- Divisional Forest officer, Social Forestry, Basistha, Guwahati -29

11. Monitoring mechanism proposed for implementation of action plans

The water quality assessment and evaluation of impacts is necessary to understand the river state at various stages of the project implementation and post implementation of the project. Therefore the water quality assessment and evaluation of the project achievements is essential component for the long term benefit of the project. The monitoring and evaluation also indicate for taking corrective measure at appropriate time. The ill effects may be controlled by taking step at right time for right cause. The monitoring & evaluation schedule and plan proposed is as under.

11.1 Water Quality Stations (WQS):

The water quality monitoring will include following parameters, which shall be monitored at monthly interval or as and when required. The one

complete unit to be purchased and identified parameters to be monitored at defined sampling stations.

The sampling stations are:

- Jhanji river at NH crossing

The parameters to be monitored are as follows.

1	pH	6	Bio-Chemical Oxygen Demand (BOD)
2	Turbidity	7	Faecal coliform
3	Conductivity	8	Total coliform
4	Temperature		
5	Dissolved Oxygen (DO)		

Most of the parameters will be monitored manually and will be incorporated in database.

12. Public Mass awareness etc.

Any river conservation project to be implemented successfully, public awareness is of utmost importance. Unless the public are made aware about the irreversible damage and pollution caused by indiscriminate littering and dumping of waste and garbage in drain and water bodies connected to Jhanji River, the project cannot be implemented in true sense of the word to achieve conservation. Some members of the communities are already aware that there is a need for river conservation programme and that they will be benefitted. Hence, it should be ensured with the following points

- Public Awareness & Public Participation should be affront-end activity of the project
- The entire programme of conservation should be conceived, formulated, implemented, monitored and evaluated in close consultation with the stake holding communities.
- Therefore, education and awareness programmes are key to the sustainability of the various components implemented as part of the river restoration project.

13. Action Plan

Table VIII: Action Points

Type	Action Points	Responsible Authority	Time Targeted
Industries	a) Strict observation/ monitoring of industrial effluent/waste water discharge strictly for compliance. a) Stringent action against non-complying industrial units b) No industry should operate or continue manufacturing process unless they possess valid permission for ground water extraction from Central Ground Water Authority (CGWA) c) Small service providing units like street food selling vendors, laundry etc should not be allowed to dispose solid, liquid or semi-liquid wastes directly into the drains or sewers. d) Set up online monitoring system in the major industries. e) To stress all the industrial units to adopt cleaner technology and take appropriate measures for reduction of effluent, recycling and reuse of treated water Directions has been issued for Zero Liquid Discharge (ZLD) in the	**Pollution Control Board Assam**	**3 Months (June, 2019 To August, 2019)**

Type	Action Points	Responsible Authority	Time Targeted
	major polluting industrial units		
Interception and treatment of raw sewage	a) The quality of waste water flowing in the drains of identified polluted stretch have to be analysed and studied to assess the drain wise characteristics of waste water. b) Concerned departments should design the installation of Sewage Treatment Plant (STP) based on flow details of the drains and utilization capacity and ensure that each households are connected to the sewers as applicable. c) Sewage Treatment Plant should also consider treatment and disposal of sewage for river catchment area settlement including discharge from toilets constructed under Swachh Bharat Mission d) To trap the discharge using strainers before falling into river. e) Channelization including diversion of sewage generated from households to sewer lines/interception of all the drains presently carrying sewage and for ensuing proper treatment through the upcoming STPs.	**PCBA/ ULBs/ District Administration/ Water Resource Department**	**2 Years (June,2019 to May, 2021)**

Type	Action Points	Responsible Authority	Time Targeted
	f) Local administration should provide pucca latrines to all the households through Individual Households Latrines (IHHL) Scheme under Swachh Bharat Mission.		
Ground Water Assessment	a) Conducting survey regarding ground water usage by category wise such as domestic, community, etc. and also identification of over exploited and critical blocks in the river stretches with respect to the ground water extraction. b) Carry out assessment of ground water survey in the catchment area of the identified polluted stretch once in a year to ensure quality. c) To promote roof top rain water harvesting by individual households	**PCBA/CGWA**	**Continuous**
Flood Plain Zone	a) Conservation of the river through watershed management. b) Cleaning of the river bed and bank. c) Afforestation on both the banks to prevent soil erosion d) Recreational activities to be promoted. e) Erection of pathway of the river banks. f) Checking encroachment in the flood plain zone	**Soil Conservation Department/Water Resource/ Forest Department/ Tourism Department/PWD Assam/Local Administration**	**6 Months (February,2020 to July, 2020)**

Type	Action Points	Responsible Authority	Time Targeted
	of the polluted river stretch g) Prohibition of disposal of municipal, plastic, biomedical and other wastes in the polluted stretch of the river bank h) Demarcation of the flood plain zone.		
	The plan for the polluted stretches of the river may be implemented in a time bound manner by fragmenting activities as a) Modification of consent conditions in and around the polluted stretches. b) Surveillance of sources of pollution in contrast to the norms. c) Assessment of water quality of the polluted stretches on monthly basis has already been commencing d) The monitoring committee may convene meeting of Stakeholder organizations on Quarterly basis with under the chairmanship of Chief Secretary	**Pollution Control Board Assam**	**3 Months (June,2019 to August, 2020)** **c) Monthly Basis**
Solid Waste	a) Prohibition of direct disposal of solid waste in the river banks. b) Frequent River Surface cleaning by removal of debris, plastics etc.	**Village Panchayats/ Water Resource Department**	**3 Months (November, 2019 to January, 2020)**
Environmental Flow	a) Flow measurement of the river should be carried out by the concerned department	**Water Resource Department**	**Continuous**

Type	Action Points	Responsible Authority	Time Targeted
	and the record has to be maintained b) Fresh water flowing through escape channels/small barrages should be checked. c) The river can be of good potential for irrigation practices and should be carried out by the farmers.		
Public Awareness	a) Awareness programs to highlight the issues related with the direct discharge of solid waste and open defecation. b) Mass awareness to conserve water.	**Village Panchayats/PCBA/NGOs**	**Continuous**

Members of River Rejuvenation Committee (RRC)

Secretary to the Govt of Assam
Environment & Forest Department

Secretary to the Govt of Assam
Urban Development Department

23/7/19

Commissioner
Industries and Commerce Assam

Member Secretary
Pollution Control Board Assam