

Action Plan for Clean Holy Bein



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**Directorate of Environment and Climate Change,
Department of Science, Technology and Environment,
Government of Punjab**

Table of Contents

Chapter 1 - Introduction.....	3
1.1 Background.....	3
1.2 About Holy Bein.....	3
1.3 State’s efforts to Control Pollution in Holy Bein	3
1.4 Directions issued by CPCB	4
Chapter 2 - Vision, Mission and Strategy	4
2.1 Overarching Vision of the State - Mission Tandarust Punjab.....	4
2.2 Vision for Clean Holy Bein	5
2.3 Mission Clean Holy Bein	5
2.4 Strategy for Clean Holy Bein.....	5
2.5 Identification of the Stakeholders and their roles	5
2.6 Nodal Department.....	7
2.7 Integration of Departmental plans.....	7
2.8 Monitoring and Governance	7
Chapter 3 - Current Status of Water Quality, E-flow, Biodiversity of Holy Bein.....	8
3.1 Monitoring.....	8
3.2 CPCB’s norms for designated best use.....	8
3.3 Environmental Flow (E.Flow) of Holy Bein	9
3.4 Biodiversity Profile of Holy Bein	9
Chapter 4 - Sources of Water Pollution in Holy Bein	10
4.1 Primary Drains.....	10
4.2 Sewage/ sullage generated from Urban Areas	10
4.3 Performance Assessment of STPs	10
4.4 Sewage/ sullage generated from Rural Areas	10
4.5 Industrial Sources in the Catchment Area of Holy Bein	10
Chapter 5 - Measures for Control of Pollution and Timelines	11
5.1 Setting up of New Treatment Facilities.....	11
5.2 Setting up of Online Effluent Monitoring Systems for STPs and ETPs	11
5.3 Timelines for Projects.....	11
5.4 Timelines for Setting up of Sewage Treatment Plants in Urban areas.....	12
5.5 Timelines for Setting up of treatment facilities for sewage/sullage in Rural areas	12
5.6 Timelines for reuse of treated wastewater of STPs for irrigation purposes	12
5.7 Cleaning of Holy Bein	12

5.8 Timelines for installing online continuous monitoring system for STPs 12

Chapter 6 – Monitoring & Governance 13

6.1 Monitoring of progress..... 13

6.2 Three Tier Monitoring 13

Chapter 6 – Training & Capacity Building..... 14

6.2 Objectives..... 14

Annexure A to L

15 to 39

Chapter 1 - Introduction

1.1 Background

- 1.1.1 The word Punjab is a compound of two Persian words, panj (“five”) and āb (“water”), thus signifying the land of five waters. The erstwhile Punjab State had five rivers namely Beas, Chenab, Jhelum, Ravi, and Sutlej. However, after the partition of India in 1947, only two rivers, the Sutlej and the Beas, falls within Punjab’s territory, while the Ravi flows only along part of its western border.
- 1.1.2 The rivers in the State have been used as a source of irrigation, drinking purpose especially in southern Punjab, development of hydro-electric projects to meet the energy requirements in the State and various activities including industrial purposes. The rivers have played a significant role in the socio-economic and industrial development of the State.
- 1.1.3 The rapid growth of urbanization and industrialization during the last few decades has adversely impact the environment of the State. The quantum of sewage and sullage generated from the habitation areas has significantly increased and finding its way into natural drains, eventually leading to rivers of the State. In the rural areas, due to increase in the population, the capacity of most of the ponds has been exhausted due to which this sewage and sullage has also started over flowing into the natural drains and finally becoming a part of river waters.
- 1.1.4 Therefore, the quality of water flowing in the water bodies has deteriorated as these water lack sufficient assimilation capacity for self purification.

1.2 About Holy Bein

- 1.2.1 The Holy Bein originates from Bhouli in Dhanoa Village near Dasuya in Distt. Hoshiarpur. It travels a distance of nearly 160 KM and merges into the River Beas near Harike. The Bein is receiving fresh water @ 200 to 250 cusec from Mukerian Hydrel Channel. The Holy Bein (Earlier named as Kali Bein) got its importance in the year of 1499, when Sh. Guru Nanak Dev Ji received his enlightenment when remained for 3 days in the said Bein and disclosed Mool Mantra.
- 1.2.2 The flow in the Holy Bein is about 500 cusecs. The Bein after flowing for 160 km, merges with River Beas at Hari Ke Pattan. Bein flows through the Districts of Hoshiarpur, Kapurthala & Jalandhar. Major towns located on the Bank of Holy Bein are Dasuya, Tanda, Begowal, Bholath Kartarpur, Kapurthala, Sultanpur Lodhi. 85 Villages falls in the catchment area of Holy Bein

1.3 State’s efforts to Control Pollution in Holy Bein

- 1.3.1 In the year 2000, the Deputy Commissioner, Kapurthala gave a serious thought with a view to revive the past glory of the Bein. At this initiative, an NGO of Kapurthala 'Guru Nanak Sacred Bein Restoration Committee' was constituted.

- 1.3.2 The Punjab Govt. in the meeting held on 17-2-2000 under the Chairmanship of Chief Secretary decided to release 100 cusecs of water from Mukerian Hydrel Channel to Bein.
- 1.3.3 In July 2000, SantBalbir Singh Seechewal took the initiative to clean the Bein and started KarSewa at SultanpurLodhi. He built bathing ghats at 6 places i.e. BudhoBarkeat, Gallowal, Shubhanpur, Kanjali, Bhulath&SultanpurLodhi. He also cleared the Bein of Hyacinth and wild grass etc to make the Bein a perennial rivulet. The KarSewa undertaken by the SantSeechewal come to the notice President of India, who lauded his effort in his address to the Nation on Technology Day on May 11, 2004.
- 1.3.4 The Government of Punjab vide Notification dated 12.10.2006 declared the Kali Bein as Holy Bein and sanction the release of 200 cusecs water Mukerian Hydrel Channel. Presently around 300-350 cuses of water is being released into Holy Bein from Mukerian Hydrel Channel.
- 1.3.5 The Government of Punjab vide order dated 19.11.2018 had constituted River Rejuvenation Committee(RRC) under the Chairmanship of Principal Secretary, Department of Science, Technology & Environment in compliance of NGT Orders dated 20.09.18 in O.A. 673/2018. Action Plan for Clean River Beas has been prepared by RRC in compliance of the NGT orders. The said Action Plan also includes pollution abatement measures for Holy Bein.
- 1.3.6 Department of Science Technology & Environment, Government of Punjab vide no. 10/352/2018-STE(5)/1605949/16-17 dated 31.10.2019 constituted District Environment Committees under respective Deputy Commissioner in compliance of NGT Order Dated 26.09.19 in O.A No. 360/2018. The meetings of the District Environment Committees of District Hoshiarpur, Kapurthala and Jalandhar are being held on Monthly basis to monitor the various activities of the Action Plan.

1.4 Directions issued by CPCB

- 1.4.1 CPCB has declared Sultanpur Lodhi to Harike stretch of River Beas as polluted river stretch of Priority- IV. Holy Bein being the major tributary of River Beas, has already been included in the Action Plan of Clean River Beas. CPCB during it 10th Meeting of the Task team held on 26.01.2020 through video conferencing, directed that t a separate Action Plan for Clean Holy Bein be prepared and submitted to CPCB after the approval of RRC.
- 1.4.2 Accordingly, a sparate Action Plan for Clean Holy Bein has been prepared in consultation with all stakeholder Departments.

Chapter 2 - Vision, Mission and Strategy

2.1 Overarching Vision of the State - Mission Tandarust Punjab

The Government of Punjab has launched Mission Tandurast Punjab to make Punjab a healthy State with healthy people by ensuring the quality of air, water, food and a good living Environment.

2.2 Vision for Clean Holy Bein

To restore the quality of water in Holy bein to prescribed standards to ensure ecological balance and socio-economic well-being of the people.

2.3 Mission Clean Holy Bein

To prepare and implement a comprehensive action plan to clean Holy Bein:

- (i) Creating awareness about the adverse impact of water pollution
- (ii) Identifying the sources of water pollution
- (iii) Setting up facilities for treating the pollutants
- (iv) Ensuring effective operations of the facilities
- (v) Ensuring effective monitoring of the quality of water
- (vi) Mitigating adverse impact on health of the people in the surrounding areas

2.4 Strategy for Clean Holy Bein

The strategy for clean Holy Bein includes:

- (i) Identification of Stakeholders
- (ii) Identification of sources of pollution
- (iii) Measures to control pollution and timelines
- (iv) Nodal Department
- (v) Integration of Departmental Plans
- (vi) Monitoring and Review
- (vii) Risk Mitigation Plan

2.5 Identification of the Stakeholders and their roles

The State of Punjab envisages a comprehensive plan for cleaning of Holy Bein by involving all the Stakeholders namely:

2.5.1 Department of Science, Technology and Environment

The Directorate of Environment and Climate Change and Punjab Pollution Control Board will be responsible for the following:

- (i) Overall coordination of the Action Plan for ensuring its successful implementation
- (ii) Setting up comprehensive online monitoring portal connecting all the executing and monitoring agencies
- (iii) Setting up of Infrastructure to monitor the quality of water
- (iv) Monitoring of quality of water of Holy Bein & ground water
- (v) Monitoring of discharge from Industries including ETPs
- (vi) Monitoring of discharge from STPs and other disposal facilities
- (vii) Monitoring of management of solid waste and other waste

2.5.2 Department of Local Government

As per the policy decision of the Department of Local Government, all Municipal Corporations are responsible for execution of their water supply and sewerage works including setting up of STPs while all Municipal Council will get the works executed through Punjab Water Supply and Sewerage Board. The policy is yet to be fully implemented as some Corporations are still relying on PWSSB for execution of works, on the other hand, some Municipal Councils are executing works on their own instead of PWSSB.

Design

- (i) Design projects to cover entire population with sewerage network system and its connection with STP.
- (ii) Design Sewage Treatment Plants of adequate capacity
- (iii) Design as per the prescribed standards

Construction

- (i) Monitor land acquisition closely as it is pre-requisite for setting up of STPs
- (ii) Ensure reputed professional contractors
- (iii) Construction of STPs as per timelines mentioned in the action plan
- (iv) Ensuring regular flow of funds during construction

Operation and Maintenance

- (i) Arranging funds for operation and maintenance of STPs to ensuring regular operation and maintenance of STPs in a professional manner
- (ii) Providing proper in-house laboratory facilities at each STP for maintaining record of characteristics of analysis of untreated as well as treated waste water
- (iii) Installation, operation & maintenance of online continuous effluent monitoring system as well as CCTV cameras for the existing STPs as well as new STPs to be installed

Solid Waste

- (i) Proper management & handling of municipal solid waste so as not to be thrown in river

2.5.3 Department of Rural Development and Panchayat

The Department of Rural Development has to provide for necessary treatment facilities in village ponds so that no untreated or polluted water enters river directly or indirectly through various drains or creeks. The Department has the following responsibilities:

- (i) Finalization of appropriate technology
- (ii) Arrangement of Funds for treatment technology in various villages identified in the Action Plan
- (iii) Reuse of water for agriculture purpose
- (iv) Proper operation and maintenance of treatment facilities installed in village ponds

2.5.4 Department of Agriculture

The Department of Agriculture through the Directorate of Soil and Water conservation is responsible for implementation of various schemes for utilizing the treated wastewater

from urban and rural treatment facilities for irrigation by the farmers. It has the following responsibilities:

- (i) Design the project as per the standards
- (ii) Follow up with various funding agencies to arrange funds
- (iii) Executing the schemes as per the timelines provided in the plan

2.5.5 Department of Water Resources

The Department of Water Resources through the Chief Engineer, Drainage has the following responsibilities:

- (i) Measurement of flow at different locations
- (ii) To stop unauthorised discharge in the drains
- (iii) Watershed Management
- (iv) Protection and Management of Flood Plain Zones
- (v) E.Flow (Ecological/Environment Flow)

2.5.6 Department of Forest & Wildlife Preservation & Punjab Bio-Diversity Board

Department of Forest & Wildlife Preservation & Punjab Biodiversity Board will be responsible for the following:

- (i) Plantation on both sides of Holy Bein and in the Flood Plain Zones
- (ii) Biodiversity Conservation

2.5.7 District Administration

District Administration will be responsible for monitoring of activities of the action plan at district level.

2.6 Nodal Department

The Department of Science, Technology and Environment is the nodal department for coordinating and monitoring activities of the plan.

2.7 Integration of Departmental plans

The Nodal Department will integrate plans of individual departments for control of pollution from various sources and coordinate its execution by tracking the progress.

2.8 Monitoring and Governance

- (i) There will be rigorous monitoring of implementation of the Action plan:
 - (a) Monitoring of physical and financial progress of works being executed
 - (b) Monitoring of operations and management of facilities set up
 - (c) Monitoring of quality of water
 - (d) Monitoring of health and diseases in the surrounding areas & awareness campaign
- (ii) The monitoring will be done at the District level & State Level.

Chapter 3 - Current Status of Water Quality, E-flow, Biodiversity of Holy Bein

3.1 Monitoring

- (i) The water quality of Kali Bein is being monitored at 4 locations, on monthly basis and the locations are as under:
- Nanakpur Bridge
 - Gurudwara Sant Ghat
 - Ber Sahib Gurudwara Sultanpur Lodhi (Gurdwara Side)
 - Kali Bein Before mixing with River Beas
- (ii) The water quality of Kali Bein is of “Class B” at the upstream of Kapurthala Town after mixing of the sewage of Kapurthala town, the quality of water deteriorates to “Class C”.
- (iii) The quality of Kali Bein water at D/s Sultanpur Lodhi to confluence point with Beas is of “Class C”. The analysis report of the different parameters at these locations is attached as **Annexure -A**

3.2 CPCB’s norms for designated best use

The Central pollution Control Board has laid down criteria for designated best use class of the water of the water bodies, which is as under:

S. No.	Constituent Parameters	Designated Best Use Class					Below E
		A	B	C	D	E	
1.	Total coliform Organisms MPN/100 ml, Max	50	500	5000	-	-	Not meeting A, B, C, D & E criteria
2.	pH value	6.5-8.5	6.5-8.5	6-9	6.5-8.5	6-8.5	
3.	Dissolved oxygen, mg/l, Min	6	5	4	4	-	
4.	Biochemical Oxygen Demand, mg/l, 5 days 20C, Max	2	3	3	-	-	
5.	Free ammonia (As N) mg/l, Max	-	-	-	1.2	-	
6.	Sodium absorption ratio, Max.	-	-	-	-	26	
7.	Electrical conductivity μ s/cm max.	-	-	-	-	2250	
8.	Boron, mg/l, Max	-	-	-	-	2	

Note:

Class A: Drinking water sources without conventional treatment, but after disinfection

Class B: Outdoor bathing (Organized)

Class C: Drinking water sources with conventional treatment followed by disinfection

Class D: Propagation of wild life and fisheries

Class E: Irrigation, Industrial cooling and controlled water disposal

3.3 Environmental Flow (E.Flow) of Holy Bein

3.3.1 'Environmental Flows' is minimum quantity of continued availability of water in the river/Bein to ensure downstream environmental, social & economic benefits as well as sustainability of its aquatic ecosystem. Good quality of water may be used for dilution to reduce concentration of pollutants to meet the desired level of water quality and extent of flow as per prescribed norms. Dilution of pollution will be used only after achieving degree of required treatment for municipal sewage and industrial effluents. To maintain the E-flow of Holy Bein the Department of Water Resources Punjab has approved to discharge 300 cusec of fresh water from Mukerian Hydel Channel at Tarkiana into Holy Bein. Accordingly the fresh water is being discharged into Holy Bein regularly to maintain the Ecology and E-flow in Holy Bein. The flow is measured at different locations and records is being maintained by Department of Water Resources, Punjab.

3.4 Biodiversity Profile of Holy Bein

3.4.1 Kanjali wetland has been developed across the Holy Bein and is located in Kapurthala District. The wetland has rich biodiversity comprising of aquatics, flora & fauna including some important species of plants & animals. Kanjali wetland is included in the list of wetlands of International Importance as per Ramsar Convention 2002. The details of bio diversity is being maintained by Department of Forest & Wildlife Preservation.

Chapter 4 - Sources of Water Pollution in Holy Bein

4.1 Primary Drains

There are 17 primary drains/ choes/nallahs, which are directly discharging into the Holy Bein. The details of these drains/ choes/ nallahs are given in **Annexure-B**. The list of urban and rural habitation discharging wastewater directly / indirectly into Holy Bein is given in the **Annexure-C**.

- (i) There are following major sources polluting the river Sutlej:
 - (a) Sewage/ sullage generated from Urban Areas
 - (b) Sewage/ sullage generated from Rural Areas
 - (c) Industrial sources

4.2 Sewage/ sullage generated from Urban Areas

There are 12 major sources discharging wastewater into Holy Bein. Out of these are 09 no. are MCs, 01 is other local body i.e Rawal & Colonies of JDA and 01 MES Authority. Out of 09 MCs, 07 STPs have been installed in 07 towns and 03 STPs are proposed to be installed in 02 MCs and 01 No. STP is proposed at Rawal & Colonies. The MES Kapurthala has installed 01 no. STP. The details of STPs installed and new STPs proposed to be installed are given in **Annexure D (1) & Annexure D(2)**.

4.3 Performance Assessment of STPs

The performance assessment of STPs in Bein is done on monthly basis. The detail is attached as per **Annexure-D (3)**.

4.4 Sewage/ sullage generated from Rural Areas

There are 71 villages, which are discharging wastewater through various creeks and drains into Holy Bein out of 71, The work of providing pond has been completed in 41 and work is still remaining in 30 villages. The treatment facilities in these villages are to be provided in phases with details as under:

- (i) **Phase 1:** 5 Villages having discharge of 1.24 MLD to be covered
- (ii) **Phase 2:** 15 Villages having discharge of 6.68 MLD to be covered
- (iii) **Phase 3:** 10 Villages having discharge of 9.31 MLD to be covered

4.5 Industrial Sources in the Catchment Area of Holy Bein

4.5.1 There are 03 water polluting Red Category Industries in the catchment area of Holy Bein (Kali Bein). The list of industries are given in **Annexure – E**.

4.5.2 None of these Industries are discharging wastewater into any drain leading to Holy Bein (Kali Bein). The Board on regular basis is monitoring all these industries.

4.5.3 All industries have already installed OCEMS and same have been connected the same with servers of CPCB & PPCB.

Chapter 5 - Measures for Control of Pollution and Timelines

5.1 Setting up of New Treatment Facilities

5.1.1 The existing treatment facilities are not adequate. In order to completely stop the untreated waste being discharged directly or indirectly into Holy Bein, additional new facilities and upgradation of existing facilities is required. The action plan envisages the following facilities to be set up/ upgraded to meet the challenges of pollution in River Beas:

- (i) Setting up of Sewage Treatment Plants in Urban areas
- (ii) Setting up of treatment facilities for sewage/sullage in Rural areas
- (iii) Setting up of facilities for reuse of treated wastewater
- (iv) Setting up treatment facilities in Industrial Areas
- (v) Cleaning of Subsidiary drains

5.2 Setting up of Online Effluent Monitoring Systems for STPs and ETPs

5.2.1 It has also been observed that the treatment facilities have not been operated as per norms and therefore there is strong need to effectively monitor the treatment facilities. In order to ensure effective monitoring, it is envisaged to install online systems for monitoring:

- (i) Setting up of online system for monitoring STPs
- (ii) Setting up online system for monitoring of industrial effluents

5.3 Timelines for Projects

Each project will have timelines for various stages of the project. Following stages have been identified to monitor the progress:

Name of the Project			
Brief Scope of the Project			
Sno.	Stage	Start Date	Completion Date
1	Preparation of DPR		
2	Financial Closure		
3	Tendering of the Work including allotment		
4	Commencement of Work		
5	Quarterly Milestones during the construction Stage		
6	Completion and Commissioning		

5.4 Timelines for Setting up of Sewage Treatment Plants in Urban areas

5.4.1 Department of Local Government/Jalandhar Development Authority(JDA)

- (i) The Department of Local Government & Jalandhar Development Authority have chalked out plans for setting up of new STPs, upgrading STPs and laying down sewerage system for left out areas. The details are given in **Annexure -F**

5.4.2 Military Engineering Service Kapurthala

- (i) Military Engineering Service(MES) Kapurhtala has installed 1 No. STP which is likely to be commissioned by 30.06.2020.

5.5 Timelines for Setting up of treatment facilities for sewage/sullage in Rural areas

The timelines for setting up the treatment facilities by Department of Rural Development & Panchyats in the 30 villages in the catchment area of Bein are given in **Annexure G**.

5.6 Timelines for reuse of treated wastewater of STPs for irrigation purposes

5.6.1 The Department of Soil and Conservation has already commissioned Irrigation Projects for 05 STPs located in the catchment areas of Holy Bein to utilize the treated wastewater of the STPs located in the catchment area of River Beas. **(Annexure-H)**.

5.6.2 The timelines for providing irrigation schemes to use treated sewage for 1 existing & 5 new STPs to be set are provided in **Annexure I**.

5.7 Cleaning of Holy Bein

The Holy Bein, one of the major drain carrying wastewater from urban/rural areas and having confluence with the River Beas generally carries lot of silt. Due to eutrophication, there is lot of growth of water hyacinth, which chokes the flow of Water in some of the stretches of Holy Bein. The Department of Water Resources need to regularly clean the Holy Bein and remove silt and water hyacinth so that unrestricted flow of water can be maintained in the Holy Bein.

5.8 Timelines for installing online continuous monitoring system for STPs

In order to get real time data of the quality of treated wastewater, Online Continuous Monitoring System(OCMS) with facility of flow meter at the outlet of all the STPs of the towns / cities located in the catchment area of Holy Bein required to be installed & connected to Central server od CPCB & PPCB. Further CCTV cameras will be installed to monitor the operation of STPs. The timelines for installing OCMS and CCTVs on STPs are provided in **Annexure J & K**, respectively.

Chapter 6 – Monitoring & Governance

6.1 Monitoring of progress

The progress Action Plan will be monitored on regular basis. In order to ensure that all the stakeholder departments adheres to the timelines given for various activities, the department shall submit progress of the project on monthly basis.

6.2 Three Tier Monitoring

6.2.1 Monitoring will be done by the concerned Departments/ Agencies, which are executing or responsible for particular activities and it will be their primary responsibility to ensure compliance of the Action Plan.

6.2.2 In addition, the implementation of Action Plan shall be reviewed and monitored by following Committees:

- (i) District Environment Committees: Department of Science Technology & Environment, Government of Punjab vide no. 10/352/2018-STE(5)/1605949/16-17 dated 31.10.2019 constituted District Environment Committees under respective Deputy Commissioner in compliance of NGT Order Dated 26.09.19 in O.A No. 360/2018. Distt. Environment Committees would monitor the timelines for implementation of Action Plan in respective districts.
- (ii) River Rejuvenation Committee (RRC) - Department of Science Technology & Environment, Government of Punjab vide order dated 19.11.2018 has constituted RRC in view of NGT orders dated 20.09.2018 in O.A. No. 673/2018 consisting of Director Environment, Director, Urban Development, Director, Industries and Member Secretary, Punjab Pollution Control Board as members. The RRC is functioning under the over all supervision & coordination of Principal Secretary to Government of Punjab, Department of Science, Technology & Environment. The state level monitoring of action plan would be carried out by RRC.
- (iii) State Apex Committee: SAC under Chief Secretary and comprising of administrative Secretaries of relevant administrative departments for monitoring the progress of Environmental Action Plans, resolving issues and enforcing accountability has been constituted by Department of Environment vide order dated 10.12.2018

Chapter 6 – Training & Capacity Building

6.1 Importance

Training and capacity building of all the personnel of concerned department on various environmental, pollution and sanitation issues and related control measures with the active involvement of NGOs and communities are key to concerted actions for clean environment. Therefore, it is imperative to enhance the capability and skills of the officers of stakeholder departments for effective implementation of Action Plan on Reuse of Treated Wastewater. National Green Tribunal (NGT) in its various orders has also emphasised on training & capacity building of the all the concerned for improving the environment in urban as well rural areas.

6.2 Objectives

- i) Raising awareness and changing the mindset.
- ii) Capacity building on various Environment Protection Plans, environmental concerns, issues, roles and responsibilities of different stakeholders.
- iii) Capacity building on existing policies, legal provisions, rules & regulations and NGT orders
- iv) Improving skills regarding existing technical practices, procedures and methodologies.
- v) Promoting an integrated and holistic approach for addressing the concerns.
- vi) Enhancing core competencies of concerned stakeholders in relevant areas of wastewater treatment and reuse .
- vii) Strengthening institutional arrangements
- viii) Reinforcing accountabilities and identifying aspects that require improvement
- ix) Understanding new challenges and requirements
- x) Fostering inter-departmental collaborations to achieve high performances

6.3 Need Assessment

The assessment of training needs of nodal and other responsible officers of various stakeholder departments involved in implementation of Action Plan will be made for development of specific training modules for different functionaries of relevant departments & organizations at various levels of hierarchies.

6.4 Involvement of Institutions and Experts

Organizations of national & international repute having expertise in the area of environment in general and wastewater reuse in particular shall be involved for conducting need specific trainings & capacity building programmes for various target groups and officials of stakeholder departments. Experts would also be involved in developing knowledge products and information material on various issues & technologies for creating mass awareness to build a responsible society with an aim to promote reuse and recycling of water.

Annexure A - Representative Quality of Water of Holy Bein for January, 2020

Sampling	pH	DO mg/l	Cond Us/C m	TSS mg/l	TDS mg/l	COD mg/l	BOD mg/l	Cl mg/l	SO4 mg/l	NO3- N mg/l	Amn.N mg/l	TKN mg/l	Na mg/l	K mg/l	T.Coli MPN/100ml	MPN
Bridge	7.4	8.6	336	28	281	10	2.0	25	18	0.3	7.8	12	27	5.9	280	
a Sant Ghat	7.4	4.0	304	30	231	30	6.8	34	29	0.7	8.4	13.1	28	5.7	240	
Gurudwara Lodhi (ra side)	7.6	4.0	310	32	228	26	7.0	30	25	0.9	8.4	11	26	4.9	170	
efore mixing Beas	7.6	5.2	362	12	226	24	2.6	29	22	0.9	0.8	1.7	24	5.0	6300	

Annexure B- List of Creeks/Drains/Nallah/Khadh Directly Discharging Wastewater into Holy Bein

Sr No	Creeks/Drains/Nallah/Khadh	Identification mark
1	Sadarpur Drain	IN:1.1
2	Nangal Sehgo Drain	IN:1.2
3	Dasuya Drain	IN:1.2.1
4	Safdar Drain	IN:1.3
5	Kurala Drain	IN:1.4
6	Tanda Drain	IN:1.5
7	Mehangrewal Choe	IN:1.6
8	Begowal Drain	IN:1.7
9	Kingranwala Choe	IN:1.8
10	Raipur Peer Bakash Drain	IN:1.9
11	Ramgarh Drain	IN:1.10
12	Beas Pind Rahimpur Drain	IN:1.11
13	Nizampur Drain	IN:1.12
14	Wadala Drain	IN: 1.13
15	Bhulana Drain	IN:1.14
16	Khane & Khane Extension Drain	IN:1.15
17	Sultanpur Drain	IN: 1.16

Annexure C- List of Urban/ Rural Areas Discharging directly/indirectly into Holy Bein

HOSHIARPUR AREA						
Sadarpur Drain (IN:1.1)						
1.	Vill Sadarpur Nagra	IN:1.1.1	Near pong main canal	31°84'58" N 75°59'48" E	200	No Treatment Provided
Nangal Sehgo Drain(IN:1.2)						
1	Vill Sehge	IN:1.2.1	Along the road from sehge to NH 44	31°84'96"N 75°63'25"E	200	No Treatment Provided
Dasuya Drain(IN:1.2.1)						
1.	MC Dasuya	1.2.2	No outfall	31°46'48" N 75°03'57" E	4000	STP Provided
Safdarpur Drain (IN:1.3)						
1	Vill Buchhan	IN:1.3.1	Directly into the drain	31°77'54"N 75°58'70"E	500	No Treatment Provided
2	Vill Chak Bamu	IN:1.3.2	Directly into the drain	31°75'88"N 75°58'57"E	200	No Treatment Provided
3	Vill Alampur	IN:1.3.3	Directly into the drain	31°74'35"N 75°58'31"E	500	No Treatment Provided
4	Vill Kahlwan	IN:1.3.4	Directly into the drain	31°73'54"N 75°58'15"E	500	No Treatment Provided
5	Vill Gilzian	IN:1.3.5	Directly into the drain	31°72'32"N 75°58'58"E	700	No Treatment Provided
6	Vill Ibrahimpur	IN:1.3.6	Directly into the drain	31°72'85"N	300	No Treatment Provided

Action Plan for Clean Holy Bein

7	Vill Mada	IN:1.3.7	Directly into the drain	75°58'64"E 31°71'26"N 75°58'87"E	150	No Treatment Provided
Kurala Drain (IN:1.4)						
1	Vill Kadari Chak	IN:1.4.1	Directly into the drain	31°70'24" N 75°59'78"E	100	No Treatment Provided
Tanda Drain (IN:1.5)						
1	Vill Kotli	IN:1.5.1	Near chauhan Palace	31°68'04"N 75°61'52"E	200	No Treatment Provided
Villages/MCs directly discharging into Holy Bein						
1	MC Tanda		Into Holy Bein through pipeline	31040'57.06"N 75035'25.49" E	3150	STP Provided
JALANDHAR AREA						
Mehangrowal Choe (IN:1.6)						
1	MC Haryana	IN 1.6.1	Opposite Hoshiarpur Road	31°62'26" N 74°84'65"E	2000	STP Proposed
Begowal Drain (IN:1.7)						
1.	MC Begowal	IN 1.7.1	Near STP Begowal	31° 36' 16"N 75° 31' 35"E	2500	STP
Kingrawalan Choe (IN:1.8)						
1	MC Sham Chaurasi	IN 1.8.1	After STP	31° 49' 91"N 75° 75' 17"E	1000	STP (WSP)
Raipur Peer Baksh Drain (IN:1.9)						
1	Vill Bhadas	IN 1.9.1	Vill Bhadas	31° 35' 10"N 75° 30' 24"E	300	No

Ramgarh Drain(IN:1.10)						
1	Vill Littan	IN:1.10.1	Near Mobile Tower	31° 30' 19"N 75° 29' 12"E	258	No
Beas Pind Rahimpur Drain (IN:1.11)						
1.	Vill Bhikhan Nangal	IN:1.11.1	Vill Bhikhan Nangal	31° 28' 03"N 75° 28' 22"E	66	No
2	Vill Cheema	IN:1.11.2	Cheema Rahimpur Colony	30° 26' 42"N 75° 31' 48"E	120	No
3	Vill Ambgarh	IN:1.11.3	Near Church	31° 26' 26"N 75° 32' 33"E	170	No
4	MC Kartarpur	IN:1.11.4	Beas Pind Drain	31° 43' 58"N 75° 50' 09"E	4000	STP Proposed
Nizampur Drain (IN:1.12)						
1	Vill Bamuwal	IN:1.12.1	Vill Bamuwal	31°30'10"N 75°26'12"E	277	No
2	Vill Muddowal	IN:1.12.2	Vill Muddowal	31°29'57"N 75°24'58"E	143	No
3	Vill Tajpur	IN:1.12.3	Vill Tajpur	31°29'26"N 75°24'27"E	90	No
4	Vill Ramidi	IN:1.12.4	Vill Ramidi	31°28'36"N 75°23'42"E	263	No
Wadala Drain (IN:1.13)						
	MC Kapurthala	IN:1.13.1	Near Pulli	31°23'20"N 75°22'18"E	25000	STP (up-gradation of technology) Various Colonies within MC Kapurthala Area shall be connected with the existing STP of 25 MLD
	Sunder Nagar	IN:1.13.2	Near Markfed	31°22'39"N 75°22'26"E	90	
	Model Town	IN:1.13.3	Bimla Enclave pipeline	31°23'22"N 75°22'30"E	860	
	Guru Nanak Nagar	IN:1.13.4	Near Guru Nanak Nagar houses	31°23'22"N 75°22'30"E	670	

Action Plan for Clean Holy Bein

	Police Line	IN:1.13.5	Near Gurudwara Sahib	31°23'24"N 75°23'05"E	540	Capacity, MC Kapurthala
	Suriya Enclave and Grover Colony	IN:1.13.6	Pully opp. Green Wood Works	31°23'41"N 75°23'27"E	980	
	New Ajit Nagar	IN:1.13.7	Near residential area	32°23'34"N 75°23'32"E	585	
	Mohalla Seenpur	IN:1.13.8	Near Jhugies	32°23'33"N 75°23'34"E	330	
	New Court Complex	IN:1.13.9	Near pump house	31°23'13"N 75°25'23"E	240	
	New Colony (Ajit Nagar)	IN:1.13.10	Backside of Ajit Nagar	31°23'34"N 75°24'08"E	260	
	Vill Daburji and Kadupur	IN:1.13.11	Pullynear Gurudwara Sahib	31°23'25"N 75°24'38"E	283	No
	Vill Mainwan	IN:1.13.12	Near Jhugies	31°23'05"N 75°26'15"E	101	No
	Vill Kot Krar Khan	IN:1.13.13	Near house of Sh. Jarnail Singh	31°23'10"N 75°28'15"E	200	No
	Vill Chuharwal	IN:1.13.14	Near old house	31°23'34"N 75°23'44"E	140	No
Bhulana Drain (IN:1.14)						
1	Vill Bhulana	IN:1.14.1	Near Gurudwara Sahib	31°19'06"N 75°19'13"E	152	STP Proposed for the treatment of effluent generated from Rawal & Its colonies
Khane & Khane Extension drain (IN:1.15)						
1	Vill Tudarwal	IN:1.15.1	Near Govt School	31°20'10"N 75°15'00"E	52	No
Sultanpur Drain (IN:1.16)						
1	Vill Malian	IN:1.16.1	Malian	31°15'48"N 75°18'11"E	185	No

List of Villages discharging directly into Holy Bein					
Sr. No.					
1	Vill Chanchok, Tehsil Bholath, Kapurthala	Backside pucca houses near bein	31°34'20"N 75°30'55"E	47	No
2	Vill Dhogarwal, tehsil & Distt, Kapurthala	Near overhead water tank	31°28'53"N 75°24'55"E	175	No
3	Vill Nanakpura, Tehsil, Kapurthala	Near Shamsan Ghat	31°23'15"N 75°20'04"E	101	No
4	Vill Talwara, Tehsil Bholath, Distt. Kapurthala	Near Atta Chaki	31°32'13"N 75°27'34"E	128	No
5	Vill Talwandi Purdal, Tehsil Bholath, Distt. Kapurthala	Near Shamsan Ghat	31°31'28"N 75°27'23"E	101	No
6	Rawal and Colonies Tehsil and Distt. Kapurthala	Near Gurdwara	31°18'57"N 75°19'07"E	845	STP of 3.0 MLD proposed by Jalandhar Development Authority
7	MC Bholath	Near STP	31°32'32"N 75°30'20"E	4000	Yes
8	MC Sultanpur Lodhi	Near STP	31°12'50"N 75°11'43"E	5600	Existing STP of 2.6 MLD to be replaced with proposed 4.0 MLD STP and another 1.0 MLD STP Proposed
9	Garrison Engineering, Kapurthala	Near Kanjali	31°22'47"N 75°22'47"E	1000	STP Proposed

Annexure D(1)-Local Bodies which have installed STPs

Sr. No	Name of Town	Capacity of STP (MLD)	Technology of STP
1.	Dasuya	4.0	WSP
2.	Tanda	4.0	MBBR
3.	Begowal	2.5	SBR
4.	Bholath	4.0	WSP
5.	Kapurthala	25.0	UASB
6.	Sultanpur Lodhi	2.6	WSP
7.	Garrison Engineer , Kapurthala	0.4	MBBR
8.	Sham Churasi	1.0	WSP

Annexure D(2)- List of ULBs/JDA/MES/PSIEC where STPs are proposed to be installed

Sr. No.	Name of the Town	Disposal	STP Capacity (MLD)	Remarks
A.	Municipal Councils			
1.	MC Sultanpur Lodhi	Into Holy Bein	4.0	New STP is propose to be replaced by existing STP.
2.	MC Sultanpur Lodhi	Into Holy Bein	1.0	New STP proposed to be installed by replacing existing STP
3.	MC Kapurthala (special repair of existing STP)	Into Holy Bein	25.0	The existing STP is non-complying so up-gradation is under process and likely to be commissioned by 30.06.2020.
4.	MC Kartarpur	Into Holy Bein	4.0	New STP proposed
B.	Other Local Bodies			
5.	Jalandhar Development Authority (JDA)	Wastewater generated from Vill Rawal and adjoining Colonies of Distt Kapurthala	3.0	New STP proposed

Annexure D(3)- Performance Assessment of STP's/WP's in the catchment area of Holy Bein as on Feb. 2020

S.No	Name of the STP	Quantity	Date of sampling	Outlet	PH	COD	BOD	TSS	F coli
1	STP Dasuya District Hoshiarpur	4 MLD	6/2/2020	Inlet	6.86	5150	2163	2200	
				Outlet	8.63	161	40	17	910
2	STP Begowal	2.5 MLD	6/3/2020	Inlet	7.8	840	250	156	1,10,000
				Outlet	9.0	200	42	72	3800
3	STP Tanda	4 MLD	6/2/2020	Inlet	7.6	408	115	120	
				Outlet	9.8	320	70	64	11000
4	STP Bholath	4 MLD	6/2/2020	Inlet	8.0	222	64	68	
				Outlet	7.2	64	12	22	610
5	STP Kapurthala	25 MLD	7/11/2019	Inlet	7.0	288	103	112	
				Outlet	7.3	144	46	60	
6	STP Sultanpur Lodhi	2.6 MLD	6/2/2020	Inlet	7.1	276	95	156	
				Outlet	7.0	132	28	58	610
7	MES Kapurthala	1.0 MLD	6/5/2020	Outlet	7.0	155	20	60	405

Annexure E - List of Industries in Catchment Area of Holy Bein

S. N	Name and Address of industry	Type of industry	Water consumption (KLD)	Effluent discharge (KLD)		ETP component	Mode of Disposal of treated wastewater
				Trade (KLD)	Domestic (KLD)		
1.	M/s AB Sugar Ltd.(Sugar Division), Village Randhawa, Dasuha, Distt. Hoshiarpur	Sugar Mill	2590	2800	30	Anaerobic followed by aerobic biological treatment	Onto land for plantation
2.	M/s AB Sugar Ltd.(Distillery Division), Village Randhawa, Dasuha, Distt. Hoshiarpur	Distillery	800	525	Common STP with Sugar Division as mentioned in Sr. No.1	ZLD (MEE)	Not Applicable
3.	Rail Coach Factory, Hussainpur, Kapurthala	Coach Factory	1700	22	1662	ETP based on physico chemical treatment technology	Onto land for plantation

All the above said three industries have installed Online Continuous Effluent Monitoring System(OCEMS).

Annexure F – Timelines for providing Sewerage Treatment Facilities and STPs by Local Bodies

1. Name of the Project: Providing Sewerage & Construction of STP of 4 MLD Capacity at Bhagorahian Road, Sultanpur Lodhi by replacing existing 2.6 MLD STP.			
Brief Scope of Work		Scope : 04 MLD STP	
Sr.No.	Stage	Start Date	Completion Date
1	Land Acquisition	Public Notice issued 30.01.2019	-
2	Preparation of DPR	To be prepared	-
3	Financial Closure	Funds not tied up. Expected Source of funds- Govt. of Punjab (Rs. 8.0 crore)	Done
4	Tendering of the work including allotment	Panchayat Land identified. Price fixation done by District Collector. Approval of Land from concerned Department and registry pending.	31.12.20
5	Commencement of work	01.01.2020	
6	Quarterly milestones during the construction stage	25%	--
7	Completion and commissioning	30.06.2020	30.09.2022

2. Name of the Project: Providing Sewerage & Construction of 01 MLD STP at Chaldhan Road, Sultanpur Lodhi			
Brief Scope of Work		Scope : 01 MLD STP	
Sr.No.	Stage	Start Date	Completion Date
1	Land Acquisition	Land Acquired	-

2	Preparation of DPR	Prepared	Approved
3	Financial Closure	Done	
4	Tendering of the work including allotment	Re-tendering to be done under Smart City	31.12.20
5	Commencement of work	01.01.21	-
6	Quarterly milestones during the construction stage	25%	-
7	Completion and commissioning	30.06.22	30.09.22
3. Name of the Project: Special repair / up-gradation of Existing STP of 25 MLD Capacity of Kapurthala			
Brief Scope of Work		Scope : 01 MLD STP	
Sr.No.	Stage	Start Date	Completion Date
1	Land Acquisition	Land Available	-
2	Preparation of DPR	Prepared	-
3	Financial Closure	Funds to be provided by MC, Kapurthala (Rs. 1.70 crore)	
4	Tendering of the work including allotment	Completed	-
5	Commencement of work	-	Work started
6	Quarterly milestones during the construction stage	-	-
7	Completion and commissioning	-	30.06.2020

4. Name of the Project: Providing Sewerage and Construction of 4 MLD STP at Bholath Road Kartarpur			
Brief Scope of Work		Scope : 25 MLD STP	
Sr.No.	Stage	Start Date	Completion Date
1	Land Acquisition	MC Land Identified	M.C Land Acquired
2	Preparation of DPR	Prepared (Rs. 6.49 crore)	Approved
3	Financial Closure	Funds tied up under HUDCO loan (Rs. 8.53 crore)	
4	Tendering of the work including allotment	30.06.20	30.09.20
5	Commencement of work	01.10.20	
6	Quarterly milestones during the construction stage	-	-
7	Completion and commissioning	31.03.22	30.06.22
5. Name of the Project: Commissioning of STP of Capacity of 3.0 MLD STP for Rawal and Colonies Distt Kapurthala by Jalandhar Development Authority (JDA)			
Brief Scope of Work		Scope : 1.0 MLD STP	
Sr.No.	Stage	Start Date	Completion Date
1	Land Acquisition	Land Acquired	-
2	Preparation of DPR	Approved	
3	Financial Closure	Funds yet to be received from JDA and Rural Development Authority	
4	Tendering of the work including allotment	01.12.20	28.02.21
5	Commencement	01.03.21	-

	of work		
6	Quarterly milestones during the construction stage	-	-
7	Completion and commissioning	31.03.22	30.06.22

Annexure G - Timelines for Setting up of treatment facilities for sewage / sullage in Rural areas

The Phase wise timelines are given as under:

Phase – I			
Brief Scope of Work		Treatment facilities for 5 villages with total discharge as 1.24 MLD	
Sr.No	Stage	Start Date	Completion Date
1	Preparation of DPR	01.03.2019	30.06.2019
2	Financial Closure	01.07.2019	31.08.2019
3	Tendering of the work including allotment	01.09.2019	31.10.2019
4	Commencement of work	1.11.2019	31.05.2020
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.06.2020	31.12.2020
Phase – II			
Brief Scope of Work		Treatment facilities for 15 villages with total discharge as 6.68 MLD	
1	Preparation of DPR	01.03.2020	30.06.2020
2	Financial Closure	01.07.2020	31.08.2020
3	Tendering of the work including allotment	01.09.2020	31.10.2020
4	Commencement of work	1.11.2020	31.05.2021
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.06.2021	31.12.2021
Phase –III			
Brief Scope of Work		Treatment facilities for 10 villages with total discharge as 9.31 MLD	
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	01.03.2021	30.06.2021
2	Financial Closure	01.07.2021	31.08.2021
3	Tendering of the work including allotment	01.09.2021	31.10.2021
4	Commencement of work	1.11.2021	31.05.2022
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.06.2022	31.12.2022

Annexure H- Details of the commissioned Irrigation Projects

STP no.	Name of Town	Capacity of STP (MLD)	Technology of STP	Remarks
1	Dasuya	4	WSP	-
2	Begowal	2.5	SBR	Extension of project underway, Funds available with Deptt.
3	Bholath	4	WSP	-
4	Kapurthala	25	UASB	Extension of Pipeline underway, Funds available with Deptt.
5	Sultanpur Lodhi	2.6	WSP	Extension of project underway, Funds available with Deptt.

Annexure I- Timelines for Irrigation Schemes for reuse of Treated Water for existing/New STPs to be set up

Sr. No.	District	Location of STP/ Town	Agency	Completion date of STP	Cap. (MLD)	Approx. Command Area (ha)	Approx. Funds Required (Rs in Lakhs)	Timeline**
1	Hoshiarpur	Tanda	PWSSB	Existing STP	4	136	180	31.05.2022
2	Kapurthala	SultanpurLodhi	PWSSB	30.09.22	4	136	180	31.05.2024
3	Kapurthala	SultanpurLodhi	PWSSB	30.09.22	1	34	45	31.05.2024
4	Jalandhar	Kartarpur	PWSSB	30.06.22	4	136	180	28.02.2024
5	Kapurthala	Rawal & Colonies	PWSSB	30.06.2022	3	111	135	28.02.2024
6	Jalandahr	Kapurthala	MES	30.09.19	1	34	45	30.06.2022

Annexure J - Timelines for installation of Online Continuous Effluent Monitoring System (OCEMS)

PWSSB for the STPs already in operation in the towns namely Dasuya, Tanda, Begowal, Bholath, Kapurthala and Sultanpur Lodhi.			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure	31.03.2020	
2	Tendering of the work including allotment	31.03.2020	
3	Commencement of the work	01.04.2020	30.06.2020
4	Completion and commissioning	01.07.2020	31.07.2020
PWSSB for the STPs proposed to be installed in Kartarpur (4.0 MLD)			
Name of the Project		All Proposed STPs where maintenance shall be with PWSSB	
1	Financial Closure	Funds tied up	
2	Tendering of the work including allotment	Allotment in process	
3	Commencement of the work		01.10.2020
4	Completion and commissioning		30.06.2022
PWSSB for the STPs proposed to be installed in Sultanpur Lodhi (1.0 MLD and 4.0 MLD),			
Name of the Project		All Proposed STPs where maintenance shall be with PWSSB	
1	Financial Closure	01.10.20	30.06.22 (Closure of Capital Works)
2	Tendering of the work including allotment	01.10.20	31.12.20

3	Commencement of the work	01.01.21	31.03.22
4	Completion and commissioning	31.03.22	30.09.22

MES for the STP (1 MLD) already in operation in the town of GE Kapurthala.			
Name of the Project		All Existing STPs where maintenance is with MES	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure	7.1.2019	31.3.2019
2	Tendering of the work including allotment	1.4.2019	30.6.2019
3	Commencement of the work	1.7.2019	30.9.2019
4	Completion and commissioning	1.10.2019	31.07.2020
Jalandhar Development Authority for STP of 3.0 MLD for Rawal and Colonies Distt Kapurthala.			
Name of the Project		STP of 3.0 MLD capacity for Rawal and Colonies by JDA	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure	31.03.2020	30.06.2020
2	Tendering of the work including allotment	01.07.2020	30.07.2020
3	Commencement of the work	01.08.2020	31.08.2020
4	Completion and commissioning	01.09.2020	31.12.2021

Annexure K - Timeline for installation of CCTV cameras for the STPs already in operation

PWSSB for the STPs already in operation in the towns namely Dasuya, Tanda, Begowal, Bholath, Kapurthala and Sultanpur Lodhi.			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
Sr.No	Stage	Start Date	Completion Date
1	Financial Closure	Already Done	
2	Tendering of the work including allotment	Tending Done	
3	Commencement of the work		
4	Completion and commissioning	-	30.09.2020
PWSSB for the STPs proposed to be installed in Kartarpur (4.0 MLD)			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
1	Financial Closure	Funds tied up	
2	Tendering of the work including allotment	Allotment in process	
3	Commencement of the work		01.10.2020
4	Completion and commissioning		30.06.2022
PWSSB for the STPs proposed to be installed in Sultanpur Lodhi (1.0 MLD and 4.0 MLD).			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
1	Financial Closure	01.10.20	30.06.22 (Closure of Capital works)
2	Tendering of the work including allotment	01.10.20	31.12.20
3	Commencement of the work	01.01.21	31.03.22
4	Completion and commissioning	31.03.22	30.09.22

MES for the STP (1 MLD) already in operation in the towns namely GE Kapurthala			
Name of the Project		All Existing STPs where maintenance is with MES	
1	Financial Closure	7.1.2019	31.3.2019
2	Tendering of the work including allotment	1.4.2019	30.6.2019
3	Commencement of the work	1.7.2019	30.9.2019
4	Completion and commissioning	1.10.2019	31.07.2020
Jalandhar Development Authority for proposed STP of 3.0 MLD for Rawal and Colonies Distt Kapurthala.			
Name of the Project		STP of 3.0 MLD capacity for Rawal and Colonies by JDA	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure	31.03.2020	30.06.2020
2	Tendering of the work including allotment	01.07.2020	30.07.2020
3	Commencement of the work	01.08.2020	31.08.2020
4	Completion and commissioning	01.09.2020	30.09.2020

Annexure L- Detailed Map of Holy Bein along with Major drains

