

Action Plan for Clean River Sutlej



31st January 2019

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

INDEX

Chapter 1 - Introduction	6
1.1 Punjab – Land of Rivers	6
1.2 Rapid Urbanization and Industrialization – Main cause of River Pollution	6
1.3 About River Sutlej	6
1.4 State’s efforts to control pollution in River Sutlej	7
1.5 Directions issued by NGT	8
Chapter 2- Vision, Mission and Strategy	9
2.1 Overarching Vision of the State - Mission Tandarust Punjab	9
2.2 Vision for Clean River Sutlej	9
2.3 Mission Clean River Sutlej	9
2.4 Strategy for Clean River Sutlej	9
2.5 Identification of the Stakeholders and their roles.....	9
2.6 Nodal Department	12
2.7 Integration of Departmental plans	12
2.8 Monitoring and Governance.....	12
Chapter 3 –Status and Trends of Water Quality in River Sutlej	13
3.1 Monitoring Locations for Water Quality	13
3.2 CPCB’s norms for designated best use of water bodies.....	13
3.3 Current Status of Quality of Water in River Sutlej	14
3.4 Status of Groud Water in the catchment area of Sutlej.....	14
Chapter 4- Sources of Water Pollution in River Sutlej.....	17
4.1 Major Drains.....	17
4.2 Major Sources of Pollution	17
4.3 Sewage/ sullage generated from Urban Areas	17
4.4 Sewage/ sullage generated from Rural Areas.....	18
4.5 Industrial Sources	19
4.6 Various Outlets discharging into Buddha Nallah.....	20
4.7 Discharge from dairy complexes.....	22
Chapter 5- Other Sources of Pollution and Their Management.....	23
5.1 Bio Medical Waste	23
5.2 Hazardous Waste	23
5.3 E-Waste.....	24
5.4 Solid Waste.....	24

Chapter 6- Utilization of Treated Wastewater	26
6.1 The State Treated Waste Utilization Policy.....	26
6.2 Utilization of treated wastewater in the catchment area of Sutlej River	26
6.3 Utilization of treated waste water of Ludhiana City through Buddha Nallah	26
Chapter 7– Various measures for control of water pollution & timelines.....	28
7.1 Various Measures	28
7.2 Setting up of STPs by ULBs in various cities	29
7.3 Setting up of STP by PSIEC for Focal Point, Jalandhar.....	29
7.4 Measures to stop direct discharge from Various Outlets into Buddha Nallah	29
7.5 Installation of CETPs for dyeing industries located in Ludhiana	32
7.6 Upgradation of ETPs of large units.....	32
7.7 Scattered small/ medium scale dyeing units in non-designated areas.....	32
7.8 Scattered small/ medium scale dyeing units in designated areas.....	32
7.9 Installation of CETP for electroplating units in Jalandhar area	32
7.10 Upgradation of 5 MLD CETP of Tanneries, Leather Complex, Jalandhar	33
7.11 Setting up of biogas plants and ETPs for Dairy Units.....	33
7.12 Modernization of existing slaughter house and Carcass plant at Ludhiana	33
7.13 Setting up of treatment facilities for sewage/sullage in Rural areas.....	34
7.14 Setting up of Reuse of treated wastewater	34
7.15 Installation of online continuous monitoring system & CCTVs for STPs	34
7.16 Installing online continuous monitoring system by Industries.....	34
7.17 Timelines for stopping disposal of solid waste in Buddha Nallah	34
7.18 Measures related to operation and maintenance (O&M)	35
7.19 Release of fresh water in Buddha Nallah.....	35
Chapter 8 – Monitoring Requirements and Formats	36
8.1 Key components of monitoring	36
8.2 Monitoring of progress of setting up of new/ upgradation STPs/CETPs/ETPs	36
8.3 Monitoring of operations and management of STPs/CETPs	36
8.4 Monitoring of ETP’s and Industrial Effluents	36
8.5 Monitoring of Quality of Water of River Sutlej	36
8.6 Monitoring of adverse impact on health of the people in surrounding areas.....	37
8.7 Monitoring of Awareness campaign	37
8.8 Monitoring of characteristics of sludge of STPs	37
8.9 Monitoring of release of fresh water in Buddha Nallah	37

8.10	Monitoring of solid waste disposal in Buddha Nallah	37
Chapter 9–Governance and Supervision		38
9.1	Three Tier Monitoring	38
9.2	District Level Special Task Force (DLSTF)	38
9.3	River Rejuvenation Committee	39
9.4	State Level Task Force	39
9.5	Monitoring Committee by NGT.....	39
Chapter 10-Risk Mitigation Plan		40
10.1	Identification of Major Risks in the Action Plan.....	40
10.2	Mitigation Plan for identified Risks	40
10.3	Accuracy and completeness of Baseline Data	40
10.4	Accuracy and completeness of Project timelines	40
10.5	Discharge from unapproved habitation areas	40
10.6	Financial closure and timely releases of funds.....	41
10.7	Tracking the Progress and program management	41
10.8	Resolution of Administrative and Technical Issues	41
10.9	STPs under one Department.....	41
10.10	Mixing of industrial effluent with domestic wastewater.....	42
Annexure A – Analysisresults of Surface water monitoring under NWMP forDec, 2018.....		43
Annexure B – Dataof surface water monitoring under NWMP (Average values)		45
Annexure C – Listof30 Major drains directly discharging into River Sutlej		47
Annexure D – Subdrains leading to Main drains directly discharging into River Sutlej		50
Annexure E – List of urban and rural areas discharging directly into river Sutlej.....		58
Annexure F – Listof urban/ rural areas discharging indirectly into River Sutlej		59
Annexure G - Total Towns discharging directly / indirectly in River Sutlej		60
Annexure H-- List of local bodies, which are without sewage conveyance system		64
Annexure I – HCFoperating in the catchment area of River Sutlej		65
Annexure J – Statusof CBWTFs Facility wise details of area catered by the CBMWTF's		66
Annexure K – Statusof hazardous waste generated as on 31.3.2018.....		67
Annexure L – Listof schemes for utilization of treated wastewater		68
Annexure M – Timelinesfor setting up of treatment facilities by Local Bodies.....		70
Annexure N - Timelines for installation of STP for Focal Point, Jalandhar		82
Annexure-N1- Timelines for installation of CETPs of Dyeing units.....		83
Annexure O –Upgradationof 5 MLD CETP of Tanneries, Leather Complex, Jalandhar.....		85

Annexure P – Timelines for ETP for Dairy Complex, Ludhiana	86
Annexure Q – Timelines for modernization of slaughter house	87
Annexure R – Timelinesfor setting up of treatment facilities in Rural areas	88
Annexure S – Timelinesfor providing irrigation schemes to utilize the treated sewage.....	89
Annexure T – (1) Installation of online continuous effluent monitoring system on STPs	93
AnnexureT – (2) Installation of CCTV cameras for the STPs already in operation	95
Annexure-U Timelines for installation of online monitoring system for industries.....	98
AnnexureV–Monitoringof Progress of projects for setting up of new/up graded facilities.....	99
AnnexureW–Performafor operational record of the STP/ CETP	100
Annexure W– (1)Performa for keeping reocord of analaysis result of STP/ CETP.....	101
Annexure X–Proformaregarding visit of industries located in catchmen area.....	102
AnnexureY -Proforma for monitoring of water quality of River Sutlej.....	103
AnnexureZ – Proformafor submission of report regarding Health Check Camps.....	104
Annexure Z – (1)Proforma for submission of report regarding awareness programme.....	105

Chapter 1 - Introduction

1.1 Punjab – Land of Rivers

- 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, lie 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.

1.2 Rapid Urbanization and Industrialization – Main cause of River Pollution

- 1.2.1 The rapid urbanization and industrialization during the last few decades have adversely affected 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 river line system 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 flowing into the natural drains and finally becoming a part of river waters.
- 1.2.2 Therefore, the quality of water flowing in the water bodies has deteriorated as these water lack sufficient assimilation capacity for self purification. This has been not only due to increase in the quantum of discharge of untreated sewage/ sullage, but, also due to decrease in the quantum of water in the water bodies owing to construction of dams & regulatory headworks on the upstream side.

1.3 About River Sutlej

- 1.3.1 The River Sutlej enters India near Mansarover and flows North Westwards. It crosses great Himalayan ranges on its way from the Shipkipass. It flows upto Gobind Sagar Lake over which Bhakra dam is constructed. About 14 Kms. downstream of Bhakra dam, Nangal head-works are constructed at Nangal. From here onwards, the river takes southern direction. After flowing for another about 50 kms, it enters the plains near Ropar.
- 1.3.2 At Ropar, there is a Head-Works for canal system to provide irrigation to large parts of the state. The gradient in the plains is very gentle. The river flows slowly downstream head-works due to broad bed width and meager flow, its major part having been diverted to the irrigation canals.

- 1.3.3 It finally reaches Harike where it meets river Beas. During the monsoon period, the areas on both sides of river are prone to floods. The river leaves Punjab plains near Ferozepur and enters Pakistan.
- 1.3.4 The total length of river Sutlej in the state of Punjab is approximately 440 km. Average discharge of river Sutlej in the state of Punjab as measured at Ropar is approximately 500 m³/ sec. The total catchment area of river Sutlej in the state of Punjab is approximately 20303 Sq. km.

1.4 State's efforts to control pollution in River Sutlej

- 1.4.1 Keeping in view deterioration in the water quality of River Sutlej, the Government of Punjab (GOP) initiated action in 2008 to identify the sources of its pollution in coordination with Punjab Pollution Control Board (PPCB). Meetings have regularly been held under the Chairmanship of Chief Minister, Punjab from the year, 2008 onward.
- 1.4.2 The State Government is serious to control the pollution in river Sutlej and the concerned departments have already identified the sources of wastewater falling into river Sutlej at various towns and cities located in the catchment area of the river. As of now, out of 65 towns, which are discharging their wastewater into river Sutlej, a total of 101 STPs need to be installed out of which 59 STPs have already been installed, 8 are under installation and remaining 34 are under various stages of planning for establishment.
- 1.4.3 Ludhiana City falls within the catchment area of River Sutlej and is contributing significantly to the water pollution of River Sutlej through Buddha Nallah, which passes through the heart of Ludhiana city. Ludhiana city was declared as critically polluted areas by the Ministry of Environment & Forests vide office memorandum J-11013/5/2010-IA II (I) dated 13/1/2010, thereby imposing restrictions on setting up of new / expansion of existing projects attracting the provisions of EIA notification, 2006.
- 1.4.4 Punjab Pollution Control Board took it as a challenge as well as an opportunity, in order to achieve significant improvement in environmental quality and pave the road for sustainable development in the area. A comprehensive remedial environmental action plan titled as "Ludhiana Action Plan regarding abatement of Environmental Pollution in Critical Polluted Areas of Ludhiana" was prepared in consultation with all the stakeholders, including Industrial Associations. The same has been regularly monitored at the State and District level.
- 1.4.5 Cleaning of Buddha Nallah has been listed amongst the projects of key concerns in the State of Punjab being monitored at the level of Chief Secretary.
- 1.4.6 The Govt. of Punjab in the Department of Local Government vide notification no. 14/89/2018-3LG1/2065 dated 26.10.2018 has constituted a task force under the chairmanship of Satguru Uday Singh Ji of Namdhari Sampardhai for execution of the programme/ interventions for tackling pollution in Buddha Nallah approved by Government.

1.5 Directions issued by NGT

1.5.1 National Green Tribunal in the matter of original application no. 101/2014 titled as Sobha Singh & Ors. Vs State of Punjab & Ors vide orders dated 24-07-2018 has directed the Central Pollution Control Board to constitute a monitoring committee with the involvement of Sh. Balbir Singh Seechewal. CPCB has accordingly vide office order dated 06-08-2018 constituted a monitoring committee comprising following members:

- (i) Shri Balbir Singh Seechewal
- (ii) Representative of Rajasthan State Pollution Control Board
- (iii) Representative of Punjab Pollution Control Board
- (iv) One Engineer & One Scientist (Central Pollution Control Board)
- (v) Representative of Urban Development, State of Punjab
- (vi) Shri J.Chandra Babu, Sc'D', WQM-1, Central Pollution Control Board

1.5.2 NGT vide another order dated 20.09.18 passed in OA no. 673/2018 titled as news item published in "The Hindu" authored by Shri. Jacob Kosuhy titled "More river stretches are now critically polluted: CPCB" has directed to prepare Action Plans within two months 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) within six months from the date of finalization of the action plans.

1.5.3 There are 4 polluted river stretches falling under the jurisdiction of State of Punjab as per the details given in the judgement:

- (i) Ghaggar (Sardulgarh to Mubarkpur)
- (ii) Sutlej (Roopnagar to Harike bridge)
- (iii) Kali Bein (SultanpurLodhi to Confluence point to Beas)
- (iv) Beas (along Mukerian)

1.5.4 NGT has directed the State Government that the action plans be prepared by four-member Committee comprising Director, Environment; Director, Urban Development; Director Industries; Member Secretary, State Pollution Control Board of concerned State. This Committee will also be the Monitoring Committee for execution of the action plan. The Committee may be called "River Rejuvenation Committee" (RRC). The RRC will function under the overall supervision and coordination of Principal Secretary, Environment. The Chief Secretaries of the State and Administrators / Advisors to Administrators of the Union Territories will be personally accountable for failure to formulate action plan, as directed.

Chapter 2- Vision, Mission and Strategy

2.1 Overarching Vision of the State - Mission Tandarust Punjab

The Government of Punjab has launched Mission Tandarust 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 River Sutlej

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

2.3 Mission Clean River Sutlej

To prepare and implement a comprehensive action plan to clean River Sutlej:

- (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 River Sutlej

The strategy for clean River Sutlej 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 River Sutlej 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 and 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 River Sutlej & ground water
- (v). Monitoring of discharge from Industries including ETPs and CETPs
- (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

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

Operation and Maintenance

- (viii). Arranging funds for operation and maintenance of STPs to ensuring regular operation and maintenance of STPs in a professional manner
- (ix). Providing proper in-house laboratory facilities at each STP for maintaining record of characteristics of analysis of untreated as well as treated waste water
- (x). 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

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

2.5.3 Department of Housing and Urban Development

The Department and all the Development authorities under its control are responsible for various Urban Estates developed by them. In addition, the Government has entrusted

construction and subsequent operation and maintenance of Sewerage network and Sewage Treatment Plants in some of the cities to various Urban Development Authorities. In all cases, where the Urban Development Authorities are discharging the functions, they shall have all the responsibilities listed out in clause 2.5.3 for Department of Local Government.

2.5.4 Department of Industries and Commerce

Department of Industries and Commerce through Punjab Small Industries & Export Corporation is responsible for management of Industrial Focal Points set up by it or transferred to it. PSIEC shall have all the responsibilities listed out in clause 2.5.3 for Department of Local Government in respect of Industrial Focal points.

2.5.5 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

2.5.6 Department of Water Supply and Sanitation

The Department of Water Supply and Sanitation along with Department of Rural Development and Panchayat will be responsible for treatment and sanitation facilities in rural areas. It has also been given some of the works in urban areas. It will accordingly discharge relevant responsibilities for rural and urban areas in respects of projects, which may be assigned to the Department.

2.5.7 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

2.5.8 Department of Health and Family Welfare

The Department of Health and Family Welfare has the following responsibilities:

- (i). Checking of health indices of the in-habitants & maintaining database
- (ii). Holding awareness camps in the catchment area of River Sutlej to make the public aware regarding water borne diseases

2.5.9 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

2.5.10 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 prepare a comprehensive plan and will coordinate its execution by tracking the progress through a centralized IT platform.

2.8 Monitoring and Governance

- (i). There will be rigorous monitoring of implementation of the comprehensive 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
 - (e). Monitoring of awareness campaign
- (ii). Setting up of IT platform for tracking progress and analysis
- (iii). The monitoring will be done at the District level, State Level.

Chapter 3 –Status and Trends of Water Quality in River Sutlej

3.1 Monitoring Locations for Water Quality

The water quality of river Sutlej is being monitored at 16 locations, starting from upstream of Nangal (where it enters State of Punjab) upto Hussainiwala in Distt. Ferozepur on monthly basis:

- (i). River Sutlej at U/S Nangal
- (ii). River Sutlej at D/S NFL
- (iii). River Sutej at 100m D/s PACL Nangal
- (iv). River Sutlej atD/s Nangal
- (v). River Sutlej at Kiratpur Sahib
- (vi). Ropar Head-Works
- (vii). River Sutlej D/S of Rishab- Paper Mills
- (viii). River Sutlej U/S Buddha Nallah
- (ix). River Sutlej at 100 mts D/s after Budha Nallah confluence, Ludhiana
- (x). River Sutlej at Boat Bridge, Dharamkot Nakodar Road
- (xi). RiverSutlej at D/s East Bein
- (xii). RiverSutlej at Harike
- (xiii). Harike Lake D/S from canal
- (xiv). D/S Harike lake
- (xv). U/S Hussainiwala H/W Ferozepur
- (xvi). D/S Hussainiwala H/W Ferozepur

3.2 CPCB’s norms for designated best use of water bodies

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.N.	Constituent Parameters	Designated Best Use Class				
		A	B	C	D	E
1.	Dissolved oxygen, mg/l, Min	6	5	4	4	-
2.	Biochemical Oxygen Demand, mg/l, Max	2	3	3	-	-
3.	Total coliform Organisms MPN/100 ml, Max	50	500	5000	-	-

4.	pH value	6.5-8.5	6.5-8.5	6-9	6.5-8.5	6-8.5
5.	Free ammonia (As N) mg/l, Max	-	-	-	1.2	-
6.	Electrical conductivity $\mu\text{s/cm}$ max.	-	-	-	-	2250
7.	Sodium absorption ratio, Max.	-	-	-	-	2.6
8.	Boron, mg/l, Max	-	-	-	-	2

Note:

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

Class B: Organized outdoor bathing

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 Current Status of Quality of Water in River Sutlej

3.3.1 The representative quality of water of river Sutlej at 16 locations for the month of December, 2018 is given in **Annexure-A**. The quality of water at few locations has degraded which may pose threat of water borne diseases to the health of people residing in the catchment area of river Sutlej. The river Sutlej being an unlined water body and the polluted water flowing in it might have deteriorated the groundwater quality in the catchment area.

3.3.2 The details of analysis results of surface water monitoring under National Water Monitoring Program (NWMP) for the year 2015-16, 2016-17 & 2017-18 are given in **Annexure-B**

3.3.3 It is evident that

- (i). Class-B quality of water enters the State, which becomes Class-C while crossing Nangal-Ropar Belt and District Hoshiarpur.
- (ii). It remains Class-C before point of confluence of Budha Nallah with river Sutlej.
- (iii). It becomes Class-E after the confluence of the Budha Nallah with River Sutlej.
- (iv). After reaching at Dharamkot Nakodar Road, Jalandhar (which is upstream of point of confluence of East Bein with River Sutlej) its quality becomes Class-D.
- (v). At the downstream point of confluence East Bein with River Sutlej, its quality becomes again Class-E.

3.4 Status of Groud Water in the catchment area of Sutlej

The Central Ground Water Board monitors the status of ground water in the catchment area of river Sutlej and the current status of ground water is as follows:

(i). Ground Water Quality

During the month of May/ 2017, ground water samples were collected from the structures spread uniformly over the area. The water samples were analyzed for major cations (Ca, Mg, Na, K) and anions (CO_3 , HCO_3 , Cl, NO_3 , SO_4) in addition to pH, EC, F, SiO_2 , PO_4 and TH as CaCO_3 and heavy metals such as Cd, Cu, Mn, Pb, Zn in the Regional Chemical Laboratory by following 'Standard Analytical Procedure' as given in APHA 2017.

(ii). Composition of Water

Chemical analysis shows that the ground water is slightly to moderately alkaline in nature. The pH values range from 7.01 at Bajakhana in Faridkot district to 8.54 at Machiwara in Ludhiana district. Hardness reported in terms of CaCO_3 ranges from 52 mg/l at Darapur in Moga district to 1446 mg/l at Sadiqe in Faridkot district. EC value of ground water in the area varies from 200 $\mu\text{S}/\text{cm}$ at Nawapind in Pathankot district to 8806 $\mu\text{S}/\text{cm}$ at Sadiqe in Faridkot district.

Chloride content of ground water in the area varies from 7 mg/l at Kot ishe Kha in Moga district to 1341 mg/l at Arianwala in Faridkot district. Chloride concentration above 400 mg/l gives salty taste to water, Nitrate in ground water above 5.0 mg/l reflects contamination at same stage of its percolation and circulation. Nitrate in water samples varies from BDL to 410 mg/l at Arianwala in Faridkot district. Whereas the fluoride concentration in ground water ranges from BDL to 5.34 mg/l at Dehlon in Ludhiana district. Fluoride concentration upto 1.0 mg/l in drinking water is desirable, upto 1.5 mg/l is permitted and above 1.5 mg/l is injurious.

(iii). Heavy metals

Presence of heavy metals in ground water is also mentioned by CGWB and studies were carried out during the year 2017. Some elements such as Fe, Mn, Zn, Cu, Se, Sn, Mo are essential in trace amounts for growth and development of living organisms as well as plants. Nevertheless, these are hazardous in large amounts. The details are as under:-

Cadmium in shallow ground water varies from 0.0008 mg/l at Sidhwan Bet in Ludhiana district to 0.089 mg/l at Sadiqe in Faridkot district. Copper in shallow ground water has been found to be within permissible limits of 1.5 mg/l (as per BIS limit).

(a). Manganese in shallow ground water ranges from 0.0014 mg/l at Chak Dera in Ropar district to 2.391 mg/l at Bamial in Pathankot district. Concentration of Lead in shallow ground water ranges from 0.0034 mg/l at Anandpur Sahib in Ropar district to 0.1458 mg/l at Balachour in Nawanshehar district.

- (b). Zinc in shallow ground water ranges from 0.0008 mg/l at Dalsingwala in Faridkot district to 6.915 mg/l at Udhampur in Jalandhar district. All locations show that Zinc has been observed within permissible limit of 15 mg/l (as per BIS limit). Arsenic in shallow ground water at all location has been observed within permissible limits.

Chapter 4- Sources of Water Pollution in River Sutlej

4.1 Major Drains

There are 30 major drains/ choes/ nallahs, which are directly discharging into the river Sutlej. The details of these drains/ choes/ nallahs are given in **Annexure-C**. Apart from this, there are 84 sub drains, which are meeting with above 30 major drains. The details of these sub drains are given in the **Annexure-D**. It is also mentioned here that wastewater of 11 Local Bodies/ Villages is directly discharged into river Sutlej. A list of the same is given in **Annexure-E**. The urban and rural habitations, which are discharging their wastewater indirectly in the River Sutlej through various drains / nallahs / creeks are given in **Annexure-F (available on PPCB website www.ppcb.gov.in)**.

4.2 Major Sources of Pollution

There are following major sources polluting the river Sutlej:

- (i). Sewage/ sullage generated from Urban Areas
- (ii). Sewage/ sullage generated from Rural Areas
- (iii). Industrial sources
- (iv). Discharge of wastewater from dairies
- (v). Waste water from carcass handling unit

4.3 Sewage/ sullage generated from Urban Areas

4.3.1 There are 54 local bodies in the catchment area of River Sutlej, which are discharging their effluent directly or indirectly into river Sutlej (**Annexure-G**). 26 local bodies have installed STPs of adequate capacity while 3 local bodies have installed STPs meeting partial requirement and remaining 25 local bodies are yet to install STPs. Out of 25 local bodies, which have not installed STPs, 9 local bodies are without sewage conveyance system (**Annexure-H**).

4.3.2 It is pertinent to mention that as per estimation of Municipal Corporation Ludhiana, present domestic sewage generation is about 477MLD and sewage generation by year 2033 will be 525 MLD. The treatment capacity of domestic sewerage at present is 466 MLD. The STPs are discharging sewage into Budda Nalla/Sutlej river and their status is given in table below:

Name of STP	Technology	Water consumed (MLD) (Based on tubewells operated by MCL & Private tubewells)	Domestic Sewage Generation in MLD 2018 (85% of water consumed)	Addition Discharge of villages adjacent to the periphery of city	Total	Domestic Sewage Generation in MLD 2033 (10% increase from 2018 levels)	STP Installed Capacity (in MLD)	Gap in sewage Treatment for 2033 (Domestic of city) in MLD	Proposed Action
Baloke	UASB	234	219	50	269	296	152	39	50 MLD Proposed
Baloke	SBR						105		
Bhattian	UASB	168	143	5	148	163	111	1.56	Will be reduced

Bhattian	SBR						50		after implementation of volumetric metering policy
Jamalpur	UASB	59	55	5	60	66	48	18	50 MLD Passed
Total		461	417		477	525	466	59	

4.3.3 Further discharge of BuddaNallah was measured by Municipal Corporation, Ludhiana along with Drainage department over the duration of 72 hours with details as under:

Name of STP/ Catchment Area	Average (72 hours) discharge of BuddaNalla (in MLD)	Current Sewage Discharge (in MLD)	Excess Unaccounted Sewage Current in BuddaNallah
Baloke	317	269	48
Baloke			
Bhattian	279	148	131
Bhattian			
Jamalpur	168	60	108
Total	764	477	287

4.3.4 Out of 287 MLD, 90 MLD will be tapped by CETPs which are under construction and 15 MLD will be catered by ETPs of dairies. So current net balance comes out to be (287-(90+15))i.e. 182 MLD.

4.3.5 The hourly variations of COD levels at inlet points of STP at Bhattian and BuddaNallah at Baranhara bridge were got analyzed by M.C. Ludhiana and it was found that COD levels vary from 944 to 1440 mg /l at Baranhara and from 352 to 736 mg/l at Bhattian STP. Similarly, Grab Samples taken from Jamalpur STP inlet and Bhattian STP inlet by Punjab Biotechnology Incubator indicate that there are lot of industries, which have not been traced and are discharging untreated effluent directly into Municipal sewers. This not only overloads the capacity of Municipal sewers but industrial effluent also damages the equipment at these STPs.

4.3.6 The safe disposal of treated effluent of large scale/ scattered industries within the City has not been planned, as effluent of the same is being discharged into municipal sewer, which results into overloading of Domestic sewers/ STPs. The excess flow in BuddaNallah is due to industrial effluent being directly discharged by the industries and all such large scale/scattered industries should be tapped while establishing their CETPs.

4.3.7 This issue needs to be resolved jointly with Punjab Pollution Control Board and Municipal Corporation, Ludhiana.

4.4 Sewage/ sullage generated from Rural Areas

There are 336 villages, which are discharging their wastewater either directly or indirectly through various drains / nallahs/ creeks. The details of these villages are already given in

Annexure-E & F. In order to install necessary treatment facilities to treat the wastewater of rural areas, the villages will be prioritized into following phases:

- (i). **Phase 1:** Villages having discharge ≥ 200 KLD –137
- (ii). **Phase 2:** Villages having discharge between 100 KLD and 200 KLD – 85
- (iii). **Phase 3:** Villages having discharge ≤ 100 KLD – 114

4.5 Industrial Sources

4.5.1 There are 2423 industries in the catchment area of River Sutlej, which are discharging their trade effluent either directly or indirectly into River Sutlej. Category and area wise detail of these units are as under:

Sr. No.	Industrial sector	No. of industries					
		Ludhiana	Jalandhar	Phagwara	Nawanshahr	Ropar	Moga
1.	Dyeing	228	3	1	0	0	0
2.	Pulp & Paper	2	0	0	0	0	0
3.	Thermal	0	0	0	0	1	0
4.	Chlor Alkali	0	0	0	0	1	0
5.	Cement	0	0	0	0	1	0
6.	Fertilizer	0	0	0	0	1	0
7.	Sugar Mills	0	0	1	1	0	0
8.	Electroplating / surface treatment	1649	254	0	0	0	0
9.	Tannery	0	87	0	0	0	0
10.	Others (washing of garments / service station / food processing/	149	40	3	0	0	1

	milk plant etc.						
TOTAL		2028	384	5	1	4	1
Grand Total		2423					

4.5.2 Out of 2423 industries, 433 industries have installed their captive ETPs.

4.5.3 The remaining 1990 industries, mentioned at Sr. No. 8 & 9 of the table given herein above have joined to the CETP, the details of which are as under:

- (i). Small & Medium scale electroplating industries & pickling units using HCl are supplying their untreated trade effluent to CETP (based on ZLD technology) installed at Focal Point, Ludhiana. The RO permeate and condensate of MEE is supplied by CETP operator to the adjoining dyeing units. The quantity of trade effluent from such industries is about 0.5 MLD. This CETP is also accepting and treating the wastewater generated by electroplating industries situated in the other parts of the State such as Amritsar, Jalandhar & Mohali etc.
- (ii). Small scale wire drawing/pickling industries using Sulphuric Acid (H₂SO₄) are providing their untreated trade effluent/spent acid to re-processing plant installed for these industries at Kohara, Ludhiana. Re-processing plant produces Ferrous Sulphate (Fe₂SO₄) as product & no trade effluent is discharged by the said plant as it is based on ZLD technology. The quantity of trade effluent from such industries is about 0.055 MLD.
- (iii). There are 10 large scale electroplating industries and these units have adopted their own Zero Liquid Discharge Treatment Technology and no effluent from these industries is discharged into sewer leading to Buddha Nallah, which merges with River Sutlej.
- (iv). There are 61 tannery units at Leather Complex, Jalandhar, the wastewater of which is treated in the CETP installed in the Leather Complex. There is a proposal for upgradation of this CETP. Besides, there are 26 bag tanning unit at Phillour, the wastewater of which is treated in CETP installed at Phillour.

4.6 Various Outlets discharging into Buddha Nallah

4.6.1 Buddha Nallah carries pollution caused by untreated industrial effluents and domestic sewage to river Sutlej. The following 16 outlets, which are not connected to any sewage treatment plant / common effluent treatment plant, are discharging their waste water directly into Buddha Nallah (within City limits of Ludhiana) which ultimately joins river Sutlej:

- (i). Multiple outlets of about 10 Dairies near Jaswal Complex, Tajpur Road (Outside MC limit)
- (ii). Final outlet of Jamalpur STP having partially treated discharge of 48 MLD and excess untreated
- (iii). Disposal near Amrit Dharam Kanda Bridge at Tajpur Road having two outlets carrying sewage/ industrial effluent from Focal Point, Sector-32 & 33, Urban Estate Phase-I & II, Chandigarh Road, Ludhiana
- (iv). Disposal of EWS Colony near Geeta Nagar Bridge along Tajpur Road. This outlet has been closed but used during rains.
- (v). Multiple outlets from various Dairies at Tajpur Road between Amrit Dharam Kanda, EWS disposal upto Tibba Road disposal and at Haibowal Dairy Complex
- (vi). Individual disposal points of slum area between EWS disposal and Tibba Road disposal
- (vii). MC Tibba Road Disposal on G.T. Road bye-pass, Ludhiana
- (viii). MC Disposal carrying effluent of Transport Nagar (near Cremation Ground)
- (ix). MC Disposal near Atam Nagar/ Sunder Nagar
- (x). MC Disposal near New Shivpuri (Opp. Shani Mandir)
- (xi). MC Disposal near Chand Cinema, G.T. Road
- (xii). MC Disposal near Chhauni Mohalla and Manna Singh Nagar. This outlet has been closed but being used during rains.
- (xiii). MC Disposal near Upkar Nagar
- (xiv). MC Disposal backside of Life line Hospital (DMC Culvert)
- (xv). MC disposal at the backside of Lord Mahavira Ayurvedic Hospital
- (xvi). MC Disposal at the backside of Ram Sharnam Satsang Bhawan. This outlet has been closed but being used during the rains.

4.6.2 It is pertinent to note that Municipal Corporation has allowed connection to the industries to discharge their treated effluents into municipal sewer. The quantity and quality of discharge of treated effluents into municipal sewer has been a cause of disagreement between Municipal authorities and Punjab Pollution Control Board.

4.6.3 Various mitigating measures to control discharge from these outlets have been given in Chapter 7.

4.7 Discharge from dairy complexes

There are 2 dairy complexes at Ludhiana and 1 dairy complex at Jalandhar. In addition, there are scattered dairies in both the cities. At present, the untreated wastewater from these sources is discharged indirectly into River Sutlej. There are proposals to setup ETPs to treat the wastewater and proposal to install biogas plant for handling cattle fecal matter.

Chapter 5- Other Sources of Pollution and Their Management

5.1 Bio Medical Waste

- 5.1.1 The bio-medical waste of all the Healthcare Facilities in the State is collected, transported, treated and disposed of by 4 authorized Common Bio-Medical Waste Treatment Facilities (CBWTF) located at Ludhiana, SAS Nagar, Amritsar and Pathankot. The Bio-Medical Waste generation in the State is in the range of 14-15 tons per day (TPD) depending upon patient load. The status of HCFs operating in towns falling in catchment areas of river Sutlej is given in **Annexure I**.
- 5.1.2 The collection vehicles of the CBWTF operators are equipped with Global Positioning System (GPS) with access to Punjab Pollution Control Board (PPCB). The CBWTF operators are using Bar-code based software system for collection of bio-medical waste from Healthcare Facilities since 2012 and the data of collection of bio-medical waste from the healthcare facility is sent online to server within 1-2 minutes and the access of same is available with PPCB. CCTV cameras are also installed in the processing areas of all the 4 CBWTF operators with access to PPCB to monitor the working of the facility.
- 5.1.3 The stack of the incinerator installed in all the 4 CBWTFs have been provided with Online Continuous Emission Monitoring System and the data is transferred online to PPCB and CPCB. This system helps in observing/monitoring the emissions discharged while treatment of bio-medical waste is being done.
- 5.1.4 Since, the Bio-Medical Waste generated in the catchment area of River Sutlej is handled and managed in proper manner through the Common Bio-Medical Waste Treatment Facilities (CBWTF), as such, there is no impact of this waste on the water quality of River Sutlej. Facility wise details of area catered by the CBWTF's is given in **Annexure-J**.

5.2 Hazardous Waste

- 5.2.1 The Government of India has framed Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 for the scientific handling of hazardous waste. The occupier of the facility is to apply for authorization for handling, generation, collection, storage, packaging, transportation, use, treatment, processing, recycling, recovery, pre-processing, co-processing, utilization, offering for sale, transfer or disposal of the waste to the Board. A passbook is issued along-with authorization to the actual user of the hazardous waste.
- 5.2.2 As per the interim order dt. 14-10-2003 of Hon'ble Supreme Court in Writ Petition (Civil) No. 657 of 1995, regarding handling of hazardous waste and development of common treatment, storage and disposal facility, a Common Treatment, Storage and Disposal Facility (CTSDF) at Village Nimbuan, Tehsil Dera Bassi, Distt. SAS Nagar was constructed by M/s Nimbuan Green Field Punjab Limited (NGPL) and commissioned in October, 2007.
- 5.2.3 The facility has been designed for 15 years capacity considering the generation of storable quantity of hazardous waste as 36,000MTA based on the assessment study carried out by

M/s Tetrattech India Limited. The total capacity of the facility is 5,40,000 MT. The capacity to store hazardous waste in the existing CTSDF is sufficient upto year 2030 at the present rate of generation. The vehicles used by the common facility operator for transportation of hazardous waste are equipped with GPS system.

- 5.2.4 The status of hazardous waste generated in the industries in area of river Sutlej as on 31.3.2018 is given in **Annexure-K**.
- 5.2.5 At present no common incinerator has been installed at CTSDF and the same is under planning. Some industries generating incinerable hazardous waste have installed captive incinerator in their premises for disposal of incinerable waste. Ten such captive incinerators are in operation for the disposal of incinerable waste. In addition to the above, the incinerable waste from the remaining industries is received by the operator of CTSDF and is incinerated at the incinerator installed by the CTSDF at its another unit at Kanpur.
- 5.2.6 Since, the Hazardous Waste generated by the industries in the catchment area of River Sutlej is handled and managed in proper manner through the Common Treatment, Storage & Disposal Facility installed at Vill. Nimbuan, Tehsil Dera Bassi, Distt. SAS Nagar, as such, there is no impact of this waste on the water quality of River Sutlej.

5.3 E-Waste

- 5.3.1 Government of India has framed E-Waste (Management & Handling) Rules, 2016 as amended on 22.3.2018. PPCB has granted NOC / 'Consent to Operate' to one dismantling facility, M/s Ramky Enviro Engineers Limited, Vill. Nimbua, Tehsil DeraBassi, Distt. SAS Nagar with capacity to handle 4 TPD of E-waste.
- 5.3.2 PPCB has granted 'Consent to Establish' to two industries i.e. M/s Black Diamond Cements Pvt. Ltd., Tehsil DeraBassi, district SAS Nagar and M/s Spreco Recycling, Tehsil Raikot, District Ludhiana to establish E-Waste recycling facility of capacities 30 TPD and 0.8 TPD respectively. These said industries have yet not commissioned the said facility. Two parties each in Amritsar and Jalandhar, have also been given go ahead by PPCB for setting up of the E-Waste recycling facilities.
- 5.3.3 Although, the channelization of E-Waste has recently been started, disposal of such waste has never been noticed in the River Sutlej.

5.4 Solid Waste

- 5.4.1 The Department of Local Government (DLG) vide notification dated 09.07.2018 has notified the Punjab State Solid Waste Management Policy, 2018. In view of the past experience, it has been decided to adopt both decentralized and centralized solid waste management approach depending upon the profile of the locality.
- 5.4.2 Further, in compliance to the orders of the Hon'ble Punjab and Haryana High Court in CWP No. 7039 of 2010, a Common Action Plan containing 10 points was prepared in 2012 for

viable alternative measures for disposal of garbage till setting up of Solid Waste Management Plants. The Directorate of Local Government is the implementing agency for this Action Plan and PPCB is monitoring the status of compliance. Out of 65 Urban Local Bodies (ULBs), 04 ULBs are complying, 43 ULBs are partially complying with the Common action plan and remaining 18 ULBs are yet to comply with the same.

- 5.4.3 The habitation areas along the banks of Budha Nallah are disposing off their solid waste into Budha Nallah due to improper collection mechanism in place by the Municipal Corporation, Ludhiana in the city. Besides, this solid waste generated by the dairy units is also disposed off in the Budha Nallah. Therefore, disposal of such solid waste in the said nallah is further degrading the quality of its water and has become a major problem for the city.
- 5.4.4 The Ministry of Environment and Forests, GOI has notified Solid Waste Management Rules, 2016. Implementation of these Rules is being monitored by the Board. As per Rule 24 of the Solid Waste Management Rules, 2016, the local body shall submit its annual report to the Board on or before the 30th day of June every year. Further, the Board is required to submit the consolidated annual report to the Central Pollution Control Board and Ministry of Urban Development by the 31st day of July of each year. The same are regularly uploaded on the official website of the Board also.

Chapter 6- Utilization of Treated Wastewater

6.1 The State Treated Waste Utilization Policy

- 6.1.1 The Department of Local Govt. has notified "The State Treated Waste Policy -2017" to promote the recycling and reusing the treated sewage for non-potable application and to make sewage projects economical and environmentally sustainable.
- 6.1.2 The policy envisages to tackle the issues pertaining to the provisions of adequate wastewater collection and treatment facilities, consideration of treated effluent as resource for reuse in irrigation/industrial/other fields and thereby improvement of the socio-economic conditions in the areas to served by the proposed systems.
- 6.1.3 The Department of Soil and Water Conservation, Punjab is executing projects for utilization of treated wastewater for irrigation of various towns/cities across the State by laying network of underground pipelines in agricultural fields.

6.2 Utilization of treated wastewater in the catchment area of Sutlej River

- 6.2.1 The Department of Soil and Water Conservation has already commissioned irrigation projects to utilise the treated wastewater of 16 STPs located in the catchment area of River Sutlej. Two more projects are under progress. The details are given in **Annexure-L**. These projects utilise about 101.5 MLD of treated wastewater about 2509 hectares of agricultural land is being irrigated.
- 6.2.2 From the experience of using STP's treated wastewater for irrigation purposes, the following issues emerge, which need to be addressed:
- (i). In case of STPs based on SBR technology, the discharge of treated wastewater is not continuous and for the gap period of about 45 minutes, the pump through which the treated wastewater is pumped for utilization onto land for irrigation is required to be shutdown, which discourages the farmers to utilize the treated wastewater. Therefore, there is a need to provide a storage tank of sufficient capacity for treated wastewater so that without shutting down the pumping station, the wastewater can be made available to the farmers.
 - (ii). The payment of electricity bill is required to be regulated by fixing the responsibility of the concerned department and funds for this purpose need to be made available with the operating agency.
 - (iii). The farmers need to be educated and made aware about the advantages of use of treated wastewater for irrigation purpose.

6.3 Utilization of treated waste water of Ludhiana City through Buddha Nallah

The Lower Budha Nallah can be revived to use the treated waste water of Ludhiana City carried by Buddha Nallah (presently being discharged into River Sutlej) for irrigation

purposes. The State Level Steering Committee in its meeting held on 30.11.2018 has decided that Department of Water Resources shall prepare a detailed action plan for this purpose in a period of 2 months in consultation with Commissioner, Municipal Corporation, Ludhiana and Punjab Pollution Control Board.

Chapter 7– Various measures for control of water pollution & timelines

7.1 Various Measures

7.1.1 In order to control water pollution in river Sutlej, following measures have been chalked out to stop the flow of untreated waste water or other waste into river directly or indirectly.

- (i). Construction of New STPs in Urban Areas
 - (a). Setting up of STPs by ULBs in various cities
 - (b). Setting up of STP by PSIEC for Focal Point, Jalandhar
 - (c). Setting up of STPs by Military Engineering Service, Jalandhar
 - (d). Closure of various direct sewage outlets in Budha Nallah, Ludhiana

- (ii). Construction of CETPs/ ETPs
 - (a). Installation of CETPs for dyeing industries located in Ludhiana
 - (b). Upgradation of existing ETPs installed by large scale dyeing units in Ludhiana
 - (c). Shifting of small scale scattered dyeing units in Ludhiana
 - (d). Installation of CETP for electroplating units in Jalandhar
 - (e). Upgradation/modification of 5 MLD CETP of Tanneries by Punjab Effluent Treatment Society for Tanneries, Leather Complex, Jalandhar

- (iii). Construction of facilities of biogas plant and ETPs for dairies

- (iv). Construction of Slaughter house and Caracass plant
 - (a). Modernization of existing slaughter house located at Ludhiana
 - (b). Installation of Caracass utilization plant

- (v). Construction of Treatment facilities in village ponds in Rural Areas

- (vi). Setting up of facilities for reuse of treated wastewater

- (vii). Operation and Management of Facilities
 - (a). Setting up of online system for monitoring STPs
 - (b). Setting up online system for monitoring industrial effluents

- (viii). Stopping solid waste/ garbage being thrown into Buddha Nallah

7.1.2 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			
S. no.	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		

7.2 Setting up of STPs by ULBs in various cities

The Department of Local Government will install necessary treatment facilities to treat the wastewater of various towns. The Department of Local Government has 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-M**.

7.3 Setting up of STP by PSIEC for Focal Point, Jalandhar

The PSIEC has proposed to install an STP for the treatment of the sewage generated from the Focal Point, Jalandhar. The timelines for installation of this CETP are given in **Annexure-N**.

7.4 Measures to stop direct discharge from Various Outlets into Buddha Nallah

Following measures are proposed to stop direct discharge from various outlets into Buddha Nallah:

- (i). Multiple outlets of about 10 Dairies near Jaswal Complex, Tajpur Road

This outlet is outside MC Limit. PPCB will take action against the owners.

- (ii). Final outlet of Jamalpur STP having partially treated discharge of 48 MLD and excess untreated

The wastewater reaching at STP installed at Jamalpur, is a mix of domestic and industrial effluent. Hence excess quantity of wastewater reaching at the inlet of this STP is bypassed directly into Buddha Nallah. Moreover, due to mixing of industrial effluent with domestic sewage the performance of the STP is affected. There is a

proposal for rehabilitation of existing 48 MLD STP and setting up of an additional module of 50 MLD capacity at Jamalpur. Further, to take care of industrial effluent of small scale dyeing units, two CETPs of 50 MLD and 40 MLD capacity are under installation. The DPR of additional capacity has been approved and this module is likely to be installed by 31.12.2020.

- (iii). Disposal near Amrit Dharam Kanda Bridge at Tajpur Road having two outlets carrying sewage/ industrial effluent from Focal Point, Sector-32 & 33, Urban Estate Phase-I & II, Chandigarh Road, Ludhiana

The sewer carrying mainly industrial effluent of focal point area mixed with domestic sewage has been connected with storm water sewer near Police Colony Chowk on Chandigarh Road due to inadequate capacity of sewerage system in Jamalpur Catchment area. Thus mixed effluent is discharged into Budha Nallah through storm water sewer. Separate sewerage system is being laid down to enhance the carrying capacity of sewage system in Jamalpur catchment area. In order to take care of industrial effluent of small scale dyeing units, two CETPs of 50 MLD and 40 MLD capacity are under installation. Also, there is a proposal for rehabilitation of existing 48 MLD STP and setting up of an additional module of 50 MLD capacity at Jamalpur. The DPR of additional capacity has been approved and this module is likely to be installed by 31.12.2020.

- (iv). Disposal of EWS Colony near Geeta Nagar Bridge along Tajpur Road. This outlet has been closed but used during rains.

The outlets of domestic sewage, which were earlier connected with storm water sewer, have been disconnected by the Municipal Corporation, Ludhiana. The same needs to be re-verified by Punjab Pollution Control Board.

- (v). Multiple outlets from various Dairies at Tajpur Road between Amrit Dharam Kanda, EWS disposal upto Tibba Road disposal and at Haibowal Dairy Complex

There are multiple outlets of dairies located at Tajpur dairy complex and Haibowal dairy complex through which the wastewater is discharged directly into Budha Nallah. There is a proposal to install an ETP of 5 MLD capacity at Tajpur road and 10 MLD at Haibowal dairy complex. DPR for installation of said ETPs has been approved by the State Level Technical Committee and these STPs are likely to be installed by 31.12.2020.

- (vi). Individual disposal points of slum area between EWS disposal and Tibba Road disposal

The slum colonies established along Budha Nallah, which are presently discharging untreated domestic sewage to multiple outlets into Budha Nallah, shall be relocated to BSUP flats at Giaspura, Mundiankalan and Dhandari under RAY Scheme. The tendering procedure in this regard has been initiated and these slum households will be shifted by 31.03.2020.

- (vii). MC Tibba Road Disposal on G.T. Road bye-pass, Ludhiana

Since the sewerage system leading to STP at Bhattian is carrying mix of industrial effluent and domestic sewage and the quantity of mixed wastewater is more than the capacity of conveyance system of this STP, therefore, mixed effluent is directly discharged into Budha Nallah. Since there are scattered industrial units in the catchment area of this STP and the industrial effluent of these units is also coming in the sewerage system of this STP. There is a need to provide separate conveyance system by the joint action of PPCB and Municipal Corporation, Ludhiana. Excess domestic effluent shall be taken care of after introduction of Volumetric Water Tariff policy by Deptt. of Local Govt.

Timeline for completion is T + 18 months (T is the date for finalization of action plan for excess effluent).

- (viii). MC Disposal carrying effluent of Transport Nagar (near Cremation Ground)

Same as stated in Para (vii) above.

- (ix). MC Disposal near Atam Nagar/ Sunder Nagar

Same as stated in Para (vii) above.

- (x). MC Disposal near New Shivpuri (Opp. Shani Mandir)

Same as stated in Para (vii) above.

- (xi). MC Disposal near Chand Cinema, G.T. Road

Same as stated in Para (vii) above.

- (xii). MC Disposal near Chhauni Mohalla and Manna Singh Nagar.

This is an open storm water drain in which no sewage is now being discharged. It needs to be re-verified by Punjab Pollution Control Board.

- (xiii). MC Disposal near Upkar Nagar

Multiple domestic connections have been made in the storm water sewer over the years. 50 MLD capacity STP has been proposed at Balloke to take care of this excess effluent which is targeted to be completed by 31.12.2020.

- (xiv). MC Disposal backside of Life line Hospital (DMC Culvert)

Same as stated in Para (xiii) above.

- (xv). MC disposal at the backside of Lord Mahavira Ayurvedic Hospital

Same as stated in Para (xiii) above.

- (xvi). MC Disposal at the backside of Ram Sharnam Satsang Bhawan.

This outlet has been permanently closed but being used during the rains. The same needs to be re-verified by Punjab Pollution Control Board.

7.5 Installation of CETPs for dyeing industries located in Ludhiana

- (i). All the dyeing units have installed captive ETPs. However, treated wastewater of these industries is discharged into municipal sewers along with domestic sewage which affects the functioning of STPs. These industrial effluents need to be treated separately.
- (ii). In order to treat the cluster wise industrial waste water at one place & to achieve the revised standards laid down for CETPs by the Board, 3 common effluent treatment plants (CETP) are being installed and after commissioning of these CETPs, it will be easier to monitor the treatment facility as well as quality of the effluent at one place rather than monitoring individual units, which are large in number.
- (iii). 3 CETPs of capacity 50 MLD, 40 MLD and 15 MLD for small and medium scale dyeing industries located at Tajpur Road & Rahon Road; Focal Point dyeing industries clusters and Bahadurke Road dyeing industries cluster, Ludhiana are being installed at Ludhiana. The timelines for installation and commissioning of these CETPs are given in **Annexure-N-1**.

7.6 Upgradation of ETPs of large units

In case of large scale dyeing units, which are 14 in number, the individual industries shall upgrade their existing ETPs to achieve the revised standards at par with the proposed CETPs. Timelines to be worked out by PPCB.

7.7 Scattered small/ medium scale dyeing units in non-designated areas

All the scattered small/ medium scale dyeing units located in various non-designated areas of the city are required to be shifted to the designated industrial areas connected with the upcoming CETPs. Timelines will be worked out in consultation with all the stakeholders.

7.8 Scattered small/ medium scale dyeing units in designated areas

All the scattered small scale dyeing units located in various designated areas of the city not having any feasibility to connect with the proposed CETPs are also required to be shifted to some designated industrial areas having feasibility to connect with the upcoming CETPs. Timelines will be worked out in consultation with all the Stakeholders.

7.9 Installation of CETP for electroplating units in Jalandhar area

In Jalandhar, there are around 254 nos. electroplating industries, which are presently supplying their effluent to Common Effluent Treatment Plant operational at Focal Point, Phase-8, Ludhiana. However, there is a proposal to setup a Common Effluent Treatment Plant of capacity 150 KLD at plot no. E-41 to E-46, Focal Point Extn Jalandhar for handling the waste water of these units. A Special Purpose Vehicle (SPV) under the name of Jalandhar Effluent Treatment Society (JETS) has been constituted, who has obtained Environmental Clearance on 24.04.2017 under EIA notification. The timelines for the same are to be provided by SPV, JETS.

7.10 Upgradation of 5 MLD CETP of Tanneries, Leather Complex, Jalandhar

Punjab Effluent Treatment Society has proposed upgradation of existing 5 MLD capacity Common Effluent Treatment Plant. The preparation of DPR has been assigned to M/s Chennai Environmental Management Company of Tanners, Chennai vide letter No. PETS/18-19/2287 dated 18.12.2018 which shall be ready by 15thFeb, 2019 and the same shall be submitted for appraisal to Project Management Consultant viz. CLRI, Chennai and after appraisal, the DPR shall be submitted to DIPP, Govt. of India for according approval of the Project by 31st March, 2019. The timeline for the same is given at **Annexure-O**.

7.11 Setting up of biogas plants and ETBs for Dairy Units

There are 2 dairy complexes at Ludhiana and one dairy complex at Jalandhar. In addition, there are scattered dairies in both the cities. At present, the untreated wastewater from these sources is discharged indirectly into River Sutlej. There are proposals to setup ETBs to treat the wastewater and proposal to install biogas plant for handling cattle fecal matter. The timelines for the installation of these projects are given as per **Annexure-P**.

7.12 Modernization of existing slaughter house and Carcass plant at Ludhiana

(i). Slaughter House

The Municipal Corporation Ludhiana has proposed to modernize the existing slaughter house and its treatment facility. The Municipal Corporation has given the timelines for the same. The details are given in **Annexure-Q**.

(ii). Installation of Carcass handling plant.

Presently, there is no mechanized carcass handling plant for proper disposal of the carcass of dead animals. Regular public complaints are being received from the nearby residents regarding the improper disposal of carcass at Ladhawal, Near River Sutlej, Distt. Ludhiana, which creates pollution in River Sutlej.

The Municipal Corporation, Ludhiana has given a proposal to install carcass utilization plant at Village Noorpur Bet, Humbran Road, Ludhiana. The MC has also obtained the site clearance from the Competent Authority (SCA-cum-SAC) for establishment of carcass utilization plant at Noorpur Bet, Ludhiana. Accordingly, Director of Factories, Punjab vide letter no. 3822-27 dated 31-03-2017 has issued

the approval of Site to Municipal Corporation, Ludhiana for the establishment of carcass utilization plant at Noorpur Bet, Ludhiana.

Thereafter, Punjab Pollution Control Board vide NOC no. ZO-II/LDH/RO-III/NOC/ZO17/F-246 dated 03-05-2017 had issued consent to establish (NOC) for the establishment of the carcass utilization plant at Noorpur Bet, Ludhiana. The timelines for installation of mechanized system for handling of carcasses are yet to be supplied by the Municipal Corporation, Ludhiana.

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

The Department of Rural Development and Panchayat has to prioritise the villages for setting up of treatment facilities. The timelines for providing treatment facility in villages are given in **Annexure-R**. The Department has yet to finalize the treatment technology to be adopted in rural areas.

7.14 Setting up of Reuse of treated wastewater

The Department of Soil and Water Conservation has given the timelines for setting up of reuse of treated wastewater. The details are given in **Annexure-S**.

7.15 Installation of online continuous monitoring system & CCTVs for STPs

In order to get real time data of the quality of treated wastewater, there is need to install Online Continuous Monitoring System with facility of flow meter at the outlet of all the STPs of the towns / cities located in the catchment area of River Sutlej. The system should be connected with server of the concerned department as well as PPCB so that quality of treated wastewater can be put in the public domain. Further CCTV cameras will be installed to monitor the operation of STPs. All concerned agencies, which are operating the facilities will ensure online system as per the timelines. The timelines for installing online systems and CCTVs is given in **Annexure –T-1 & T-2**.

7.16 Installing online continuous monitoring system by Industries

Although, all the 17 categories of industries have installed online continuous monitoring system, which are attached with server of CPCB as well as PPCB. Further, all the small scale dyeing units will join the CETP, hence the OCMS is not required for individual dyeing units, however, OCMS will be installed on the respective CETP. Further, OCMS will be installed on the CETP installed for electroplating industries. As such, the remaining 62 industries having discharge of trade effluent 50 KLD or more are required to install Online Continuous Monitoring System with facility of flow meter at the outlet of their ETPs. The time schedule for installing online system is given in **Annexure-U**.

7.17 Timelines for stopping disposal of solid waste in Buddha Nallah

The surrounding areas of Buddha Nallah being inhabited by economically weaker section, lot of waste generated in the vicinity is disposed of in Buddha Nallah. Municipal

Corporation will ensure suitable arrangements for prohibiting disposal of solid waste in Buddha Nallah.

7.18 Measures related to operation and maintenance (O&M)

- (i). O&M of the STPs & CETPs should be entrusted to reputed companies and scope should be comprehensive to ensure that O&M is carried out effectively and no untreated or treated waste beyond prescribed norms is discharged.
- (ii). All the STPs should have in-house laboratory facilities at each STP for maintaining record of characteristics of analysis of untreated as well as treated waste water.
- (iii). Sludge generated from STPs is required to be analyzed for the parameters as mentioned in the schedule 2 of Municipal Solid Waste, 2016 to find out its usage/ route for disposal of the same. The operator of the STP is required to maintain database in this regard. In case the sludge is required to be treated to make it fit as usage/ disposal, the concerned authority shall provide suitable treatment technology after consulting the matter with an expert agency.
- (iv). All the STPs should have standby arrangements for smooth functioning during maintenance period and there should be standard operating procedure for the same. All the STPs should have adequate capacity of holding tank (s) or standby arrangements for storage of untreated sewage during maintenance or shut down if any. All upcoming STPs also should have the above provisions.
- (v). All STPs should have a provision of uninterrupted power supply or power backup system including standby electrical and mechanical components for ensuring proper and effective operation of the STPs.

7.19 Release of fresh water in Buddha Nallah

Since Buddha Nallah is a non-perennial water body, as such it does not have sufficient assimilation capacity to achieve Class-B quality water even after implementation of measures mentioned herein above. Therefore, there is a need to release atleast 200 cusec of water from Sirhind Canal to achieve the mandate with regard to quality of water meant for organized outdoor bathing.

Chapter 8 – Monitoring Requirements and Formats

8.1 Key components of monitoring

There are following key components of monitoring

- (i). Monitoring of progress of projects for setting up of new STPs/CETPs/ETPs and upgradation of existing STPs/CETPs
- (ii). Monitoring of operations and management of STPs/CETPs
- (iii). Monitoring of ETPs and Industrial Effluents
- (iv). Monitoring of Quality of Water of River Sutlej
- (v). Monitoring of adverse impact on health of the people in surrounding areas due to water pollution
- (vi). Monitoring of Awareness campaign
- (vii). Monitoring of other violations of laws/ regulations
- (viii). Monitoring of characteristics of sludge of STPs
- (ix). Monitoring of release of fresh water in Buddha Nallah
- (x). Monitoring of solid waste disposal in Buddha Nallah

8.2 Monitoring of progress of setting up of new/ upgradation STPs/CETPs/ETPs

The progress of projects for setting up of new STPs in various Urban Local Bodies, CETPs by Special Purpose Vehicles (SPVs) and ETPs for the treatment of Dairy effluents will be monitored on regular basis. In order to ensure that all the stakeholder departments adheres to the timelines given for setting up of new STPs/CETPs/ETPs and upgradation of existing STPs/CETPs facilities, the department shall submit progress of the project on monthly basis in the proforma attached as **Annexure-V** for monitoring.

8.3 Monitoring of operations and management of STPs/CETPs

To ensure proper functioning of the STPs/CETPs, regular availability of funds for operation and maintenance has to be ensured. All the STPs/CETPs should also have standby source of power. The O&M contracts shall clearly define the responsibilities of the Operator. Monthly reports as per **Annexure-W & W-1** will be submitted for monitoring.

8.4 Monitoring of ETP's and Industrial Effluents

Punjab Pollution Control Board shall visit the industries located in the catchment area of River Sutlej as per protocol regarding frequency of visit to the industries to carry out monitoring of Effluent Treatment Plants & ground water and maintain proper record of all these visits. PPCB will submit report as per the proforma given in **Annexure-X**

8.5 Monitoring of Quality of Water of River Sutlej

The Punjab Pollution Control Board shall continue to monitor the quality of water of River Sutlej at 16 locations under National Water Monitoring Programme and shall submit report on monthly basis in the proforma as per **Annexure-Y**.

8.6 Monitoring of adverse impact on health of the people in surrounding areas

The District Level Special Task Force shall get organized / conducted the health check up camps of the people in the catchment area of River Sutlej and shall submit the monthly report in proforma as per **Annexure-Z**.

8.7 Monitoring of Awareness campaign

The PPCB will organize awareness programme in partnership with the Department of Health & Family Welfare and other stakeholders in the habitation area falling in the catchment area of River Sutlej to educate them about the harmful effects of water pollution. The PPCB shall submit monthly report in the proforma as per **Annexure-Z-1**.

8.8 Monitoring of characteristics of sludge of STPs

The PWSSB/ concerned authority and the operating agency shall get the sample of sludge of STPs analyzed for the parameters mentioned in schedule 2 of MSW Rules, 2016 to find out its characteristics, atleast once in six months so that its usage/ disposal route may be adopted accordingly.

8.9 Monitoring of release of fresh water in Buddha Nallah

The Department of Water Resources is preparing a DPR for release of fresh water into Budha Nallah from Sirhind Canal to achieve the mandate w.r.t quality of water meant for organized outdoor bathing.

8.10 Monitoring of solid waste disposal in Buddha Nallah

The disposal of solid waste into Budha Nallah by the habitation areas located along its banks due to improper collection mechanism and by the dairy units would be monitored on regular basis.

Chapter 9—Governance and Supervision

9.1 Three Tier Monitoring

9.1.1 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.

9.1.2 In addition, there will be three level of Committees to review and monitor the status:

(i). District Level Task Force

a) Ludhiana— As mentioned in para 1.4.4, the State Government has already constituted a Task Force for cleaning of Buddha Nallah, headed by Satguru Uday Singh Ji of Namdhari Sampardhai. This task force shall also monitor the timelines for implantation of part of action plan pertaining to district Ludhiana.

b) Other Districts — The District Level Task Force already constituted under RRC, shall monitor the timelines for implantation of action plan pertaining to respective other districts.

(ii). River Rejuvenation Committee

(iii). State Level Task Force / Monitoring Committee

9.1.3 Department of Science, Technology and Environment and PPCB will set up a dedicated team for supporting coordination and monitoring of the Action Plan. The team will collate and analyse data from all the concerned agencies and escalate the issues and challenges to the appropriate level for resolution. It will also develop suitable IT platform for monitoring purposes.

9.2 District Level Special Task Force (DLSTF)

(i). The mandate of this task force as per order dated 14.11.2018 issued by the Govt. of Punjab, Deptt. of Science, Technology & Environment is as under:

(a). It shall identify all persons responsible for violation of law and norms relating to pollution in Sutlej river and the drains joining it.

(b). It shall review action by the Competent Authority w.r.t. Civil and Criminal action against the violators as well as those who fail to perform their duties in this regard.

(c). It shall submit a monthly report on all actions taken by it to the State Level Special Task Force (SLSTF), by first week of every month.

(d). It shall assist the SLSTF in preparation of the action plan and finalizing the timelines.

(e). It shall involve Civil Society Organizations and public participation in preparing the action plan in all the relevant areas.

- (f). It shall ensure periodic sampling of river water as well as ground water to check water quality.

9.3 River Rejuvenation Committee

The River Rejuvenation Committee under the Chairmanship of Principal Secretary, Science, Technology and Environment will monitor the Status of implementation of the Action Plan at the State Level.

9.4 State Level Task Force

- (i). The mandate of this task force as per order dated 14.11.2018 issued by the Govt. of Punjab, Deptt. of Science, Technology & Environment is as under:
 - (a). It shall finalize the Action Plan with firm timelines and review the same.
 - (b). It shall submit quarterly report on action taken during the quarter to the Central Pollution Control Board.
 - (c). It will also ensure that the quarterly Action Taken Reports are uploaded on the website of Punjab Pollution Control Board.
 - (d). It shall Co-ordinate with the Executing Committee, appointed by NGT
 - (e). The State Level Task Force will accordingly hold regular meetings to review the progress and taken necessary action against the defaulters

9.5 Monitoring Committee by NGT

As per directions of NGT vide order dated 24-7-2018, CPCB has accordingly vide office order dated 06-08-2018 constituted a monitoring committee comprising following members:

- (i) Shri Balbir Singh Seechewal
- (ii) Representative of Rajasthan State Pollution Control Board
- (iii) Representative of Punjab Pollution Control Board
- (iv) One Engineer & One Scientist (Central Pollution Control Board)
- (v) Representative of Urban Development, State of Punjab
- (vi) Shri J.Chandra Babu, Sc'D', WQM-1, Central Pollution Control Board

The monitoring committee will monitor the project as per the mandate of the NGT.

Chapter 10-Risk Mitigation Plan

10.1 Identification of Major Risks in the Action Plan

10.1.1 The Action Plan to clean Sutlej and restore the quality of water to the prescribed standards is a complex multi sectoral and multi agency action plan. Successful implementation would face many challenges. Following major risks have been identified

- (i). Accuracy and completeness of Baseline Data
- (ii). Accuracy and completeness of Project timelines
- (iii). Financial closure and timely releases of funds
- (iv). Discharge from unapproved habitation areas
- (v). Tracking the Progress and program management
- (vi). Resolution of Administrative and Technical Issues
- (vii). Mixing of industrial effluent with domestic wastewater

10.2 Mitigation Plan for identified Risks

It is important to devise strategies and plans to mitigate the identified risks. Action plan will remain on paper if the bottlenecks and the risks are not dealt satisfactorily. Mitigation plan for each of the identified risk has been prepared in the following paras.

10.3 Accuracy and completeness of Baseline Data

Due to paucity of time, the information about the sources of pollution, current treatment facilities, quantity and quality of discharges etc. could not be properly validated and there could be gaps in the same, which may lead to substantial alterations in the plans. In order to ensure accuracy and completeness of baseline data, another round of validation of the same would be got done through the respective Administrative Departments and Action plan updated accordingly. This will be completed in 30 days.

10.4 Accuracy and completeness of Project timelines

Due to paucity of time, the information about the project timelines could not be properly validated and deliberated and there could be gaps in the same. In order to ensure accuracy and completeness of Project timelines, each Administrative Department would be asked to validate the project timelines carefully after taking into account all the relevant factors. The needful will be done in 45 days in parallel to the activity in para 10.3 and Action plan updated accordingly.

10.5 Discharge from unapproved habitation areas

There are certain unapproved colonies or villages, which have come under municipal limit, which are currently not covered in the plans but are discharging their untreated sewage directly or indirectly into river Sutlej. The concerned authorities for urban and rural areas will be asked to identify such localities and plan for their connectivity with the main sewer or development of the sewer system shall be worked out.

10.6 Financial closure and timely releases of funds

Availability of funds for completing the projects on time is a major risk. Some of the projects have still not achieved financial closure. It has also been observed that the release of funds is often not regular even though the project had appropriate financial approval. In case of operation and maintenance of the facilities, substantial blame has been apportioned to lack of regular release of funds for maintenance, which resulted in failure of STPs to treat the wastewater and as a result untreated water has been discharged in the drain. In order to overcome the challenges, efforts will be made towards:

- (i). Seeking a firm commitment of Department of Finance to release the funds for the projects on priority.
- (ii). In case of operation and maintenance, seeking firm commitment of ULBs/ Department of Local Government to treat this as committed expenditure according to highest priority and release the funds regularly. Further, arrangement may be worked out with the Administrative Department and Department of Finance that in case of default of ULB to pay to the operator, funds will be deducted from the grant to be released to ULB and paid directly to the Operator.

10.7 Tracking the Progress and program management

The action plan for clean Sutlej is a complex, multi department and multi agency program and the current capacity and skill sets in Directorate and PPCB are not adequate to track the progress of various milestones and carry out effective program management for successfully implementing the program. In order to mitigate the risk, a dedicated team with requisite Program Management and IT skills will be positioned to collate data, analyse the same, prepare status updates, escalate issues and assist various committees in review and issue resolution.

10.8 Resolution of Administrative and Technical Issues

Some of the issues such as acquisition of land, design parameters or treatment technologies can hold up the progress of the implementation of the Action Plan. The Program management team will continuously track and identify such issues and escalate to the appropriate level. The three tier monitoring and review system will help in resolving the issues.

10.9 STPs under one Department

Presently, STPs are under the control of the different organisations and different organisations are planning in their own way and there is no proper co-ordination. All STPs should be under one authority so that it becomes easy for planning, commissioning and ensuring proper operation and maintenance of the existing or upcoming STPs. In year 2013, the state government has taken a decision that the work related to construction, operation and maintenance of the STPs shall be taken over by the respective Municipal Corporations within their jurisdiction and by Punjab Water Supply and Sewerage Board (PWSSB) in respect of other local bodies. However, this policy decision has not been fully implemented, which

needs to be implemented and streamlined. There are few cities, where STPs are being run by the GLADA, which should be taken over by the respective local bodies/ PWSSB.

10.10 Mixing of industrial effluent with domestic wastewater

- (i). Industrial effluents of the cities or towns should not be allowed to mix up with the domestic sewage. In the industrial cities like Ludhiana and Jalandhar where industrial effluents have been allowed to mix with domestic sewage, the whole machinery of STP's has been damaged decreasing their working capacity. Therefore, dedicated sewerage network for carrying industrial effluent should be laid.
- (ii). MC Ludhiana carried out sampling from various industries discharging their effluent into Municipal Sewer system to gauge the quantum of industrial outflow being discharged and its quality. PPCB objected to this that this sampling is incorrect as this falls outside the purview of MC Ludhiana. The sampling was got done by PBTI Mohali in presence of administration officials. The excess flow of about 182 MLD in Buddha Nallah still remains unresolved since MC Ludhiana claims it to be effluent coming from industries. Further, it needs to be worked out whether MC Ludhiana or any Municipal Corporation can carry out sampling from industries since industries are discharging their effluent into Municipal Sewer system and their monitoring by Corporations is essential to ensure that sewer system/STPs function properly.
- (iii). A number of scattered industries (running from households) are discharging their effluent directly into Municipal Sewer. A foolproof mechanism needs to be formulated for tapping the effluent of these industries.
- (iv). This issue needs to be resolved with Punjab Pollution Control Board and Municipal Corporation, Ludhiana.

Annexure A – Analysis results of Surface water monitoring under NWMP for Dec, 2018

S.N.	Point of Sample Collection	pH	DO mg/l	BOD mg/l	Cond µs/Cm	T.Coli MPN/ 100ml	B mg/l	Quality of water as per DBU
1	River Sutlej at U/S Nangal	7.66	8.6	<1	215	170	0.13	B
2	River Sutlej at D/S NFL	7.76	8.4	<1	265	210	0.14	B
3	River Sutej at 100m D/s PACL Nangal	7.81	8.3	<1	262	210	0.17	B
4	River Sutlej at D/s Nangal	7.98	8.4	<1	234	150	0.24	B
5	River Sutlej at Kiratpur Sahib	7.86	8.1	<1	246	940	0.22	C
6	Ropar Head-Works	7.13	7.9	<1	253	1400	0.13	C
7	River Sutlej D/S of Rishab- Paper Mills	7.86	7.3	1.6	460	2100	0.29	C
8	River Sutlej U/S Buddha Nallah	7.14	7.0	1.4	436	3200	0.16	C
9	River Sutlej at 100 mts D/s after Budha Nallah confluence, Ludhiana	7.07	3.6	26	723	7,90,000	0.25	E
10	River Sutlej at Boat Bridge, Dharamkot Nakodar Road	7.03	5.2	9	542	94,000	0.22	D

11	River Sutlej at D/s East Bein	7.7	3.8	10.2	610	35000	0.12	E
12	River Sutlej at Harike	8.1	6.2	4.2	306	14000	0.15	D
13	Harike Lake D/S from canal	7.9	7.5	1.8	234	3500	0.20	C
14	D/S Harike lake	7.7	7.4	2.0	242	3300	0.14	C
15	U/S Hussainiwala H/W Ferozepur	7.20	6.9	1.0	268	2200	0.10	C
16	D/S Hussainiwala H/W Ferozepur	7.41	7.0	1.1	275	2100	0.14	C

Note. 1. BDL means Below Method Detection Limit

2. WQI means Water Quality Index (S means Satisfactory, N means not Satisfactory).

3. DBU means Designated Best Use (Class-A,B,C,D& E)

Annexure B – Data of surface water monitoring under NWMP (Average values)

Year	Location	pH	DO mg/l	COD mg/l	BOD mg/l	Total Coliform MPN/10 0ml	FecalColifor m MPN/100ml	Class as per DBU
2015	River Sutlej at U/S Nangal	7.7	8.3	<5	<1	57	27	B
2016		7.7	8.1	<5	<1	324	148	B
2017		7.8	8.0	<5	<1	369	174	B
2018		7.8	8.3	<5	<1	323	61	B
2015	Sutlej at 1 km D/S of Shree Rishab Papers	7.6	7.3	11	2.2	933	513	C
2016		7.8	7.6	8.1	1.3	855	355	C
2017		7.7	7.5	6.0	<1	1107	572	C
2018		7.8	7.9	<5	<1	1158	428	C
2015	Sutlej at U/S Budha Nallah (Upper)	7.5	6.3	5.9	1.3	500	228	B
2016		7.9	7.3	9.2	<1	895	324	C
2017		7.5	6.7	12.3	<1	2286	1119	C
2018		7.6	6.8	9.3	<1	2550	1053	C
2015	Sutlej at 100m D/S Budha Nallah Confl., Ludhiana	7.2	4.2	54	17	56000	38250	D
2016		7.5	4.1	69	21	41100	17140	D
2017		7.4	3.0	251	75	123083	71167	E
2018		7.3	3.0	218	54	535000	235556	E
2015	Sutlej at Boat	7.5	6.3	23	5	20410	9820	D

Action Plan for Clean River Satluj

2016	Bridge Dharamkot Nakodar Road, Jalandhar	7.7	6.3	44	11	28629	11838	D
2017		7.6	5.5	61	17	65167	31333	D
2018		7.5	5.3	72	19	107800	43333	D
2015	Sutlej at D/S East Bein	7.5	3.0	35	6.1	8750	4125	E
2016		6.8	2.3	49	9	2430	838	E
2017		7.2	1.1	54	12	2353	1145	E
2018		7.5	3.1	50	11	24742	15208	E
2015	Sutlej at Bridge Harike	7.6	5.3	11	2.6	920	550	C
2016		7.2	5.2	23	2.8	657	260	C
2017		7.1	4.9	25	3.1	1053	562	D
2018		7.6	5.6	26	3.7	14167	9517	D

Annexure C – List of 30 Major drains directly discharging into River Sutlej

S.No.	Name of the drain	Point of origin	Approx length (in Km)	Location at which it meets river Sutlej	Approx. Discharge (MLD)
1.	Adhera Choe/Siswan nadi/Dulchi nadi	Siswan Dam	38.11	village beli kalan, Sri Chamkaur Sahib	200570
2.	Hussainpura Drain	Village Ladal and Hussainpur	3.04	village Katli, through ropar wet land	244.5
3.	Phool Drain	village phool	3.06	village Bara Phool	244.5
4.	Budh ki nadi	Himachal	36.58	Village Nanowal	129637
5.	Sarsa Nadi	Himachal Pradesh	6.10	Village Avaan Kot	
6.	Ladl Choe	Himachal Pradesh	3.04	Village Katli	537.90
7.	Main Seepage	Village Lodhipur	8.15	Through Nakia Khadd near Gurudwara Patalpuri Sahib	579.46
8.	Kiratpur Choe	From hills near Kiratpur Sahib	1.0	Through Nakia Khadd near Gurudwara Patalpuri Sahib	36.68
9.	Charan Ganga	From Nallah of Sri Anandpur Sahib	3.5	Near Village Lodhipur	22
10.	M.C.M. Drain (Lower)	Near Chamkaur Sahib	21.65	Mattewara Forest	909.876
11.	Budha Nallah	Near Machhiwara	40	Near Vill. Walipur	2768
12.	Jassowal Extension Drain	Khadoor	1.07	Near Vill. Sherewal	20730.754
13.	Kishanpura outfall drain	Near Village Kamaal ke, Tehsil Dharamkot, Distt. Moga	11.28	Near Satluj, Village Sherewala, Tehsil Dharamkot, Distt. Moga	638.55
14.	Makhu drain	Near Village Nangal / Jogewala, Distt. Ferozepur	17.98	Near Village Dinne ke, downstream of Harike Head Works, Tehsil Zira, Distt. Ferozepur.	320.5
15.	Sukkar Nala Drain	Village Badowal, Distt. Moga	99.10	Near Village Masteke, Tehsil & Distt. Ferozpur	2083.76
16.	Phidda drain	Near Village Burj	68.29	Near Village Langeana, close to international	1663.67

Action Plan for Clean River Satluj

		Duna, Distt. Moga		boundry, Tehsil & Distt. Ferozepur.	
17.	Luthar Drain	Village Luthar, Tehsil & Distt. Ferozpur	5.18	Near Village Waghe Wala	280.6
18.	Mamdot Drain	Village Changa Makhana, Tehsil & Distt. Ferozpur	11.89	Near Village Mamdot Hithar	409.92
19.	Phidda outfall drain	Near Village Sehjadi, Tehsil & Distt. Ferozepur.	52.59	Near Village Gajni Wala, Tehsil Guru Har Sahai, Distt. Ferozepur.	12428.6
20.	Jiwan Arain Drain	Village Mohan Ke Uttar, Tehsil Guru Har Sahai, Distt. Ferozpur	12.95	Near Village Issa Panj Grain, Tehsil Guru Har Sahai, Distt. Ferozpur	
21.	Jalalabad mauzzam drain	Near Village Chak Janisar, Tehsil Jalalabad, Distt. Fazilka	19	This drain fall into creek of river Satluj, at Village Walle Shah Uttar / Hasta Kalan, Tehsil & Distt. Fazilka.	--
22.	Salemshah Drain	Near Village Theh Qulandar, Tehsil & Distt. Fazilka	11.7	This drain falls into creek of river Satluj at village Muhar Jamsher, Tehsil & Distt. Fazilka	--
23.	Fazilka Drain	Near to Fazilka town	5.3	Actual meeting poing with Sutlej in is Pakistan terriatory 2 km from international boundary near to sulemanke headworks	--
24.	Rahon Drain	Usmanpur to Kazampur Road	8.47	Near Vill. Saidpur Kalan	5.62
25.	Balachaur Choe	South side of the road balachaur to ropar road	7.1	Balachaur discharge into Balachaur choe and does not reach to River Sutlej.	450
26.	Lasara Kadiana	Village Pandrawal	10.67	Near Darbar Baba Jhandipir	-
27.	Theing Drain	Village Theing, Phillaur	5.4	Near Crossing Dhusi Bandh at Phillaur	03
28.	East Bein	Nawan Shahar	214.62	Near Mandala Pind	5000
29.	Patti Nalah	Village Rampur, District Gurdaspur	103.4	Village Kot Budha	625
30.	Kasur Nalah	Village Tibbar, District	157.276	Village Kalas	1125

		Gurdaspur			
--	--	-----------	--	--	--

Annexure D – Subdrains leading to Main drains directly discharging into River Sutlej

Sr. No.	Name of the Sub drain	Point of origin	Approx Length (in Km)	Location at which the sub drain meets main drain	Approx. Discharge (MLD)
M.C.M. Drain (lower)					
1	M.C.M. Drain	Chamkaur Sahib	23.78	Near Panjgaraiyan	1891.846
2	Powat Drain	Near Village Powat	1.37	Near Powat	4.972
3	Old Machhiwara Drain	Near Machhiwara	5.12	Near Ropar Road, Machhiwara City	156.618
4	Burj Drain	Burj	6.10	Lakhowal Khurd	315.722
Buddha Nallah					
5	Kum Link Drain	Near Panjgaraiyan	14.29	Koom Kalan	933.45
6	Rakh Drain	near kum kalan	11.12	Village Koom	716.88
7	Rajgarh Drain	Village Rajgarh	3.65	Village Bhaman Kalan	363.42
8	Rakh feeder	Near	1.52	Marewal	154.33
9	Neelon Drain	Neelon Khurd	12.92	Near village Kum	1195.766
10	Dhande Drain	Near Neelon	4.27	Near village Kum on Ropar, Rahon Road	9.944
11	Dhande L/Drain	Near Neelon	1.37	Near village Kum on Ropar, Rahon Road	-
12	Neelon Feeder	Near Neelon	1.52	Near Neelon	4.972
13	Koom Drain	Near Koom	4.08	Near village Kum	295.834
14	Sherian 15Drain	Near Neelon	4.42	Near Village Kum Kalan	94.468
15	Koom Feeder Drain	Near Kum Khurd	1.52	NearKum Kalan	79.552
16	Jamalpur Drain	Jamalpur awana	3.66	Ludhiana	49.72
17	Barewal Drain	Near Barewal	2.90	Near Barewal	62.15
18	Birmi Drain	Near Birmi	4.5	Bardar Road, Kurali	89.496
19	Buddha Nallah (lower)	Near Jamalpur	32.62	Near Walipur	626.472
20	Porain Drain	Near Walipur	4.73	Near Walipur	310.75
21	Porain Link Drain	Near Walipur	3.96	Near Walipur	218.768

22	Bhiaini Arayian Drain	Near Arayian	2.38	Near Arayian	154.132
23	Jassowal Drain	Chhokran	55.4	Hayatwala	11823.416
24	Sidhwan Bet Drain	Baraich	24.45	Malsian Bhaike	591.668
25	Swaddi Drain	Swaddi Kalan	9.45	Chimara	2120.558
26	Lalton Pamal Drain	Baddowal	14.27	Raqba	867.614
27	Jassowal Extension Drain	Bliah	8.38	Mohi	1362.328
Kishanpura Outfall Drain					
28	Kishanpura Drain	Near village Kishanpura Kalan, Tehsil Dharamkot, Ditric Moga	9.1	Near village Ferozewala Bada, Tehsil Dharamkot	
Sukkarnala Drain					
29	Zira Link Drain		15.2	Into Sukkarnala drain at Village Alipur.	
30	Sarhali Drain	Near Village Fatehgarh Sabrawan	19.6	Into Sukkarnala drain at town Mallanwala.	
Phidda Drain					
31	Ferozeshah Drain	Near Village Ratol Rohi, Tehsil Zira, Distt. Ferozepur	19.5	Village Bhamba Landa, Tehsil & Distt. Ferozepur.	-
32	Talwandi Bhai Drain	Vill. Kaliewala, Tehsil & Distt. Moga	12.4	vill. Haraj, Tehsil & Distt. Ferozpur	-
33	Daulatpura drain	Vill. Daulatpura, Tehsil & Distt. Moga	11.6	Into Talwandibhai Drain at vill. Mahesari sandhwan, Tehsil & Distt. Moga.	-
34	Moga Drain	Near Jagraon town	48.5	Village Chota Ghar,	-

				Tehsil Baghapurana Distt. Moga.	
35	Ajitwal Drain	Near Jagraon town	21.3	Into Moga drain near village Mehna, Tehsil & District Moga.	
36	Dagru Drain	Near village Khosa Kotla, Tehsil & District Moga	14.1	Near Village Phidda, Tehsil & District Ferozepur	
37	Buttar Drain	From Pond of village Buttar, Tehsil Nihal Singh Wala, District Moga	33.2	At Village Chota Ghar, Tehsil Baghapurana Distt. Moga.	
38	Attari Drain	Near vill attari		Near Village Phidda.	590.4
Jalalabad Mauzzam Drain					
39	Jalalabad main drain	Near Village Mare Khurd, Tehsil Guruharsahai, Distt. Ferozepur	39	Village Saide ke uttar, Tehsil Jalalabad, Distt. Fazilka.	2006.55
40	Barkat Wah Drain	Near Village Saide ke, Tehsil Guruharsahai Distt. Ferozepur.	31.6	Into Jalalabad main drain at Village Chak Sontaria, Tehsil Jalalabad, Distt. Fazilka.	921.2
41	Ladhuka drain	Near Village chack Sona Sandhar, Tehsil Jalalabad & Distt. Fazilka.	11	Into Jalalabad main drain at Village Chak Khunde, Tehsil Jalalabad, Distt. Fazilka.	774.2
42	Tarobari drain	Near Village Nurpur Kirpal ke, Tehsil & Distt. Muktsar.	18.4	Into Jalalabad main drain at Village Chak Hamid, Tehsil Jalalabad, Distt. Fazilka.	2557.8
43	Langeana drain	Near Village Nathoke, Near to Channu wala Head Works of Abohar Branch, Tehsil Baghapurana Distt.	45.3	Into Langeana drain at Village Nurpur Kirpal ke, Tehsil & Distt. Muktsar, and combined drain is	1773.8

		Moga.		named as Tarobari drain.	
44	Langeana drain - 2	Near Village Nathoke, Near to Channu wala Head Works of Abohar Branch, Tehsil Baghapurana Distt. Moga.	12.3	Into Langeana Drain at village Demru Kalan, Tehsil Baghapurana.	997.15
45	Kaleka drain	Near Village Kaleka, Tehsil Baghapurana, Distt. Moga	6.4	Into Langeana drain at Village Kotla Mehar Singh, Tehsil Baghapurana, Distt. Moga.	3600
46	Gholia Drain	Near Village Gholia, Tehsil Baghapurana, Distrct Moga	5.8	Into Langeana - 2 drain at Village Kotla Mehar Singh, Tehsil Baghapurana, Distt. Moga.	510
47	Deviwala drain	Near Village Deviwala, Tehsil Kotkapura Distt. Faridkot	9.6	Into Langeana drain at Village Nangal, Tehsil & Distt. Faridkot.	12369
48	Golewala drain	Near Village Sappanwali, Tehsil & Distt. Ferozepur	42.1	Into Langeana drain at Village Nurpur Kirpal ke, Tehsil & Distt. Muktsar and combined drain is named as Tarobari drain.	1000
49	Mudki drain	Near town Mudki, Tehsil & Distt. Ferozepur.	31.5	Into Golewala drain at Village Shivpura, Tehsil & Distt. Muktsar.	1000
50	Pacca diversion drain	Near Village Mahla Kalan, Tehsil Baghapurana, Distt. Moga	35	Into Langeana drain at Village Landa Roda, Tehsil & Distt. Muktsar.	12000

51	Mahla Drain	From Village Pond of village Mahla Khurd	7.6	Into Pacca Diversion Drain at village Jandwala, Tehsil & District Ferozepur.	505
52	Chandbhan Diversion drain	From vill. Chandbhan, Tehsil Gangsar Jaito Distt. Faridkot	28	Vill. Chak suhelawala, Tehsil Jalalabad Distt. Fazilka	17084.946
53	Bhullar Link Drain	From Vill. Bhullar Tehsil & Distt. Sh. Mukatsar Sahib	5.11	Into Chandbhan Diversion drain near vill. Sotha, Tehsil & Distt. Sh. Mukatsar Sahib.	1100
54	Bassian Drain	From Vill. Bassian ,Near Jagraon Distt Ludhiana	29.4	Into Chandbhan Diversion drain near vill. Krishangarh, Distt. Moga.	8569
55	Badhni Drain	Start from near abohar branch near Golian Kalan		Into Bassian drain near Village Minian	3000
56	Smadh Bhai Drain	Near Village Manooke Gill, Tehsil Nihal Singh Wala, District Moga	19.0	Into Chandbhan Diversion Drain at village Chandbhan, Tehsil Jaito, District Faridkot	728
57	Mari Drain	Near village Mari Mustfa, Tehsil Baghapurana, District Moga	12.8	Into Smadh Bhai Drain, Near Village Kothe Santa Singh Wala.	1500
58	Bura Gujjar drain	From Vill. Bura Gujjar, Tehsil & distt. Mukatsar Sahib	19.21	Into Jalalabad Mauzzam drain at vill. Chak suhelawala, Tehsil Jalalabad Distt. Fazilka	-

59	Akal garh Link Drain	From Vill. Kotali Dewan, Tehsil & Distt. Sh. Mukatsar Sahib	5.10	Into Bura Gujjar drain at vill. Badhai, Tehsil & Distt. Sh. Mukatsar Sahib	-
	Fazilka Drain				
60	Sabuana Drain	From Vill. Sabuana, Tehsil & distt. Fazilka	7.1	Near vill. Karian, Tehsil & Distt. Fazilka.	-
61	Abhul Khurana out fall Drain	Upperscale of Bikaner kanal near Vill. Daneala Tehsil Abhor, Distt. Fazilka.	13.8	Into Sabuana Drain Near vill. Sabuana, Tehsil & Distt. Fazilka.	-
62	Abhul Khurana Drain	From Vill. Abhul Khurana, Tehsil- Malout, Distt. Sh. Mukatsar Sahib	66.9	Into Abhul Khurana out fall Drain Near vill. Danewala, Tehsil Abhor & Distt. Fazilka.	-
63	Wahab Wala Drain	From Vill. Raike Kalan, Tehsil & Distt. Bathinda.	54.27	Into Abhul Khurana Drain Near vill. Wahab Wala, Tehsil Abhor & Distt. Fazilka.	-
64	Malout Drain	From Vill. Ghumhiar khera, tehsil Malout, Distt. Sh. Mukatsar Sahib	23.6	Into Abhul Khurana Drain Near vill. Bhadur Khera, Tehsil Abhor & Distt. Fazilka.	-
65	Aspal Drain	Vill. Karniwala, Tehsil Malout, Distt. Sh. Mukatsar Sahib	37.33	Into Khuikhera drain near vill. Khuikhera.	578
66	Bam Drain	Vill. Bam, Tehsil Malout, Distt. Sh. Mukatsar Sahib	20.28	Into Aspal drain near vill. Dharingwala, Distt. Fazilka.	149

67	Mehraj Link Drain	Near Vill. Lakhmirwala, Distt. Sh. Mukatsar Sahib	19.79	Into Aspal drain near vill. Gaddandob, Distt. Fazilka.	222
East Bein					
68	Kala Singhia Drain	Near vill Raowali	45.58	At Dhadha Lehna	672.8
69	City Outfall Drain	Near Urban Estate, Jalandhar	10.06	Village Pondari Rajputan	200
70	Taragarh choe	Adampur	16.76	Bohani	3204.71
71	Jhandu Singhia Drain	Kishangarh	17.8	Nangal Fateh Khan	885.66
72	Lessriwal Drain	Dholike	11.70	Kapur Pind	2035.55
73	Alawalpur Drain	Alwalpur	4.6	Lessriwal	282.5
74	Chomman Drain	Chommon	3.0	Satowali	1
75	Nasrala Choe	starts in hoshiarpur	15.24	Dug	
76	Phagwara Sullage Drain	Plahi Gate Phagwara	14	Kukkar Pind	50
76	Jandiala Drain	Rurka Kalan	17.68	Chananpur	5
77	Kail Nallah	Behram	22.85	Madhopur	732.5
78	Khalwara Bahua	Bishanpur	6.24	Dhak Khalwara	1
79	Langroya Drain	Langroya	5.85	Near Gujjarpur Kalan	3.75
80	Bangi Gopalpur Drain	Kangraur	14.63	Near Goplapur	8.125
81	Mehlanwali Choe	Vil Chaunni Kalan	36		73.5

82	Chounni Choe	Vill Chak Sadhu	10		24.5
83	Changgran Choe	Vill Mal Mazara	09		19.6
84	Rajni Devi Choe	Vill cheta	36		49.0

Annexure E – List of urban and rural areas discharging directly into river Sutlej

Sr No	Name of the source	Identification mark	Location / Coordinates at the outfall (latitude & Longitude)	Approximate Discharge (KLD)	Present treatment facility installed, if any
1	Nangal	D1	31°22'14" 76°22'02"	10200	Installed
			31°21'50" 76°22'17"		
2	Shri Anandpur Sahib	D2	31°13'33" 76°30'20"	2140	Installed
3.	Shri Kiratpur Sahib	D3	31°10'52" 76°33'35"	1000	STP proposed
4.	Roopnagar	D4	30°59'23" 76°31'28"	8000	Installed
			30°55'55" 76°31'11"		
5	Village Rattanpura Distt. Ropar	D5	31.02°06.2"N 76.34°20.2"E	90	Treatment proposed
6	Village Brahmipur Lower & Bandlehri Distt. Ropar	D6	31.649582"N 76.23°18.7"E	192	Treatment proposed
7.	Ferozepur	D7	30°57'07" 74°33'17"	14000	Installed
8.	Ludhiana (Bhattian)	D8	30°59'38.1"N 75°49'58.2"E	161000	Installed
9.	Out fall of Bazigar Colony, Phillaur	D9	30°59'49"N 75°27'26"E	100	to be connected with STP Phillaur
10.	Out fall of STP 3 MLD South area of Phillaur	D10	30°59'27"N 75°46'08"E	1500	Installed
11.	Village Gag Dhagara	D11	75.59589 E 30.97611 N	50	Treatment proposed

Annexure F – List of urban/ rural areas discharging indirectly into River Sutlej

The list being voluminous has been uploaded on the website of Punjab Pollution Control Board i.e. www.ppcb.gov.in.

Annexure G - Total Towns discharging directly / indirectly in River Sutlej

S.No	Towns	Sewerage generated in MLD	STP Exist (Yes/No) if yes, No of STP	Installed capacity of STP (MLD)	Quantity of Sewage discharged without treatment (MLD)	Disposal
						(Land, River, Drain or any other)
A) Local Government						
1	Ludhiana city	659	Yes(05)	466 (48-UASB, 50-SBR, 152-UASB, 111-UASB, 105-SBR)	11 * 2 new STP of capacity 50 MLD each at Jamalpur & Balloke proposed. Rehabilitation of existing 3 STPs at Village Bhattian, Balloke and Jamalpur, Ludhiana also proposed. 3 CETPs of	Budha nalla
2	Jalandhar City	314	Yes(06)	235 (100-UASB, 25-SBR, 25-SBR, 50-SBR, 10-SBR & 25-SBR)	79 * 2 new STP of capacity 50 MLD and 25 MLD proposed at Pholriwal and Basti Peer Dad respectively. Replacement of STP of capacity 100 MLD at Pholriwal also proposed.	Kala Sanghian drain, Garha drain, jaindusingh drain & MES drain
3	Phagwara	28	Yes(03)	36 (20-UASB, 8-MBBR & 8-MBBR)	0	Phagwara drain
4	Phillaur	3.6	Yes(02)	5.6 (3-MBBR & 2.6-WSP)	0	Tehang
5	Nakodar	5	Yes(01)	6-SBR	0	East bein
6	Nawanshahar	6	Yes(01)	6-SBR	0	East bein
7	Banga	2.5	Yes(01)	3-SBR	0	East bein
8	Hoshiarpur	20	Yes(01)	30-MBBR	0	Nasrala drain to east drain
B) Deptt. of Water Supply & Sanitation						
9	Shri Muktsar sahib	12.9	Yes(03)	17.9 (8.7-MBBR, 5.7-MBBR & 3.5-MBBR)	0	Chand bhan drain
10	Anandpur sahib	2.14	Yes(01)	8-MBBR	0	Sutlej
11	Baghapurana	3.41	Yes(01)	4-SBR	0	Local drain

C) Deptt. of Housing & Urban Development (GMADA)						
12	Kurali	3	Yes(01)	5-SBR	0	Partially for irrigation and rest in Adhera Choe
D) Punjab Water Supply & Sewerage Board						
13	Nangal	6	Yes(02)	13 (8-ASP & 5-ASP)	0	Directly into Sutlej
14	Garhshankar	2.5	No	0	2.5 * one new STP proposed	East bein
15	Machhiwara	3	Yes(01)	4-SBR	0	Budha nalla
16	sahnewal	3	Yes(01)	7-SBR	0	Budha nalla
17	Ropar	8	Yes(03)	14.5 (10-SBR, 2.5-SBR & 2-SBR)	0	Phool drain, budhkinadi hussainpur drain
18	Morinda	4	No	0	4* one new STP proposed	Dulchi Nadi
19	Balachaur	2.5	No	0	2.5* one new STP proposed	Gadhi Drain
20	Rahon	2	No	0	2* one new STP proposed	Machhiwara Drain
21	Kiratpur sahib	1	No	0	1* one new STP proposed	Lohundkhud
22	Jagraon	10	Yes(02)	28 (12-SBR & 16-SBR)	0	Nanaksar & Malik drain
23	Goniana	1.8	Yes(01)	3-WSP	0	Chanchan drain
24	Faridkot	12	No	0	12* one new STP proposed	Chand Bhan drain
25	Jaitu	5	No	0	5* one new STP proposed	Jaitu chand bhan drain
26	Moga	50	Yes (01)	27-SBR	23* one new STP proposed	Fidda drain
27	Abohar	20	Yes (01)	25-SBR	0	Abulkhurana drain
28	Arniwala	1	No	0	1* one new STP proposed	Baam drain-ditch drain
29	Firozpur	14	No	0	14* one new STP proposed	Local drain
30	Kotkapura	12	No	0	12* one new STP proposed	Deviwala drain
31	Malout	10	Yes (02)	13 (3-WSP & 10-MBBR)	0	Ennakhera link drain
32	Dharamkot	3	Yes (01)	4-SBR	0	Masita drain
33	Patti	5.5	No	0	5.5* one new STP proposed	Rohi
34	Makhu	2	Yes (01)	4-SBR	0	Makhu drain
35	Guruharsahai	3.5	No	0	3.5* one new STP proposed	Jalalabad – maujam drain

36	Talwandi Bhai	2	Yes (01)	4-SBR	0	Ferozshah drain
37	Zira	5	Yes (01)	8-MBBR	0	Zira drain
38	Maluka	1	No	0	1* one new STP proposed	Chanchan drain
39	Jalalabad	6	Yes(01)	8-MBBR	0	Jalalabad drain
40	Raikot	4	No	0	4* one new STP proposed	Local drain
41	Barriwala	1	No	0	1* one new STP proposed	SaraiNaya drain to chandbhan drain
42	Mamdot	2	No	0	2* one new STP proposed	mamdot drain
43	Mallanwala	2	No	0	2* one new STP proposed	jattanwali drain
44	Mudki	1	No	0	1* one new STP proposed	Mudki drain
45	Bhai Roopa	1.5	No	0	1.5* one new STP proposed	Chand bhan drain
46	Bhagta Bhaika	1.5	No	0	1.5* one new STP proposed	Chand bhan drain
47	Kothaguru	1	No	0	1* one new STP proposed	Chand bhan drain
48	Mahilpur	1	No	0	1* one new STP proposed	Barsati Drain
49	Nihal Singh wala	1	No	0	1* one new STP proposed	jwaharsinghwala drain
50	Gidarbaha	4.6	No	0	4.6* one new STP proposed	Bawania drain leading to Malout drain
E) Deptt. of Bhakra Beas Management Board						
51	Nangal	5.4	Yes(01)	6.75	0	Onto land for plantation (overflow)
F) Deptt. of Military Engineering Services						
52	M/s Garrison Engineer (East), MES Jalandhar Cantt	6	Yes	6.4 (3-MBBR, 3-MBBR, 0.4-MBBR)	0	Drain near village Sufi Pind, Jalandhar and further into ChittiBein near village Bambian
53	M/s Garrison Engineer (West), MES Jalandhar Cantt	2.5	Yes	3.0 (1.5-MBBR, 1.5-MBBR)	0	concrete oxidation pond through which effluent is discharged to Nallah leading to Garha drain
G) PSIEC, Focal Point, Jalandhar						

54	Focal Point, Jalandhar	1	No	0	1 *one STP proposed by PSIEC, Jalandhar	Into drain
----	---------------------------	---	----	---	---	------------

Annexure H-- List of local bodies, which are without sewage conveyance system

Sr. No	Towns	Sewage Generation in MLD	STP Exist (Yes/No) If Yes, no. of STPs	STP installed Capacity in MLD	Gap in Sewage Treatment in MLD	Disposal (Land, River, Drain or any other)	Catchment area (Sutlej/Beas)
1	Barriwala	1	No	0	1	SaraiNaya drain to chandbhan drain	Sutlej
2	Mamdot	2	No	0	2	mamdot drain	Sutlej
3	Mallanwala	2	No	0	2	jattanwali drain	Sutlej
4	Mudki	1	No	0	1	Mudki drain	Sutlej
5	Bhai Roopa	1.5	No	0	1.5	chanchan drain	Sutlej
6	Bhagta Bhaika	1.5	No	0	1.5	chanchan drain	Sutlej
7	Kothaguru	1	No	0	1	chanchan drain	Sutlej
8	Mahilpur	1	No	0	1	Barsati Drain	Sutlej
9	Nihal Singhwala	1	No	0	1	jwaharsingh wala drain	Sutlej

Annexure I – HCFoperating in the catchment area of River Sutlej

Sr. No	Town Name	No. of HCFs covered	No. of bedded HCFs	No. of non-bedded HCFs	No. of HCFs not made agreement with CBWTF
1	Nangal	40	18	22	0
2	Sri Anandpur Sahib	37	7	30	2
3	Ropar	90	25	65	0
4	Jalandhar	512	208	304	16
5	Ludhiana	807	402	405	50
6	Moga	142	90	52	0
7	Phagwara	150	56	94	11
8	Phillaur	42	18	24	0
9	Kurali	36	4	32	0
10	Banga	57	30	27	11
11	Hoshiarpur	214	74	140	0
12	SBS Nagar	94	45	49	9
13	Sri Kiratpur Sahib	10	5	5	0
14	Ferozpur	287	144	143	0
15	Zira	18	7	11	0
16	Machiwara	30	16	14	0
17	Dharamkot	3	0	3	0
18	Makhu	5	1	4	0
19	Talwandi Bhai	19	9	10	0

Annexure J – Status of CBWTFs Facility wise details of area catered by the CBMWTF's

S. N.	Name & Address of the CBMWTF with contact person name and telephone no.	Name of the cities/ areas covered by CBMWTF	Total no. of beds covered	Total no. of HCFs covered	BMW Treatment kg/day	Installed Capacity
1.	M/s Rainbow Environment Pvt. Ltd. , Village Balyali, Mohali	SAS Nagar, Rupnagar, Fatehgarh Sahib, Nawa Shahar and partially from Jalandhar, Hoshiarpur & Kapurthala districts	17710	2867	Incineration-4730 Autoclaving-2925 Shredding-18000	
2.	M/s Amritsar Enviro Care System (P) Ltd. Village Ibban Kalan, Chabhal Road, Amritsar	Amritsar, Tarn Taran, Ferozepur, Faridkot and Mukatsar	16526	1572	Incineration-4400 Autoclaving-5850 Shredding-7200	
3.	M/s BMWT Trust, Vill. Pangoli, Defence Road, Distt. Pathankot	Distt. Pathankot & Distt. Gurdaspur, Jalandhar City 50 % + G T Road, Dasuya, Tanda, Mukerian & Kapurthala City.	8613	897	Incineration-3300 Autoclaving-4950 Shredding-15600	
4.	M/s Medicare Environmental Management (P) Ltd., Opp. Central Jail, Ludhiana	Ludhiana, Bathinda, Patiala, Sangrur, Barnala, Mansa, Moga.	27710	2790	Incineration-8800 Autoclaving-2790 Shredding-18000	
Total			70559	8126	Incineration-21230 Autoclaving-16515 Shredding-58800	

Annexure K – Status of hazardous waste generated as on 31.3.2018

Sr. No.	Name of the District	No. Industries	Authorized Quantity of Hazardous Waste (Metric Tonne)					Quantity of Hazardous Waste generated as per Annual Return within the State/ UT (Metric Tonne)			
			1	2	3	4	5	6	7	8	9
				Landfillable	Incinerable	Recyclable	Utilizable	Landfillable	Incinerable	Recyclable	Utilizable
1	Hoshiarpur	12	1553	20	2140	25500	830.248	3.3	1288.95	20682.625	
	Shaheed Bhagat Singh Nagar	8	6470	3819.5	10883	350	4095	992.397	3535.3	289.9	
2	Jalandhar	593	3342.524	32.68	1869.11	0	3305.57	28.56	1829.11	0	
	Phagwara	52	125.76	158.2	1.25	-	24.8	141.18	0.57	-	
3	Faridkot	10	7.68	0	180.8	0.024	1.475	0	180	0	
	Moga	13	13.472	16	1326.48	1.33	10.0304	0.25	397.035	0	
	Ferozepur	4	0.135	0	120.84	0	0	0	120.72	0	
	Fazilka	3	6	0	1.25	21	1.92	0	0	0.32	
4	Ludhiana-1	485	4957.8	174.4	1714.76	62940.79	5336.34	78.875	1396.25	13573.1	
5	Ludhiana-2	253	2622.2	513.86	6307.48	328.87	2866.35	185.32	1574.05	135.6	
6	Ludhiana-3	232	1183.92	120.3	337.84	0	823.92	40	182.93	0	
7	Ludhiana-4	304	1764.735	211.097	297.07	1200	882.515	205.33	246.37	0	
8	Rupnagar	4	272.557	1.1	3322	1600	51.14	0	2144.39	1465.56	
	Total	1973	22319.783	5067.137	28501.88	66092.014	18229.3084	1675.212	12895.604	15174.58	

Annexure L – List of schemes for utilization of treated wastewater

S.No.	Name of STP/Town	STP Capacity (MLD)	STP Technology	Area Irrigated (Hectares)	Remarks
Irrigation Projects Commissioned					
1.	Dharamkot	4	SBR	160	Irrigation Project Commissioned
2.	Goniana	3	WSP	102	Irrigation Project Commissioned
3.	Kurali (GMADA)	5	MBBR	130	Irrigation Project Commissioned, Damage to pipeline due to bypass construction, Repair Underway
4.	Malout, Distt. Shri Muktsar Sahib	3	WSP	160	Irrigation Project Commissioned
5.	Mukatsar (DWSS & AMRUT)	8.7	MBBR	480	Irrigation Project Commissioned
6.	Mukatsar -II	5.7	MBBR	185	Irrigation Project Commissioned
7.	Machhiwara , Distt Ludhiana	4	SBR	40	Irrigation Project Commissioned
8.	Nakodar	6	SBR	180	Irrigation Project Commissioned
9.	Naya Nangal (STP NFL)	5	ASP	200	Irrigation Project Commissioned
10.	Phagwara, Distt Kapurthala	20	UASB	455	Irrigation Project Commissioned
11.	Phagwara –II, Distt Kapurthala	8	MBBR		Irrigation Project Commissioned
12.	Ropar-I	10	SBR	100	Irrigation Project Commissioned
13.	Ropar-II	2.5	SBR	80	Irrigation Project Commissioned
14.	Ropar-III	2	SBR	72	Irrigation Project Commissioned
15.	Phillaur, Distt. Jalandhar	3	WSP	75	Irrigation Project Commissioned

Action Plan for Clean River Satluj

16.	Sham Churasi, Distt. Hoshiarpur	1	WSP	90	Irrigation Project Commissioned
17.	Jalalabad (DWSS)	8	WSP	--	Irrigation Project under Progress
18.	Phillaur-I	2.6	DWP	--	Irrigation Project under Progress

Annexure M – Timelines for setting up of treatment facilities by Local Bodies

(1) Municipal Corporation Ludhiana			
(i) Name of the Project: Commissioning of New STP of 50 MLD at Jamalpur, Ludhiana.			
Brief Scope of Work		Scope : 1 No. STP 50 MLD	
Sr.No	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds of Rs. 61.71 crores approved by SLTC.	
3	Tendering of the work including allotment	DNIT under preparation	
4	Commencement of work	DNIT under preparation	
5	Quarterly milestones during the construction stage	DNIT under preparation	
6	Completion and commissioning	31.12.2020	
(ii) Name of the Project: Rehabilitation of Existing STP of Village Bhattian, Balloke and Jamalpur			
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds of Rs. 18.91 crores approved by SLTC	
3	Tendering of the work including allotment	DNIT under preparation	
4	Commencement of work	-	
5	Quarterly Milestones during the construction stage	-	-
6	Completion and Commissioning	31.12.2020	
(iii) Name of the Project: Construction of new additional STP of 50 MLD at Village Balloke, Ludhiana			
Sr. No.	Stage	Start Date	Completion Date
1	Preparation of DPR	15.01.2019	
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	01.04.2020	31.12.2020
(2) Municipal Corporation, Jalandhar			
(i) Name of the Project: Replacement of STP located at Village Pholriwal, Jalandhar			
Brief Scope of Work		From 100 MLD UASB Technology with 100 MLD SBR Technology	
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	01.01.2019	28.02.2019
2	Financial Closure	30.11.2019	
3	Tendering of the work including allotment	01.12.2019	30.06.2020
4	Commencement of work	01.07.2020	
5	Quarterly milestones during the construction stage	01.12.2020	30.04.2020
6	Completion and commissioning	31.10.2021	31.12.2021
(ii) Name of the Project: Installation of STP of capacity 25 MLD at Basti Peer Dad, Jalandhar			
1	Preparation of DPR	01.01.2019	28.04.2019
2	Financial Closure	30.11.2019	
3	Tendering of the work including allotment	01.12.2019	30.06.2020
4	Commencement of work	01.07.2020	
5	Quarterly Milestones during the construction stage	01.12.2020	30.04.2020
6	Completion and Commissioning	31.10.2021	31.12.2021
(iii) Name of the Project: Installation of New STP at Village Pholriwal, Jalandhar			
Brief Scope of Work		Installation of STP of 50 MLD SBR Technology	
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	01.01.2019	28.04.2019
2	Financial Closure	30.11.2019	
3	Tendering of the work including allotment	01.12.2019	30.06.2020
4	Commencement of work	01.07.2020	
5	Quarterly milestones during the construction stage	01.12.2020	30.04.2020

6	Completion and commissioning	31.10.2021	31.12.2021
(3) Punjab Water Supply & Sewage Board			
(i) Name of the Project : STP under installation at Arniwala.			
Brief Scope of Work			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	Completed
4	Commencement of work	Started	31.12.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.01.2020	31.03.2020
(ii) Name of the Project : STP under installation at Ferozpur.			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	Completed
4	Commencement of work	Started	31.12.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.01.2020	31.03.2020
(iii) Name of the Project : STP under installation at Guru Har Sahai			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	Completed
4	Commencement of work	Started	31.12.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.01.2020	31.03.2020
(iv) Name of the Project : STP under installation at Jaito			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved

2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	Completed
4	Commencement of work	Started	30.04.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.05.2019	31.07.2019
(v) Name of the Project : STP under installation at Kotkpura			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	Completed
4	Commencement of work	Started	30.06.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.07.2019	30.09.2019
(vi) Name of the Project : STP under installation at Morinda			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	Completed
4	Commencement of work	Started	31.03.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.04.2019	30.06.2019
viii) Name of the Project : STP under installation at Gidderbaha			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	Completed
4	Commencement of work	Started	30.06.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	01.07.2019	30.09.2019

	commissioning		
ix) Name of the Project : Construction of STP whose work is yet to be started-Balachaur			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	31.07.2019
4	Commencement of work	01.08.2019	31.07.2020
5	Quarterly milestones during the construction stage	25 %	-
6	Completion and commissioning	01.08.2020	31.10.2020
x) Name of the Project : Construction of STP whose work is yet to be started-Garhshankar			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	31.07.2019
4	Commencement of work	01.08.2019	31.07.2020
5	Quarterly milestones during the construction stage	25 %	-
6	Completion and commissioning	01.08.2020	31.10.2020
xi) Name of the Project : Construction of STP whose work is yet to be started-Maluka			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	31.07.2019
4	Commencement of work	01.08.2019	31.07.2020
5	Quarterly milestones during the construction stage	25 %	-
6	Completion and commissioning	01.08.2020	31.10.2020
xii) Name of the Project : Construction of STP whose work is yet to be started-Rahon			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	31.07.2019
4	Commencement of work	01.08.2019	31.07.2020

5	Quarterly milestones during the construction stage	25 %	-
6	Completion and commissioning	01.08.2020	31.10.2020
xiii) Name of the Project : Construction of STP whose work is yet to be started-Samrala			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	31.07.2019
4	Commencement of work	01.08.2019	31.07.2020
5	Quarterly milestones during the construction stage	25 %	-
6	Completion and commissioning	01.08.2020	31.10.2020
xiv) Name of the Project : Construction of STP whose work is yet to be started-Faridkot			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Tender allotted but land is being finalised.	
4	Commencement of work	Work will be started after possession of land – T	T+12 months
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	T+12 months	T+15 months
xv) Name of the Project: Construction of STP whose work is yet to be started - Patti			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Land being finalised and tendering will be started after possession of land - T	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	-

6	Completion and commissioning	T+18 months	T+21 months
xix) Name of the Project : Towns where sewage system does not exist - Barriwala			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xx) Name of the Project : Towns where sewage system does not exist – Bhagta Bhaika			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxi) Name of the Project : Towns where sewage system does not exist - Bhai Roopa			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxiv) Name of the Project : Towns where sewage system does not exist - Kotha Guru			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months

4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxvii) Name of the Project : Towns where sewage system does not exist - Mahilpur			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure	T	
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxix) Name of the Project : Towns where sewage system does not exist - Mallan Wala			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure	T	
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxx) Name of the Project : Towns where sewage system does not exist - Mamdot			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure	T	
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxxi) Name of the Project : Towns where sewage system does not exist - Mudki			
Sr.No.	Stage	Start Date	Completion Date

1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxxii) Name of the Project : Towns where sewage system does not exist - Nihal Singh Wala			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxxiii) Name of the Project : Towns where sewage system does not exist - Raikot			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxxiv) Name of the Project : STP Moga			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months

6	Completion and commissioning	T+18 months	T+21 months
xxxv) Name of the Project : STP Phillaur			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxxv) Name of the Project : STP Sham Churasi			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxxvi) Name of the Project : STP Goniana			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure		T
3	Tendering of the work including allotment	T + 3 months	T+6 months
4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
xxxvii) Name of the Project : STP Malout			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	14.01.2019	31.03.2019
2	Financial Closure	T	
3	Tendering of the work including allotment	T + 3 months	T+6 months

4	Commencement of work	T+6 months	T+18 months
5	Quarterly milestones during the construction stage	25 %	T + 18 months
6	Completion and commissioning	T+18 months	T+21 months
4) Department of Water Supply Of Sanitation			
(i) Name of the Project: Repair of existing STPs installed Shri Muktsar Sahib and installation of continuous online effluent monitoring system.			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Under preparation (AMRUT Project)	31.01.2019
2	Financial Closure	836.66 Lakhs	
3	Tendering of the work including allotment	15.03.2019	15.05.2019
4	Commencement of work	01.06.2019	-
5	Quarterly milestones during the construction stage	01.06.2019 01.07.2019 01.10.2019	01.07.2019 01.08.2019 30.11.2019
6	Completion and commissioning	30.11.2019	31.12.2019
(ii) Name of the Project: Sewage facility in complete city (Shri Muktsar Sahib).			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Under preparation (AMRUT Project)	31.01.2019
2	Financial Closure	Rs. 58.63 Crores	
3	Tendering of the work including allotment	15.03.2019	15.05.2019
4	Commencement of work	01.06.2019	-
5	Quarterly milestones during the construction stage	01.06.2019 01.06.2020 01.06.2021	01.06.2020 01.06.2021 01.11.2021
6	Completion and commissioning	30.11.2021	31.12.2021
(iii) Name of the Project: Upgradation of existing STP installed at Shri Anandpur Sahib			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Under preparation	31.03.2019
2	Financial Closure	8 Crore	
3	Tendering of the work including allotment	15.05.2019	30.06.2019
4	Commencement of work	31.07.2019	-
5	Quarterly milestones	01.08.2019	01.11.2019

	during the construction stage	01.11.2019 01.02.2020 01.05.2020	01.02.2020 01.05.2020 01.08.2020
6	Completion and commissioning	30.11.2021	31.12.2021
(iv) Name of the Project: Upgradation of sewage system of Shri Anandpur Sahib.			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Under preparation	15.02.2019
2	Financial Closure	Rs. 8.28 Crore	
3	Tendering of the work including allotment	15.03.2019	15.05.2019
4	Commencement of work	01.06.2019	-
5	Quarterly milestones during the construction stage	01.06.2019 16.08.2019 01.10.2019 16.11.2019	15.08.2019 30.09.2019 15.11.2019 31.12.2019
6	Completion and commissioning	30.11.2019	31.12.2019
xiii) Name of the Project : Construction of STP whose work is yet to be started-Kiratpur Sahib			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Prepared	Approved
2	Financial Closure	Funds tied up with HUDCO	
3	Tendering of the work including allotment	Started	31.07.2019
4	Commencement of work	01.08.2019	31.07.2020
5	Quarterly milestones during the construction stage	25 %	-
6	Completion and commissioning	01.08.2020	31.10.2020

Annexure N - Timelines for installation of STP for Focal Point, Jalandhar

1) Name of the Project: STP for Focal Point, Jalandhar			
Brief Scope of Work		--	
Sr.No	Stage	Start Date	Completion Date
1	Preparation of DPR	Yet to prepare	
2	Financial Closure	Pending	
3	Tendering of the work including allotment	Pending	
4	Commencement of work	Yet to start	
5	Quarterly milestones during the construction stage	Yet to start	
6	Completion and commissioning	Yet to provide by PSIEC	

Annexure-N1- Timelines for installation of CETPs of Dyeing units

1) Name of the Project: 15 MLD CETP Bahadurke Road Cluster, Ludhiana.			
Brief Scope of Work		Scope : 1 No. CETP of 15 MLD	
Sr.No	Stage	Start Date	Completion Date
1	Preparation of DPR	Already Prepared	Approved
2	Financial Closure	Already done.	
3	Tendering of the work including allotment	Already done.	
4	Commencement of work	Already done.	
5	Quarterly milestones during the construction stage	80% completed.	
6	Completion and commissioning	31.03.2019	
2) Name of the Project: 40 MLD CETP Focal Point Cluster, Ludhiana.			
Brief Scope of Work		Scope : 1 No. CETP of 40 MLD	
Sr.No	Stage	Start Date	Completion Date
1	Preparation of DPR	Already Prepared	Approved
2	Financial Closure	Already done.	
3	Tendering of the work including allotment	Already done.	
4	Commencement of work	Already done.	
5	Quarterly milestones during the construction stage	70 % completed.	
6	Completion and commissioning	31.08.2019	
3) Name of the Project: 50 MLD CETP Tajpur-Rahon Road Cluster, Ludhiana.			
Brief Scope of Work		Scope : 1 No. CETP of 50 MLD	
Sr.No	Stage	Start Date	Completion Date
1	Preparation of DPR	Already Prepared	Approved
2	Financial Closure	Already done.	
3	Tendering of the work including allotment	Already done.	
4	Commencement of work	Already done.	
5	Quarterly milestones during the construction	30% completed.	

	stage	
6	Completion and commissioning	31.01.2020

Annexure O –Upgradation of 5 MLD CETP of Tanneries, Leather Complex, Jalandhar

1) Name of the Project: Punjab Effluent Treatment Society for Tanneries, Leather Complex, Jalandhar-Upgradation/modification of 5 MLD CETP of Tanneries.			
Brief Scope of Work		Scope : Upgradation/modification of 5 MLD CETP.	
Sr.No	Stage	Start Date	Completion Date
1	Preparation of DPR	Preparation of DPR for the up-gradation/modification has been assigned to M/s Chennai Environmental Management Company of Tanners, Chennai vide letter No. PETS/18-19/2287 dated 18.12.2018 and the draft DPR shall be ready by 15 th Feb.2019 and the same shall be submitted for appraisal to Project Management Consultant viz. CLRI, Chennai and after appraisal, the DPR shall be submitted to DIPP, Govt. of India for according approval of the Project by 31 st March,2019.	
2	Financial Closure	-----	
3	Tendering of the work including allotment	Open tender is expected to be floated to invite bids through e-tendering in the 1 st week of April, 2019.	
4	Commencement of work	Commencement of work is expected to be undertaken by the end of 1 st quarter of 2019-20.	
5	Quarterly milestones	GOI as per Central Sector Scheme-“Indian Footwear, Leather & Accessories Development Programme” (IFLADP scheme) shall release 70% of the Project Cost as grant in aid in four equal instalments and thus the quarterly achievements shall be 25% for each quarter.	
6	Completion and commissioning	Modification/Upgradation of the CETP is expected to be completed by 31 st March, 2020 and the upgraded/modified CETP simultaneously start its commencement of effluent treatment on continuous basis.	

Anneuxre P – Timelines for ETP for Dairy Complex, Ludhiana

(i) Name of the Project: Treatment of Effluent generated from dairy complex located at Tajpur and Haibowal, Ludhiana			
Brief Scope of Work		Scope:2 No. ETPs of 05MLD capacity and 10 MLD Capacity	
1	Preparation of DPR	Prepared	Approved.
2	Financial Closure	Funds of Rs. 43.30 crores approved by SLTC	
3	Tendering of the work including allotment	DNIT under preparation	
4	Commencement of work	-	-
5	Quarterly Milestones during the construction stage	-	-
6	Completion and Commissioning	-	31.12.2020
(ii) Name of the Project: Installation of Bio-gas power plant Jamsher Dairy Complex, Jalandhar			
1	Preparation of DPR	Prepared	Already approved
2	Financial Closure	-	
3	Tendering of the work including allotment	Started.	Done
4	Commencement of work	-	-
5	Quarterly Milestones during the construction stage	-	-
6	Completion and Commissioning	30.11.2019	31.12.2019
(iii) Name of the Project: Installation of ETP of 5 MLD Capacity at Jamsher Dairy Complex, Jalandhar			
1	Preparation of DPR	01.01.2019	28.04.2019
2	Financial Closure	30.11.2019	
3	Tendering of the work including allotment	01.12.2019	30.06.2020
4	Commencement of work	01.07.2020	
5	Quarterly Milestones during the construction stage	01.12.2020	30.04.2020
6	Completion and Commissioning	31.08.2021	30.09.2021

Anneuxre Q – Timelines for modernization of slaughter house

(i) Name of the Project: Modernization of existing slaughter house located at Ludhiana			
1	Preparation of DPR	Prepared	Already approved
2	Financial Closure	Funds of Rs. 17.65 allotted to the third party.	
3	Tendering of the work including allotment	Started.	07.09.2018
4	Commencement of work	08.09.2018	Ongoing
5	Quarterly Milestones during the construction stage	40% work completed as on 15.01.2019	100% civil work will be complete as on 30.06.2019. 100% commissioning will be complete as on 30.09.2019.
6	Completion and Commissioning	-	30.09.2019

Annexure R – Timelines for setting up of treatment facilities in Rural areas

Phase – 1			
Brief Scope of Work		Treatment facilities for villages having discharge more than or equal to 200 KLD	
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	1.3.2019	31.5.2019
2	Financial Closure	1.6.2019	31.7.2019
3	Tendering of the work including allotment	1.8.2019	30.9.2019
4	Commencement of work	1.10.2019	31.12.2019
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	1.1.2020	31.1.2020
Phase – 2			
Brief Scope of Work		Treatment facilities for villages having discharge between 100 KLD to 200 KLD	
1	Preparation of DPR	1.1.2020	31.3.2020
2	Financial Closure	1.4.2020	30.6.2020
3	Tendering of the work including allotment	1.7.2020	31.8.2020
4	Commencement of work	1.9.2020	31.12.2020
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	1.1.2021	31.1.2021
Phase – 3			
Brief Scope of Work		Treatment facilities for villages having discharge less than 100 KLD	
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	1.2.2021	30.4.2021
2	Financial Closure	1.5.2021	30.6.2021
3	Tendering of the work including allotment	1.7.2021	31.8.2021
4	Commencement of work	1.9.2021	31.12.2021
5	Quarterly milestones during the construction stage	-	-
6	Completion and commissioning	1.1.2022	31.1.2022

Anneuxre S – Timelinesfor providing irrigation schemes to utilize the treated sewage

Name of Project		Utilization of Treated Water from Sewerage Treatment Plants(STP's) situated in Sutlej Catchment	
Brief Scope of Project		<p>The project involves laying network of underground pipelines from Sewerage Treatment Plants for conveyance of treated water for irrigation in agricultural fields.</p> <p>Of total planned STP's in Sutlej catchment, installation of irrigation projects from 70 completed, under progress or planned STP's an amount of Rs. 132.82 cr shall be required for installation of irrigation infrastructure from these STP's. This requirement does not include STP's wherein irrigation projects are not feasible mainly due to non availability of irrigation command near these STP's because of these being located in urbanized area. The department has already commissioned irrigation projects from 16 STP's whereas 4 irrigation projects are under progress in STP's located in Sutlej catchment</p>	
S.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Under Progress	30.6.2019
2	Financial Closure	Projects already proposed to Gol and State for funding (132.82 cr required)	T
3	Tendering of Work including allotment	T+1 month	T+4 months
4	Commencement of Work	T+5 months*	T+11 months*
5	Quarterly Milestone during construction Stage	NA	NA
6	Completion and Commissioning	T+11 to T+18 months	T+14 to T+20 months

*Delay in commencement of work after funding and tendering process is mainly because as irrigation pipeline has to be laid in agricultural fields, due to which irrigation projects can be installed during harvest season. It shall depend upon month of availability of funds for projects, i.e. why period of 1 month upto 6 month has been identified in commencement of work

Fund Requirement for Individual Irrigation Projects from STP's

S.No.	Name of STP/Town	STP (MLD)	STP Technology	Irrigation Project Status		Remarks
				Yes/No	Funds Requirement	
STPs FUNCTIONAL						
Irrigation Projects Commissioned						
1	Anandpur Sahib (DWSS)	8	MBBR	Yes/Partially Functional		Irrigation Project was functional for 5 years, Railways changed the crossing point of pipeline. Revised permission obtained from Railways. Work underway
2	Dharamkot	4	SBR	Yes		Irrigation Project Commissioned
3	Goniana	3	WSP	Yes		Irrigation Project Commissioned
4	Kurali (GMADA)	5	MBBR	Yes		Irrigation Project Commissioned, Damage to pipeline due to bypass construction, Repair Underway
5	Malout	3	WSP	Yes		Irrigation Project Commissioned
6	Mukatsar (DWSS & AMRUT)	8.7	MBBR	Yes		Irrigation Project Commissioned
7	Mukatsar -II	5.7	MBBR	Yes		Irrigation Project Commissioned
8	Machhiwara	4	SBR	Yes		Irrigation Project Commissioned
9	Nakodar	6	SBR	Yes		Irrigation Project Commissioned
10	Nangal	8	ASP	Yes		Irrigation Project Commissioned
11	Phagwara	20	UASB	Yes		Irrigation Project Commissioned
12	Phagwara -II	8	MBBR	Yes		Irrigation Project Commissioned
13	Ropar-I	10	SBR	Yes		Irrigation Project Commissioned
14	Ropar-II	2.5	SBR	Yes		Irrigation Project Commissioned

Action Plan for Clean River Satluj

15	Ropar-III	2	SBR	Yes		Irrigation Project Commissioned
	Total	97.9				
	Irrigation Projects under Progress					
16	Jalalabad (DWSS)	8	WSP	Yes		Irrigation Project under Progress
17	Phillaur-I	2.6	DWP	Yes		Irrigation Project under Progress
	Total	10.6				
	Funding Required for Irrigation Projects					
18	Abohar (AMRUT)	25	SBR	No	685.00	Funds to be tied up, Proposed under NABARD-RIDF-24
19	Hoshiarpur (AMRUT)	30	MBBR	No	925.00	Funds to be Tied up
20	Jalandhar-III	25	SBR	No	910.00	Funds to be Tied up
21	Jalandhar-IV	25	SBR	No	875.00	Funds to be Tied up
22	Jalandhar-V	25	SBR	No	890.00	Funds to be Tied up
23	Jalandhar-VI	10	SBR	No	425.00	Funds to be tied up, Proposed under NABARD-RIDF-24
24	Jagraon-I	16	SBR	No	625.00	Funds to be tied up, Proposed under NABARD-RIDF-24
25	Jagraon-II	12	SBR	No	470.00	Funds to be tied up, Proposed under NABARD-RIDF-24
26	Malout-II	10	MBBR	No	385.00	Funds to be Tied up
27	Moga (AMRUT)	27	SBR	No	1293.00	Funds to be tied up, Proposed under NABARD-RIDF-24
28	Mukatsar -III	3.5	MBBR	No	125.00	Funds to be Tied up
29	Nangal-II	5	ASP	No	225.00	Funds to be Tied up. Blind line to be laid as command in away from STP
30	Nawanshahar	6	SBR	No	204.00	Funds to be Tied up
31	Phillaur-II	3	MBBR	No	83.00	Funds to be Tied up
32	Sahnawal	7	SBR	No	227.00	Funds to be Tied up
33	Zira	8	MBBR	No	306.00	Funds to be tied up, Proposed under NABARD-RIDF-24
	Total	237.5			8653.00	
	Irrigation Projects Not Feasible					
34	Jalandhar -I	100	UASB	No		Irrigation Project Not Feasible
35	Jalandhar-II	50	SBR	No		Feasibility Study being Conducted
36	Ludhiana-I	152	UASB	No		Irrigation Project Not Feasible
37	Ludhiana-II	111	UASB	No		Irrigation Project Not Feasible
38	Ludhiana-III	48	UASB	No		Irrigation Project Not Feasible

Action Plan for Clean River Satluj

39	Ludhiana-IV	105	SBR	No		Irrigation Project Not Feasible
40	Ludhiana-V	50	SBR	No		Irrigation Project Not Feasible
41	Phagwara-III	8	MBBR	No		Farmers not willing to use treated water
	Total	624				
	Grand Total	970			8653.00	
B	STPs UNDER CONSTRUCTION					
	Funding Required for Irrigation Projects					
42	Jaitu	6	SBR	No	196.00	Funds to be Tied up
43	Arniwala	2	SBR	No	56.00	Funds to be Tied up
44	Baghapurana (DWSS)	3.8	MBBR	No	145.00	Funds to be Tied up
45	Kotkapura-I	8	SBR	No	304.00	Funds to be Tied up
46	Kotkapura-II	6	SBR	No	265.00	Funds to be Tied up
47	Ferozepur (AMRUT)	18	SBR	No	825.00	Funds to be Tied up
48	Gidderbaha	7	MBBR	No	225.00	Funds to be Tied up
49	Guruhsahai-I	4	SBR	No	106.00	Funds to be Tied up
50	Guruhsahai-II	1	SBR	No	38.00	Funds to be Tied up
51	Makhu	4	SBR	No	170.00	Funds to be Tied up
52	Morinda	5.5	SBR	No	185.00	Funds to be Tied up
53	Talwandi Bhai	4	SBR	No	165.00	Funds to be tied up, Proposed under NABARD-RIDF-24
	Total (B)	69.3			2680	
C	STPS PROPOSED TO BE CONSTRUCTED					
	Funding Required for Irrigation Projects (Tentative)					
54	Ferozepur (AMRUT)	1		No	32.00	Funds to be Tied up
55	Balachaur	4		No	113.00	Funds to be Tied up
56	Rahon	3		No	95.00	Funds to be Tied up
57	Patti	8		No	200.00	Funds to be Tied up
58	Samrala	4		No	109.00	Funds to be Tied up
59	Faridkot	14		No	410.00	Funds to be Tied up
60	Garhshankar	3		No	94.00	Funds to be Tied up
61	Maluka	1		No	32.00	Funds to be Tied up
62	Mukatsar	10		No	375.00	Funds to be Tied up
63	Kiratpur Sahib	2		No	55.00	Funds to be Tied up
	Total (C)	50			1515	
GRAND TOTAL		1089.3			12848	

Annexure T – (1) Installation of online continuous effluent monitoring system on STPs

(1) PWSSB for the STPs already in operation in the towns namely Phagwara, Phillaur, Nakodar, Nawanshehar, Hoshiarpur, Banga, Machiwara, Nangal, Sahnewal, Ropar, Jagraon, Moga, Abohar, Malout, Dharamkot, Makhu, Talwandi Bhai, Zira, Goniana			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure	7.1.2019	31.03.2019
2	Tendering of the work including allotment	1.4.2019	30.06.2019
3	Commencement of the work	1.7.2019	30.9.2019
4	Completion and commissioning	1.10.2019	30.11.2019
PWSSB for the STPs already in operation in the towns namely Jalalabad			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure		
2	Tendering of the work including allotment	10.3.2019	2.4.2019
3	Commencement of the work	7.4.2019	6.7.2019
4	Completion and commissioning	6.7.2019	10.7.2019
(1) Department of Water supply & sanitation			
(i) Name of the Project: Installation of continuous online effluent monitoring system of STP Shri Anandpur Sahib.			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Under preparation	15.2.2019
2	Financial Closure	Rs. 8.28 Crore	
3	Tendering of the work including allotment	15.03.2019	15.05.2019
4	Commencement of work	01.06.2019	-
5	Quarterly milestones during the construction stage	01.06.2019	15.08.2019
		16.08.2019	30.09.2019
		01.10.2019	15.11.2019
		16.11.2019	31.12.2019
6	Completion and commissioning	30.11.2019	31.12.2019
(2) Grater Mohali Area Development Authority, Department of Housing and Urban Development			
(i) Name of the Project: Installation of continuous online effluent monitoring system of STP Kurali			
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	-	-
2	Financial Closure	10.1.2019	31.3.2019
3	Tendering of the work including allotment	5.4.2019	10.5.2019
4	Commencement of work	15.5.2019	30.6.2019
5	Quarterly milestones during the		

	construction stage		
6	Completion and commissioning	30.6.2019	30.6.2019
(i) Name of the Project: Installation of continuous online effluent monitoring system of STP Shri Muktsar Sahib			
Sr. No.	Stage	Start Date	Completion Date
1	Preparation of DPR	Under Preparation (AMRUT Project)	31.1.2019
2	Financial Closure	836.66 Lakhs	
3	Tendering of the work including allotment	15.3.2019	15.5.2019
4	Commencement of work	01.06.2019	-
5	Quarterly milestones during the construction stage	01.06.2019 01.07.2019 01.10.2019	01.07.2019 01.08.2019 30.11.2019
6	Completion and commissioning	30.11.2019	31.12.2019
(2) Municipal Corporation, Ludhiana			
Name of the Project		All STPs of Ludhiana	
Brief Scope of the Project		Online Continuous Monitoring System	
Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR		28.12.2018 (Completed)
2	Financial Closure	31.12.2018	01.02.2019
3	Tendering of the work including allotment	14.02.2019	28.03.2019 (Issue of LOA)
4	Commencement of the work	15.04.2019	
5	Completion and commissioning	30.06.2019	
(3) Municipal Corporation ,Jalandhar			
Name of the Project		STP 100 MLD Pholriwal & 25 MLD Pholriwal	
Brief Scope of the Project		Online Continuous Monitoring System	
1	Preparation of DPR	01.01.2019	31.01.2019
2	Financial Closure	31.03.2019	
3	Tendering of the work including allotment	01.04.2019	22.04.2019
4	Commencement of the work	08.07.2019	
5	Completion and commissioning	01.10.2019	31.12.2019

AnneuxreT – (2) Installation of CCTV cameras for the STPs already in operation

(1) PWSSB for the STPs already in operation in the towns namely Phagwara, Phillaur, Nakodar, Nawanshehar, Hoshiarpur, Banga, Machiwara, Nangal, Sahnewal, Ropar, Jagraon, Moga, Abohar, Malout, Dharamkot, Makhu, Talwandi Bhai, Zira, Goniana			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
Brief Scope of the Project		Installation of CCTV cameras	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure	05.01.2019	15.02.2019
2	Tendering of the work including allotment	15.02.2019	31.03.2019
3	Commencement of the work	01.04.2019	15.04.2019
4	Completion and commissioning	15.04.2019	30.04.2019
PWSSB for the STPs already in operation in the towns namely Jalalabad			
Name of the Project		All Existing STPs where maintenance is with PWSSB	
Sr.No.	Stage	Start Date	Completion Date
1	Financial Closure		
2	Tendering of the work including allotment	10.3.2019	2.4.2019
3	Commencement of the work	7.4.2019	6.7.2019
4	Completion and commissioning	6.7.2019	10.7.2019
(2) Greater Ludhiana Area Development Authority			
Name of the Project		Kurali, Distt. Mohali.	
Brief Scope of the Project		Installation of CCTV cameras	
1	Financial Closure	10.01.2019	31.03.2019
2	Tendering of the work including allotment	05.04.2019	10.05.2019
3	Commencement of the work	15.05.2019	30.06.2019
4	Completion and commissioning	30.06.2019	30.06.2019
(3) Department of Water Supply & Sanitation			
(i)	Name of the Project	STP of Shri Anandpur Sahib	
	Brief Scope of the Project	Installation of CCTV cameras	
1	Financial Closure	Rs. 1.20 Lacs	
2	Tendering of the work including allotment	15.02.2019	15.04.2019
3	Commencement of the work	22.04.2019	-
4	Completion and commissioning		10.05.2019
(ii)	Name of the Project	STP Shri Muktsar Sahib	
	Brief Scope of the Project	Installation of CCTV cameras	
Sr.No.	Stage	Start Date	Completion Date

1	Preparation of DPR	The said work is part of repair of existing STP to be taken under AMRUT Project
2	Financial Closure	
3	Tendering of the work including allotment	
4	Commencement of the work	
5	Completion and commissioning	

(3) Grater Mohali Area Development Authority, Department of Housing and Urban Development**(i) Name of the Project: Installation of CCTV Camera at STP Kurali**

Sr.No.	Stage	Start Date	Completion Date
1	Preparation of DPR	-	-
2	Financial Closure	10.1.2019	31.3.2019
3	Tendering of the work including allotment	5.4.2019	10.5.2019
4	Commencement of work	15.5.2019	30.6.2019
5	Quarterly milestones during the construction stage		
6	Completion and commissioning	30.6.2019	30.6.2019

(4) Municipal Corporation, Ludhiana

	Name of the Project	All STPs of Ludhiana
	Brief Scope of the Project	Installation of CCTV cameras
1	Financial Closure	Complete (Part of ICT project)
2	Tendering of the work including allotment	04 – 03 – 2019 (Issue of LOA)
3	Commencement of the work	-
4	Completion and commissioning	31.08.2019

(5) Municipal Corporation, Jalandhar

(i)	Name of the Project	STP of Pholriwal	
	Brief Scope of the Project	Installation of CCTV cameras	
1	Financial Closure	31.03.2019	
2	Tendering of the work including allotment	01.04.2019	22.04.2019
3	Commencement of the work	10.07.2019	
4	Completion and commissioning	01.10.2019	31.12.2019
(ii)	Name of the Project	STP of Basti Peer Dad	
	Brief Scope of the Project	Installation of CCTV cameras	
1	Financial Closure	31.03.2019	
2	Tendering of the work including allotment	01.04.2019	22.04.2019
3	Commencement of the work	10.07.2019	

4	Completion and commissioning	01.10.2019	31.12.2019
(iii)	Name of the Project	STP of Jaitewali	
	Brief Scope of the Project	Installation of CCTV cameras	
1	Financial Closure	31.03.2019	
2	Tendering of the work including allotment	01.04.2019	22.04.2019
3	Commencement of the work	10.07.2019	
4	Completion and commissioning	01.10.2019	31.12.2019
6) Local Government, Jalandhar			
Name of the Project		STP located at MC Shamcurasi	
Brief Scope of the Project		Installation of CCTV cameras	
1	Financial Closure	-	-
2	Tendering of the work including allotment	20.02.2019	15.04.2019
3	Commencement of the work	30.04.2019	15.05.2019
4	Completion and commissioning	15.05.2019	31.05.2019

Annexure-U Timelines for installation of online monitoring system for industries

Sr No.	Activity	Date of Start	Date of completion
1	Procurement Process	01.02.2019	28.02.2019
2	Finalization of Supply orders	01.03.2019	31.03.2019
3	Installation of online continuous monitoring system	01.04.2019	31.05.2019
4.	Caliberation of online continuous monitoring system	01.06.2019	30.06.2019
5.	Connecting the online continuous monitoring system with the server of PPCB	01.07.2019	31.07.2019

AnnexureV–Monitoring of Progress of projects for setting up of new/up graded facilities

Name of the Project		Progress achieved at the end of the month		
Brief Scope of the Project				
S. no.	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 / development Stage			
6	Completion and Commissioning			

AnnexureW–Performafor operational record of the STP/ CETP

Locati on of STP/ CETP	Capaci ty of STP/ CETP (MLD)	Readi ng of Water meter at 8 am	Quant ity of waste water treate d (in KLD)	Sludge wasted (kg/day)	Qty. of Chlori ne used/ DAY (Kg/d ay)	Details of chemical used for dozing purpose and the compone nt at which the same was imparted.	Name of the compone nt remained out of order during the day and reasons thereof.	Qty of treated w/w reused for irrigation of agricultural land / irrigation of green area / construction purpose (KLD)	Qty of treated w/w discharged into drain leading to river Ghaggar (KLD)

Annexure W– (1) Performa for keeping record of analysis result of STP/ CETP

Date of Sampling	Point of sampling	Values of the parameters in mg/l except pH						
		pH	TSS (mg/l)	BOD (mg/l)	COD (mg/l)	T.Coli (MPN/100 ml)	F.Coli (MPN/100 ml)	Metals

Annexure X–Proformaregarding visit of industries located in catchmen area

S.No.	Name & location of the industry	Date of visit	Observations noticed during visit	Analysis results of trade effluent samples	Whether meeting with the effluent standards or not	Remarks, if any

AnnexureY -Proforma for monitoring of water quality of River Sutlej

Sr. no.	Sampling points at river Sutlej	Date of Sampling	DO (mg/l)	pH	BOD (mg/l)	T.Coliform (MPN/100 ml)	D.B.U. classification

AnnexureZ – Proforma for submission of report regarding Health Check Camps

Sr. No.	Location of the camp	Date on which camp was organized	Name of the Doctor(s) & name of their organization	No. of people examined	No. of people found effected with water borne disease

Annexure Z – (1) Proforma for submission of report regarding awareness programme

Sr. No.	City / Town / Location where the awareness programme is organized	Name of the Officer(s) who hold this programme	Date	No. of participants	Brief detail about awareness detail