

15 MGD Water Treatment Plant for Hooghly-Chinsurah & Bansberia Municipality.

Executive Summary:

Hooghly-Chinsurah and Bansberia Municipalities are among the growing regions in Kolkata Metropolitan Area (KMA) with areas of 17.2 sq.km. and 9.064 sq.km respectively. The combined population of the two Municipalities 2,75,000 as per 2001 census, will be 3,85,000 (year 2025) and will be 4,70,000 (year 2039).

The Municipalities are facing substantial Water crisis especially in the summer months due to their high dependence on ground water sources. With depletion of ground water, safe water has become a scarce commodity for quality of life of residents and economic growth of the region.

To combat such situation, the aforementioned project has been taken up under JNNURM with approved project cost of Rs. 4929 lakhs to serve the above stated population along with Industrial-Commercial-Institutional and fire fighting demand with implementation period of 36 months.

The project envisages a 15 MGD (68 MLD) Water Treatment Plant, to be accommodated in the area where a Surface Water Treatment Plant, river Hooghly, as its source with capacity 0.6 MGD installed 80 years back for Hooghly-Chinsurah Municipality and after commissioning will replace existing ground water source in phases. The scheme also includes R.C.C Intake Jetty, Raw Water Pumping Station on the bank of river Hooghly, 2 nos. 600 mm dia 400 M long Water Rising Main. The treated water will be accommodated in 2 million capacity Clear Water Reservoir from which it will be pumped through a combine primary main of 1000 mm dia. for a distance of 1.5 km. and then bifurcate to two trunk mains - 8.27 km. for Hooghly-Chinsurah and 7 km. for Bansberia Municipality respectively and will feed the existing OHRs 7 under Hooghly-Chinsurah and 3 under Bansberia Municipality will serve as the zone centres for equitable distribution of water within Municipal limit. The existing distribution grid will be integrated accordingly.

The per capita water supply per day has been adopted as 135 liter from the existing 60 liter. In addition, Industrial, Commercial, and Institutional demand along with fire-fighting demand as per CPHEEO norm has been included in the water demand. The project after implementation will be handed over to the Municipalities for its Operation and Maintenance.

CPHEEO

Appraisal Note for Consideration of Projects under JNNURM by Central Sanctioning & Monitoring Committee of M/o UD

(Water Supply)

- Proposal : 15 MGD WTP with raw water intake/ transmission system & treated water transmission & distribution system at Bansberia
- Name of State / UT : West Bengal
- Name of City : Kolkata
- Objectives : To provide adequate and quality water supply to the population in the project area and to reduce dependency on ground water.
- whether CDP is prepared : Not furnished to CPHEEO
- Background : The Municipalities are facing water supply problem due to their high dependence on groundwater sources. With depletion of ground water the water has become a scarce commodity for quality of life of residents and economic growth of the region.
- Present Status : Hooghly-Chinsurah has a small surface Water Treatment Plant with River Hooghly as its source with a capacity of 0.6 MGD. This plant is about 80 years old and hardly serves a fraction of the population on date. Bansberia Municipality does not have any surface water source.
- Thus, there is need to develop water supply based on surface water.

Water availability	:	
• Availability of source	:	Surface water from River Hooghly
• Total (MLD)	:	About 25000 MLD
Per capita (Ipcd)	:	135 plus 15% losses
UFW, existing	:	35% (Hooghly-Chinsurah) 37% (Bansberia)
Need of the Project	:	The municipalities of Hooghly-Chinsurah and Bansberia lack water supply adequate water supply in quality & quantity. The existing water supply is based on ground water, which is showing Arsenic contamination in West Bengal. The proposed water supply system is requires to replace & augment the existing water supply.
Population	:	
- As per 2001 Census	:	170,200 (Hooghly-Chinsurah) 104,400 (Bansberia)
- Base year (2009)	:	189,016 (Hooghly-Chinsurah) 118,386 (Bansberia)
- Design year (2039)	:	280,039 (Hooghly-Chinsurah) 189,607 (Bansberia)
As per Demand (mid) Base year	:	56.43
Design year (2039)	:	83.26
Based Source	:	
Surface	:	River Hooghly
Ground	:	Nil
Project Components	:	<ul style="list-style-type: none"> • Raw water intake arrangements • Raw water transmission system • Water treatment plant with civil and electro mechanical works & Clear Water reservoir • Raw & Clear Water Pumping Stations Treated water transmission & integration system
Estimated cost proposed	:	Rs.49.29 Crore

➤ Period of Implementation	:	3 years
➤ Funding Pattern	:	Gol 35% (JNNURM scheme) GoWB 65% (Budgetary support) ULB - Nil
➤ Financial Pattern (lakhs)	:	FY 06-07- 1478.6; FY 07-08 - 1971.50; FY 08-09-1478.6
➤ Implementing Agency	:	Kolkata Metropolitan Water & Sanitation Authority (KMWSA)
➤ Annual O&M Expenditure (Rs. lakh)	:	
- Existing	:	163.53
- Proposed (year 2009)	:	474.50
➤ Agency Responsible for O&M	:	Municipalities of Hooghly-Chinsurah & Bansberia
➤ Tariff (Rs./kl)	:	
- Existing	:	3.00
- Proposed (year 2009)	:	3.50
➤ Revenue generation	:	
- Existing	:	55.49
- Proposed (year 2009)	:	612.8
➤ Estimated cost for consideration & approval	:	Rs. 49.29 crore

CPHEEO's Technical Comments:

1. The proposal is for providing treated water supply based on surface water source, to the population in "the Municipalities of Hooghly - Chinsurah and Bansberia. These municipalities presently have ground water based water supply, which is meagre and facing quality problems related to Iron & Arsenic.
2. The population projections of the project areas have been furnished and found to be in order. Similarly, water demand projections have been made in the revised DPR.

3. The raw water source is River Hooghly (a branch of River Ganga), which is a perennial source.
4. Raw water quality analysis reports have been furnished with the revised DPR.
5. Designs of the various components such as raw water mains, water treatment plant, clear water mains including integration with the existing ESRs have been furnished and are in order. Drawings of the proposal have also been furnished.
6. Design of pumping machinery has been done as per the guidelines laid down in the Manual on Water Supply & Treatment and is in order.
7. Annual O&M estimate of the proposed scheme has been framed and appended with the revised DPR.
8. The DPR also furnishes the proposal for water tariff.
9. Cost estimates of all the components of the project, based on current schedule of rates (SOR) applicable in the state have been furnished with DPR. Items not covered under SOR have been estimated at market rates.
10. The revised DPR for 15 MGD Water Treatment Plant at Bansberia and allied works has been examined and technically approved at a cost of Rs.49.29 crore for execution, subject to the condition that: -
 - a. All works proposed in the DPR shall be carried out as per the detailed standard specifications and the relevant code of practice published by the Bureau of Indian Standards.
 - b. The pumping machinery and electrical equipment shall conform to the relevant Indian Standards published by the Bureau of Indian Standards.
 - c. The execution and O&M of the project shall be carried out as per the comments appended.
 - d. No change in the scope of work shall be effected without prior approval of CPHEEO.

Appendix
Bansberia

Technical comments for execution and O&M of water supply projects:

- a. Metering of all the service connections should be done to ensure the recovery of user charges.
- b. Leak detection & control measures should be taken up in the projects area

to reduce leakage, which has been estimated as 35-37% to enable the replacement of worn out pipes, if any, and reduce water & energy losses.

- c. Bulk meters should be installed in all the transmission mains to monitor the quantity of water produced & introduced into the distribution system.
- d. Water samples should be picked up after each unit operation at WTP to ensure water of desired quality.
- e. The execution of water treatment plants should be done on turn key basis and agency should be asked to operate & maintain the plant for a minimum period of at least one year from the date of commissioning and train the staff of local body who are likely to operate & maintain the plant later.
- f. Water quality surveillance mechanism should be put in place by the local body and regular water samples should be procured from consumer end and strategic locations to ensure quality of water being supplied to consumer.
- g. Pumping equipment & machinery should be procured directly from the manufacturers to ensure quality of product and manufacturer may be asked to install the pumps.
- h. For the water treatment plants, care should be taken at every unit operation in order to produce treated water of desired quality and also to reduce the O&M cost.