

Canal re-excavation works in parts of East Kolkata Wetlands under Kolkata Environmental Improvement Project

Extended Summary

1. The sewage of the core area of Kolkata city has traditionally been discharged in the Dry Weather Flow (DWF) channel which feeds the fisheries of the East Kolkata Wetlands (EKW). The main organic pollution indicator of sewage, i.e., BOD (Biochemical Oxygen Demand) concentration at Topsia where sewage is discharged into the DWF channel is about 150 mg/l. Measured BOD concentration at the inlets of the fish ponds varies between 35 and 90 mg/l. At the exit of the fish ponds measured BOD concentration is generally between 20-30 mg/l indicating that ponds act efficiently in reducing BOD concentration of the effluent to standards acceptable for final discharge in surface water bodies.

2. Under Kolkata Environmental Improvement Project (KEIP), scientific sewage and drainage network construction has commenced in borough VII and in parts of borough XI and XII of Kolkata Municipal Corporation (KMC). The separated sewage has been planned to be discharged into the DWF channel with the goal that such discharge will not only give rise to a highly efficient, low cost, low carbon emission foot print system for treating waste water from a major urban centre but will also enhance the livelihood of a large rural population involved in sewage-fed fish farming and agriculture.

3. A specialised scientific study carried out by KEIP has established that the pond system has the additional capacity to treat more waste water (at least an additional 10% of the present flow) with a high probability that fish production will increase because of the projected additional flow.

4. In order to fully facilitate the above plan of additional discharge reaching the targeted fish ponds like Nalban, Charcharia, etc KEIP has planned to carry out major engineering interventions in the EKW. These include improvements in hydraulic short comings and also improvement in existing sewage distribution system of the EKW areas by

- desilting of main DWF channel to aid in effective conveyance of sewage to fishery feed canals and
- re-excavation/desilting of major sewage distribution canals as follows:

Northern EKW areas

Package	Item	Stretch (m)	Present details lining	Desilting quantity (cu.m.)
CW20 Lot 1	Desiltation of DWF <i>khal</i> (Dhapa lock Nalban <i>khal</i>)	0.0 – 760.0	Existing side & bed lined	8700
	Desiltation of Nalban <i>khal</i>	0.0 – 3946.00	Unlined	20,100
	Desiltation of Nerinir <i>khal</i>	0.0 – 6700.00	Unlined	18,500
	Desiltation of Paran chaprasi <i>khal</i>	0.0 – 5600.00	Unlined	27,500
CW20 Lot 2	Desiltation of Ghosher <i>khal</i>	0.0 – 6152.00	Unlined	25,900
	Desiltation of District board <i>khal</i>	0.0 – 3793.00	Unlined	5000.00
	Desiltation of Charcharia Srifaltala <i>khal</i>	0.0 – 3606.00	Unlined	11,200.00

Package	Item	Stretch (m)	Present lining details	Desilting quantity (cu.m.)
CW20 Lot 3	Desiltation of DWF channel from Topsia point A to Bantala	0.0 – 5881.50	Existing side & bed lined and/or having U-trough	104,600
		5881.50-6225.00	Unlined	
	Desiltation/renovation of defunct DWF channel (from Bantala to NalbanDhapa lock)	760.0 – 4332.00	Unlined	40,800
	Desiltation of main Fish feed channels	0.0 – 3503.00	Unlined	20,100

Southern EKW areas

Package	Item	Stretch (m)	Present Lining details	Desilting quantity (cu.m.)
CW21 Lot 1	Desiltation of Lalkuthi <i>khal</i>	0.0 - 3500.00	Unlined	21600.00
	Desiltation of TP Bajbarantala link canal	0.0 – 2325.0	Unlined	28200.00
	Desiltation of Nodor <i>khal</i>	0.0 – 5224.0	Unlined	47400.00
CW21 Lot 2	Desiltation of Deara <i>khal</i>	0.0 – 6804.0	Unlined	146000.00
	Desiltation of Kharki Belekhal Bajbarantala <i>khal</i>	0.0 – 3946.0	Unlined	25800.00
CW21 Lot 3	Desiltation of Bidydhari extension <i>khal</i>	0.0 – 4540.0	Unlined	26200.00
	Desiltation of fishery feed canal	3503.0– 4776.0	Unlined	49500.00
	Desiltation of Kanchagheri Jhawkhai <i>khal</i>	0.0 – 5380.0	Unlined	53000.00

- constructing a new siphon for the DWF channel below the Central Lake Channel so as to feed the fisheries with waste water without dilution by storm water,
- repair of many existing siphons originating from DWF channel

5. Although the sub-project is expected to have an overall positive impact on the environmental condition and livelihood of the local communities, potential environmental impacts from planning, construction and operation phases of the sub-project have been assessed for their significance, in order to identify appropriate mitigation measures wherever required.

6. The primary potential impact of the sub-project is associated mainly with proper disposal of the excavated silt. Local fishermen have preferred that the excavated material may be used (as back filling) to construct canal bank roads which are currently not present in most stretches of the selected canals. Accordingly final disposal of excavated silt will be made at sites along canal banks located and approved by local fishermen and/or by the Fish Producers' Association. This is an environment friendly measure as it will involve minimum transport of excavated material and local utilization of waste material for infrastructure development.

7. The other potential impact could be contamination of surface water bodies in the EKW by interstitial water draining out of the disposed silt on canal banks after excavation from canal beds. Such water will have the same chemistry of the canal/pond water to which it will flow back. There will therefore be no addition of pollutants to the surface water bodies from the interstitial water draining out of the excavated disposed silt.

8. Analysis of bed silts from EKW canals (to be re-excavated) carried out so far indicates that the materials from the bed level and at 1 m depth are non-hazardous in respect of analysed parameters when compared with the limits set in the existing

Hazardous Wastes Rules. There are no organized health care facilities in the EKW areas and therefore, possibility of finding bio-medical waste in the canal silt of EKW is remote. Further such silts are in contact with the canal water for a long time before they are to be excavated out. Therefore pollutants, if present in the material before excavation, have been completely leached out. Negligible quantity of pollutants, if at all, is likely to be leached out from the excavated material once they are disposed/used as back filling material of the proposed canal bank roads.

9. The aquifer in the EKW area from which drinking water is drawn occurs at about 100 m depth. Further the top surface of EKW area is covered predominantly by a 14 m thick clay layer. Such clay layer has a hydraulic conductivity of 10^{-6} cm/sec. Therefore any leachate (containing pollutants) generated at surface will take a few hundred years to reach the aquifer in order to pollute the drinking water source in the area.

10. Threat to health of construction workers handling sewage-charged silts during re-excavation of canals is a potential environmental impact. Therefore provision of appropriate protective gears for the construction workers is a pre-requisite before the excavation commences each day.

11. Good site management during construction is the key to environment management of the EKW area. A well planned construction site is the most essential element towards mitigation of many environmental impacts during construction.

12. Effects on environmental parameters such as air quality, noise, flood control and drainage, soils, land use and transportation, institutions, aesthetics, public health and safety, and cultural resources are of insignificant nature.

13. The environmental assessment relating to the re-excavation and desilting of canals of the EKW therefore shows that the sub-project will have a positive impact on the project area environment particularly on facilitating a highly efficient, low cost, low carbon emission foot print system for treating additional waste water from Kolkata city and supporting the wise use of the wetland through enhanced supply of sewage in the sewage fed fisheries, an unique eco-friendly livelihood activity of the region. The potential negative impacts on the environment are localized, short-term, not significant, and can generally be mitigated.