

HYDRAULIC STUDY DEPARTMENT (HSD), SYAMA PRASAD MOOKERJEE PORT, Kolkata (SMPK)

OBJECTIVE :

Aligned with SMPK's Corporate Quality Policy, the objectives of the Hydraulic Study Department are:

- Applied Hydraulic Research on the behaviour of the Bhagirathi-Hugli river system and formulate necessary River Regulatory Measures (viz. Dredging, River Training & Bank Protection Measures) for its implementation towards the maintenance and continual improvement of depth in the shipping channel leading to KDS & HDC
- Provide advanced Navigational Aids (e.g. VTMS) to the Vessels for safe navigation & provide Electronic equipment / Instruments (e.g., DGPS, ADCP etc.) for acquisition of Hydraulic and Bathymetric data.
- Automation & Digitization of Port operations towards Ease of Doing Business (EoDB) alongwith maintenance of Legacy software, hardware & network systems.

BACKGROUND :

Since 19th century, the pre-eminent position of Calcutta port has been declining due to progressive reduction of head water supply and navigable depth due to sedimentation problem of Bhagirathi-Hooghly River system. Accordingly, the Govt. of India had been consulting recognized national and international experts of fame to assess the hydraulic behaviour of the river system and suggest remedies. Though River Training (RT) works and dredging were conventional remedial measures for improvement of navigational depth, no significant RT works were taken up prior to 1954. It was realized that without having a comprehensive understanding about the Geo-morpho-dynamics and Tidal Hydraulics of the river system, the appropriate regulatory measures could not be undertaken. This calls for a specialized research department to study, analyse and formulate the remedial measures of this river system.

Thus, deteriorating navigability of Hooghly River has prompted the Commissioners of the Port of Calcutta, to set up a Hydraulic Study Department (HSD) under the stewardship of Dr. D.M. McDowell, a United Nations Hydraulic Expert, in 1962 to serve the need of

preservation and maintenance of the Kolkata Port by improving the regime and navigability of the Bhagirathi-Hooghly River system.

Soon after commissioning, the HSD took up systematic estuarine Data collection, analyses thereof and recommended several RT measures augmented with dredging to improve the navigability of the Hugli. Different schemes were taken up and they yielded satisfactory results – this includes the series of RT works taken up in the Ninan-Nurpur- Mayapur-Goriapole areas. Many foreign experts of fame came in association with the department and appreciated its functioning. The success of the department in serving the very purpose of its creation was recognized by the Ministry of Science and Technology, Government of India, which accredited this department as a Research and Development unit. The department maintains close liaison with many scientific Institutions of National / International repute, some of which are University of Calcutta, Jadavpur University, IEST (shibpur), Indian Institute of Technology (Kharagpur), Indian Institute of Technology (Madras), Bose Institute, S.N. Bose Institute of Basic sciences, Saha Institute of Nuclear Physics, Geological Survey of India, Meteorological Department, Department of Space (Ministry of Science & Technology), Bhaba Atomic Research Centre, Central Water & Power Research Station (Pune), Water & Power Consultancy Services (WAPCOS), National Institute of Ocean Technology(Chennai), National Remote Sensing Agency (NRSA). University of Hamburg (Germany), Lanka Hydraulic Institute (Sri Lanka), Danish Hydraulic Institute etc.

This department also performed significant role in the commissioning of the Farakka Barrage Project which was built to ensure perennial upland discharge in the Bhagirathi-Hooghly River. To observe the changes in the river after the barrage was constructed, Hydraulic Study Field Organisation, a field unit of this department was set up at Berhampore in 1975. Another discharge measurement station was also set up first at Samudragarh (Burdwan, W.B.) and then it was shifted to Swarupgunj(Nadia, W.B.). Since the late sixties onwards, global shipping industry underwent changes with the introduction of higher-drafted vessels. Calcutta Port authorities by that time realized that to arrest falling cargo-handling quantum, they should do away with the draft restriction existing throughout the 232 km long riverine passage. Accordingly, setting up of a deep-drafted dock complex at Haldia was contemplated by the CPT and finally it came in 1977-78.

ACTIVITIES :

The department at present performs multi-faceted regular as well as consulting / depository

Activities. Being recognized as an R&D unit on River/Estuarine Hydraulics by the Ministry of Science & Technology, GOI is entrusted by several Govt/Semi-Govt./other organization to carry out numerous Techno-feasibility studies on depository work basis with the approval of competent authority of SMPK.

HSD CORE PROCESS FLOW (AS-IS) :

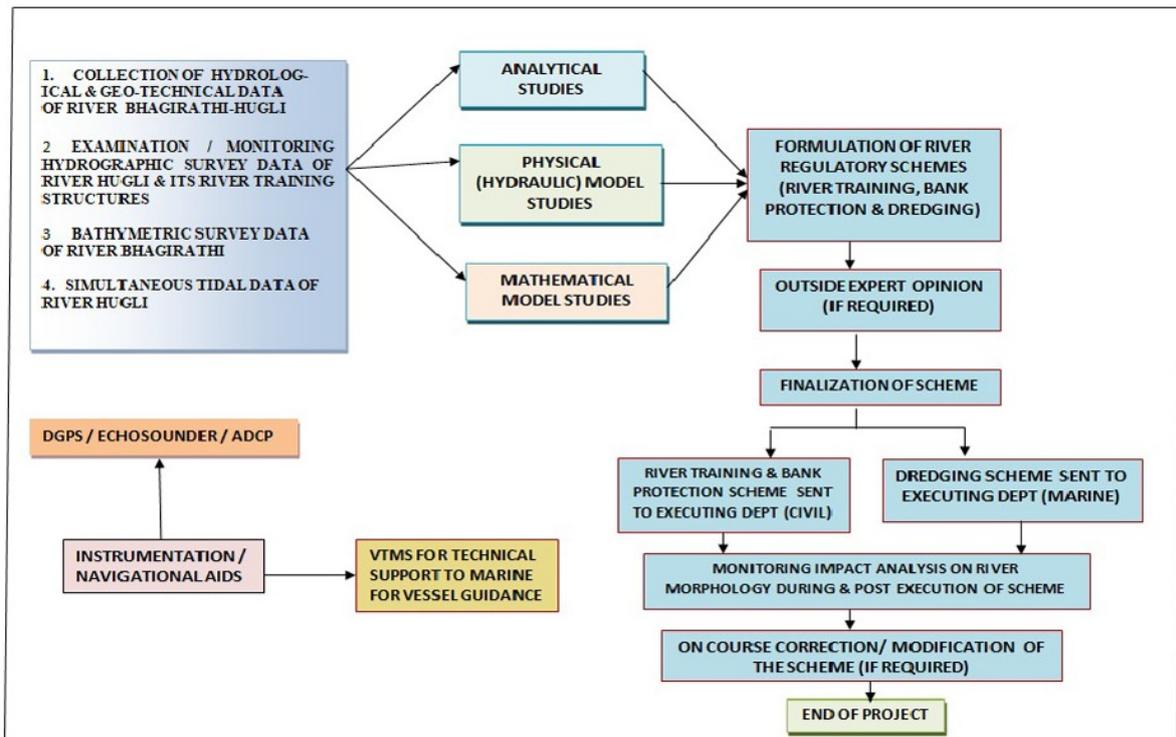


FIG TO BE MADE CONSPICUOUS

ACHIEVEMENT :

The following River Regulatory Works for Hugli river / estuary were/are formulated & monitored by this department. The works were / are executed by the River Training Wings of SMP-K

(i) Already Executed:

- Nourishment of Spur Nos. 92A, 93 at Moyapur region and Spur nos. ~~120,122~~ 122, 123 at Phalta region and Spur No.134 at Ninan –Nurpur area

- Bank Protection Work near Sondia Column
- Bank Protection Work near 3rd Oil Jetty
- Construction of a Guide-wall at the northern tip of Nayachar Island
- Construction of a submerged Guide-wall at Jellingham area (Pilot projet)
- Bank protection works at Nischintapur & Ghoramara island
- Removal of impediment at Balari Passage
- Removal of impediment at Auckland

(ii) Under Execution:

- Nourishment / Rebuilding of 10 no. Spurs at Nischintapur area (South 24-Parganas)
- Bank protective measures at Jorabagan area (Kolkata)
- Bank protective measure at Shalukkhali (Haldia).
- Bank Protective measure at left bank in the river reach at Phalta region comprising 55 Nos. of short spurs

(iii) Feasibility study under progress for upcoming River Regulatory Measures :

- Nourishment / Strengthening of existing River Training measure at right bank in the river reach at Phalta region

HUMAN RESOURCE :

This multi-disciplinary department is headed by Sri Debasish Guha, Chief Hydraulic Engineer (che@kolkataporttrust.gov.in) duly backed up by a pool of Scientists & Engineers from varied academic / professional backgrounds viz. Civil / Electronics & Communication / Instrumentation / Electrical Engineering, Applied & Pure Mathematics, Physics, Computer Application, Nautical Science etc.

LOCATION :

The Main Office of HSD is located at 20, Garden Reach Road, Kolkata -700 043 (Tele-Fax : +9133-2409-3031) with different offices situated all over West Bengal starting from Berhampore, Swarupgunj, Kolkata, Falta, Haldia, Saugor, Frasergunj, Dadanpatra etc.