



Dhaka Environmentally Sustainable Water Supply Project

Roadshow Brochure

February 2014



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1 Background information

1.1 Dhaka

Dhaka is the capital city of Bangladesh. It is one of the major cities of South Asia, located in the heart of the Bengal delta. Dhaka has an estimated population of around 15 million, making it the ninth largest city in the world, with forecasts of 29 million by 2035.

1.2 Water supply system in Dhaka

Dhaka Water Supply and Sewerage Authority (DWASA) is responsible for construction, operation, improvement, and maintenance of necessary infrastructure for providing potable water supply, sewerage, and storm water drainage services in its services areas. DWASA supplies potable water to almost 100% of the population of Dhaka, with a service area of some 400 km².

Major achievements regarding DWASA's management improvement in recent years include:

- an annual tariff increase of 5% every year since 2007
- implementation of a 5-year capacity building program for over 800 staff in areas including financial management, operation & maintenance, and billing and accounting
- rationalization of staff evidenced by the reduction in the ratio of staff per 1,000 connections from 17 in 2007 to 12 in 2012
- development of a 5-year business plan in 2011 and annual update thereafter
- computerization of the water connections database of about 310,000 customers
- a fully computerized billing system
- a reduction in non-revenue water from 36% in 2007 to about 29.57% in 2012
- operating ratio from 0.90 in 2008 to reduced 0.66 in 2012; and
- revenue collection % of total bill amount increased 64.50% in 2008 to 93.36% in 2012.

1.3 Water resource

DWASA has been relying heavily on groundwater as a source of water supply but current abstraction is beyond sustainable yields. The water table in Dhaka is falling by 2–3 metres per year, which makes 40–60 deep tube wells inoperable each year.

Groundwater extraction is expected to be reduced from 1,900 MLD in 2012 to 1,360 MLD by 2020 and 1,260 MLD by 2025. At the same time, the overall supply needs to be increased to cater for the growing population in a larger service area. The main existing source of surface water is being polluted rapidly. Out of the total 2,400 MLD currently provided by DWASA, 450 MLD is provided by Saidabad Water Treatment Plant (WTP), which abstracts water from the nearby Sitalakhya River, where water quality is deteriorating, particularly due to high ammonia concentrations during the dry season. This puts sustainable operation of the WTP at serious risk. This in turn makes it essential for DWASA to find an adequate and sustainable source of raw water to achieve its long-term development objectives.

The Meghna River will be a new source of water supply for Dhaka. This has good water quality and ample quantity even during the dry season.

1.4 Potable water supply

DWASA is implementing water distribution network improvements with Asian Development Bank (ADB) financing, to rehabilitate and strengthen the water supply systems, complemented by capacity building of DWASA to manage the water supply systems competently. Six contracts have been awarded to reduce NRW to 15% in each district metered area in five out of 11 zones of the DWASA service area by 2016.

2 Project Description

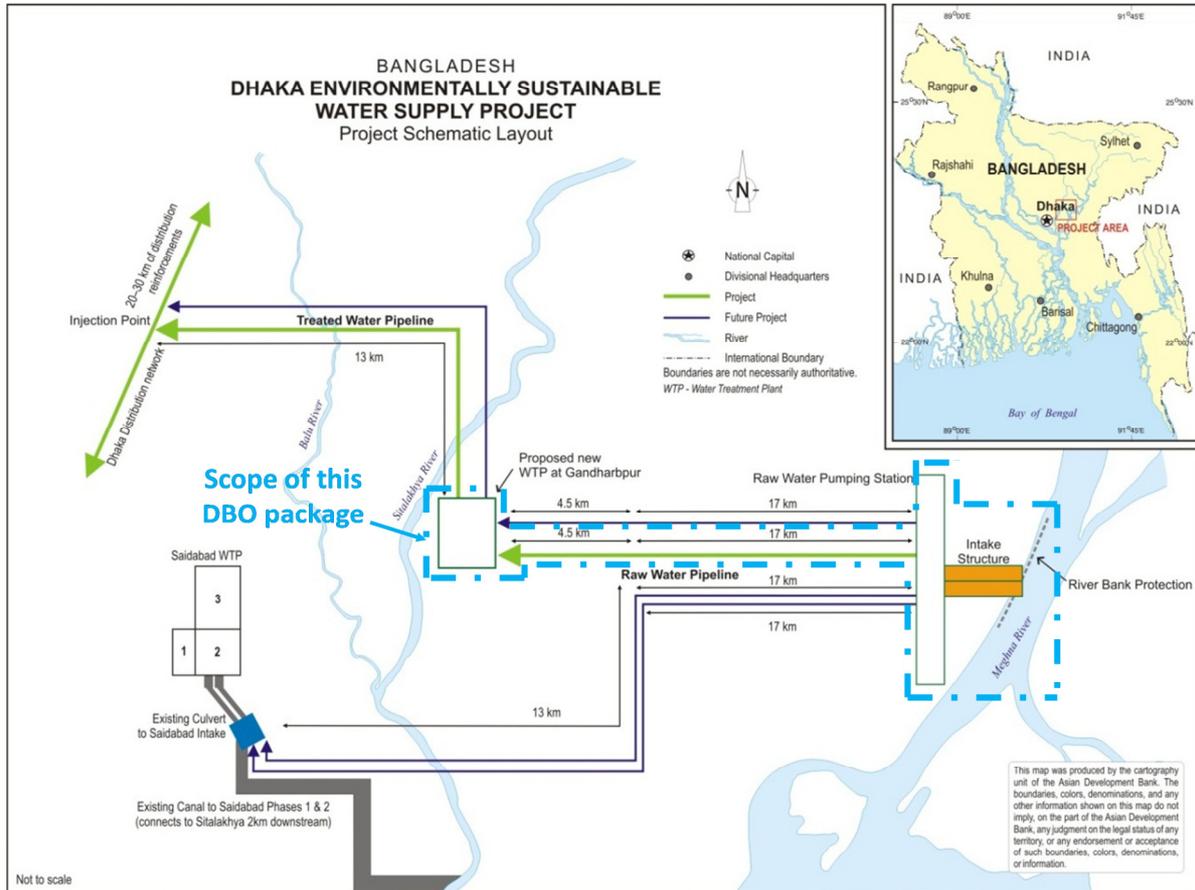


Figure 1: Project Schematic Layout

2.1 Goals and objectives of the project

The goals and objectives of the Dhaka Environmentally Sustainable Water Supply Project (ESWSP) are to:

- Design and build modern, reliable facilities to provide 500MLD of treated water into the Dhaka water distribution system (highlighted in the dotted line in Figure 1 above).
- Construct a treated water transmission pipeline from the WTP to the injection point of the existing distribution network
- Implement distribution reinforcements
- Improve distribution network for non-revenue water reduction in one zone of DWASA service area.

2.2 Status

The Government of Bangladesh has received financing from the ADB, Agence Française de Développement (AFD), and European Investment Bank (EIB), which will be re-lent to DWASA for the implementation of the project¹.

2.3 Location

See Figure 1 for the various elements of the Dhaka ESWSP.

¹ <http://www.adb.org/projects/documents/dhaka-environmentally-sustainable-water-supply-project-rp>

Facility	This Project	Future Development
Intake	Capacity for output of 2000 MLD	N/A
Pre-treatment and Raw Water Pumping Station	Sufficient capacity for 500 MLD total treated water at WTP, plus space for expansion to 2,000 MLD	1,500 MLD additional
Raw Water Transmission System	22 km pipe with sufficient capacity for 500 MLD output from WTP (Minimum diameter to be confirmed in bid documents, but assumed approximately 2m)	31m wide pipe corridor to be used for duplicate pipeline to Gandharbpur and two pipelines to Saidabad (2x450 MLD output from WTP)
Water Treatment Plant	500 MLD treated water output, pumped into transmission main (by others), plus outline design and space for further 500 MLD	500 MLD at Gandharbpur WTP

Table 1: Key project data (note that above values are to be reviewed)

2.4 Scope of this package

The rest of this brochure is focused on a design-build package for providing 500 MLD of treated water as mentioned above.

This package comprises:

- Raw water intake, including pre-treatment (if necessary) and raw water pumping station
- Raw water pipeline
- Water treatment plant, including treated water pumping station.

A design-build contract is proposed to incentivize design innovation, and ensure integrated design and operation from the intake to the WTP. The same contractor will be engaged to operate the system for 3 years. The contractor will train and develop DWASA personnel in those 3 years to be able to operate the facilities.

The Gandharbpur WTP will be located about 10 km east of Dhaka, on the bank of the Sitalakhya River. A raw water intake will be developed at the Meghna River, with associated facilities and a pumping station with sufficient capacity for the WTP plus losses. A raw water pipeline and access road will be constructed from the intake to the WTP, leaving space for three future pipes to be laid beside.

Key design figures for this package and for future development are listed in Table 1.

The WTP will serve the population of about 3 million people in Badda, Gulshan, Mirpur, and Uttara.

See Figure 2 for a location map with the pipeline route included.

2.5 Parties involved

- DWASA is the project initiator and Executing Agency.
- Asian Development Bank (ADB), Agence Française de Développement (AFD), European Investment Bank (EIB) and Government of Bangladesh (GoB) will finance the project.
- Consultant Mott MacDonald (MM) is providing technical and procurement assistance for this package up to bid evaluation².

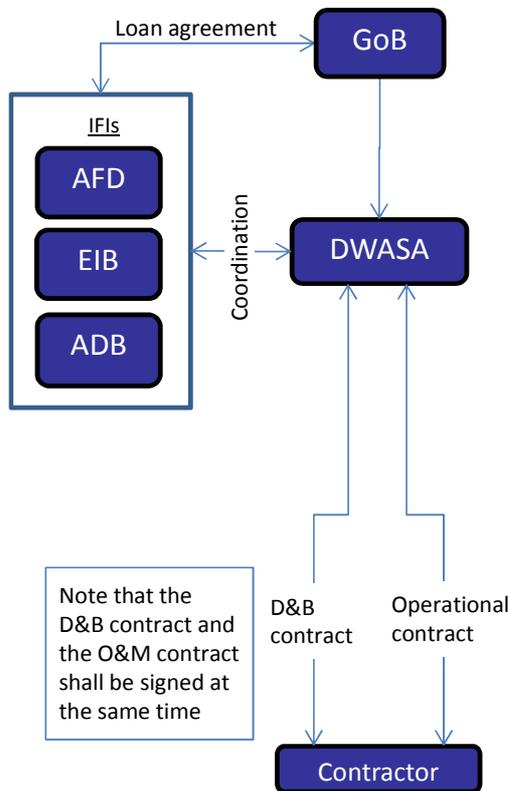


Figure 3: Stakeholder Organogram

² An international team of consultants will be recruited separately for design review and construction supervision of this package.

2.6 Assets and land

The WTP site is already owned by DWASA. DWASA is in the process of procuring all the land (about 204 acres) for the pipeline and intake.

The Contractor will be required to construct the facilities within the borders of the land plots.

2.7 Water quality monitoring

Meghna River water quality data is being collected from January 2014 at the intake site. This information will be given to bidders.

2.8 Geotechnical survey

Geotechnical information from some 20 boreholes is already available for most of the intake site and pipe route. Further detailed geotechnical surveys of the WTP site are being carried out and the results will be included in the bid documents.

2.9 Topographic survey

Topographic survey information is available for all the sites and will be included in the bid documents.

2.10 Design and Build

2.10.1 Design requirements

Each bidder shall be required to prepare and submit outline designs as part of its Technical Proposal to demonstrate how it intends to meet the Employers Requirements set out in the bid documents.

2.10.2 Environmental requirements in the construction phase

The project shall be required to meet requirements of both the Government of Bangladesh and the project financial institutions. The requirements will be incorporated into the contract. An initial Environmental Examination (IEE) of the project is available from the website of ADB³ and DWASA. DWASA will develop an Environmental Impact Assessment in accordance with the government's requirements.

2.11 Operations phase

The Contractor will be responsible for operation of the facilities for a 3 year period under an Operations Contract.

The Contractor will be required to pump raw water from the intake to the WTP, treat at the WTP, and transmit treated water from the outlet of the WTP into a transmission pipeline, provided by others, leading to the distribution system. The contract will set out the requirements for the quality, quantity and pressure of that treated water supply.

2.11.1 Payment mechanism

2.11.1.1 Fixed payments

The Contractor will receive a fixed 'availability payment'. The fixed payment is intended to cover the time related costs of providing the services, including staffing.

The amount of fixed payment will be based on the Contractor's bid.

2.11.1.2 Variable payments

The Contractor will receive payment per cubic meter of treated water, delivered from the WTP.

2.11.1.3 Performance deductions

Performance deductions will be applicable for failure of the Contractor to provide the service required during the operational phase. These are likely to relate to treated water quality, pressure and flow.

³ <http://www.adb.org/projects/documents/dhaka-environmentally-sustainable-water-supply-project-iee>

2.12 Outline risk matrices

Tables 2 and 3 set out the indicative risk allocation for this package. These will be reviewed and developed during the roadshow and the development of the bid documents.

Table 2: Outline risk matrix – design and construction phase

Risk No.	Risk Description	Party Responsible	
		DWASA	Contractor
1	Land provision	*	
2	Risk of general ground conditions		*
3	Antiquities, munitions, major utilities or existing contamination affecting construction	*	
4	Design risk		*
5.1	Permitting risk - generally		*
5.2	Permitting risk - where permits are unlawfully delayed / revoked	*	
6	Completion risk		*
7	Quality of construction and of services		*
8	Foreign currency risk		*
9	Inflation risk	*	
10	Cost overruns		*
11	Force-majeure event	*	

Table 3: Outline risk matrix – operations phase

Risk No.	Risk Description	Party Responsible	
		DWASA	Contractor
1	Operation of facilities during 3 year operations period		*
2.1	Permitting risk - generally		*
2.2	Permitting risk - where permits are unlawfully delayed / revoked	*	
3	Water demand risk	*	
4	Water tariff risk	*	
5	Foreign currency risk		*
6	Inflation risk	*	
7	DWASA credit risk	*	
8	Cost overruns		*
9	Force-majeure event	*	
10	Raw water quality (outside a defined 'envelope')	*	
11	Energy consumption risk		*

3 Procurement

3.1 Procurement process

The procurement will follow a two-stage bidding procedure. There will be no separate prequalification phase.

In the first stage, bidders will be required to submit a 'Technical Proposal'. This will include:

- evidence that the bidder meets clearly defined qualification requirements and other information demonstrating bidder's understanding of the complexity of the contract e.g. preliminary work programme, licensing arrangements, etc.; and
- the bidder's detailed 'Contractor's Proposals' showing, among others, the facilities that he proposes.

The bidder's Technical Proposals will be received and reviewed by DWASA with assistance by Mott MacDonald. Bidders whose Technical Proposals do not provide the required information to allow for their assessment may be rejected. DWASA will advise each bidder of any non-conformity of material nature in its Technical Proposal and may choose to modify elements of the bidding documents through an addendum with a view to enhancing competitiveness of the bidding process without compromising essential project objectives.

In the second stage, bidders will be required to submit Final Technical Proposals. These will be reviewed by DWASA with assistance by Mott MacDonald. Bidders whose Final Technical Proposal has corrected all notified non-conformities and are evaluated to be technically substantially responsive will be requested to submit a Price Proposal. Price Proposals of such bidders will then be opened and evaluated.

DWASA intends to encourage the bidders to design to achieve the optimum whole life cost. The bids will be evaluated on the net present cost of the price for the design and build phase and the discounted guaranteed operational cost based on a discount period of approximately 25 years. The guaranteed operational cost will be part of the Schedule of Guarantees in the Contract and subject to demonstration in the 'Tests After Completion' in the Contract.

There will be separate contracts for the Design and Build and for Operation. The successful bidder will win both of these contracts.

3.2 Preliminary procurement schedule

Table 4: Preliminary bid schedule

Activity ⁴	Approximate Date ⁵
Issue Stage 1 bid documents	April 2014
Submit Stage 1 Technical Proposals	August 2014
Review Stage 1 Technical Proposals and issue Addenda (if necessary)	October 2014
Submit Stage 2 Technical Proposals	December 2014
Submit Price Proposals	February 2015
Bid Evaluation	April 2015
Award contracts for D&B and O&M to one successful bidder	May 2015

⁴ The staging of these activities may be subject to adjustment.

⁵ These dates are to be confirmed.

3.3 Indicative schedule

Table 5: Indicative programme

Bid announcement	Duration
Mobilize design-build contractor	Q2 2015
Complete construction works	By 2018
Commence operation of the project facilities	By end of 2018

3.4 Bidding requirements

Detailed requirements will be included in the bid documents and bidders need to demonstrate them in the first-stage bid.

3.4.1 Eligibility

This procurement will follow ADB's Procurement Guidelines, but ADB's member country eligibility restrictions will not apply. Domestic preference (as defined in ADB's Procurement Guidelines) will not apply.

3.4.2 General requirements

Bidders will need to show their compliance with a set of general prequalification requirements, such as:

- due registration and existence
- absence of unsettled debts to the Bangladeshi budgets

- statutory or contractual restrictions to participate in a bid or in the project
- absence of a conflict of interest.

Each bidder will be requested to sign a Covenant of Integrity that can be found in the EIB Guide to Procurement⁶.

3.4.3 Financial requirements

Each bidder will also need to prove their financial strength (requirements will be set for assets, revenues, equity and net profit for the last 5 years).

3.4.4 Special requirements

Each bidder will be required to demonstrate specified experience in the design, construction and commissioning of:

- water treatment plants
- raw water pipelines; and
- raw water intake facilities and pumping stations

Each bidder will also be required to demonstrate experience in the operation and maintenance of water facilities in accordance with specified qualification criteria.

⁶ http://www.eib.org/attachments/thematic/procurement_en.pdf

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