

**DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK**

**BARBADOS**

**WATER AND SANITATION SYSTEMS UPGRADE**

**(BA-L1015)**

**LOAN PROPOSAL**

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<b>REQUIRED</b>	
1. POA	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148470">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148470</a>
2. Monitoring & Evaluation Arrangements	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148476">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148476</a>
3. Procurement Plan	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2149274">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2149274</a>
4. ESA*	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148481">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148481</a>
5. ESMR	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2168163">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2168163</a>
<b>OPTIONAL</b>	
1. Technical options and design	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148484">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148484</a>
2. Analysis of project cost and economic viability	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2154447">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2154447</a>
3. Financial analysis	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148486">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148486</a>
4. Institutional analysis/personnel, procedures other aspects of implementation capacity	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148492">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2148492</a>
5. Safeguard and Screening Form for Screening and Classification of projects (SSF)	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2145330">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2145330</a>

## **Abbreviations**

AOP	Annual Operating Plans
BWA	Barbados Water Authority
CDB	Caribbean Development Bank
CIS	Custom Information System
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESA	Environmental and Social Analysis
ESMP	Environmental and Social Management Plan
ESMR	Environmental and Social Management Report
ESS	Environmental and Social Strategy
FSO	Fund for Special Operations
FTC	Fair Trading Commission
GIS	Geographical Information Systems
GOBA	Government of Barbados
ICAS	Institutional Capacity Assessment System
ICB	International Competitive Bidding
IDB	Inter-American Development Bank
IT	Information Technology
IWRMP	Integrated Water Resources Management Plan
MEWD	Ministry of Environment, Water Resources, and Drainage
MIS	Management Information Systems
NRW	Non Revenue Water
OC	Ordinary Capital
OM	Operations Manual
PEU	Project Execution Unit
PIU	Public Investment Unit, Ministry of Finance, Investment, Telecommunication and Energy
POD	Proposal for Operation Development
PPP	Public-private-partnership
PSC	Project Steering Committee
SCADA	Supervisory Control And Data Acquisition
TC	Technical Cooperation
UFW	Unaccounted for Water
WSSP	Water and Sanitation Strategic Sector Plan

**PROJECT SUMMARY**  
**BARBADOS**  
**WATER AND SANITATION SYSTEMS UPGRADE**  
**(BA-L1015)**

Financial Terms and Conditions			
<b>Borrower:</b> Government of Barbados (GOBA)		<b>Amortization Period:</b>	25 Years
<b>Executing Agency:</b> Barbados Water Authority (BWA) of the Ministry of the Environment, Water Resources and Drainage		<b>Grace Period:</b>	5 Years
		<b>Disbursement Period:</b>	5 Years
<b>Source</b>	<b>Amount(US\$)</b>	<b>Supervision and Inspection Fee:</b>	*
<b>IDB (OC)</b>	50,000,000	<b>Interest Rate:</b>	LIBOR-based
<b>Local</b>	3,000,000	<b>Credit Fee:</b>	*
<b>Total</b>	53,000,000	<b>Currency:</b>	US Dollar
Project at a Glance			
<b>Project Objective/Description:</b> <p>The goal of the project is to improve water resources management and sustainable water and wastewater service provision by the BWA. Specifically, the project will support the GOBA's efforts to modernize the institutional setting of the water and sanitation sector, and improve the efficiency of the operations of the BWA.</p>			
<b>Special contractual clauses:</b> <p>Special contractual conditions for the first disbursement will be: (i) evidence that the Project Execution Unit has been established (¶3.6); (ii) evidence that the Project Steering Committee has been established (¶3.6); (iii) evidence that a Project Manager has been hired (¶3.6); and (iv) evidence that the Project Operating Manual, previously approved by the Bank, has been approved and adopted by the Management and Board of Directors of BWA (¶3.6).</p>			
<b>Exceptions to Bank policies:</b> None			
Project consistent with Country Strategy:	Yes [ X ]	No [   ]	
<b>Project qualifies for:</b> SEQ[   ] PTI [   ] Sector [   ] Geographic[   ] Headcount [   ]			
<b>Procurement:</b> The procurement of works, goods and consulting services will be done in accordance with the Bank's new procurement policies and procedures (documents GN-2349-7 and GN-2350-7) (¶3.8).			

(\*) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the applicable provision of the Bank's policy on lending rate methodology for ordinary capital loans. In no case will the credit fee exceed 0.75% or the inspection and supervision fee exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

## I. DESCRIPTION AND RESULTS MONITORING

### A. Background, Problem Addressed, Justification

- 1.1 Barbados is ranked among the top fifteen countries in the world in terms of water scarcity, with only 390 m<sup>3</sup> of fresh water available per capita per year. According to the Barbados Water Authority (BWA), abstractions for water production in 2007 averaged about 159,100 m<sup>3</sup> per day.<sup>1</sup> Other abstractions from privately owned and operated wells account for approximately 36,364 m<sup>3</sup> per day. Based on these abstraction estimates and a population of 275,300, current groundwater abstraction levels exceed the sustainable groundwater yields. As a result, further development, as is currently the case with a proliferation of requests for tourist developments (golf courses, hotels, etc) is constrained by the unavailability of fresh water. The BWA, a government-owned statutory corporation, provides 100% of the potable water for the island's population. Estimates from water production versus billed by the BWA indicate that unaccounted-for-water (UFW) has escalated to 40-45%<sup>2</sup> due to the age of the system, deferred infrastructure maintenance, and inadequacies in the system operations.
- 1.2 With increases in water demand, wastewater discharge has also become an important concern not only from the public health standpoint, but also for the preservation of beach water quality, near shore waters and the coral reefs. In principle, the BWA is responsible for sewage disposal services. However, the majority of wastewater and sewage is disposed via septic tanks and septic wells. Currently there are 4,500 sewage connections in Barbados, versus over 100,000 potable water connections. Consequently, there is a pressing need for an efficient use and preservation of the existing water resources, wastewater treatment, and a review of Barbados long-term water resource strategy.
- 1.3 A number of studies have been commissioned over the last 10 years on the BWA; however, many of the recommendations have not been implemented. This has resulted in an unsatisfactory level of efficiency of the Utility and with the high level of subsidies transferred from the GOBA budget to the BWA. The GOBA recognizes that it is therefore necessary to prepare the BWA for future regulation by the Fair Trading Commission (FTC).
- 1.4 **Role of the Bank.** The Bank's involvement in Barbados in the water and sanitation sector has been traditionally focused on the sewerage sector. Initially the Bank financed the Bridgetown Sewerage Project in 1975. Following the execution of this project, the Bank and the European Investment Bank (EIB) supported development of the South Coast Sewerage Project in 1992 709/OC-BA and 710/OC-BA. Additionally, the GOBA and the BWA, with the

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<sup>1</sup> The abstraction includes brackish water supply for the desalination plant.

<sup>2</sup> This estimate is to be verified by Consultants hired under TC BA-T1010.

support of the IDB,<sup>3</sup> are currently developing a Water and Sanitation Strategic Sector Plan (WSSP) that will guide the Sector for the next 10 years.

- 1.5 Given the interest of the GOBA in increasing the efficiency and viability of the BWA, the Bank and the GOBA have agreed to structure a new operation geared towards achieving these goals, prior to entering into more substantial programs in wastewater collection and treatment expansion and potable water network improvement. The strengthening of the BWA in its mandates, financial viability and execution capacity will ensure the proper implementation of future loan programs.
- 1.6 The proposed project is in line with the Bank's Country Strategy for Barbados (2005 - 2008) through support for improvement in transport, neighborhood and environmental infrastructure as well as for improvements in results-based management, accountability and efficiency. The new Country Strategy (2009 – 2013), which has been confirmed by the GOBA and is pending Board consideration, iterates Bank support for improvement in water resources management, efficiency of water services and the management of wastewater. This project is also consistent with the Water and Sanitation Initiative of the Bank as it contributes to the "Efficient and Transparent Utilities" program.
- 1.7 **Donor Coordination.** The proposed operation has been presented to and discussed with the Caribbean Development Bank (CDB) and the EIB; both entities have expressed interest in participating in future investment programs of the BWA. The Public Investment Unit (PIU) will follow up with both the CDB and the EIB to ensure that any future interventions of these entities are consistent with this program.

## **B. Objective, Components and Cost**

- 1.8 The goal of the project is to improve water resources management in Barbados and sustainable water and wastewater service provision by the BWA. Specifically, the project will support the GOBA's efforts to modernize the institutional setting of the water and sanitation sector and improve the efficiency of the operations of the BWA.
- 1.9 In order to address the issues related to UFW and overall efficiency of the BWA operations, there is a need to modernize the BWA and to improve the potable water supply system. With respect to sanitation, GOBA has initiated the investments in wastewater treatment plants and has expressed interest in the Bank's assistance to define a concrete action plan for wastewater management and reuse. It is therefore proposed that the project be comprised of three components as outlined below:

- i. **Component 1: Reorganization and modernization of the BWA (US\$6.4 million):** This component will address the institutional strengthening needs

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<sup>3</sup> Through the Water and Sanitation Initiative

of the BWA and will include: (i) the preparation of a long-term business plan including a human resources strategy (institutional review), implementation of approved organizational/corporate structure changes, an operational strategy (standard operational procedures), change management/re-branding, benchmark performance standards, 24-hour service provision, implementation of long-term customer service plan and a review of the role of the BWA as regulator of water abstraction – in order to prepare the BWA for regulation by the Fair Trading Commission (FTC); (ii) integration of IT systems, (iii) installation of the Customer Information System (CIS) and subsequent training, and (iv) preparation of a public awareness campaign / stakeholder management.

- ii. **Component 2: Rehabilitation of potable water supply (US\$35.6 million):** This component will include: (i) Unaccounted for Water (UFW) reduction through a meter installation and replacement project, establishment of island-wide Water Management Districts; and preparation of a multi-phased mains replacement project and implementation of the first phase; (ii) upgrade of potable water facilities; (iii) installation of Management Information Systems (MIS) and training,<sup>4</sup> network management systems such as the Supervisory Control And Data Acquisition (SCADA), and Geographical Information Systems (GIS) and Hydraulic Network Model and training; and (iv) equipment upgrades and energy efficient alternatives, including renewable energy.
- iii. **Component 3: Wastewater treatment action plan and upgrades (US\$3.45 million):** This component will include the development of : (i) a wastewater reuse master plan; (ii) Environmental Impact Assessment (EIA) of wastewater reuse for aquifer recharge; (iii) study of the viability of wastewater reuse in the context of tariff setting and subsidies; (iv) the South Coast Sewerage System improvement program, including design of emergency bypass, replacement of odor control system and installation of full SCADA; as well as (v) purchase of equipment. AquaFund resources will be requested to explore the viability of a public-private-partnership (PPP) arrangement for the implementation of the wastewater treatment action plan, and if necessary, the development of terms and conditions for the PPP.

## C. Key Results Indicators

- 1.10 The principal outcome of the project will be a modernized BWA organizational structure, measured by improved efficiency of the BWA operations whereby its UFW is reduced by at least 10 percentage points<sup>5</sup> when compared to the start of the project, and is prepared for FTC regulation. The improvement in efficiency of

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<sup>4</sup> Training will be conducted for systems maintenance.

<sup>5</sup> Baseline data will be verified by Consultants hired under BA-T1010 along with estimated level of reduction to be attained under BA-L1015.



BWA's operations is expected to yield improvement in its financial position and viability as a commercially run company. Additionally, the project will prepare a wastewater treatment action plan, which will provide for water reuse.

- 1.11 Key output indicators of efficiency gains from the project will be realized through the implementation of: (i) BWA Corporate Business Plan; (ii) upgraded billing and collection systems; and (iii) UFW reduction program including establishment of district metered areas, replacement of micro-meters and network infrastructure improvements. The indicator of success of the wastewater treatment action plan will be assurance of its readiness for implementation including the identification of the source of financing.
- 1.12 These indicators have been selected because they represent the activities required to achieve the project objective. They address directly the problems affecting the operation of the BWA and will provide the tools required for the BWA to be commercially viable. The project will ultimately provide for the BWA to be regulated by the FTC.

## II. FINANCING STRUCTURE AND MAIN RISKS

### A. Cost and Financing

- 2.1 The total cost for the project is US\$53 million. Of that amount, US\$50 million will be drawn from the Bank's Ordinary Capital Resources (OC), and US\$3 million from local counterpart contributions. The following table provides a breakdown by investment category and source of financing.

Category	IDB	Local	Total
<b>1- Project Administration</b>	<b>0</b>	<b>3,000,000</b>	<b>3,000,000</b>
1.1 Project Management and Supervision		3,000,000	3,000,000
<b>2- Direct Costs</b>	<b>45,450,000</b>		<b>45,450,000</b>
2.1 Reorganization and Modernization of the BWA	6,400,000		6,400,000
2.2 Rehabilitation of Potable Water Supply	35,600,000		35,600,000
2.3 Wastewater Treatment Action Plan	3,450,000		3,450,000
<b>3- Concurrent Costs</b>	<b>500,000</b>		<b>500,000</b>
3.1 Auditing	300,000		300,000
3.2 Monitoring and Evaluation	200,000		200,000
<b>4. Unallocated</b>	<b>4,050,000</b>		<b>4,050,000</b>
4.1 Contingencies	2,800,000		2,800,000
4.2 Financial Charges	1,250,000		1,250,000
<b>Total</b>	<b>50,000,000</b>	<b>3,000,000</b>	<b>53,000,000</b>
Percentage (%)	95%	5%	100%

### B. Borrower and Executing Agency

- 2.2 The Borrower is the GOBA while the executing agency for the project will be the BWA of the Ministry of the Environment, Water Resources and Drainage.

### **C. Environmental and Social Safeguard Risks**

- 2.3 Six (6) Policy Directives, including OP-704 A-2 and OP-703 B.04, B.05, B.06, B.11 and B.12 have been triggered. OP-704 A-2 pertains to natural hazards as Barbados is within the Atlantic hurricane belt and is exposed to storm events. OP-703 relates to the need for an Environmental and Social Analysis, and public consultations. Through the project, positive impacts will be fostered by modernizing the BWA and improving efficiency of its operations.
- 2.4 By improving water supply and sanitation services, the project will contribute to the health and well being of Barbados' population, especially in preventing illnesses due to waterborne diseases and improving overall environmental conditions. The project is not expected to have any major large scale, significant and/or irreversible negative environmental or social impacts. Potential negative impacts are mainly related to water infrastructure construction works and operations, including construction noise, dust, waste generation, traffic inferences and occupational risks. Social impacts of the project may range from temporary outages of water supply to customers and inconvenience caused by open excavation. This will be mitigated by giving the public advance notice of affected areas, notice of traffic detours, as well as provision of water tanker service.
- 2.5 In accordance with the Category "B" classification, the Environmental and Social Strategy (ESS) an Environmental and Social Analysis (ESA) has been conducted for the project and a draft report submitted to the Bank. No adverse impact is foreseen for Component 1. Components 2 and 3 may have certain environmental and social impacts associated with the anticipated civil works. To mitigate these potential impacts, the Environmental and Social Management Plan (ESMP) is expected to be completed after public consultations, which will be conducted before the end of November 2009.
- 2.6 Lastly, the draft ESA also recommends capacity building and training of BWA personnel in order to strengthen the capacity of the BWA to undertake tasks related to environmental and social safeguards.

### **D. Risks and Special Considerations**

- 2.7 **Fiduciary Risk.** The fiduciary risk of the project is moderate. The GOBA and the BWA have worked with the Bank on previous projects and have gained experience with Bank procedures and national financial and procurement systems. However, continued efforts will be made in assisting the GOBA and the BWA in improving project management and implementation activities. This point will be further elaborated in 2.12 and Section III. It is also expected that the integration of the IT systems considered under Component 1 will help BWA in producing timely financial statements.
- 2.8 **BWA Financial Considerations.** BWA's annual operating revenue for 2005 – 2006 (the latest audited position) stood at US\$41.4 million. The majority

- of BWA's revenue is derived from water sales and wastewater collection charges. However, the revenues are impaired by the inefficiencies in billings and collections. Billings are hindered by meters that are either stopped or under-registering. To address this problem, the BWA must replace approximately 25,000 meters annually over the next four years. Under this program 50,000 meters are earmarked for replacement. Management estimates that average revenue loss per stopped meter per month is US\$8.50, which extrapolates to about US\$2.6 million lost revenues per annum. In terms of collections, the BWA management estimates that approximately 53% of customers billed are in arrears. This has resulted in a chronically high accounts receivable, which has grown from US\$12.6 million as at March 31, 2006 to US\$14 million as at September 30, 2009, an increase of 11%. There are penalties imposed for the late payment which include disconnection of service and/or an assignment of debt to a collection agent.
- 2.9 On the expenditure side, BWA's cost structure is largely associated with expenses in labor, energy and desalinated water production. Annual operating expense for 2005-2006 stood at US\$38.8 million. Furthermore, the BWA has very little flexibility in reducing its costs as a large portion of the operating expenses originates from fixed costs associated with water production and distribution. Lastly, the lack of funds has limited the ability for the BWA to realize its capital expenditures program, which for 2000- 2008 has averaged only US\$5.5 million annually.
- 2.10 Due to the highly fixed cost structure, the short term focus to improve BWA's financial position has been two-fold. Firstly, the implementation of a 60% tariff increases, enacted by the GOBA on July 1, 2009 which temporarily relieves the BWA in terms of revenue stream.
- 2.11 Secondly, but more importantly, to reduce the receivables from 30% of revenues down to 20% of revenues and reduce the delinquency rate from 53% down to 30%. In order to reach these targets, the BWA will have to implement a comprehensive program to improve the procedures in billing and collection, meter reading, and the policies for incentives. In addition, having the BWA's service standards be subjected to independent regulation would provide a sufficient level of discipline and accountability for the BWA operations. The work of the PEU will be assisting the BWA in its preparation for regulation.
- 2.12 Long term solutions for the BWA to which the project will contribute includes the reduction in fixed costs through efficiency gains in water delivery, which will in turn reduce energy costs, water losses and eventually personnel costs. This is in part achieved by rehabilitating or replacing existing assets managed by the BWA, including booster pumps, pumping stations, water mains and water treatment facilities.

## **E. Other Key Issues and Risks**

- 2.13 **Institutional.** The Institutional Capacity Assessment System (ICAS) indicates that there is a need for training activities related to the Operation's policies and procedures of the IDB for procurement of works, goods, consulting and related services. Those activities will be initiated during the preparation of the project, with the support of the Bank's Representation in Barbados.
- 2.14 GOBA has indicated that the subsidies received by the BWA, affecting its fiscal situation, would not be maintained and that it was looking for the BWA to become financially independent, under the regulation of the FTC. This position is likely to be maintained and the corresponding commitment of the GOBA towards the reorganization of the BWA, should guarantee its success.

## **III. IMPLEMENTATION AND MANAGEMENT PLAN**

### **A. Summary Implementation Arrangements**

- 3.1 The BWA of the MEWD will be the executing agency for the project. In order to achieve the institutional and operational changes proposed under the project, the GOBA has decided to establish a Project Executing Unit (PEU) which will coordinate project planning and operation with the BWA General Manager, who will report to the BWA Board of Directors. In addition to the Project Manager, the PEU will comprise a number of support officers including: an Engineer, an Information Technology Officer, a Financial/Accounting Officer, and a Procurement Officer reporting to the Project Manager. All PEU staff will be contracted through national competitive bidding processes. The Project Manager will assist in the overall preparation of the BWA for regulation by the FTC. The Engineer will be responsible for the infrastructure component. The Financial/Accounting Officer will carry out all accounting and financial management functions and the Procurement Officer all the procurement activities.
- 3.2 Specific responsibilities of the PEU will include: (i) preparation, implementation and coordination of the Annual Operating Plans (AOPs); (ii) preparation of budgets, project accounting, including disbursement and reimbursement of project funds; (iii) preparation of the project's Annual Procurement Plan, the procurement of works, goods, consulting and related services for the project; (iv) coordination of the preparation of technical reports, periodic and end-of-year financial reports; (v) monitoring of the progress of project activities and analysis of variances of actual results against plans; (vi) coordination of the external audit and ensuring in collaboration with the General Manager of the BWA, that approved recommendations are implemented; (vii) facilitation of external evaluations and ensuring in collaboration with the General Manager of the BWA, that the approved recommendations are implemented; and (viii) serving as a liaison for the project with the Bank. Details of this arrangement will be elaborated in the Operations Manual.

- 3.3 In cases where operational issues cannot be resolved at the PEU levels, the matter will be referred first to the General Manager of the BWA and if there is no resolution, then to the Chairman of the BWA Board of Directors.
- 3.4 The project will be executed following the AOP that will include for each programmed annual activity: its goals, terms of reference, budget, source of funding, and responsibility for its execution. The AOPs will be prepared according to guidelines established in the Project's Operations Manual, which will set forth the details regarding project execution including coordination of activities amongst the different offices. Changes to the AOP will require the non-objection of the Bank. The overall need to update the Operations Manual will be assessed during the mid-term review.
- 3.5 Additionally, a Project Steering Committee (PSC) chaired by the Permanent Secretary of Ministry of Environment, Water Resources, and Drainage (MEWD), will be established with representatives from the BWA, the Ministry of Finance and other relevant stakeholders. The PSC will ensure the coordination among the participating entities, will monitor overall performance of the operation and facilitate the work of the PEU in order to ensure that necessary GOBA approvals and clearances are received in a timely manner. Detailed TOR of the PSC will be finalized in the Operations Manual.
- 3.6 Special contractual conditions for the first disbursement will be: **(i) evidence that the Project Execution Unit has been established; (ii) evidence that the Project Steering Committee has been established; (iii) evidence that a Project Manager has been hired and; and (iv) evidence that the Project Operating Manual, previously approved by the Bank, has been approved and adopted by the Management and Board of Directors of BWA.**
- 3.7 During project execution, the BWA will deliver the project's audited financial statements within 120 days after the close of each financial year (beginning with the year in which the project was made effective). The external audit will be performed by a firm of independent auditors acceptable to the Bank, in accordance with the requirements set out in documents AF-100 and ASF-300, and terms of reference previously approved by the Bank (documents AF-400 and AF-500).
- 3.8 **Procurement:** The procurement of works, goods and consulting services will be done in accordance with the Bank's new procurement policies and procedures (documents GN-2349-7 and GN-2350-7). The thresholds for international competitive bidding (ICB) will be US\$250,000 for goods contracts, US\$3 million for civil works, and US\$200,000 for consulting services.
- 3.9 Purchases of goods, works and consulting services will be reviewed ex ante. This approach may be replaced by ex post review, after the program has been in execution for at least one year, by agreement between the executing agency and the Bank's Country Office in Barbados (that agreement will also establish the

corresponding thresholds), provided the executing agency is in compliance with Bank requirements for that approach.

- 3.10 Annex III includes details on project procurement. The executing agency will update the procurement plan within its semiannual reports.

**B. Summary of Arrangements for Monitoring Results**

- 3.11 The PEU will be in charge of monitoring the performance and progress of project execution. The PEU will submit semi-annual progress reports throughout the life of the project execution, within 60 days after the end of each period. Additionally, with Bank's resources, independent evaluators will be hired to conduct a midterm and final evaluation of the project.
- 3.12 The PSC will provide strategic direction, coordination and support for project execution. The Project Manager will be responsible for monitoring progress against agreed benchmarks for, assessing the continued viability of the project.
- 3.13 Administration missions will be conducted semi-annually in the first year, complemented by monthly inspection visits by the Bank. Thereafter, quarterly administration missions will be conducted to monitor relevant technical, operational and financial aspects of the project. The PEU will be responsible for developing the system for gathering and maintaining the data related to the different indicators included in the Results Framework. An evaluation consultant will be hired by the PEU during the first semester of execution to assist in determining the methodology and gathering the data for the baselines of project indicators. Progress toward meeting the different targets will be evaluated and communicated to the Bank in the semi-annual progress reports.
- 3.14 At the end of 30 months from the date of the loan contract or after 50% commitment of the resources, whichever comes first, a mid-term review is to take place with the help of an external consultant who will focus on, among other things: (i) level of progress in attaining the project's objectives stated in the Results Matrix; (ii) level of acceptance of approved procedures developed under the project; and (iii) degree of effectiveness of the internal and the Bank's monitoring and supervision system.
- 3.15 The final evaluation, to be carried out also with the help of an external consultant, is to take place after 90% of loan resources have been committed. The evaluation will assess: (i) degree of attainment of project objectives in relation to plans and reasons for any variances; (ii) the organization established for project execution; (iii) implementation and acceptance of approved procedures and systems developed through the project; (iv) sustainability of the activities funded under the project; and (v) lessons learned that could be applied to future public sector reform projects. The result of this final evaluation will be used as input for the project completion report to be prepared by the Bank.

- 3.16 **Disbursement Timetable.** The disbursement period for the project is five years. The projected disbursement schedule is as follows:

Disbursement schedule (US\$ millions)							
Year	1	2	3	4	5	Total	%
IDB	5.1	15.0	15.0	10.0	4.9	50.0	94%
GOBA <sup>6</sup>	0.60	0.60	0.60	0.60	0.60	3.0	6%
<b>Total</b>	<b>5.70</b>	<b>15.60</b>	<b>15.60</b>	<b>10.60</b>	<b>5.50</b>	<b>53.0</b>	<b>100%</b>

- 3.17 **Revolving Fund.** It is recommended that a special account be established as a revolving fund, with an advance equal to 5% of the Bank loan, equivalent to US\$2.5 million.

### C. Significant Design Activities Post Approval

- 3.18 To date, the BWA has already developed a draft water mains replacement program. This program is based on the system of monitoring activities they have been carrying out for the last five years. The system is divided into four operational districts and the draft plan covers 155.5 km of pipe replacement over five years. The draft program will be used as the baseline for the development of the mains replacement sub-components of the loan. In parallel, the Bank's project team is implementing a US\$400,000 technical cooperation (TC), financed under the AquaFund, which will contribute to the preparation of the execution of the mains projects and studies related to the loan. In addition, the TC will develop the Operations Manual for the project. Deliverables from the TC is scheduled to be finalized in May 2010 and will complement Components 1 and 2 under the proposed project prior to their execution. The Bank is currently in the procurement process for the TC.

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<sup>6</sup> GOBA will be responsible for the salaries of the staff of the PEU

**Results Framework  
Matrix of Indicators**

<b>Project Objective</b>	<p>The goal of the Project is to improve water resources management in Barbados and sustainable water and wastewater service provision by the BWA. Specifically, the Project will support the GOBA's efforts to modernize the institutional setting of the water and sanitation sector and improve the efficiency of the operations of BWA.</p> <p><i>[It is often useful to state the objective in terms of outcomes: the problem is a low value for the particular outcome, and the objective is to achieve a higher value]</i></p>						
<b>Component 1</b>	<b>Base</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	
<u>Outputs</u>							
<b>BWA corporate business plan (CBP) prepared and approved by FTC</b>	None	CBP in preparation	CBP presented to FTC	CBP approved by FTC	CBP in implementation under FTC control	CBP in implementation under FTC control	<i>[The number of outputs, intermediate outcomes, and outcomes monitored for each component will vary case by case according to project teams judgment.]</i>
<u>Outcomes</u>							
<b>Number of Employees per 1000 connections</b>	7.8	7.8	7.8	7.6	7.4	7.2	<i>[Note: Intermediate outcomes measured in year following output]</i>
<b>Customer satisfaction %age of customers qualifying the service as good or very good (Survey)</b>	To be established	Improvement of 20% over baseline	Improvement of 30% over baseline	>75%	>75%	>75%	
<b>Financially viable BWA (measured by the % of EBITDA/Total Operating revenues)</b>	-17%	-9.7%	0%	3%	6%	10%	
<b>Component 2</b>	<b>Base</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	
<u>Outputs</u>							
<b>NRW Program implemented</b>	Not implemented	In preparation	Being Implemented	Being Implemented	Being Implemented	Implemented	
<b># of meters replaced under the program (Cumulated amount)</b>	0	0	10,000	25,000	40,000	50,000	
<b>District Meters installed (% of surface of the island covered)</b>	0	0	10%	30%	50%	90%	
<u>Outcomes</u>							



<b>NRW reduction</b>	54%	54%	51%	49%	48%	47%	
<b>Metering (% of customers which bill is established validated water meters (&lt; 5 years old))</b>	10%	30%	40%	45%	60%	70%	
<b>Water Turbidity (Reduction of non compliant turbidity samples in a month)</b>	20%	40%	60%	80%	85%	90%	
<b>Water Disinfection (Reduction of non compliant samples in a month)</b>	40%	30%	35%	50%	70%	80%	
<b>Continuity (Reduction in the number of customers with no service available at some hours in a month)</b>	10%	30%	40%	50%	60%	70%	
<b>Pressure (reduction of the number of customers with water pressure under BWA standards per month)</b>	20%	30%	40%	50%	60%	70%	
<b>Component 3</b>	<b>Base</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	
<u>Outputs</u>							
<b>Wastewater treatment action plan</b>	Not Prepared	In Preparation	Prepared	Approved	In implementation	In implementation	
<u>Outcomes</u>							
<b>Source of Financed Identified</b>	No	No	No	Yes	Yes	Yes	

- Notes:
1. The Matrix of Indicators will show the base level values, expected year values, and target values of each indicator;
  2. Outputs and outcomes are grouped together to facilitate monitoring of component performance
  3. The right hand column can be used for description of output / outcomes and choice of indicator and other explanatory notes
  4. In the Results annex/section, this Matrix will be complemented by a detailed account of the arrangements (including institutional responsibilities, operating regulations, terms of reference, hiring of consultants, budgeting) showing how the data will be collected, verified, analyzed and reported to the Bank. The data sources and rationale behind the base line and target values will also be described.

**SUMMARY PROCUREMENT TABLE**  
**WATER AND SANITATION SYSTEMS UPGRADE**  
**(BA-L1015)**

Description of the contract and estimated cost of procurement	Procurement method <sup>1</sup>	Review (prior or post)	Source of financing and percentage		Prequalification (Yes/No)	Estimated dates		Status (pending, in process, awarded, cancelled)	Comments
			IDB %	Local/other %		Publication of specific procurement notice	Completion of contract		
<b>1. <u>Goods (US\$12,420,000)</u></b>									
1.1 Development of Management Information Systems and Training including IT system, and installation of CIS, SCADA, GIS and training in MIS and Hydraulic Network Modeling US\$5,420,000	ICB	Prior	100	0	Yes	Jul 2010	Jul 2012	Pending	
1.2 Meter Installation Program Purchase of 50,000 meters US\$5,000,000	ICB	Prior	100	0	Yes	Nov. 2010	Nov. 2011	Pending	
1.3 Purchase of Standby Power for Major Stations US\$1,400,000	ICB	Prior	100	0	Yes	Oct. 2010	Dec. 2011	Pending	
1.4 Purchase of Equipment for Sewerage Systems US\$600,000	ICB	Prior	100	0	No	July, 2010	April. 2011	Pending	
<b>2. <u>Consulting Services (US\$7,600,000)</u></b>									
2.1 Preparation of Long Term Business Plan for BWA US\$300,000	QCBS	Prior	100	0	No	July.2010	Dec 2011	Pending	

<sup>1</sup> **ICB:** International competitive bid ding; **LIB:** limited international bidding; **NCB:** national competitive bidding; **PC:** price comparison; **DC:** direct contracting; **FA:** force account; **PSA:** Procurement through specialized agencies; **PAs:** Procurement agents; **IA:** Inspection agents; **PLFI:** Procurement in loans to financial intermediaries; **BOO/BOT/BOOT:** Build, own, operate/build, operate, transfer/build, own, operate, transfer; **PBP:** Performance-based procurement; **PLGB:** Procurement under loans guaranteed by the Bank; **PCP:** Community participation procurement; **QCBS:** Quality- and cost-based selection **QBS:** Quality-based selection **FBS:** Selection under a fixed budget; **LCS:** Least-cost selection; **CQS:** Selection based on the consultants' qualifications; **SSS:** Single-source selection.

Description of the contract and estimated cost of procurement	Procurement method <sup>1</sup>	Review (prior or post)	Source of financing and percentage		Prequalification (Yes/No)	Estimated dates		Status (pending, in process, awarded, cancelled)	Comments
			IDB %	Local/other %		Publication of specific procurement notice	Completion of contract		
2.2 Preparation of BWA for Regulation by the FTC US\$2,700,000	QCBS	Prior	100	0	Yes	July. 2010	Mar. 2012	Pending	
2.3 Feasibility Study for Automatic Meter Reading US\$150,000	QCBS	Prior	100	0	Yes	Dec 2011	Feb 2012	Pending	
2.4 System Integration US\$50,000	QCBS	Prior	100	0	Yes	Jul 2010	Nov. 2010	Pending	
2.5 Restructuring Corporate Structure US\$600,000	QCBS	Prior	100	0	No	Dec 2011	Dec 2012	Pending	
2.6 Improvement Plan for Long Term Customer Service Improvement and Training US\$350,000	QCBS	Prior	100	0	No	Feb 2011	Aug 2014	Pending	
2.7 Public Awareness Campaign / Stakeholder Management US\$100,000	QCBS	Prior	100	0	No	Sept 2014	Feb 2015	Pending	
2.8 Assessment of water quality problems at Bowmanston Well US\$100,000	QCBS	Prior	100	0	No	Apr. 2010	Dec. 2010	Pending	
2.9 Final designs for upgrade of St. Philip/Christ Church reservoirs US\$700,000	QCBS	Prior	100	0	No	July 2010	Dec 2010	Pending	
2.10 Assessment of needs for standby power for major water stations US\$100,000	QCBS	Prior	100	0	No	May 2010	Oct. 2010	Pending	
2.11 Designs of works for the increase in chlorination contact time US\$300,000	QCBS	Prior	100	0	No	July 2010	Dec 2010	Pending	
2.12 Assessment of Nitrate problem at Ashton Hall US\$500,000	QCBS	Prior	100	0	No	July 2010	Dec 2010	Pending	

Description of the contract and estimated cost of procurement	Procurement method <sup>1</sup>	Review (prior or post)	Source of financing and percentage		Prequalification (Yes/No)	Estimated dates		Status (pending, in process, awarded, cancelled)	Comments
			IDB %	Local/other %		Publication of specific procurement notice	Completion of contract		
2.13 Wastewater Reuse Master Plan including EIA for aquifer recharge and assessment of viability of wastewater reuse US\$1,500,000	QCBS	Prior	100	0	No	July 2010	Dec. 2011	Pending	
2.14 Design of Emergency By-Pass for South Coast Sewerage System US\$100,000	QCBS	Prior	100	0	No	July 2010	Dec. 2010	Pending	
2.15 Assessment of odour control at Graeme Hall Treatment Plant US\$50,000	QCBS	Prior	100	0	No	July 2010	Dec. 2010	Pending	
<b>3. <u>Civil works</u></b>									
3.1 Establishment of Leakage Management Districts US\$4,750,000	ICB	Prior	100	0	No	July. 2010	July 2014	Pending	
3.2 Refurbishment of Service Reservoirs US\$3,000,000	ICB	Prior	100	0	No	Dec 2010	Dec 2011	Pending	
3.3 Mains Replacement Program (Lot 1) US\$6,475,000	ICB	Prior	100	0	No	July 2010	Jun 2013	Pending	
3.4 Mains Replacement Program (Lot 2) US\$6,475,000	ICB	Prior	100	0	No	July 2010	Jan. 2013	Pending	
3.5 Rehabilitation of Bowmanston Well US\$1,700,000	NCB	Prior	100	0	No	Nov. 2010	Dec. 2011	Pending	
3.6 Equipment Upgrades and Energy Efficiency alternatives US\$500,000	NCB	Prior	100	0	No	July 2010	Jun 2012	Pending	
3.7 Upgrade of Chlorination Systems at Stations US\$2,580,000	NCB	Prior	100	0	No	Dec 2010	Jul. 2012	Pending	
3.8 Replacement of Odor Control System at Graeme Hall Plant US\$950,000	NCB	Prior	100	100	No	July 2010	Feb 2011	Pending	