



Operation Number: **BA-L1015**  
Year- PMR Cycle: **Second period Jan-Dec 2015**  
Last Update: **3/30/2016**  
PMR Validation Stage: **Validated by Representative**

Chief of Operations validation date: **03/31/2016**  
Division Chief validation date: **04/01/2016**  
Country Representative validation date: **04/19/2016**

Inter-American Development Bank - IDB  
Office of Strategic Planning and Development Effectiveness

## Operation Profile

### Basic Data

|                        |                                      |                                   |                 |
|------------------------|--------------------------------------|-----------------------------------|-----------------|
| Operation name:        | Water and Sanitation Systems Upgrade | Loan Number:                      | 2255/OC-BA      |
| Executing Agency (EA): | BARBADOS WATER AUTHORITY             |                                   |                 |
| Team Leader:           | Mellinger,Yvon                       | Sector/Subsector:                 | AS              |
| Operation Type:        | Loan Operation                       | Overall Stage:                    | Fully Disbursed |
| Lending Instrument:    | Investment Loan                      | Country:                          | BARBADOS        |
| Borrower:              | BARBADOS                             | Convergence related Operation(s): |                 |

### Total Cost and Source

|          | Original IDB    | Current Active IDB | Local Counterpart | Co-Financing/Country | Total operation cost - Original Estimate |
|----------|-----------------|--------------------|-------------------|----------------------|--|
| BA-L1015 | \$50,000,000.00 | \$43,200,000.00    | \$3,000,000.00    | \$0.00               | \$53,000,000.00                          |

### Available Funds (US\$)

|          | Current IDB     | Disb. Amount to Date | % Disbursed | Undisbursed Balance |
|----------|-----------------|----------------------|-------------|---------------------|
| BA-L1015 | \$43,200,000.00 | \$43,200,000.00      | 100.00%     | \$0.00              |

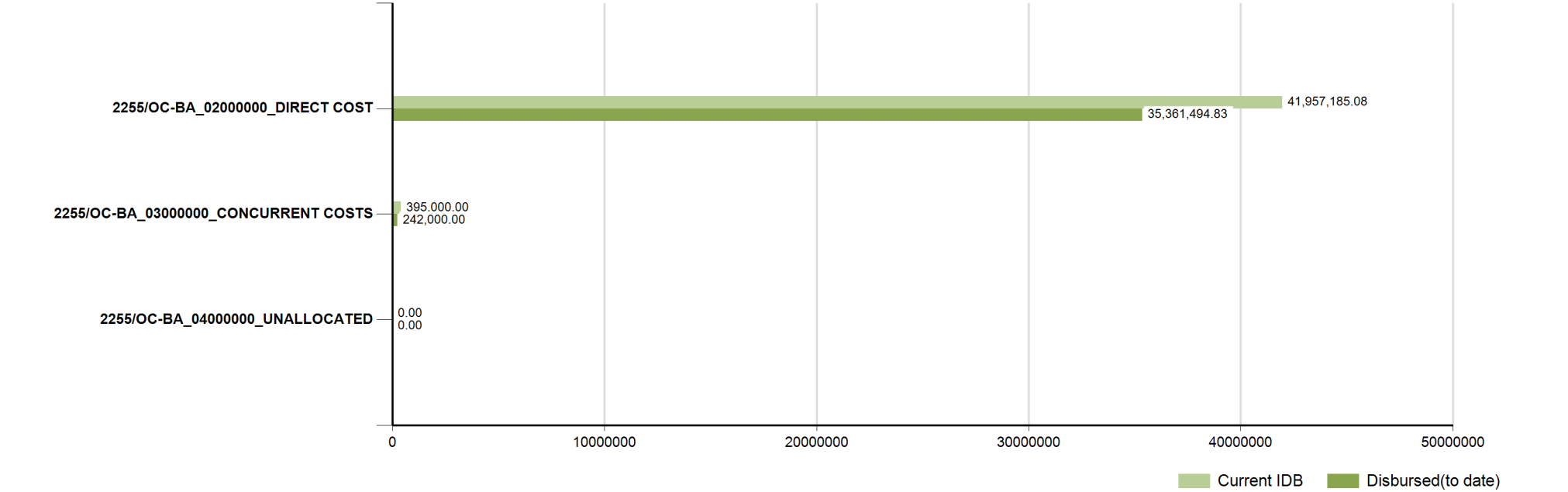
### Environmental and Social Safeguards

|   |   |
|---|---|
| Main Operation                            |   |
| Impacts Category:                         | B |
| Safeguard Performance Rating:             |   |
| Safeguard Performance Rating - Rationale: |   |

### Reformulation Information

|   |    |
|---|----|
| Main Operation  |    |
| Was/Were the objective(s) of this operation reformulated? | NO |
| Date of approval:   |    |

Expense Categories by Loan Contract (cumulative values)



## Results Matrix


### Impacts

| <b>Impact:</b>  | 0 Rehabilitation of Potable Water Supply to support sustainability of the service |                 |          |               |                            |              |            |
|---|---|-----------------|----------|---------------|----------------------------|--------------|------------|
| <b>Observation:</b>   | Essentially through NRW activities  |                 |          |               |                            |              |            |
| Indicators  | Flags*  | Unit of Measure | Baseline | Baseline Year | Means of verification      | Observations | EOP        |
| 0.0 N# of Production Meters replaced                              |   | Meters          | 0.00     | 2011          | Reports from PEU.          |              | P          |
|   |   |                 |          |               |                            |              | P(a) 75.00 |
|   |   |                 |          |               |                            |              | A 0.00     |
| 0.1 NRW Program Implemented (Completion of relevant procurement). |   | Program         | 0.00     | 2011          | Reports from the PEU / BWA |              | P          |
|   |   |                 |          |               |                            |              | P(a) 1.00  |
|   |   |                 |          |               |                            |              | A 0.00     |

 RF - RF Indicator
  SI - Sector Indicator
  CI - Country Indicator
  PG - Pro-Gender
  PE - Pro-Ethnicity

### Outcomes

| <b>Outcome:</b>  | 1 Sustainable water and wastewater utility services are provided by the BWA |                 |          |               |  |   |      |       |       |       |       |       |       |       |
|--|---|-----------------|----------|---------------|--|---|------|-------|-------|-------|-------|-------|-------|-------|
| <b>Observation:</b>  |   |                 |          |               |  |   |      |       |       |       |       |       |       |       |
| Indicators   | Flags*  | Unit of Measure | Baseline | Baseline Year | Means of verification                                  | Observations  | 2010 | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | EOP   |
| 1.1 Employees per 1000 connections   |   | employees       | 7.80     | 2009          | Inspection visits and progress reports                 | On track  | P    |       |       |       |       |       |       | 7.20  |
|  |   |                 |          |               |  |   | P(a) | 7.80  | 7.80  | 7.60  | 36.40 | 7.20  | 7.20  | 7.20  |
|  |   |                 |          |               |  |   | A    |       |       | 7.60  | 7.50  | 7.20  | 7.20  |       |
| 1.2 Customers qualifying BWA's services as good or very good   |   | %               | 70.00    | 2012          | Survey results, Inspection visits and progress reports | On track  | P    |       |       |       |       |       |       | 76.00 |
|  |   |                 |          |               |  |   | P(a) |       |       | 30.00 | 50.00 | 60.00 | 70.00 | 76.00 |
|  |   |                 |          |               |  |   | A    |       |       | 0.00  | 70.00 | 70.00 | 70.00 |       |
| 1.3 Earnings before interest, taxes, depreciation and amortization (EBITDA)/Total operating revenues |   | %               | 0.00     | 2009          | Inspection visits and progress reports                 | Highly improved. To be reviewed in upcoming mission                                     | P    |       |       |       |       |       |       | 10.00 |
|  |   |                 |          |               |  |   | P(a) |       | 0.00  | 3.00  | 6.00  | 10.00 | 10.00 | 10.00 |
|  |   |                 |          |               |  |   | A    |       |       | 21.00 | 24.00 | 20.00 | 22.00 |       |
| 1.4 Non-revenue water (NRW)  |   | %               | 49.00    | 2009          | Inspection visits and progress reports                 | Works for reduction of NRW not yet started; preparation for these works is in progress. | P    |       |       |       |       |       |       | 47.00 |
|  |   |                 |          |               |  |   | P(a) | 49.00 | 49.00 | 49.00 | 47.00 | 45.00 | 42.00 | 39.00 |
|  |   |                 |          |               |  |   | A    |       |       | 49.00 | 49.00 | 49.00 | 42.00 |       |

|  |  |            |       |      |  |   |      |       |       |       |       |       |          |           |           |
|--|--|------------|-------|------|--|---|------|-------|-------|-------|-------|-------|----------|-----------|-----------|
| 1.6 Water turbidity (percentage of non-compliant turbidity samples in a month) at Bowmanston Well    |  | %          | 40.00 | 2009 | Inspection visits and progress reports | TBD; dependent on assessment and rehabilitation works on Bowmanston Well, which is in progress. | P    |       |       |       |       |       |          |           | 10.00     |
|  |  |            |       |      |  |   | P(a) | 40.00 | 40.00 | 30.00 | 20.00 | 20.00 | 20.00    | 20.00     | 20.00     |
|  |  |            |       |      |  |   | A    |       |       | 40.00 | 40.00 | 40.00 | 40.00    |           |           |
| 1.7 Water disinfection (non-compliant samples in a month)  |  | %          | 40.00 | 2009 | Inspection visits and progress reports | TBD; dependent on upgrade of Chlorination system to be realized later in the project.           | P    |       |       |       |       |       |          |           | 20.00     |
|  |  |            |       |      |  |   | P(a) | 40.00 | 40.00 | 30.00 | 20.00 | 20.00 | 20.00    | 20.00     | 20.00     |
|  |  |            |       |      |  |   | A    |       |       | 40.00 | 40.00 | 40.00 | 40.00    |           |           |
| 1.8 Continuity (customers with no service available at some hours in a month)                        |  | %          | 70.00 | 2010 | Inspection visits and progress reports | TBD; dependent on improvements in equipment and operations to be realized later in the project. | P    |       |       |       |       |       |          |           | 10.00     |
|  |  |            |       |      |  |   | P(a) | 70.00 | 70.00 | 60.00 | 50.00 | 40.00 | 40.00    | 30.00     | 30.00     |
|  |  |            |       |      |  |   | A    |       |       | 70.00 | 70.00 | 70.00 | 70.00    |           |           |
| 1.9 Pressure (percentage of customers with water pressure below BWA standards per month, i.e. 25psi) |  | %          | 70.00 | 2011 | Inspection visits and progress reports | TBD; dependent on improvements in equipment and operations to be realized later in the project. | P    |       |       |       |       |       |          |           | 20.00     |
|  |  |            |       |      |  |   | P(a) | 70.00 | 70.00 | 60.00 | 50.00 | 35.00 | 35.00    | 20.00     | 20.00     |
|  |  |            |       |      |  |   | A    |       |       | 70.00 | 70.00 | 70.00 | 70.00    |           |           |
| 1.11 Households with upgraded water supply   |  RF | Households | 0.00  | 2011 | Progress reports                       | TBD; dependent on improvements in equipment and operations to be realized later in the project. | P    |       |       |       |       |       |          |           | 20,000.00 |
|  |  |            |       |      |  |   | P(a) |       | 0.00  | 0.00  | 20.00 | 80.00 | 8,000.00 | 20,000.00 | 20,000.00 |
|  |  |            |       |      |  |   | A    |       |       |       | 0.00  | 0.00  | 0.00     |           |           |

| Outcome:  | 2 Improved management of Barbados' water resources |                 |          |               |                          |  |      |      |      |      |      |      |      |      |
|---|--|-----------------|----------|---------------|--------------------------|--|------|------|------|------|------|------|------|------|
| Observation:  | Activity would be financed outside the loan.       |                 |          |               |                          |  |      |      |      |      |      |      |      |      |
| Indicators  | Flags*   | Unit of Measure | Baseline | Baseline Year | Means of verification    | Observations   | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | EOP  |
| 2.0 Strategic Plan for Management of Barbados Water resources |  | Plan            | 0.00     | 2009          | Progress Report from BWA | Strategic Plan based on WSSSP would be financed under BA-T1037 | P    |      |      |      |      |      |      |      |
|   |  |                 |          |               |                          | P(a)   |      |      |      |      |      |      | 0.00 | 0.00 |
|   |  |                 |          |               |                          | A  |      |      |      |      |      |      |      |      |
|   |  |                 |          |               |                          |  |      |      |      |      |      |      |      |      |

## Outputs: Annual Physical and Financial Progress

| Reorganization and modernization of the BWA   |                 | Physical Progress |           |           | Financial Progress |               |                |
|---|-----------------|-------------------|-----------|-----------|--------------------|---------------|----------------|
| Outputs   | Unit of Measure |                   | 2015      | EOP       |                    | 2015          | EOP            |
| Barbados Water Authority corporate business plan prepared for implementation (Baselines indicators Management and operations Audit) | Plan            | P                 | 1.00      | 1.00      | P                  | 941,111.00    | 3,850,001.00   |
|   |                 | P(a)              |           | 1.00      | P(a)               |               | 390,000.00     |
|   |                 | A                 | 0.00      | 0.00      | A                  | 0.00          | 390,000.00     |
| Information technology (IT) systems integrated  | IT System       | P                 | 1.00      | 1.00      | P                  | 744,800.00    | 7,505,000.00   |
|   |                 | P(a)              |           | 1.00      | P(a)               | 2,965,000.00  | 6,263,000.00   |
|   |                 | A                 | 0.00      | 0.00      | A                  | 1,954,000.00  | 5,202,000.00   |
| Public campaign adopted   | campaign        | P                 |           | 1.00      | P                  |               | 100,000.00     |
|   |                 | P(a)              |           | 1.00      | P(a)               | 63,000.00     | 100,000.00     |
|   |                 | A                 |           | 1.00      | A                  | 43,000.00     | 70,000.00      |
| Rehabilitation of potable water supply  |                 | Physical Progress |           |           | Financial Progress |               |                |
| Outputs   | Unit of Measure |                   | 2015      | EOP       |                    | 2015          | EOP            |
| Meters replaced and installed (Only initial assessment of needs and specifications)   | meter           | P                 | 32,940.00 | 98,800.00 | P                  | 3,450,366.00  | 11,148,485.00  |
|   |                 | P(a)              |           | 0.00      | P(a)               | 0.00          | 142,000.00     |
|   |                 | A                 | 0.00      | 0.00      | A                  | 0.00          | 142,000.00     |
| NRW Program implemented - Water distribution mains replaced   | km              | P                 | 40.00     | 123.00    | P                  | 4,379,961.00  | 14,720,000.00  |
|   |                 | P(a)              | 49.00     | 49.00     | P(a)               | 14,911,168.00 | 25,824,000.00  |
|   |                 | A                 | 41.00     | 41.00     | A                  | 12,797,000.00 | 23,429,000.00  |
| Water facilities (power generators, pumps, Chlorination equipment, well) upgraded   | facility        | P                 |           | 4.00      | P                  | 3,000,000.00  | 10,880,000.00  |
|   |                 | P(a)              |           | 1.00      | P(a)               | 2,382,000.00  | 7,433,000.00   |
|   |                 | A                 |           | 1.00      | A                  | 1,062,000.00  | 6,113,000.00   |
| District/Production meters installed  | meter           | P                 |           | 0.00      | P                  |               | 0.00           |
|   |                 | P(a)              | 25.00     | 50.00     | P(a)               | 650,000.00    | 761,000.00     |
|   |                 | A                 | 0.00      | 0.00      | A                  | 440,000.00    | 551,000.00     |
| Wastewater treatment action plan and upgrades   |                 | Physical Progress |           |           | Financial Progress |               |                |
| Outputs   | Unit of Measure |                   | 2015      | EOP       |                    | 2015          | EOP            |
| Wastewater treatment action plan prepared (Studies only)  | Plan            | P                 |           | 1.00      | P                  |               | 1,500,000.00   |
|   |                 | P(a)              |           | 1.00      | P(a)               | 190,000.00    | 581,000.00     |
|   |                 | A                 |           | 0.00      | A                  | 190,000.00    | 581,000.00     |
| South Coast emergency by-pass and odor control system improved (Studies and minor upgrades only)                                    | System          | P                 |           | 1.00      | P                  |               | 1,100,000.00   |
|   |                 | P(a)              |           | 1.00      | P(a)               |               | 103,000.00     |
|   |                 | A                 |           | 0.00      | A                  | 0.00          | 103,000.00     |
| Other Costs   |                 | Physical Progress |           |           | Financial Progress |               |                |
| Outputs   | Unit of Measure |                   | 2015      | EOP       |                    | 2015          | EOP            |
| Project Execution Unit (Counterpart), Contingency, and Financial Charges  | Cost            | P                 |           |           | P                  | 1,000,000.00  | 5,300,000.00   |
|   |                 | P(a)              |           |           | P(a)               | 0.00          | 1,399,660.00   |
|   |                 | A                 |           |           | A                  |               | 1,399,660.00   |
| Other Cost  |                 |                   |           |           | 2015               |               | Cost           |
| Project Execution Unit (Counterpart), Contingency, and Financial Charges  |                 |                   |           | P         |                    |               |                |
|   |                 |                   |           | P(a)      | \$990,340.00       |               | \$5,523,340.00 |
|   |                 |                   |           | A         | \$1,202,000.00     |               | \$5,358,000.00 |

| Total Cost |      | 2015            | Total Cost      |
|------------|------|-----------------|-----------------|
|            | P    | \$13,516,238.00 | \$56,103,486.00 |
|            | P(a) | \$22,151,508.00 | \$48,520,000.00 |
|            | A    | \$17,688,000.00 | \$43,338,660.00 |

Changes to the Matrix

No information related to this operation.