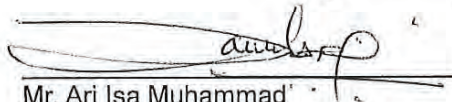
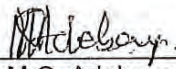


RECORD OF DISCUSSIONS
ON
FEDERAL CAPITAL TERRITORY
REDUCTION OF NON-REVENUE WATER PROJECT
IN
FEDERAL REPUBLIC OF NIGERIA
AGREED UPON BETWEEN
FEDERAL CAPITAL TERRITORY ADMINISTRATION
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Abuja, 17 July 2014


Mr. Tetsuo Seki
Chief Representative
Nigeria Office
Japan International Cooperation Agency
Japan


Mr. Ari Isa Muhammad
Director
Economic Planning Research and Statistics
Department
Federal Capital Territory Administration
Federal Republic of Nigeria


Mr. M.O. Adebayo
Director
Federal Capital Territory Water Board
Federal Capital Territory Administration
Federal Republic of Nigeria

Witnessed by


Mr. B. O. Akpanyung
Director
International Co-operation Department
National Planning Commission
Federal Republic of Nigeria

Based on the minutes of meetings on the Detailed Planning Survey on the Federal Capital Territory Reduction of Non-Revenue Water Project (hereinafter referred to as "the Project") signed on on 22nd May, 2014 between Federal Capital Territory Administration of Government of Federal Republic of Nigeria (hereinafter referred to as "FCTA") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with Federal Capital Territory Water Board (hereinafter referred to as "FCTWB") which will work as implementation agency under the umbrella of FCTA and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that FCTA/FCTWB will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of Federal Republic of Nigeria.

The Project will be implemented within the framework of the Note Verbales exchanged on 12th December 2013 between the Government of Japan (hereinafter referred to as "GOJ") and the Government of Federal Republic of Nigeria.

Appendix 1: Project Description

Appendix 2: Main Points Discussed



PROJECT DESCRIPTION

Both parties confirmed that there is no major change in the Project Description agreed on in the minutes of meetings on the concerning Preparatory Survey on the Project signed on 22nd May 2014.

I. BACKGROUND

The Government of Federal Republic of Nigeria sets the target of access ratio to improved water sources as 75% by the year of 2015 and 100% by the year of 2020, according to Vision 20:2020 adopted in December 2009. However, the access ratio to improved water sources is decreasing in urban area due to rapid population growth. The improvement of water supply systems in urban areas is acknowledged as one of the most critical issues to achieve the target set by Vision 20:2020.

Federal Capital Territory, Abuja, has approximately 2,150,000 population which is growing at 4.5% a year. The access ratio to improved water sources in Federal Capital Territory is lower than the average ratio of the whole urban areas in Nigeria. Therefore, Federal Capital Territory Water Board (FTCWB), a sole water service provider in the capital, is urgently implementing projects to extend its capacity and service area.

Another problem FCTWB faces is Non-Revenue Water (NRW). Although the NRW ratio is not accurately measured, it is said that almost half of water production is lost without any revenue.

Under these circumstances, the Government of Federal Republic of Nigeria requested JICA for a technical cooperation project to strengthen capacity of FCTWB for reducing NRW in the capital.

II. OUTLINE OF THE PROJECT

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex 1-1) and the tentative Plan of Operation (Annex 1-2).

1. Implementation Structure

The Project organization chart is given in the Annex 1-3. The roles and assignments of relevant organizations are as follows:

(1) FCTA

Project Director: Director, Economic Planning, Research and Statistics
Department



Project Director will be responsible for overall administration of the Project.

(2) FCTWB

Project Manager: Director

Project Manager will be responsible for the implementation of the Project.

Deputy Project Manager: Head of Administration and Supply Department

Deputy Project manager will support the Project Manager in the implementation of the Project.

Technical Manager (Distribution): Head of Distribution Department

Technical Manager (Commerce): Head of Commerce Department.

Technical Managers will be responsible for technical matters pertaining to the implementation of the Project.

(3) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to FCTWB on any matters pertaining to the implementation of the Project.

(4) Joint Coordinating Committee

Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be convened and presided by the Project Director. JCC will be held at least twice a year and whenever deems it necessary, JCC will approve an annual work plan (annual PO), review overall progress, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex 1-4.

2. Project Site(s) and Beneficiaries

(1) Project site

- Federal Capital Territory

(2) Beneficiaries

- Direct beneficiaries: FCTWB and its staff

- Indirect beneficiaries: People living in FCTWB service area

3. Duration

The duration of the Project will be three (3) years and six (6) month from the date when the first expert is dispatched from Japan.

4. Environmental and Social Considerations

(1) FCTA/FCTWB agreed to abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.



III. UNDERTAKINGS OF FCTA/FCTWB AND THE GOVERNMENT OF FEDERAL REPUBLIC OF NIGERIA

1. FCTA/FCTWB and the Government of Federal Republic of Nigeria will take necessary measures to:

- (1) ensure that the technologies and knowledge acquired by the Federal Republic of Nigeria nationals as a result of Japanese technical cooperation contributes to the economic and social development of Federal Republic of Nigeria, and that the knowledge and experience acquired by the personnel of Federal Republic of Nigeria from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and
- (2) grant privileges, exemptions and benefits to the JICA experts referred to in the Project Design Matrix (PDM) as attached and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in Federal Republic of Nigeria.

2. FCTA/FCTWB and the Government of Federal Republic of Nigeria will take necessary measures to:

- (1) provide security-related information as well as measures to ensure the safety of the JICA experts;
- (2) permit the JICA experts to enter, leave and sojourn in Republic of Nigeria for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees.

IV. MONITORING AND EVALUATION

JICA and the FCTA/FCTWB will jointly and regularly monitor the progress of the Project through the Monitoring Sheets (Annex 1-5) based on the Project Design Matrix (PDM) and Plan of Operation (PO). The Monitoring Sheets shall be submitted to JICA Nigeria Office every six (6) months.

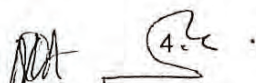
Also, Project Completion Report shall be drawn up one (1) month before the termination of the Project.

JICA will conduct the following evaluations and surveys to mainly verify sustainability and impact of the Project and draw lessons. The FCTA/FCTWB is required to provide necessary support for them.

1. Post evaluation: three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, FCTA/FCTWB will take appropriate measures to make the Project widely known to the people of Federal Republic of Nigeria.



VI. MISCONDUCT

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, FCTA/FCTWB and relevant organizations shall provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Federal Republic of Nigeria.

FCTA/FCTWB and relevant organizations shall not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VII. MUTUAL CONSULTATION

JICA and FCTA/FCTWB will consult each other whenever any major issues arise in the course of Project implementation.

VIII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between JICA and FCTA.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

- Annex 1-1 Logical Framework (Project Design Matrix: PDM)
- Annex 1-2 Tentative Plan of Operation (PO)
- Annex 1-3 Project Organization Chart
- Annex 1-4 List of Proposed Members of Joint Coordinating Committee
- Annex 1-5 Monitoring Sheets



MAIN POINTS DISCUSSED

During the discussion for formulation of the project outline, the following issues were agreed:

- 1) Three Pilot Metering Areas (PMAs) will be selected from either part of or whole areas of Jabi Area Office, Garki I Area Office and Gudu Area Office and PMA will be zoned into some Sub Metering Areas (SMAs) after detailed survey by Japanese experts based on the Selection Criteria as attached.
- 2) Tentative list of personnel assigned for the Project is shown as attached.
- 3) JICA will provide the machinery and equipment necessary for implementation of the project such as pickup trucks, leakage detection equipment, water flow meters, customer meters and valves.
- 4) The following expenses will be borne by FCTWB:
 - a) Expenses for implementing the project activities such as repair costs for distribution pipes, installation, operation and maintenance costs for machinery and equipment provided by JICA;
 - b) Administrative and operational expenses such as electricity, water, communication;
 - c) Local traveling costs and daily subsistence allowance (DSA) for Nigerian personnel involved in the Project; and
 - d) Others as necessary.
- 5) Local expertise will be utilized as appropriate.
- 6) Necessary budget for the Project will be ensured and allocated to FCTWB in the timely manner by FCTA.
- 7) Proper security measures for Japanese experts should be taken by FCTWB during the project activities in PMAs.
- 8) Furnished offices for Japanese experts should be provided at HQ and pilot Area Offices of FCTWB from the commencement of the Project.
- 9) Information sharing seminars for entire FCTWB and FCTA, including kick off and final seminars, will be held once a year.
- 10) Detailed Plan of Operation (PO) and Annual PO shall be prepared in the beginning of the Project through discussion between Nigerian project personnel and Japanese experts for approval by the first Joint Coordinating Committee, based on the tentative PO attached as Annex 1-2.

Annex 2-1 Selection Criteria
Annex 2-2 Tentative List of Personnel Assigned



Annex 1-1 Project Design Matrix (PDM)

PDM ver. 1 (day/month/year)

Project Title: "The Federal Capital Territory Reduction of Non-Revenue Water Project"
 Project Period : Three and a half years from the date when the first Japanese Expert is dispatched (i.e. Day/Month/Year to Day/Month/Year)
 Implementing Organization: Federal Capital Territory Administration (FCTA) / Federal Capital Territory Water Board (FCTWB)
 Direct beneficiaries: FCTWB, relevant staff of FCTWB Headquarters and pilot Area Offices
 Project Site: FCT Pilot Area Offices: Jabi, Gariki I and Gudu

| Narrative Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|--|--|---|-------------|---------|
| <p><Overall Goal> Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB</p> <p><Project Purpose> Capacity of FCTWB for NRW reduction is strengthened</p> | <p>a: Annual NRW ratio is reduced to X%*(*) at the end of the year 2021</p> <p>Note(*): Target value (X%), which is expected to be determined in the mid-term strategic plan for NRW reduction, shall be tentatively filled when the final draft was approved by the Director of FCTWB, which shall be finalized when the plan is approved by FCTA</p> <p>a. The mid-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project.</p> <p>b. NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB</p> <p>c. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level</p> <p>d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**)</p> <p>Note(**): Target for each PMA is expected to be determined by the end of the first quarter of the second year</p> | <p>a Record of NRW ratio kept by Distribution Department</p> <p>a. Date of approval of the plan</p> <p>b. Result of monitoring by NRW Management Team</p> <p>c. Results of joint assessment based on the criteria set by the Project</p> <p>d. Record of NRW ratio kept by Distribution Department</p> | <p>A Policy support for NRW reduction is not discontinued</p> <p>B. Natural disaster/ political instability/ economic crisis that affect the service area of FCTWB do not occur</p> <p>C. Activities to implement the mid-term strategic plan are not discontinued or delayed</p> | | |
| <p><Outputs></p> <p>1. Level of NRW of the service area of FCWTB is monitored regularly</p> <p>2. Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices. (*1)</p> <p>3 A mid-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 (*2)</p> | <p>1a Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the first year of the Project</p> <p>1b Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the first year of the Project</p> <p>1c Quarterly NRW ratio of the service area of FCTWB is reported to the Board of Directors of FCTWB from the third quarter of the first year of the Project</p> <p>2a Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations</p> <p>2b Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project</p> <p>3a By October 2017, draft mid-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval</p> <p>3b By October 2017, an annual NRW reduction plan (2018) is incorporated in FCTWB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval</p> <p>3c A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project</p> | <p>1a Monthly record of NRW ratio.</p> <p>1b&1c Material for meetings submitted by the Distribution Department</p> <p>2a Record of NRW ratio kept by the Distribution Department</p> <p>2b Date of approval of the manuals</p> <p>3a&3b Date of official letter submitting draft strategic plan and annual recurrent and capital plan</p> <p>3c Date of approval of the manual</p> | <p>A Staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) trained through the Project do not leave the office in large numbers</p> | | |

Note (*1): NRW components targeted by Output 2 are (i) invisible leakage; (ii) customer meter malfunction; and (iii) illegal connection
 Note (*2) A mid-term strategic plan is a five-year plan, which may include mid-term target, strategies and actions, timeframe, human resource requirement, on-the-job training mechanism, cost-benefit analysis of NRW reduction, etc. It is noted that NRW components addressed by the strategic plan are not limited to the ones mentioned in (*1) above; they shall be discussed and determined in developing the outline of the strategic plan (through Activity 3-4).





Annex 1-1 Project Design Matrix (PDM)

| Activities | Inputs | |
|---|---|---|
| <p>1-1 Install bulk meters to water treatment plants 1 and 2</p> <p>1-2 Measure monthly water production of water treatment plants 1, 2, 3, and 4</p> <p>1-3 Tally the above water production data monthly</p> <p>1-4 Calculate the monthly water consumption based on the billing data</p> <p>1-5 Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4</p> <p>*****</p> <p>2-1 Review existing NRW reduction operations at each pilot Area Office</p> <p>2-2 Conduct capacity assessment of the relevant staff of each pilot Area Office</p> <p>2-3 Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA(*3)</p> <p>2-4 Prepare/update distribution network drawings for each PMA</p> <p>2-5 Install water flow meters to each PMA and measure in/outflows monthly</p> <p>2-6 Zone each PMA into Sub Metering Areas (SMA)</p> <p>2-7 Isolate a SMA by installing valves</p> <p>2-8 Update the distribution network drawings for each SMA</p> <p>2-9 Measure an initial level of NRW of each SMA</p> <p>2-10 Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA</p> <p>2-11 Develop a NRW reduction operation plan of each SMA, including reduction target, for review by Head of Distribution Department</p> <p>2-12 Review and approve NRW reduction operation plan of each SMA</p> <p>2-13 Implement the NRW reduction operations at each SMA</p> <p>2-14 Monitor the progress of the NRW reduction operations of each SMA</p> <p>2-15 Measure level of NRW of each SMA at the end of the respective operations</p> <p>2-16 Prepare a report on pilot projects, covering Activity 2-1~2-15</p> <p>2-17 Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials</p> <p>*****</p> <p>3-1 Establish a Working Group for NRW planning (*4)</p> <p>3-2 Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB</p> <p>3-3 Conduct hydraulic and water pressure distribution analyses of the pipeline networks</p> <p>3-4 Develop outlines of the mid-term strategic plan and its annual NRW reduction plan</p> <p>3-5 Develop the first mid-term strategic plan (2018-2022) for approval by FCTA</p> <p>3-6 Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA</p> <p>3-7 Develop a planning manual for NRW reduction</p> | <p style="text-align: center;"><Nigerian Side></p> <p>Project Personnel</p> <ol style="list-style-type: none"> 1. Project Director: Director of Economic Planning, Research and Statistic Department, FCTA 2. Project Manager: Director of FCTWB 3. Deputy Project Manager: HoD for Administration and Supply/FCTWB 4. Technical Managers (Also Leaders of NRW Management Team): HoD for Distribution and HoD for Commerce/FCTWB 5. Members of NRW Management Team (FCTWB): Head of Special Project Unit of Distribution Department (as Coordinator) - Relevant Head of Unit (HoU) and officers of the Distribution Department, Commerce Department and Administration and Supply Department 6. Heads of other relevant Departments and Unit of FCTWB: HoD for Finance, HoD for Production, HoU for Planning Research and Statistics (PRS) 7. Members of pilot NRW Action Team: Area Manager, Assistant Area Manager (Distribution), Assistant Area Manager (Commerce), technical officers (Distribution) and meter readers (Commerce) of each pilot Area Office 8. Other personnel mutually agreed upon as necessary <p>Land, Building and Facilities</p> <ol style="list-style-type: none"> 1. Office building and facilities necessary for the implementation of the Project 2. Office spaces and necessary facilities for the Japanese Experts at the FCTWB Headquarters and each Pilot Area Office, including internet connection and air conditioners 3. Other facilities mutually agreed upon as necessary <p>Local Costs</p> <ol style="list-style-type: none"> 1. Cost for installation, operation and maintenance of the provided equipment and cost for pipe repair at PMAs 2. Administration and operational costs, including costs for local travel for the Project Personnel | <p style="text-align: center;"><Japanese Side></p> <p>Japanese Experts</p> <ol style="list-style-type: none"> 1. Chief Advisor 2. NRW Reduction 3. NRW Planning 4. Leakage Detection 5. Commercial Loss 6. Hydraulic Analysis 7. Administrative Coordinator 8. Other experts mutually agreed upon as necessary <p>Equipment</p> <ol style="list-style-type: none"> 1. Bulk meters for water treatment plants 2. Water flow meters, valves, and customer meters for SMA 3. Leakage detection equipment for PMA 4. Pipe repair equipment for PMA 5. Vehicles (Pick-ups) 6. Other equipment mutually agreed upon as necessary <p>Training of the Nigerian Project Personnel in Japan</p> <p>Four persons mutually agreed upon will be trained in Japan annually</p> |
| <p>A Natural disaster/ political instability/ economic crisis that affect the project activities do not occur</p> <p><Pre-Conditions></p> <p>A Furnished offices for Japanese Expert Team are secured at Headquarters and each Pilot Area Office of FCTWB</p> <p>B Project Personnel is assigned with the finalized list</p> <p>↑ ↑ Issues & Counter measures</p> | | |

Note (*3) Selection criteria of PMA are as follows: (i) Safety for night works is secured in measuring minimum night flow; (ii) Distribution network is separated and it is easy to isolate it in measuring NRW ratio; and (iii) NRW ratio is supposedly high.

Note (*4) Working Group for NRW planning would consist of Project Manager (as chair), Deputy Project Manager, Technical Managers, Head of Finance Dept., Head of Production Dept., Head of PRS Unit, and members of NRW Management Team.





Tentative Plan of Operation

Version ●

Dated ●●●●●●●●

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

| Schedule of Major Japanese Inputs | Year | 1st Year | | | | 2nd Year | | | | 3rd Year | | | | 4th Year | | | | Remarks | Monitoring | |
|--|--------|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|---------|------------|-------|
| | | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | IV | Issue |
| Expert | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| NRW reduction | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Leakage Detection | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Commercial Loss | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Hydraulic Analysis | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Administrative Coordinator | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Equipment | | | | | | | | | | | | | | | | | | | | |
| Bulk meters for water treatment plants | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Water flow meters, valves, and customer meters for Sub Metering Area | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Leakage detection equipment for Pilot Metering Area (PMA) | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Pipe repair equipment for PMA | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Vehicles(Pick-ups) | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |
| Training in Japan | | | | | | | | | | | | | | | | | | | | |
| Four persons mutually agreed upon will be trained in Japan annually | Plan | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | |

| Activities | Sub-Activities | Year | 1st Year | | | | 2nd Year | | | | 3rd Year | | | | 4th Year | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts (CA) | Other Major Inputs | | Remarks | Achievements | Issue & Countermeasures | | |
|---|--|--------|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|------------------------------|------------------------|-----------------------|--------------------|-------|---------|--------------|-------------------------|---------|--|
| | | | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | | | IV | Japan | | | | Nigeria | |
| Output 1: Level of NRW of the service area of FCWTB is monitored regularly | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 | Install bulk meters to water treatment plants 1 and 2 | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.2 | Measure monthly water production of water treatment plants 1,2,3, and 4 | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.3 | Tally the above water production data monthly | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.4 | Calculate monthly water consumption based on the billing data | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 | Calculate monthly NRW ratio of the service area of FCWTB using the data obtained from Activity 1-3 and 1-4 | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Output 2: Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Area(PMAs) under pilot Area Offices | Year | 1st Year | | | | 2nd Year | | | | 3rd Year | | | | 4th Year | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts (CA) | Other Major Inputs | | Remarks | Achievements | Issue & Countermeasures | | | |
|---|---|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|------------------------------|------------------------|-----------------------|--------------------|-------|---------|--------------|-------------------------|---------|--|--|
| | | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | | | IV | Japan | | | | Nigeria | | |
| 2.1 | Review existing NRW reduction operations at each pilot Area Office | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 | Conduct capacity assessment of the relevant staff of each pilot Area Office | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.3 | Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.4 | Prepare/update distribution network drawings for each PMA | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | |

Annex 1-2 Tentative Plan of Operation (PO)

| Activities Sub-Activities | Year | 1st Year | | | | 2nd Year | | | | 3rd Year | | | | 4th Year | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts | Other Major Inputs | | Remarks | Achievements | Issues & Countermeasures |
|---|--------|----------|----|----|-----|----------|----|----|-----|----------|----|----|-----|----------|---|----|-----|------------------------------|------------------------|-------------------|----------------------------|----------------------------|---------|--------------|--------------------------|
| | | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | | | IV | Japan | | | |
| 2.5 Install water flow meters to each PMA and measure in/outflows monthly | Plan | | ██ | ██ | ██ | | | | | | | | | | | | | | | Water flow meters | Installation and O&M cost. | | | | |
| | Actual | | ██ | ██ | ██ | | | | | | | | | | | | | | | | | | | | |
| 2.6 Zone each PMA into Sub Metering Areas (SMAs) | Plan | | ██ | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | | | | | | | | | | | | | | | | | | | | | | |
| <For each SMA> | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 Isolate a SMA by installing valves | Plan | | | | | ██ | ██ | ██ | | | | | | | | | | | | | Valves | Installation and O&M cost. | | | |
| | Actual | | | | | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| 2.8 Update the distribution network drawings for each SMA | Plan | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| 2.9 Measure an initial level of NRW of each SMA | Plan | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| a Measure in/outflows | Plan | | | | | | | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| b Survey water consumption | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| c Calculate NRW ratio | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.10 Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA | Plan | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| a Detect invisible leakage | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| b Detect customer meter malfunction | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| c Detect illegal connection | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.11 Develop a NRW reduction operation plan of each SMA, including reduction target for review by Head of Distribution Department | Plan | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| 2.12 Review and approve NRW reduction operation plan of each SMA | Plan | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| 2.13 Implement NRW reduction operations at each SMA | Plan | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| a Operation for invisible leakage | Plan | | | | | | | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| b Operation for customer meter malfunction | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| c Operation for illegal connection | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.14 Monitor the progress of the NRW reduction operations of each SMA | Plan | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| | Actual | | ██ | ██ | ██ | ██ | ██ | ██ | | | | | | | | | | | | | | | | | |
| a Operation for invisible leakage | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| b Operation for customer meter malfunction | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |
| c Operation for illegal connection | Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | |

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Annex 1-2 Tentative Plan of Operation (PO)

| Activities | 1st Year | | | | 2nd Year | | | | 3rd Year | | | | 4th Year | | | | Responsible Org (Nigeria) | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts | Other Major Inputs | | Remarks | Achievements | Issue & Countermeasures |
|--|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|---------------------------|------------------------------|------------------------|------------------|--------------------|-------|---------|--------------|-------------------------|
| | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | | | | IV | Japan | | | |
| <p>Sub-Activities</p> <p>2.15 Measure level of NRW of each SMA at the end of the respective operations</p> <p>a Measure in/outflows</p> <p>b Survey water consumption</p> <p>c Calculate NRW ratio</p> <p><Documentation></p> <p>2.16 Prepare a report on pilot projects, covering Activity 2-1-2-15</p> <p>2.17 Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials</p> <p>Output 3: A mid-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2</p> <p>3.1 Establish a Working Group for NRW planning</p> <p>3.2 Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB</p> <p>3.3 Conduct hydraulic and water pressure distribution analyses of the pipeline networks</p> <p>3.4 Develop outlines for the mid-term strategic plan and its annual NRW reduction plan (approval by the Director)</p> <p>3.5 Develop the first mid-term strategic plan (2018-2022) for approval by FCTA</p> <p>3.6 Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA</p> <p>3.7 Develop a planning manual for NRW reduction</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Duration / Phasing</p> <p>Plan Actual</p> <p>Year 1st Year 2nd Year 3rd Year 4th Year</p> <p>Qr I II III IV I II III IV I II III IV I II III IV I II III IV</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Project Management and Coordination</p> <p>0.1 Organize Joint Coordination Committee</p> <p>0.2 Develop Detailed Plan of Operation (DPO) for review and approval by JCC</p> | | | | | | | | | | | | | | | | | | | | | | | | | |

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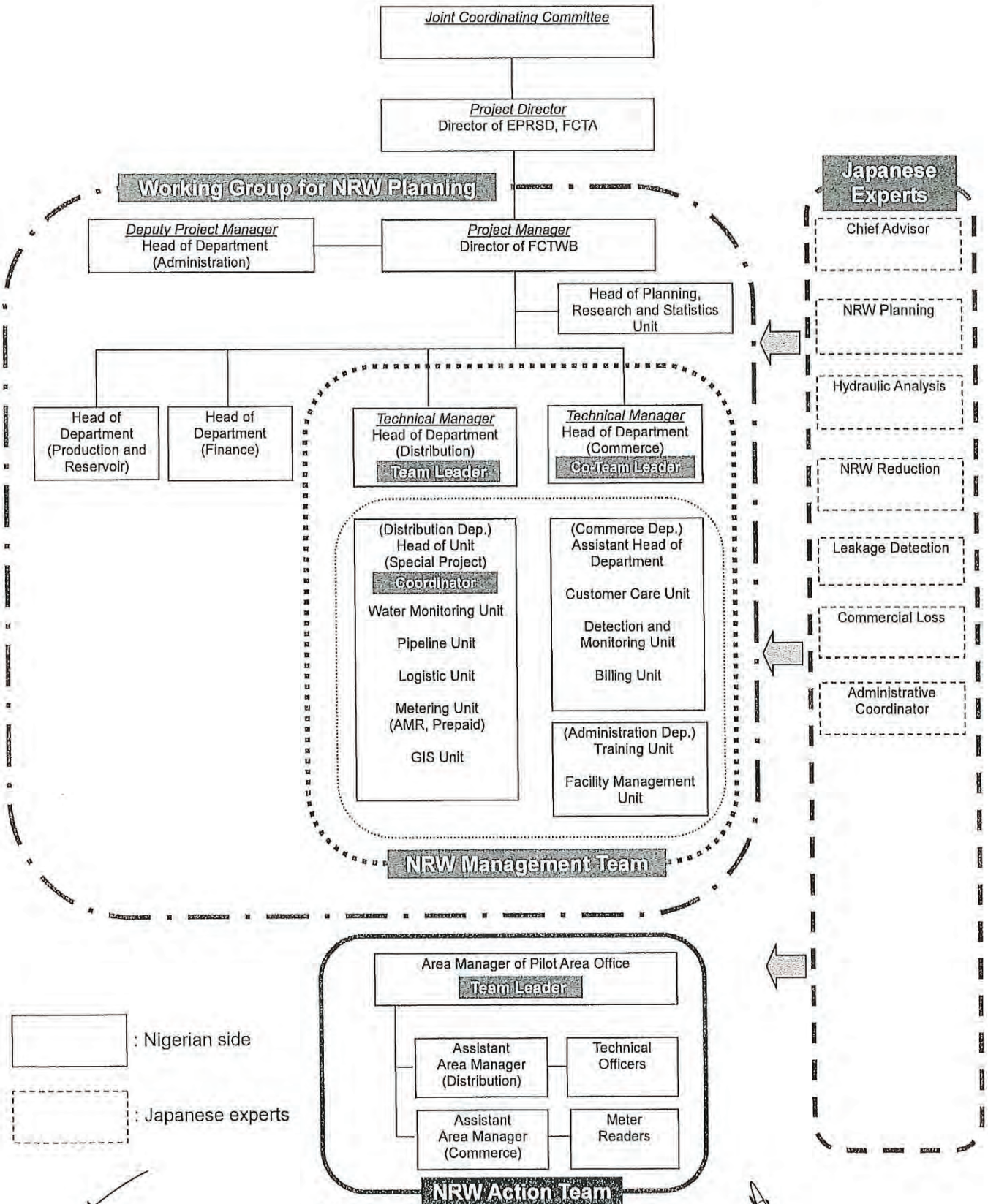
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Annex 1-2 Tentative Plan of Operation (PO)

| Activities Sub-Activities | Year 1st Year | | | | 2nd Year | | | | 3rd Year | | | | 4th Year | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts | Other Major Inputs | | Remarks | Achievements | Issue & Countermeasures | | |
|---|---------------|---|----|-----|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|------------------------------|--------------------------|-------------------------------------|--------------------|-------|---|--------------|-------------------------|---------|--|
| | Or | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | | | IV | Japan | | | | Nigeria | |
| 0.3 Develop Annual Plan of Operation (APO) for review and approval by JCC. | Plan | | | | | | | | | | | | | | | | | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | APO will be prepared in parallel with FCTWB's annual recurrent and capital plan | | | | |
| 0.4 Organize monthly technical meetings | Plan | | | | | | | | | | | | | | | | | NRW Mgt Team, AM | ditto | | | Progress of previous month and plan for the next month, issues & solutions, etc discussed | | | | |
| 0.5 Organize quarterly project meeting | Actual | | | | | | | | | | | | | | | | | Dy. PM, NRW Mgt Team, AM | ditto | | | Progress of previous quarter and plan for the next quarter, issues & solutions, etc discussed | | | | |
| 0.6 Conduct Joint Monitoring semi-annually | Plan | | | | | | | | | | | | | | | | | ditto | ditto | | | Achievement of PDM and progress of PO monitored | | | | |
| 0.7 Submit Monitoring Sheet to JICA Nigeria Office semi-annually | Actual | | | | | | | | | | | | | | | | | JICA | CA | | | | | | | |
| 0.8 Monitoring Mission from JICA for Joint Review | Actual | | | | | | | | | | | | | | | | | JICA | To be determined | | | | | | | |
| 0.9 Organize information sharing seminars for FCTWB /FCTA, including Area Offices | Plan | | | | | | | | | | | | | | | | | Dy. PM | CA, Administrative Coordinator (AC) | | | | | | | |
| 0.10 Collect and organize data for Indicators of PDM | Plan | | | | | | | | | | | | | | | | | Dist Dpt NRW Mgt Team | | | | | | | | |
| a Develop criteria for capacity assessment for each level of the relevant staff (i.e. members of NRW Mgt Team and NRW Action Teams) | Actual | | | | | | | | | | | | | | | | | NRW Mgt Team AM | CA and other Experts | | | Indicator for Project Purpose | | | | |
| b Conduct joint capacity assessment of the relevant staff | Plan | | | | | | | | | | | | | | | | | NRW Mgt Team AM | CA and other Experts | | | ditto | | | | |
| c Set reduction target for each PMA (by the first quarter of the second year) | Actual | | | | | | | | | | | | | | | | | NRW Mgt Team AM | CA and other Experts | | | ditto | | | | |
| d Collect and organize data for Indicators for semi-annual Joint Monitoring | Plan | | | | | | | | | | | | | | | | | NRW Mgt Team AM | CA and other Experts | | | | | | | |
| 0.11 Project Completion Report | Actual | | | | | | | | | | | | | | | | | NRW Mgt Team AM | CA and other Experts | | | | | | | |
| 0.12 Develop Project Website | Plan | | | | | | | | | | | | | | | | | NRW Mgt Team AM | CA, AC | | | | | | | |
| 0.13 Preparation of public relation materials | Actual | | | | | | | | | | | | | | | | | PM | CA, AC | | | Public Relation Unit under Director (PM) will collaborate | | | | |
| Monitoring and Evaluation in the Post-Project period | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.13 Post Monitoring by JICA | Plan | | | | | | | | | | | | | | | | | JICA | | | | | | | | |
| 0.14 Post Evaluation by JICA | Actual | | | | | | | | | | | | | | | | | JICA | | | | | | | | |

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Project Organization Chart



: Nigerian side
 : Japanese experts

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List of Proposed Members of Joint Coordinating Committee

1. Chairperson: Project Director (Director of Economic Planning, Research and Statistics Department, Federal Capital Territory Administration)

2. Members

(1) Nigerian side:

- 1) Representative(s) of National Planning Commission
- 2) Representative(s) of Executive Secretary of Federal Capital Development Authority
- 3) Representative(s) of Federal Ministry of Water Resources
- 4) Project Manager (Director of Federal Capital Territory Water Board)
- 5) Deputy Project Manager (Head of Administration and Supply Department, Federal Capital Territory Water Board)
- 6) Technical Manager (Head of Distribution Department, Federal Capital Territory Water Board)
- 7) Technical Manager (Head of Commerce Department, Federal Capital Territory Water Board)
- 8) Head of Finance Department, Federal Capital Territory Water Board
- 9) Head of Production and Reservoir Department, Federal Capital Territory Water Board

(2) Japanese side:

- 1) Chief Advisor
- 2) Other experts
- 3) Representatives of JICA Nigeria Office
- 4) Other personnel as mutually agreed upon



TO CR of JICA NIGERIA OFFICE

PROJECT MONITORING SHEET

Project Title : _____Version of the Sheet: Ver.●● (Term: Month, Year - Month, Year) _____Name: _____Title: Chief Advisor _____Submission Date: _____**I. Summary****1 Progress**

1-1 Progress of Inputs

1-2 Progress of Activities

1-3 Achievement of Output

1-4 Achievement of the Project Purpose

1-5 Changes of Risks and Actions for Mitigation

1-6 Progress of Actions undertaken by JICA

1-7 Progress of Actions undertaken by Gov. of Republic of Nigeria

1-8 Progress of Environmental and Social Considerations (if applicable)

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

2-2 Cause

2-3 Action to be taken

2-4 Roles of Responsible Persons/Organization (JICA, Gov. of Republic of Nigeria)

3 Modification of the Project Implementation Plan

3-1 PO

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

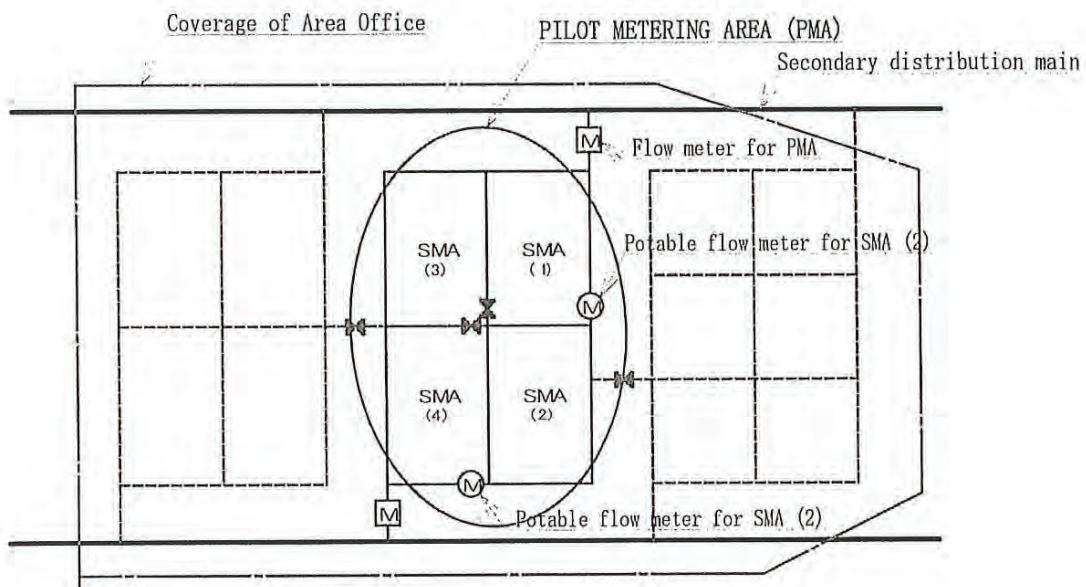
4 Preparation of Gov. of Republic of Nigeria toward after completion of the Project**II. PDM&PO as Project Monitoring Sheet I & II**

Selection criteria

Selection criteria of Pilot Metering Area are as follows:

- 1) Safety for night works is secured in measuring minimum night flow;
- 2) Distribution network is separated and it is easy to isolate it in measuring NRW rate; and
- 3) NRW rate is supposedly high.

Definition of Pilot Metering Area (PMA) and Sub Metering Area (SMA) is as shown below.



Pilot Metering Area is a separated distribution network and covers approximately 1,000-1,500 service connections. Pilot Metering Area is also further divided into several Sub Metering Areas which cover approximately 200-500 service connections each and hydraulically separated for NRW measuring purpose.

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Tentative List of Personnel assigned for the Project

- (1) Project Director: Mr. Ari Isa Muhammad, Director of Economic Planning Research and Statistics Department, FCTA
- (2) Project Manager: Mr. M.O.Adebayo, Director of FCTWB
- (3) Deputy Project Manager: Mr. S.T Bello, Head of Administration and Supply Department, FCTWB
- (4) Technical Manager: Engr. A. A. Nahuche, Head of Distribution Department, FCTWB
: Mr. Hudu Bello, Head of Commerce Department, FCTWB
- (5) Members of NRW Management Team
- (a) Distribution Department

| | Name of staff | Position in FCTWB | Remarks |
|----|---------------------------|--|------------------------------------|
| 1 | Abolade. R. Lawal | Head of Special Project Unit | Coordinator of NRW Management Team |
| 2 | Yetunde Olaniyan | Head of Water Monitoring Unit | |
| 3 | A.O. Akande | Head of Metering Unit (AMR Meter) | |
| 4 | Abdullahi Masaud | Head of Metering Unit (pre-paid Meter) | |
| 5 | Musa Dikko | Head of pipeline Unit | |
| 6 | Mohammed Dauda | Technical Officer , Pipeline Unit | |
| 7 | Moh. KabiruRabiu | Head of Logistic Unit | |
| 8 | AbubakarUbale Abubakar | Civil Engr. II, Logistic Unit, | |
| 9 | Shehu Suleiman | Head of GIS Unit | |
| 10 | Ezeh Hilary | Surveyor, GIS Unit | |

(b) Commerce Department

| | Name of staff | Position in FCTWB | Remarks |
|---|------------------|---|---------|
| 1 | Adis Mohammed | Assistant Director | |
| 2 | Isaac O. Owolabi | Head of Customer Care Unit | |
| 3 | Danjumalsah | Head of Monitoring and Detection Unit | |
| 4 | TaiwoAdeyemi | Monitoring staff, Monitoring and Detection Unit | |
| 5 | Rose Akpan | Head of Billing Unit | |
| 6 | SulemanAgbawn | Billing Officer, Billing Unit | |

(c) Administration and Supply Department

| | Name of staff | Position in FCTWB | Remarks |
|---|-----------------------------|----------------------------------|---------|
| 1 | Francisca Samuel | Head of Training/ Welfare Unit | |
| 2 | Bakare Christopher Imafidon | Technical Officer, Facility Unit | |

(6) Head of other relevant Departments and Unit

| | Name of staff | Position in FCTWB | Remarks |
|---|-------------------|--|---------|
| 1 | Hafsat Ahmed Lawi | Head of Financial Department | |
| 2 | Aliyu Usman | Head of Reservoir Department | |
| 3 | BunmiOlowookere | Head of Planning, Research and Statistics Unit | |



(7) Member of Pilot NRW Action Team

(a) Jabi

| | Name of staff | Position in FCTWB | Remarks |
|---|---------------------|--|---------|
| 1 | Muhammed A.S. Ramat | Area Manager (Distribution) | |
| 2 | Abawonse J.K | Assistant Area Manager (Commerce) | |
| 3 | Sadiq Salihu | Assistant Area Manager (Distribution) | |
| 4 | Aliyu Ibrahim | Senior Works Superintendent (Distribution) | |
| 5 | Mahmud Muhammed | Foreman (Distribution) | |
| 6 | Abubakar Danladi | Foreman (Distribution) | |
| 7 | Jummai Ugbo-daga | Senior Commercial Officer (Commerce) | |
| 8 | Mohammed Moh'd | Planning Officer (Commerce) | |
| 9 | Raliat Zubairu | Higher Trade Officer (Commerce) | |

(b) Gudu

| | Name of staff | Position in FCTWB | Remarks |
|---|--------------------|---------------------------------------|---------|
| 1 | Kenneth N. Azih | Area Manager (Distribution) | |
| 2 | Ogbu O. Williams | Assistant Area Manager (Commerce) | |
| 3 | Abdul Ozumi | Assistant Area Manager (Distribution) | |
| 4 | Adamulsmaila | Unit Head (Commerce) | |
| 5 | Umar I. Adamu | Assistant Tech. Officer (Commerce) | |
| 6 | Kotangora Mohammed | Assistant Unit Head (Distribution) | |
| 7 | Salisu Mohammed | Plumber (Distribution) | |



(b) Garki 1

| | Name of staff | Position in FCTWB | Remarks |
|----|---------------------------|---|---------|
| 1 | SulemanAminat Mohammed | Area Manager (Commerce) | |
| 2 | Umar Ibrahim | Assistant Area Manager (Commerce) | |
| 3 | Mohammed Gana | Assistant Area Manager (Distribution) | |
| 4 | Olusegun Rose | Senior Trade Office (Commerce) | |
| 5 | Abdulahi Ibrahim | Assistant Tech. Officer (Commerce) | |
| 6 | IliyaGaladima | Higher Works Superintendent (Distribution) | |
| 7 | Raymond Olowookere | Forman (Distribution) | |
| 8 | Ibrahim Yelwa | Forman (Distribution) | |
| 9 | Hassan Abubakar | Commerce Officer (Commerce) | |
| 10 | Shehu Isa | Craftsman (Distribution) | |



MINUTES OF MEETING
BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
FEDERAL CAPITAL TERRITORY ADMINISTRATION
FEDERAL REPUBLIC OF NIGERIA
ON
THE JAPANESE TECHNICAL COOPERATION
FOR
THE FEDERAL CAPITAL TERRITORY
REDUCTION OF NON-REVENUE WATER PROJECT

Based on the Record of Discussion signed on 17th July 2014 (hereinafter referred to as "the R/D"), the mission of Japan International Cooperation Agency (hereinafter referred to as "JICA") visited the Federal Republic of Nigeria (hereinafter referred to as "Nigeria") to officially commence the Federal Capital Territory Reduction of Non-Revenue Water Project (hereinafter referred to as "the Project") with the JICA Expert Team who will cooperate with the Federal Capital Territory Water Board (hereinafter referred to as "FCTWB") for implementation of the Project, and had a series of discussions with the Federal Capital Territory Administration (hereinafter referred to as "FCTA") and FCTWB.

As a result of discussions, both Nigerian and Japanese sides confirmed the matters referred to in the document attached hereto.

Abuja, 6th November 2014

Mr. OMURA Yoshiki
Leader,
Monitoring Mission Team,
Japan International Cooperation Agency
Japan

Mr. Ari, Isa Muhammad
Director,
Economic Planning, Research and
Statistics Department,
Federal Capital Territory Administration,
Federal Republic of Nigeria

Mr. MIYOSHI Akinori
Chief Advisor,
JICA Expert Team

Mr. Hudu Bello
Director,
Federal Capital Territory Water Board,
Federal Capital Territory Administration,
Federal Republic of Nigeria

ATTACHED DOCUMENT

1. Work Plan

Nigerian side understood the overview of draft Work Plan as attached and agreed that the Work Plan will be finalized through discussions between the JICA Expert Team and FCTWB and approved by the first Joint Coordinating Committee (hereinafter referred to as "1st JCC") to be held at the beginning of December 2014.

Both Nigerian and Japanese sides agreed that Monitoring Sheet Ver. 1 shall be used to regularly monitor the Project as attached. Both sides also agreed that the quantities and specifications of necessary equipment to be purchased by JICA will be decided through discussions between the JICA Expert Team and FCTWB based on the tentative equipment list as attached, and will be approved by 1st JCC.

2. Project Members

Based on the tentative list attached on the R/D, the personnel participating in the Project were assigned by Project Manager as attached and will be approved by 1st JCC. The responsible person for each activity was assigned from both Nigerian and Japanese sides as shown in Monitoring Sheet Ver. 1.

3. Project Budget

FCTWB explained that 2015 budget necessary for implementing the Project was proposed to FCTA and assured that the budget will be operational without any problem for the project implementation.

4. Office Space and Facilities

Both Nigerian and Japanese sides confirmed that the office space and necessary facilities for the JICA Expert Team at FCTWB Head Office was properly prepared by FCTWB. However, the office space at each pilot Area Office was found unprepared. FCTWB assured that the office space, store room and necessary facilities including electricity at each pilot Area Office shall be ready by the end of April 2015 before the commencement of pilot project.

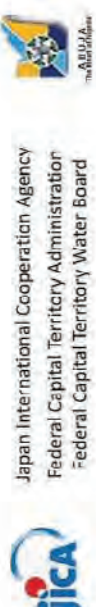
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Appendix 1: Overview of draft Work Plan

Appendix 2: Monitoring Sheet Ver. 1

Appendix 3: Tentative List of equipment for the Project

Appendix 4: List of personnel assigned for the Project



Japan International Cooperation Agency
Federal Capital Territory Administration
Federal Capital Territory Water Board

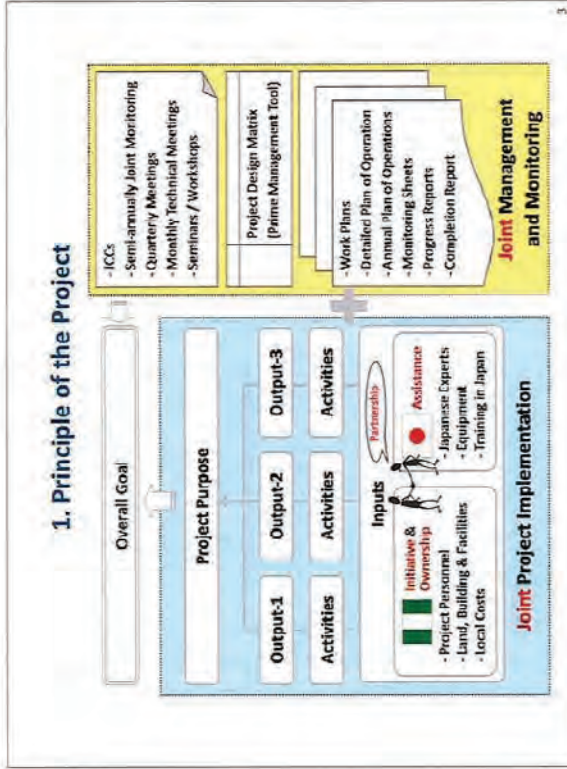
**The Federal Capital Territory
Reduction of Non-Revenue Water Project**

**Overview of
Draft Work Plan**

November 2014
JICA Expert Team

Contents

1. Principle of the Project
2. Outline of the Project
3. Current Status & Issues of Water Supply in Federal Capital City
4. Expected Impact by NRW Reduction
5. Principles of the Project Implementation
6. Capacity Assessment and Capacity Development Plan
7. Capacity Development for Individuals
8. Activities for Output-1
9. Activities for Output-2
10. Activities for Output-3
11. Members of the JICA Expert Team



2. Outline of the Project

Project Period
Phase-1: October 2014 to December 2016
Phase-2: January 2017 to March 2018

Overall Goal, Project Purpose and three Outputs
See the page 5&6

Project Areas
Federal Capital Territory (FCT)
Pilot Areas: Garki I, Gudu and Jabi

Organizations concerned (Counterparts) in Nigeria Side
Federal Capital Territory Administration (FCTA)
Federal Capital Territory Water Board (FCTWB)

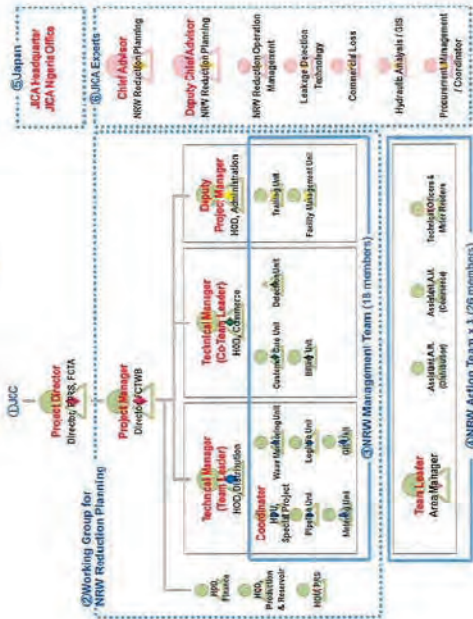
Project Implementing Structure
See the page 7

Overall Goal, Project Purpose and Three Outputs

| | |
|------------------------|---|
| Overall Goal | Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB. |
| Indicator | a. Annual NRW ratio is reduced to X% at the end of the year 2021. |
| Project Purpose | Capacity of FCTWB for NRW reduction is strengthened. |
| Indicator | a. The medium-term strategic plan (2018-2022) is approved by FCTA. b. NRW reduction operations of the first quarter of 2018 are carried out. c. Relevant staff become equipped with skills and knowledge necessary for NRW reduction. d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target. |

5

Project Implementing Structure



7

Overall Goal, Project Purpose and Three Outputs (Continued)

| | |
|------------------|---|
| Output-1 | Level of NRW of the service area of FCTWB is monitored regularly. |
| Indicator | 1a: Record of monthly NRW ratio is kept. 1b: Monthly NRW ratio is reported. 1c: Quarterly NRW ratio is reported. |
| Output-2 | Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices. |
| Indicator | 2a: Decrease rate of NRW ratio for each Sub Metering Area reaches at least 80% of its target. 2b: Technical manuals are approved. |
| Output-3 | A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2. |
| Indicator | 3a: Draft medium-term strategic plan (2018-2022) is submitted by FCTWB to FCTA. 3b: An annual NRW reduction plan (2018) is incorporated in FCTWB's annual recurrent and capital plan (2018). 3c: A planning manual for NRW reduction is approved. |





6

Relationship Matrix between Nigerian Counterparts and JICA Experts in terms of their major roles in the Project Implementation

| Nigerian Counterparts | Working Group for NRW Reduction Planning | | | | | | | | | | | | | | | | | | | | | |
|---|--|-----------------------------------|-----------------------------------|--------------|-----------------|-----------|---------------------------------------|-----------------------------------|---|---------------|-----------------|--------------------|----------------|---------|----------|--------------------------|---------------|----------------|----------------------|-----------------------|------------------------------------|--|
| | NRM Management Team | | | | | | | | | | NRW Action Team | | | | | | | | | | | |
| JICA Experts | Project Director / Director, EPRS, FCTA | Project Manager / Director, FCTWB | Deputy P.M. / HOD, Administration | HOD, Finance | HOD, Production | HOD, P&IS | Technical Manager / HOD, Distribution | Technical Manager / HOD, Commerce | Coordinator / HOD, Special Project Unit | Pipeline Unit | Metering Unit | W. Monitoring Unit | Logistics Unit | RC Unit | C&I Unit | Facility Management Unit | Training Unit | Detection Unit | Assess. & M. (Dist.) | Assistant A.M. (Com.) | Technical Officers / Meter Readers | |
| Chief Advisor / NRW Reduction Planning | | | | | | | | | | | | | | | | | | | | | | |
| Deputy Chief Advisor / NRW Reduction Planning | | | | | | | | | | | | | | | | | | | | | | |
| NRW Reduction Operation Management | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Detection Technology | | | | | | | | | | | | | | | | | | | | | | |
| Commercial Losses | | | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Analysis / GIS | | | | | | | | | | | | | | | | | | | | | | |
| Procurement Mgmt. / Coordinator | | | | | | | | | | | | | | | | | | | | | | |

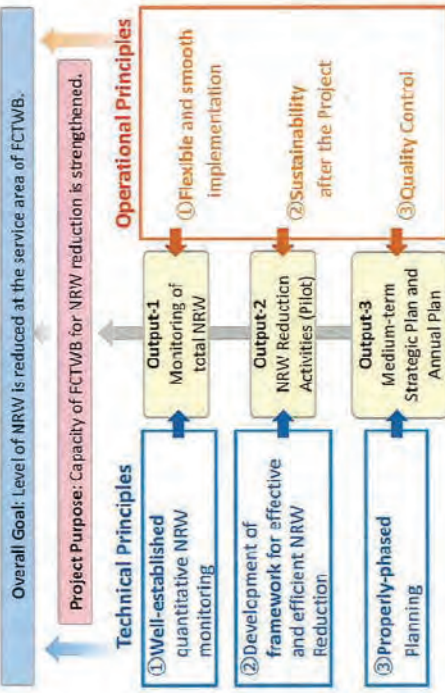
8

3. Current Status & Issues of Water Supply in Federal Capital City

- 
1. Strengthening of Management and Organization
 Future independence, inefficient personnel
- 
2. Improvement in Financial Situation
 Depression in tariff collection ratio, weak financial management, etc.
- 
3. Increase in Water Service Coverage
 Delay in development and construction, facility deterioration, etc.
- 
4. NRW Reduction
 Absence of planning, shortage of skilled manpower, absence of quantitative monitoring system by bulk flow meters, passive leakage detection, etc.

9

5. Principles of the Project Implementation



11

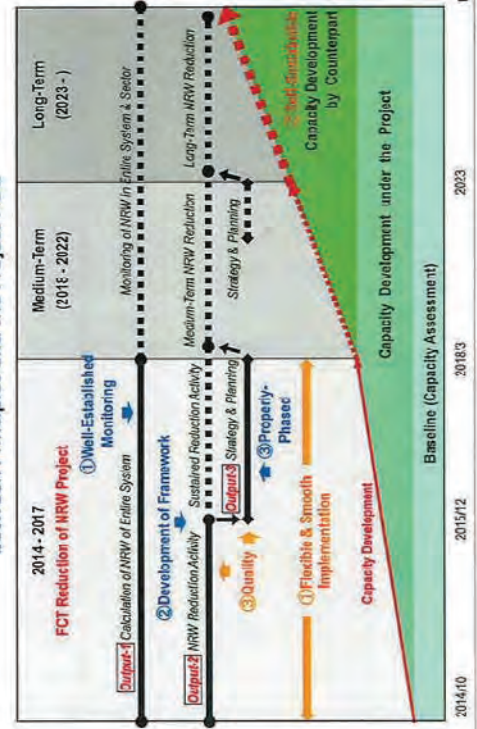
4. Expected Impact of NRW Reduction

| Items | NRW (2017) (currently estimated) | NRW (2024) (tentative Target) | Impact | Calculation Conditions |
|---|----------------------------------|-------------------------------|----------------------|---|
| Population to be served | 1.96 mill | 2.53 mill | Additional 0.57 mill | Supply Capacity: estimated 624,000m ³ /day, Per-Capita Consumption: 197LCD |
| Demand exceed. Supply (When new WTP is needed.) | 2017 | 2024 | 7 years postponed | Population projection until 2050 by FCTWB |
| Daily Water Consumption (Billed water) | 1,62,400m ³ | 209,600m ³ | 47,000m ³ | Actual daily supply: 262,000m ³ |
| Annual Revenue | N4.746bn | N6.12bn | N1.38bn | Water tariff (domestic): N80/m ³ |
| Cost saving of WTP (Rough estimate) | - | - | N16.8bn | 47,000m ³ /day x N3 600/m ³ /day |

Source: JICA Detailed Planning Survey, 2014

10

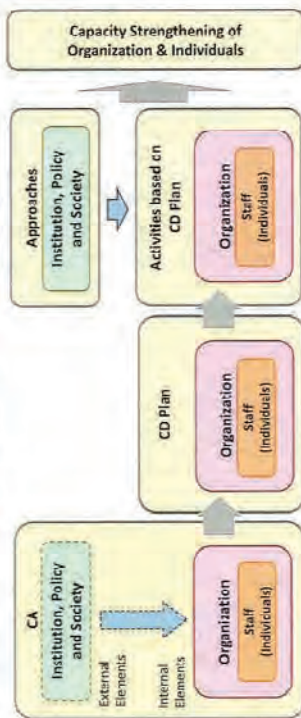
Relationship in Timeframe between Principles and the Project Flow



12

6. Capacity Assessment and Capacity Development Plan

CA and CP plan are for both **Organization** and **Individuals** with approaches to **Institution, Policy and Society**, as a triadic component.



- * CA and CD Planning by **jointly** the JICA Expert Team and the Management of FCTWB.
- * **Interim assessments** of organization and individuals will be conducted **annually**.

13

8. Activities for Output-1

| | |
|-----|---|
| 1-1 | Install bulk meters to water treatment plants 1 and 2. * <i>Four ultrasonic flow meters, chamber and monitoring room if needed (to be constructed by FCTWB).</i> |
| 1-2 | Measure monthly water production of water treatment plants 1, 2, 3, and 4. |
| 1-3 | Tally the above water production data monthly. |
| 1-4 | Calculate the monthly water consumption based on the billing data. * <i>Modification of programme of billing and collection system.</i> |
| 1-5 | Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4. |

15

7. Capacity Development for Individuals

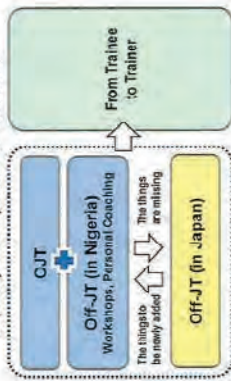
- **Expansion** of transferred skills and knowledge into the **whole FCC** water supply services and other Area Offices after the Project. (Trainee to Trainer)
- Technical meetings and workshops organized under **the initiative of FCTWB staff** with support of the JICA Expert Team.

Trainings in Japan

- 1st Training for the NRW Management Team in charge of Output-1 to 3 (in 2015)
- 2nd Training for the NRW Action Team in charge of Output-2 (in 2016)
- 3rd Training for the Working Group for NRW Reduction Planning in charge of Output-3 (in 2017)

* *Supposedly in Yokohama City.*

Capacity Development for Individuals



14

9. Activities for Output-2

| | |
|------|---|
| 2-1 | Review existing NRW reduction operations at each pilot Area Office. |
| 2-2 | Conduct capacity assessment of the relevant staff of each pilot Area Office. |
| 2-3 | Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA. |
| 2-4 | Prepare/update distribution network drawings for each PMA. * <i>GIS software, Mesh management, comprehensive mapping system, GIS & database training</i> |
| 2-5 | Install water flow meters to each PMA and measure in/outflows monthly. |
| 2-6 | Zone each PMA into Sub Metering Areas (SMA). |
| 2-7 | Isolate a SMA by installing valves. |
| 2-8 | Update the distribution network drawings for each SMA. |
| 2-9 | Measure an initial level of NRW of each SMA. * <i>Water balance analysis (WBA)</i> |
| 2-10 | Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA. * <i>Minimum Night, Flow survey, step test, leakage detector, correlator, etc</i> |

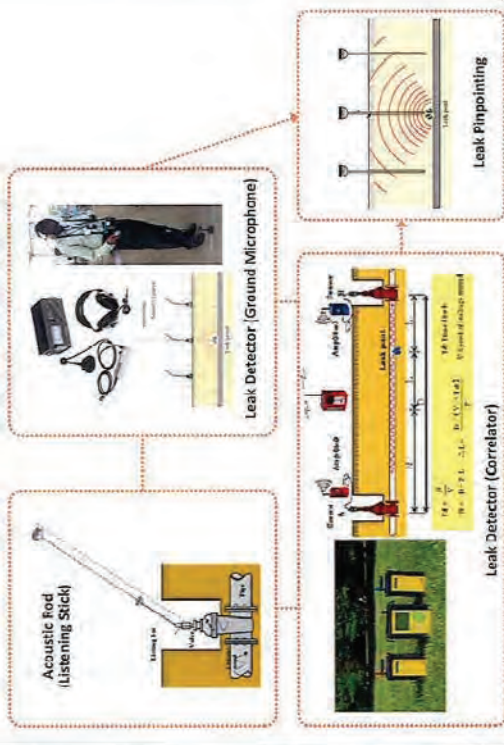
16

9. Activities for Output-2 (Continued)

| | |
|------|--|
| 2-11 | Develop a NRW reduction operation plan of each SMA, including reduction target, for review by Head of Distribution Department. |
| 2-12 | Review and approve NRW reduction operation plan of each SMA. |
| 2-13 | Implement the NRW reduction operations at each SMA. <ul style="list-style-type: none"> Leakage repair, legalization/disconnection of illegal connections, replacement/ installation of water meters |
| 2-14 | Monitor the progress of the NRW reduction operations of each SMA. |
| 2-15 | Measure level of NRW of each SMA at the end of the respective operations. <ul style="list-style-type: none"> Minimum Night Flow survey and Water balance analysis (NWA) |
| 2-16 | Prepare a report on pilot projects, covering Activity 2-1 to 2-15. <ul style="list-style-type: none"> Leakage density by mesh coloring |
| 2-17 | Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials. <ul style="list-style-type: none"> To be developed by jointly the ICA Expert Team and FCTWB. Audio visual materials by using widely-used software for continuous revision and creation by FCTWB. |

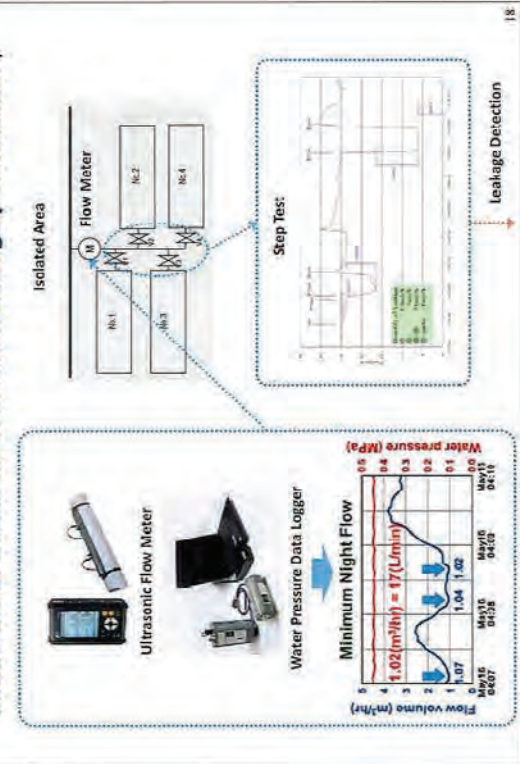
17

Basic Flow of Detection of Invisible Leakage



19

Basic Flow of Detection of Invisible Leakage (Prioritization)



18

10. Activities for Output-3

| | |
|-----|---|
| 3-1 | Establish a Working Group for NRW planning. |
| 3-2 | Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB. <ul style="list-style-type: none"> Future establishment of specialized unit or task force |
| 3-3 | Conduct hydraulic and water pressure distribution analyses of the pipeline networks. <ul style="list-style-type: none"> EPANET supposedly |
| 3-4 | Develop outlines of the medium-term strategic plan and its annual NRW reduction plan. <ul style="list-style-type: none"> See the page 21 |
| 3-5 | Develop the first medium-term strategic plan (2018-2022) for approval by FCTA. <ul style="list-style-type: none"> See the page 22 |
| 3-6 | Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA. <ul style="list-style-type: none"> See the page 21 |
| 3-7 | Develop a planning manual for NRW reduction. |

20

Outlines of the Medium-term Strategic Plan and Annual NRW Reduction Plan (Tentative)

| | Medium-term Strategic Plan for NRW Reduction (5-year plan) | Annual NRW Reduction Plan |
|----|--|--|
| A. | Introduction to NRW and approaches (e.g. PDCA) | Relation with medium-term strategic plan for NRW reduction |
| B. | Target and indicator | Review of target and indicator |
| C. | Staffing plan and their responsibilities | Staffing plan |
| D. | HRD plan | Flow of NRW reduction operations |
| E. | Summary of results of pilot projects | NRW reduction operations |
| F. | Causes of NRW and their patterns by features of areas | Implementation schedule |
| G. | NRW reduction operation plan | Estimation of annual cost |
| H. | <ul style="list-style-type: none"> Network drawings and data Design and creation of DMA or equivalent (such as TMA and SKA) Prioritization in NRW reduction Field examination or existing values, etc. Measurement of Minimum Night Flow Leakage detection Repair of leaks and recording Customer listing Identification of illegal connections and meter inaccuracy Data collection of billed consumption before/after NRW reduction Measures against illegal connections and meter inaccuracy Water audits for NRW reduction operations Safety measures | Estimation of annual benefit |
| I. | Implementation schedule | Reporting and workshops |
| J. | Estimation of total and annual costs | |
| K. | Estimation of total and annual benefits | |
| L. | Recommendations | |
| M. | Manual for equipment | |

21

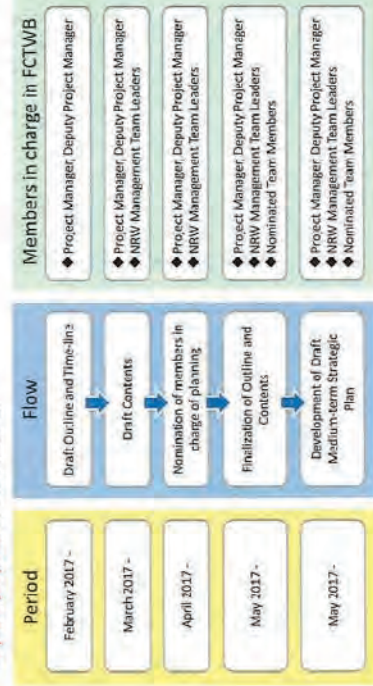
11. Members of the JICA Expert Team

| | | | |
|---|---|---|---|
|  | Akinori MIYOSHI (Mr.) Chief Advisor / NRW Reduction Planning |  | Takuji OKUBO (Mr.) Commercial loss |
|  | Taketoshi FUJIYAMA (Mr.) Deputy Chief Advisor / NRW Reduction Planning |  | Shinta SEGAWA (Mr.) Hydraulic Analysis / GIS |
|  | Toru TOYODA (Mr.) NRW Reduction Operations Management |  | Kazuhito ISHIJURA (Mr.) Procurement Management / Coordinator |
|  | Kiyoshi KIYAMA (Mr.) Leakage Detection Technology | | |

23

Flow from Preparation of Outline to Development of The Medium-term Strategic Plan

Technical Managers with support of the JICA Expert Team should take on **leading roles** to develop the first medium-term strategic plan and make it **feasible** in consideration of **cost and budget allocation**, based on the **results of pilot projects** in the Phase-1.



22

To Chief Representative of JICA Nigeria Office

PROJECT MONITORING SHEETS

Project Title : The Federal Capital Territory Reduction of Non-Revenue Water Project

Version of the Sheet: Ver. 1 (Term: October, 2014 - March, 2018)

Name: Akinori Miyoshi

Title: Chief Advisor

Submission Date: 6 November 2014

I. Summary

1 Progress

1-1 Progress of Inputs

1-2 Progress of Activities

1-3 Achievement of Output

1-4 Achievement of the Project Purpose

1-5 Changes of Risks and Actions for Mitigation

1-6 Progress of Actions undertaken by JICA

1-7 Progress of Actions undertaken by Nigerian side

1-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

2-2 Cause

2-3 Action to be taken

2-4 Roles of Responsible Persons/Organization

3 Modification of the Project Implementation Plan

3-1 PO

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HQ. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

4 Preparation by Nigerian side toward after completion of the Project

II. Project Monitoring Sheet I & II (as attached)

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

Project Period: October 2014 to March 2018

Implementing Organization: Federal Capital Territory Administration (FCTA) / Federal Capital Territory Water Board (FCTWB)

Direct Beneficiaries: FCTWB, relevant staff of FCTWB Headquarters and pilot Area Offices

Project Site: FCT Pilot Area Offices: Jabi, Garki I and Gudu

Version 1
Dated 6 Nov. 2014

| Narrative Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumption | Achievement | Remarks |
|--|---|--|---|-------------|---------|
| <p><Overall Goal> Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB</p> | <p>a. Annual NRW ratio is reduced to X% (*) at the end of the year 2021</p> <p>Note (*): Target value (X%), which is expected to be determined in the medium-term strategic plan for NRW reduction, shall be tentatively filled when the final draft was approved by the Director of FCTWB, which shall be finalized when the plan is approved by FCTA</p> | <p>a. Record of NRW ratio kept by Distribution Department</p> | <p>A. Policy support for NRW reduction is not discontinued Policy support for NRW reduction is not discontinued</p> | | |
| <p><Project Purpose> Capacity of FCTWB for NRW reduction is strengthened</p> | <p>a. The medium-term strategic plan for NRW reduction (2016-2022) is approved by FCTA by the end of the Project</p> <p>b. NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB</p> <p>c. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level</p> <p>d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**)</p> <p>Note (**): Target for each PMA is expected to be determined by the end of the first quarter of the second year</p> | <p>a. Date of approval of the plan b. Result of monitoring by NRW Management Team c. Results of joint assessment based on the criteria set by the Project d. Record of NRW ratio kept by Distribution Department</p> | <p>B. Natural disaster/ political instability/ economic crisis that affect the service area of FCTWB do not occur C. Activities to implement the medium-term strategic plan are not discontinued or delayed</p> | | |
| <p><Outputs> 1. Level of NRW of the service area of FCWMTB is monitored regularly</p> | <p>1a. Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the first year of the Project</p> <p>1b. Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the first year of the Project</p> <p>1c. Quarterly NRW ratio of the service area of FCTWB is reported to the Board of Directors of FCTWB from the third quarter of the first year of the Project</p> | <p>1a. Monthly record of NRW ratio. 1b&1c. Material for meetings submitted by the Distribution Department</p> | <p>A. Staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) trained through the Project do not leave the office in large numbers</p> | | |
| <p>2. Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices (*1)</p> | <p>2a. Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations</p> <p>2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project</p> | <p>2a. Record of NRW ratio kept by the Distribution Department 2b. Date of approval of the manuals 3a&3b. Date of official letter submitting draft strategic plan and annual recruitment and capital plan 3c. Date of approval of the manual</p> | | | |
| <p>3. A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 (*2)</p> | <p>3a. By October 2017, draft medium-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval</p> <p>3b. By October 2017, an annual NRW reduction plan (2018) is incorporated in FCWMTB's annual recruitment and capital plan (2018) for submission to FCTA for review and approval</p> <p>3c. A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project</p> | | | | |

Note (*1): NRW components targeted by Output 2 are (i) invisible leakage; (ii) customer meter malfunction; and (iii) illegal connection
Note (*2): A medium-term strategic plan is a five-year plan, which may include medium-term target, strategies and actions, timeframe, human resource requirement, on-the-job training mechanism, cost-benefit analysis of NRW reduction, etc. It is noted that NRW components addressed by the strategic plan are not limited to the ones mentioned in (*1) above; they shall be discussed and determined in developing the outline of the strategic plan (through Activity 3-4).

| Activities | The Nigerian Side | Inputs | The Japanese Side | Important Assumption |
|--|--|---|---|--|
| <p>1-1 Install bulk meters to water treatment plants 1 and 2 1-2 Measure monthly water production of water treatment plants 1, 2, 3, and 4 1-3 Tally the above water production data monthly 1-4 Calculate the monthly water consumption based on the billing data 1-5 Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4</p> | <p>Project Personnel 1. Project Director: Director of Economic Planning, Research and Statistic Department, FCTA 2. Project Manager: Director of FCTWB 3. Deputy Project Manager: HoD for Administration and Supply/FCTWB 4. Technical Managers (Also Leaders of NRW Management Team): HoD for Distribution and HoD for Commerce /FCTWB 5. Members of NRW Management Team (FCTWB): - Head of Special Project Unit of Distribution Department (as Coordinator) - Relevant Head of Unit (HoU) and officers of the Distribution Department, Commerce Department, and Administration and Supply Department 6. Heads of other relevant Departments and Unit of FCTWB: HoD for Finance, HoD for Production, HoU for Planning Research and Statistics (PRS) 7. Members of NRW Action Team: Area Manager, Assistant Area Manager (Distribution), Assistant Area Manager (Commerce), technical officers (Distribution) and meter readers (Commerce) of each pilot Area Office 8. Other personnel mutually agreed upon as necessary</p> | <p>Japanese Experts 1. Chief Advisor / NRW Reduction Planning 2. Deputy Chief Advisor / NRW Reduction Planning 3. NRW Reduction Operations Management 4. Leakage Detection Technology 5. Commercial Loss 6. Hydraulic Analysis / GIS 7. Procurement 8. Management / Coordinator 9. Other experts mutually agreed upon as necessary</p> | <p>Pre-Conditions A. Furnished offices for Japanese Expert Team are secured at Headquarters and each Pilot Area Office of FCTWB B. Project Personnel is assigned with the finalized list</p> | <p>A. Natural disaster/political/instability/economic crisis that affect the project activities do not occur</p> |
| <p>2-1 Review existing NRW reduction operations at each pilot Area Office 2-2 Conduct capacity assessment of the relevant staff of each pilot Area Office 2-3 Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA(*) 2-4 Prepare/update distribution network drawings for each PMA 2-5 Install water flow meters to each PMA and measure in/outflows monthly 2-6 Zone each PMA into Sub Metering Areas (SMA) 2-7 Isolate a SMA by installing valves 2-8 Update the distribution network drawings for each SMA 2-9 Measure an initial level of NRW of each SMA 2-10 Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA 2-11 Develop a NRW reduction operation plan of each SMA, including reduction target, for review by Head of Distribution Department 2-12 Review and approve NRW reduction operation plan of each SMA 2-13 Implement the NRW reduction operations at each SMA 2-14 Monitor the progress of the NRW reduction operations of each SMA 2-15 Measure level of NRW of each SMA at the end of the respective operations</p> | <p>Land, Building and Facilities 1. Office building and facilities necessary for the implementation of the Project 2. Office spaces and necessary facilities for the Japanese Experts at the FCTWB Headquarters and each Pilot Area Office, including internet connection and air conditioners 3. Other facilities mutually agreed upon as necessary</p> | <p>Equipment 1. Bulk meters for water treatment plants 2. Water flow meters, valves, and customer meters for SMA 3. Leakage detection equipment for PMA 4. Pipe repair equipment for PMA 5. Vehicles (Pick-ups) 6. Other equipment mutually agreed upon as necessary</p> | <p>Issues & Countermeasures</p> | <p>A. Natural disaster/political/instability/economic crisis that affect the project activities do not occur</p> |
| <p>2-16 Prepare a report on pilot projects, covering Activity 2-1~2-15 2-17 Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials</p> | <p>Local Costs 1. Cost for installation, operation and maintenance of the provided equipment and cost for pipe repair at PMAs 2. Administration and operational costs, including costs for local travel for the Project Personnel</p> | <p>Training of the Nigerian Project Personnel in Japan Four persons mutually agreed upon will be trained in Japan annually</p> | | |
| <p>3-1 Establish a Working Group for NRW planning (*) 3-2 Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB 3-3 Conduct hydraulic and water pressure distribution analyses of the pipeline networks 3-4 Develop outlines of the medium-term strategic plan and its annual NRW reduction plan 3-5 Develop the first medium-term strategic plan (2018-2022) for approval by FCTA 3-6 Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA 3-7 Develop a planning manual for NRW reduction</p> | | | | |

Note (*) Selection criteria of PMA are as follows: (i) Safety for night works is secured in measuring minimum night flow; (ii) Distribution network is separated and it is easy to isolate it in measuring NRW ratio; and (iii) NRW ratio is supposedly high.
Note (*) Working Group for NRW planning would consist of Project Manager (as chair), Deputy Project Manager, Technical Managers, Head of Finance Dept., Head of Production Dept., and members of NRW Management Team.

Project Monitoring Sheet II (Revision of Plan of Operation)

Responsibility of Members

Version Dated 1 6 Nov. 2014

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

| Activities | Responsible Organization (Nigeria) | Responsible Person (Nigeria) | Implementers (Nigeria) | JICA Experts | Other Major Input | | Remarks | | | |
|---|--|--|------------------------|-------------------------------|-------------------------------------|--|--------------------------------------|-------------------|---------------------------|--|
| | | | | | Japan | Nigeria | | | | |
| | | | | | | | | | | |
| Output-1 | | | | | | | | | | |
| Level of NRW of the service area of FCTWB is monitored regularly | 1-1 | Install bulk meters to water treatment plants 1 and 2 | R/D WP | Dist. Dpt Prod. Dpt | HoU(Pipeline)/D HoU(Metering)/D | Tech Officers (Pipeline) | CA, Dy.CA | Bulk meters | Installation, O&M cost | Prod Dpt will be consulted |
| | 1-2 | Measure monthly water production of water treatment plants 1, 2, 3, and 4 | R/D WP | Dist. Dpt Prod. Dpt | HoU(Pipeline)/D HoU(Prod)/Prod | Tech Officers (Pipeline) Tech Officers (Prod) | CA, Dy.CA | | | If bulks are installed inside the plants, Prod Dept shall measure. |
| | 1-3 | Tally the above water production data monthly | R/D WP | Dist. Dpt | HoU(Water Monitoring) | HoU(Water Monitoring) | CA, Dy.CA | | | |
| | 1-4 | Calculate the monthly water consumption based on the billing data | R/D WP | Com Dpt | HoU(Billing)/C | Billing staff | CA, Dy.CA | Cost for software | | |
| | 1-5 | Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4 | R/D WP | Dist. Dpt | HoU(Logistics)/D | Logistics officer | CA, Dy.CA | | | |
| Output-2 | | | | | | | | | | |
| Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices | 2-1 | Review existing NRW reduction operations at each pilot Area Office | R/D WP | Dist. Dpt, Com. Dpt | HoD(Dist)(Com) | AM, AAM (Dist)(Com) | CA, Dy.CA, NRW reduction | | O&M cost | |
| | 2-2 | Conduct capacity assessment of organization and the relevant staff | R/D WP | Dist. Dpt, Com. Dpt | HoD(Dist)(Com) | NRW Mgt Team | CA and other Experts | | | |
| | 2-3 | Identify and select a Pilot Metering Area (PMA) for each Pilot Area Office based on the selection criteria of PMA | R/D WP | Dist. Dpt, Com. Dpt | HoD(Dist)(Com) | NRW Mgt Team AM, AAM (Dist)(Com) | CA, Dy.CA, NRW reduction | | | |
| | 2-4 | Prepare/update distribution network drawings for each PMA | R/D WP | Dist. Dpt | HoD(Dist) | HoU(Logistics)&officers HoU(GIS)&officers | NRW reduction, Hydraulic analysis | | | |
| | 2-5 | Install water flow meters to each PMA and measure in/outflows monthly | R/D WP | Dist. Dpt | Area Manager(AM) | AAM(Dist) Tech Officers(Dist) | NRW reduction, Hydraulic analysis | Water flow meters | Installation and O&M cost | |
| | 2-6 | Zone each PMA into Sub Metering Areas (SMA) | R/D WP | Dist. Dpt | HoU(Logistics)/D HoU(Metering)/D | AM, AAM(Dist)(Com) HoU(GIS)&officers | NRW reduction, Hydraulic analysis | | | |
| | 2-7 | Isolate a SMA by installing valves | R/D WP | Dist. Dpt | AM | Tech Officers(Dist) AAM(Dist) | NRW reduction | Valves | Installation and O&M cost | |
| | 2-8 | Update the distribution network drawings for each SMA | R/D WP | Dist. Dpt | HoU(Logistics)/D | AAM(Dist),HoU(GIS)&officers HoU(Logistics)&officers | NRW reduction, Hydraulic analysis | | | |
| | 2-9 | Measure an initial level of NRW of each SMA | R/D WP | Dist. Dpt | HoD(Dist) | | NRW reduction | | | |
| | 2-10 | Measure in/outflows | | Area Office | AAM(Dist) | Tech Officers(Dist) | NRW reduction | | | |
| | | Survey water consumption | | Area Office | AAM(Com) | Meter Readers(Com) | NRW reduction | | | |
| | | Calculate NRW ratio | | Dist. Dpt | HoU(Logistics)/D | Logistics Officer | NRW reduction | | | |
| | 2-10 | Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA | R/D WP | Dist. Dpt, Com. Dpt | AM | | NRW reduction | | | |
| | | Detect invisible leakage | | Dist. Dpt | AAM(Dist) | Tech Officers(Dist) | Leakage detection | Detection equip. | O&M cost | Staff of Pipeline Unit (Dist) will join. |
| | | Detect customer meter malfunction | | Com. Dpt | AAM(Com), HoU(Metering)/D | Meter Readers(Com) | Com Loss | | | |
| | 2-10 | Detect illegal connection | | Dist. Dpt, Com. Dpt | AAM(Dist)(Com), HoU(Detect)/C | Meter Readers(Com) | Com Loss | | | Staff of Detection Unit (Com) will join. |
| | | Detect illegal connection | | Dist. Dpt, Com. Dpt | AAM(Dist)(Com), HoU(Detect)/C | Meter Readers(Com) | Com Loss | | | |
| 2-11 | Develop a NRW reduction operation plan of each SMA, including reduction target for review by Head of Distribution Department | R/D WP | Dist. Dpt | AM | AAM (Dist)(Com) | NRW reduction, Leakage detection, Com Loss | | | | |
| | Review and approve NRW reduction operation plan of each SMA | R/D WP | Dist. Dpt | HoD(Dist) | Relevant HoUs | NRW reduction | | | | |
| 2-13 | Implement NRW reduction operations at each SMA | R/D WP | Dist. Dpt, Com. Dpt | AM | | NRW reduction | | | | |
| | Operation for invisible leakage | | Dist. Dpt | AAM(Dist) | Tech Officers(Dist) | Leakage detection | Repair equip. | Repair cost | | |
| 2-13 | Operation for customer meter | | Com. Dpt | AAM(Com), HoU(Metering)/D | AAM(Com), HoU(Metering)/D | Com Loss | Cust. Meters | Install, O&M cost | | |
| | Operation for illegal connection | | Dist. Dpt, Com. Dpt | AAM(Dist)(Com), HoU(Detect)/C | AAM(Dist)(Com), HoU(Detect)/C | Com Loss | | | | |
| 2-14 | Monitor the progress of the NRW reduction operations of each SMA | R/D WP | Area Office | AM | | NRW reduction | | | | |
| | Operation for invisible leakage | | Dist. Dpt | AAM(Dist) | Tech Officers(Dist) | Leakage detection | | | | |
| | Operation for customer meter | | Com. Dpt | AAM(Com), HoU(Metering)/D | AAM(Com), HoU(Metering)/D | Com Loss | | | | |
| 2-14 | Operation for illegal connection | | Dist. Dpt, Com. Dpt | AAM(Dist)(Com), HoU(Detect)/C | AAM(Dist)(Com), HoU(Detect)/C | Com Loss | | | | |
| | Measure level of NRW of each SMA at the end of the respective operations | R/D WP | Area Office | AM | | NRW reduction | | | | |
| 2-15 | Measure in/outflows | | Area Office | AAM(Dist) | Tech Officers(Dist) | NRW reduction | | | | |
| | Survey water consumption | | Area Office | AAM(Com) | Meter Readers(Com) | NRW reduction | | | | |
| | Calculate NRW ratio | | Dist. Dpt | HoU(Logistics)/D | Logistics Officer | NRW reduction | | | | |
| 2-16 | Prepare a report on pilot projects, covering Activity 2-1-2-15 | R/D WP | Dist. Dpt, Com. Dpt | HoD(Dist)(Com) | NRW Mgt Team, AM, | CA, Dy.CA, NRW reduction, Leakage detection, Com loss | | | | |
| 2-17 | Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials | R/D WP | Dist. Dpt, Com. Dpt | HoD(Dist)(Com) | NRW Mgt Team, AM, AAM (Dist)(Com) | CA, Dy.CA, NRW reduction, Leakage detection, Com Coordinator | | | | |
| Output-3 | | | | | | | | | | |
| A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output-1&2 | 3-1 | Establish a Working Group for NRW reduction planning | R/D WP | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | |
| | 3-2 | Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB | R/D WP | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | |
| | 3-3 | Conduct hydraulic and water pressure distribution analyses of the pipeline networks | R/D WP | Dist. Dpt | HoU(Logistics)/D HoU(Pipeline)/D | HoU(Logistics)&officers HoU(GIS)&officers HoU(Pipeline)&officers | Hydraulic analysis | | | |
| | 3-4 | Develop outlines of the medium-term strategic plan and its annual NRW reduction plan (approval by the Director) | R/D WP | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | |
| | 3-5 | Develop the first medium-term strategic plan (2018-2022) for approval by FCTA | R/D WP | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | |
| | 3-6 | Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA | R/D WP | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | |
| | 3-7 | Develop a planning manual for NRW reduction | R/D WP | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | |

Project Monitoring Sheet II (Revision of Plan of Operation)

Responsibility of Members

Version 1
Dated 6 Nov. 2014

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

| Inputs (the Japanese side) | | | Remarks |
|----------------------------|---|-----------|-----------|
| JICA Expert | | | |
| 1 | Akhoru MIYOSHI Chief Advisor / NRW Reduction Planning | R/D WP | |
| 2 | Takatoshi FUJIYAMA Deputy Chief Advisor / NRW Reduction Planning | R/D WP | |
| 3 | Toru TOYODA NRW Reduction Operations Management | R/D WP | |
| 4 | Kiyoshi KIYAMA Leakage Detection Technology | R/D WP | |
| 5 | Takuji OKUBO Commercial Loss | R/D WP | |
| 6 | Shinta SEGAWA Hydraulic Analysis / GIS | R/D WP | |
| 7 | Kazuhiro ISHIURA Procurement Management / Coordinator | R/D WP | |
| Equipment | | | |
| 1 | Leakage detection equipment *3PMAs in Japan (JICA) | R/D WP | |
| 2 | Bulk meters (ultrasonic flow meter) *WTP in Japan (JICA Expert) | R/D WP | |
| 3 | Water meter, flow meter and valves *3PMAs in Nigeria (JICA Expert) | R/D WP | |
| 4 | Pipe repair equipment *3PMAs in Nigeria (JICA) | R/D WP | |
| 5 | Vehicles (Pickup truck) *Leakage Detection in Nigeria (JICA) | R/D WP | |
| 6 | GIS software, office equipment *FCTWB HQs in Nigeria (JICA) | R/D WP | |
| Local Consultant | | | |
| 1 | Modification of billing and collection System | R/D WP | |
| 2 | GIS and database training | R/D WP | |
| Training in Japan | | | R/D WP |

| Duration / Phasing | R/D | WP | | | | | | |
|--------------------|-----|----|--|--|--|--|--|--|
| | | | | | | | | |

| Monitoring Plan | | | Responsible Organization (Nigeria) | Responsible Person (Nigeria) | Implementors (Nigeria) | JICA Experts | Other Major Input | | Remarks |
|---|---|-----------|------------------------------------|------------------------------|--------------------------|------------------------|-------------------|---------|--|
| | | | | | | | Japan | Nigeria | |
| Planning, Monitoring and Coordination | | | | | | | | | |
| 1 | Organize Joint Coordination Committee (JCC) | R/D WP | FCTWB | PM | Dy. PM | CA and other Experts | | | |
| 2 | Develop Detail Plan of Operations (DPO) for review and approval by JCC | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 3 | Develop Annual Plan of Operations (APO) for review and approval by JCC | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 4 | Organize monthly technical meetings | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| 5 | Organize quarterly project meetings | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 6 | Conduct Joint Monitoring semi-annually | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 7 | Submit Monitoring Sheet to JICA Nigeria Office semi-annually | R/D WP | | | | CA, Dy.CA | | | |
| 8 | Monitoring Mission from JICA for Joint Review | R/D WP | JICA | JICA HQ | To be determined | | | | |
| 9 | Organize information sharing seminars for FCTWB/FCTA, including Area Offices | R/D WP | FCTWB | PM | Dy.PM | CA and other Experts | | | |
| 10 | Collect and organize data for Indicators of PDM | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| a | Develop criteria for capacity assessment for each level of the relevant staff (i.e. members of NRW Mgmt and Action Teams) | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| b | Conduct joint capacity assessment of the relevant staff | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| c | Prepare Capacity Development (CD) Plan | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| d | Set reduction target for each PMA by the first quarter of the second year | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| e | Collect and organize for Indicators for semi-annual Joint Monitoring | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| Reports / Documents | | | | | | | | | |
| 11 | Work Plan | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team | | | | |
| 12 | Project Progress Report | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team | | | | |
| 13 | Project Completion Report | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team | CA and other Experts | | | |
| Public Relations | | | | | | | | | |
| 14 | Develop Project Website | R/D WP | FCTWB | PM | NRW Mgt Team, HoU(PR) | CA, Dy.CA, Coordinator | | | |
| 15 | Preparation of public relations materials | R/D WP | FCTWB | PM | NRW Mgt Team, HoU(PR) | CA, Dy.CA, Coordinator | | | Public Relation Unit under Director(PM) will collaborate |
| Monitoring and Evaluation in the Post-Project period | | | | | | | | | |
| 16 | Post Monitoring by JICA (not described here) | | JICA | | | | | | |
| 17 | Post Evaluation by JICA (not described here) | | JICA | | | | | | |

Tentative List of Equipment for the Project

| No. | Equipment | Specification | County to Purchase | | Assumed Quantity | Remarks |
|-------------------------------------|--------------------------------------|-----------------------------|--------------------|---------|------------------|---|
| | | | Japan | Nigeria | | |
| For Activity 1-2 | | | | | | |
| 1 | Ultrasonic flow meter | fixed type, including cable | ● | | 4 | |
| 2 | Data logger | | ● | | 4 | |
| For Activity 2-4 and 2-8 | | | | | | |
| 1 | GIS software | | | ● | 2 | |
| 2 | Plotter (A0) | A0 | | ● | 1 | |
| 3 | GPS terminal | Handset | | ● | 2 | |
| 4 | Personal computer | Desktop type | | ● | 2 | |
| 5 | Anti-virus software | | | ● | 2 | |
| For Activity 2-5 | | | | | | |
| 1 | Flow meter | | | ● | - | The quantity will be decided after Activity 2-4 |
| For Activity 2-7 | | | | | | |
| 1 | Sluice valve | | | ● | - | The quantity will be decided after Activity 2-4 |
| For Activity 2-10 | | | | | | |
| 1 | Ultrasonic flow meter | Portable type | ● | | 6 | |
| 2 | Water pressure data logger | 2ch | ● | | 6 | |
| 3 | Water leak detector | Leak noise correlator | ● | | 2 | |
| 4 | Water leak detector | Acoustic type | ● | | 6 | |
| 5 | Non-metal pipe locator | | ● | | 3 | |
| 6 | Metal locator | | ● | | 3 | |
| 7 | Time integral water leakage detector | | ● | | 3 | |
| 8 | Acoustic rod | | ● | | 9 | |
| 9 | Distance meter | | ● | | 3 | |
| 10 | Hammer drill | | ● | | 3 | |
| 11 | Boring bar | 1.0m | ● | | 3 | |
| 12 | Drill bit | Dia.19×800mm | ● | | 9 | |
| 13 | Residual chlorine analyzer | Portable type | ● | | 3 | |
| 14 | Metal pipe and cable locator | | ● | | 3 | |
| 15 | Reference meter | | ● | | 3 | for checking customer meters |
| For Activity 2-13 | | | | | | |
| 1 | Generator | 200V | | ● | 3 | |
| 2 | Asphalt cutter | | | ● | 3 | |
| 3 | Concrete breaker | | | ● | 3 | |
| 4 | Small-sized dewatering pump | | | ● | 3 | |
| 5 | Small-sized tamper | | | ● | 3 | |
| 6 | Electric drum | | | ● | 3 | |
| 7 | Customer meter | | | ● | - | The quantity will be decided after Activity 2-4 |
| For Output 2 | | | | | | |
| 1 | Pickup truck for pilot sites | | | ● | 2 | |
| For Operation of the Project | | | | | | |
| 1 | Laser printer | A4 | | ● | 1 | |
| 2 | Inkjet printer | A3 | | ● | 1 | |
| 3 | Multifunction copier | | | ● | 1 | |
| 4 | UPS | | | ● | 3 | |
| 5 | Graphic/movie editing software | | | ● | 1 | |

List of Personnel assigned for the Project

(1) Project Director: Mr. Ari, Isa Muhammad, Director of Economic Planning, Research and Statistics Department, FCTA

(2) Project Manager: Mr. Hudu Bello, Director of FCTWB

(3) Deputy Project Manager: Mr. S.T Bello, Head of Administration and Supply Department, FCTWB

(4) Technical Manager: Engr. A. A. Nahuche, Head of Distribution Department, FCTWB

: Mr. Adis S. Muhammad, Head of Commerce Department, FCTWB

(5) Members of NRW Management Team

(a) Distribution Department

| | Name of staff | Position in FCTWB | Remarks |
|----|----------------------------|--|------------------------------------|
| 1 | Abolade. R. Lawal | Head of Special Project Unit | Coordinator of NRW Management Team |
| 2 | Moh. Kabir Rabi | Head of Logistic Unit | |
| 3 | Musa Dikko | Head of pipeline Unit | |
| 4 | Shehu Suleiman | Head of GIS Unit | |
| 5 | Douglas E. Oloton | Head of Metering General | |
| 6 | A.O. Akande | Head of Metering Unit (AMR Meter) | |
| 7 | Yetunde Olaniyan | Head of Water Monitoring Unit | |
| 8 | Abdullahi Masaud | Head of Metering Unit (pre-paid Meter) | |
| 9 | Abubakar Ubale Abubakar | Civil Engr. II, Logistic Unit, | |
| 10 | Mohammed Dauda | Technical Officer , Pipeline Unit | |
| 11 | Ezeh Hilary | Surveyor, GIS Unit | |

(b) Commerce Department

| | Name of staff | Position in FCTWB | Remarks |
|---|------------------|---|---------|
| 1 | Isaac O. Owolabi | Head of Customer Care Unit | |
| 2 | Danjuma Isah | Head of Monitoring and Detection Unit | |
| 3 | Taiwo Adeyemi | Monitoring staff, Monitoring and Detection Unit | |
| 4 | Aliyu Maradun | Head Major Consumers | |
| 5 | Rose Akpan | Head of Billing Unit | |
| 6 | Suleman Agbawn | Billing Officer,Billing Unit | |

(c) Administration and Supply Department

| | Name of staff | Position in FCTWB | Remarks |
|---|------------------|--------------------------------|---------|
| 1 | Francisca Samuel | Head of Training/ Welfare Unit | |
| 2 | Akudike Ike D. | Head, Facility Management Unit | |

(6) Head of other relevant Departments and Unit

| | Name of staff | Position in FCTWB | Remarks |
|---|-------------------|--|---------|
| 1 | Hafsat Ahmed Lawi | Head of Financial Department | |
| 2 | Aliyu Usman | Head of Reservoir Department | |
| 3 | Bunmi Olowookere | Head of Planning, Research and Statistics Unit | |
| 4 | Abbas A. Ahmed | Head of Public Relations Unit | |
| 5 | Vincent Obeh | Head of MIS Unit | |

(7) Members of NRW Action Team

(a) Jabi

| | Name of staff | Position in FCTWB | Remarks |
|----|----------------------|---------------------------------------|---------|
| 1 | Muhammed A. S. Ramat | Area Manager (Distribution) | |
| 2 | Sadiq Salihu | Assistant Area Manager (Distribution) | |
| 3 | Abawonse J. K | Assistant Area Manager (Commerce) | |
| 4 | Jummai Ugbodaga | Senior Commercial Officer (Commerce) | |
| 5 | Mohammed Moh'd | Planning Officer (Commerce) | |
| 6 | Aliyu Ibrahim | Senior Works Superintendent | |
| 7 | Abubakar Danladi | Foreman (Distribution) | |
| 8 | Raliat Zubairu | Higher Trade Officer (Commerce) | |
| 9 | Mahmud Muhammed | Forman (Distribution) | |
| 10 | Hassan Yelwa | STA (Commerce) | |

(b) Gudu

| | Name of staff | Position in FCTWB | Remarks |
|---|-----------------------|---------------------------------------|---------|
| 1 | Abdurrahaman U. Sanda | Area Manager (Distribution) | |
| 2 | Ogbu O. Williams | Assistant Area Manager (Commerce) | |
| 3 | Abdul Ozumi | Assistant Area Manager (Distribution) | |
| 4 | Adamu Ismaila | Unit Head (Commerce) | |
| 5 | Umar I. Adamu | Assistant Tech. Officer (Commerce) | |
| 6 | Kotangora Mohammed | Assistant Unit Head (Distribution) | |
| 7 | Salisu Mohammed | Plumber (Distribution) | |

(c) Garki I

| | Name of staff | Position in FCTWB | Remarks |
|----|-----------------------|---|---------|
| 1 | Adesoji Adenuga | Area Manager (Commerce) | |
| 2 | Umar Ibrahim | Assistant Area Manager (Commerce) | |
| 3 | Mohammed Gana | Assistant Area Manager (Distribution) | |
| 4 | Olusegun Rose | Senior Trade Office (Commerce) | |
| 5 | Abdulahi Ibrahim | Assistant Tech. Officer (Commerce) | |
| 6 | Iliya Galadima | HigherWorks Super intendant (Distribution) | |
| 7 | Raymond Olowookere | Forman (Distribution) | |
| 8 | Ibrahim Yelwa | Forman (Distribution) | |
| 9 | Hassan Abubakar | Commerce Officer (Commerce) | |
| 10 | Shehu Isa | Craftsman (Distribution) | |

Project Design Matrix (PDM)

PDM ver. 1 (day/month/year)

Project Title: "The Federal Capital Territory Reduction of Non-Revenue Water Project"
Project Period : Three and a half years from the date when the first Japanese Expert is dispatched (i.e. Day/Month/Year to Day/Month/Year)
Implementing Organization: Federal Capital Territory Administration (FCTA) / Federal Capital Territory Water Board (FCTWB)
Direct beneficiaries: FCTWB, relevant staff of FCTWB Headquarters and pilot Area Offices
Project Site: FCT Pilot Area Offices: Jabi, Gaiki I and Gudu

| Narrative Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|--|--|--|---|-------------|---------|
| <p><Overall Goal> Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB</p> <p><Project Purpose> Capacity of FCTWB for NRW reduction is strengthened</p> | <p>a: Annual NRW ratio is reduced to X% (*) at the end of the year 2021</p> <p>Note(*): Target value (X%), which is expected to be determined in the mid-term strategic plan for NRW reduction, shall be tentatively filled when the final draft was approved by the Director of FCTWB, which shall be finalized when the plan is approved by FCTA</p> <p>a. The mid-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project.</p> <p>b. NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB</p> <p>c. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level</p> <p>d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**)</p> <p>Note(**): Target for each PMA is expected to be determined by the end of the first quarter of the second year</p> | <p>a Record of NRW ratio kept by Distribution Department</p> <p>a. Date of approval of the plan</p> <p>b. Result of monitoring by NRW Management Team</p> <p>c. Results of joint assessment based on the criteria set by the Project</p> <p>d. Record of NRW ratio kept by Distribution Department</p> | <p>A Policy support for NRW reduction is not discontinued</p> <p>B. Natural disaster/ political instability/ economic crisis that affect the service area of FCTWB do not occur</p> <p>C. Activities to implement the mid-term strategic plan are not discontinued or delayed</p> | | |
| <p><Outputs></p> <p>1. Level of NRW of the service area of FCWTB is monitored regularly</p> <p>2. Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices (*1)</p> <p>3 A mid-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 (*2)</p> | <p>1a Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the first year of the Project</p> <p>1b Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the first year of the Project</p> <p>1c Quarterly NRW ratio of the service area of FCTWB is reported to the Board of Directors of FCTWB from the third quarter of the first year of the Project</p> <p>2a Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations</p> <p>2b Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project</p> <p>3a By October 2017, draft mid-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval</p> <p>3b By October 2017, an annual NRW reduction plan (2018) is incorporated in FCWTB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval</p> <p>3c A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project</p> | <p>1a Monthly record of NRW ratio.</p> <p>1b&1c Material for meetings submitted by the Distribution Department</p> <p>2a Record of NRW ratio kept by the Distribution Department</p> <p>2b Date of approval of the manuals</p> <p>3a&3b Date of official letter submitting draft strategic plan and annual recurrent and capital plan</p> <p>3c Date of approval of the manual</p> | <p>A Staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) trained through the Project do not leave the office in large numbers</p> | | |

Note (*1): NRW components targeted by Output 2 are (i) invisible leakage; (ii) customer meter malfunction; and (iii) illegal connection

Note (*2) A mid-term strategic plan is a five-year plan, which may include mid-term target, strategies and actions, timeframe, human resource requirement, on-the-job training mechanism, cost-benefit analysis of NRW reduction, etc. It is noted that NRW components addressed by the strategic plan are not limited to the ones mentioned in (*1) above; they shall be discussed and determined in developing the outline of the strategic plan (through Activity 3-4).

Project Design Matrix (PDM)

| Activities | Inputs | | A Natural disaster/ political instability/ economic crisis that affect the project activities do not occur |
|---|--|--|---|
| <p>1-1 Install bulk meters to water treatment plants 1 and 2</p> <p>1-2 Measure monthly water production of water treatment plants 1, 2, 3, and 4</p> <p>1-3 Tally the above water production data monthly</p> <p>1-4 Calculate the monthly water consumption based on the billing data</p> <p>1-5 Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4</p> <p>*****</p> <p>2-1 Review existing NRW reduction operations at each pilot Area Office</p> <p>2-2 Conduct capacity assessment of the relevant staff of each pilot Area Office</p> <p>2-3 Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA(*3)</p> <p>2-4 Prepare/update distribution network drawings for each PMA</p> <p>2-5 Install water flow meters to each PMA and measure in/outflows monthly</p> <p>2-6 Zone each PMA into Sub Metering Areas (SMA)</p> <p>2-7 Isolate a SMA by installing valves</p> <p>2-8 Update the distribution network drawings for each SMA</p> <p>2-9 Measure an initial level of NRW of each SMA</p> <p>2-10 Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA</p> <p>2-11 Develop a NRW reduction operation plan of each SMA, including reduction target, for review by Head of Distribution Department</p> <p>2-12 Review and approve NRW reduction operation plan of each SMA</p> <p>2-13 Implement the NRW reduction operations at each SMA</p> <p>2-14 Monitor the progress of the NRW reduction operations of each SMA</p> <p>2-15 Measure level of NRW of each SMA at the end of the respective operations</p> <p>2-16 Prepare a report on pilot projects, covering Activity 2-1~2-15</p> <p>2-17 Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials</p> <p>*****</p> <p>3-1 Establish a Working Group for NRW planning (*4)</p> <p>3-2 Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB</p> <p>3-3 Conduct hydraulic and water pressure distribution analyses of the pipeline networks</p> <p>3-4 Develop outlines of the mid-term strategic plan and its annual NRW reduction plan</p> <p>3-5 Develop the first mid-term strategic plan (2018-2022) for approval by FCTA</p> <p>3-6 Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA</p> <p>3-7 Develop a planning manual for NRW reduction</p> | <p style="text-align: center;"><Nigerian Side></p> <p>Project Personnel</p> <p>1. Project Director: Director of Economic Planning, Research and Statistic Department, FCTA</p> <p>2. Project Manager: Director of FCTWB</p> <p>3. Deputy Project Manager: HoD for Administration and Supply/FCTWB</p> <p>4. Technical Managers (Also Leaders of NRW Management Team): HoD for Distribution and HoD for Commerce/FCTWB</p> <p>5. Members of NRW Management Team (FCTWB): Head of Special Project Unit of Distribution Department (as Coordinator)</p> <p>6. Relevant Head of Unit (HoU) and officers of the Distribution Department, Commerce Department, and Administration and Supply Department</p> <p>7. Heads of other relevant Departments and Unit of FCTWB: HoD for Finance, HoD for Production, HoU for Planning Research and Statistics (PRS)</p> <p>8. Members of pilot NRW Action Team: Area Manager, Assistant Area Manager (Distribution), Assistant Area Manager (Commerce), technical officers (Distribution) and meter readers (Commerce) of each pilot Area Office</p> <p>9. Other personnel mutually agreed upon as necessary</p> <p>Land, Building and Facilities</p> <p>1. Office building and facilities necessary for the implementation of the Project</p> <p>2. Office spaces and necessary facilities for the Japanese Experts at the FCTWB Headquarters and each Pilot Area Office, including internet connection and air conditioners</p> <p>3. Other facilities mutually agreed upon as necessary</p> <p>Local Costs</p> <p>1. Cost for installation, operation and maintenance of the provided equipment and cost for pipe repair at PMAs</p> <p>2. Administration and operational costs, including costs for local travel for the Project Personnel</p> | <p style="text-align: center;"><Japanese Side></p> <p>Japanese Experts</p> <p>1. Chief Advisor</p> <p>2. NRW Reduction</p> <p>3. NRW Planning</p> <p>4. Leakage Detection</p> <p>5. Commercial Loss</p> <p>6. Hydraulic Analysis</p> <p>7. Administrative Coordinator</p> <p>8. Other experts mutually agreed upon as necessary</p> <p>Equipment</p> <p>1. Bulk meters for water treatment plants</p> <p>2. Water flow meters, valves, and customer meters for SMA</p> <p>3. Leakage detection equipment for PMA</p> <p>4. Pipe repair equipment for PMA</p> <p>5. Vehicles(Pick-ups)</p> <p>6. Other equipment mutually agreed upon as necessary</p> <p>Training of the Nigerian Project Personnel in Japan</p> <p>Four persons mutually agreed upon will be trained in Japan annually</p> | <p><Pre-Conditions></p> <p>A Furnished offices for Japanese Expert Team are secured at Headquarters and each Pilot Area Office of FCTWB</p> <p>B Project Personnel is assigned with the finalized list</p> <p>↑ ↓</p> <p>Issues & Counter measures</p> |

Note (*3) Selection criteria of PMA are as follows: (i) Safety for night works is secured in measuring minimum night flow; (ii) Distribution network is separated and it is easy to isolate it in measuring NRW ratio; and (iii) NRW ratio is supposedly high.

Note (*4) Working Group for NRW planning would consist of Project Manager (as chair), Deputy Project Manager, Technical Managers, Head of Finance Dept., Head of Production Dept., Head of PRS Unit, and members of NRW Management Team.

Tentative Plan of Operation

Version 00.00.00.00

Dated 00.00.00

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

| Schedule of Major Japanese Inputs | Year | | | | | | | | | | | | Remarks | Issue | Monitoring | | | |
|--|----------|---|----------|-----|----------|---|----------|-----|----------|---|----------|-----|---------|-------|------------|-------|----------|-----|
| | 1st Year | | 2nd Year | | 3rd Year | | 4th Year | | 5th Year | | 6th Year | | | | | Issue | Solution | |
| Expert | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | | | III |
| Chief Advisor | Plan | | | | | | | | | | | | | | | | | |
| NRW reduction | Actual | | | | | | | | | | | | | | | | | |
| Leakage Detection | Plan | | | | | | | | | | | | | | | | | |
| Commercial Loss | Actual | | | | | | | | | | | | | | | | | |
| Hydraulic Analysis | Plan | | | | | | | | | | | | | | | | | |
| Administrative Coordinator | Actual | | | | | | | | | | | | | | | | | |
| Equipment | | | | | | | | | | | | | | | | | | |
| Bulk meters for water treatment plants | Plan | | | | | | | | | | | | | | | | | |
| Water flow meters, valves, and customer meters for Sub Metering Area | Actual | | | | | | | | | | | | | | | | | |
| Leakage detection equipment for Pilot Metering Area (PMA) | Plan | | | | | | | | | | | | | | | | | |
| Pipe repair equipment for PMA | Actual | | | | | | | | | | | | | | | | | |
| Vehicles(Pick-ups) | Plan | | | | | | | | | | | | | | | | | |
| Training in Japan | | | | | | | | | | | | | | | | | | |
| Four persons mutually agreed upon will be trained in Japan annually | Actual | | | | | | | | | | | | | | | | | |

| Activities | Year | | | | | | | | | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts (CA) | Other Major Inputs | Remarks | Achievements | Issue & Countermeasures |
|--|----------|---|----------|-----|----------|---|----------|-----|----------|---|----------|-----|------------------------------|------------------------|-----------------------|--------------------|---------|--------------|-------------------------|
| | 1st Year | | 2nd Year | | 3rd Year | | 4th Year | | 5th Year | | 6th Year | | | | | | | | |
| Sub-Activities | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | | |
| Output 1: Level of NRW of the service area of FCWTB is monitored regularly | | | | | | | | | | | | | | | | | | | |
| 1.1 Install bulk meters to water treatment plants 1 and 2 | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |
| 1.2 Measure monthly water production of water treatment plants 1,2,3, and 4 | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |
| 1.3 Tally the above water production data monthly | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |
| 1.4 Calculate monthly water consumption based on the billing data | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |
| 1.5 Calculate monthly NRW ratio of the service area of FCWTB using the data obtained from Activity 1-3 and 1-4 | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |

| Activities | Year | | | | | | | | | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts (CA) | Other Major Inputs | Remarks | Achievements | Issue & Countermeasures |
|--|----------|---|----------|-----|----------|---|----------|-----|----------|---|----------|-----|------------------------------|------------------------|-----------------------|--------------------|---------|--------------|-------------------------|
| | 1st Year | | 2nd Year | | 3rd Year | | 4th Year | | 5th Year | | 6th Year | | | | | | | | |
| Sub-Activities | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | | |
| Output 2: Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Area(PMAs) under pilot Area Offices | | | | | | | | | | | | | | | | | | | |
| 2.1 Review existing NRW reduction operations at each pilot Area Office | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |
| 2.2 Conduct capacity assessment of the relevant staff of each pilot Area Office | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |
| 2.3 Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |
| 2.4 Prepare/update distribution network drawings for each PMA | Plan | | | | | | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | | | | | | | |

Tentative Plan of Operation (PO)

| Activities | Year | | | | | | | | | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts | Other Major Inputs | | Remarks | Achievements | Issue & Countermeasures | | | |
|---|----------|--------|------|----------|------|--------|----------|--------|------|----------|------|--------|------------------------------|------------------------|----------------------|----------------------------------|--|-----------------------------|---------------------------|-------------------------|---|---|--|
| | 1st Year | | | 2nd Year | | | 3rd Year | | | 4th Year | | | | | | Japan | Nigeria | | | | | | |
| | Or | I | II | III | IV | I | II | III | IV | I | II | III | | | | | | | | | IV | | |
| Sub-Activities | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Manager (AM) | AAAM (Dist) Tech Officers (Dist) | NRW reduction Hydraulic analysis | Water flow meters | Installation and O&M cost | | | | |
| 2.5 Install water flow meters to each PMA and measure in/outflows monthly | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Manager (AM) | AAAM (Dist) Tech Officers (Dist) | NRW reduction Hydraulic analysis | Water flow meters | Installation and O&M cost | | | | |
| 2.6 Zone each PMA into Sub Metering Areas (SMAs) | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | HoU (Logistics)/D | AM, AAAM (Dist) (Com) | ditto | | | | | | |
| <For each SMA> | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 Isolate a SMA by installing valves | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Office | Tech Officers (Dist) | NRW reduction | Valves | Installation and O&M cost | | | | |
| 2.8 Update the distribution network drawings for each SMA | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Dist Dpt (Logistics) | AAAM (Dist) Tech Officers (Dist) | NRW reduction | | | | | | |
| 2.9 Measure an initial level of NRW of each SMA | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Office | | NRW reduction | | | | | | |
| a Measure in/outflows | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | ditto | Tech Officers (Dist) | | | | | | | |
| b Survey water consumption | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | AAAM (Dist) (Com) | Meter Readers | | | | | | | |
| c Calculate NRW ratio | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | HoU (Logistics)/D | Logistics Officer | | | | | | | |
| 2.10 Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Office | | NRW reduction | | | | | | |
| a Detect invisible leakage | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | ditto | Tech Officers (Dist) | Leakage detection | Leakage detection equipment | O&M cost | | Staff of Pipeline Unit (Dist) will join | | |
| b Detect customer meter malfunction | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | AAAM (Com) | Meter Readers | Com Loss | | | | | | |
| c Detect illegal connection | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | AAAM (Com) | Meter Readers | Com Loss | | | | | Staff of Detection Unit (Com) will join | |
| 2.11 Develop a NRW reduction operation plan of each SMA, including reduction target for review by Head of Distribution Department | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Office | AAAM (Dist) (Com) | NRW reduction, Leakage detection, Com loss | | | | | | |
| 2.12 Review and approve NRW reduction operation plan of each SMA | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Dist. Dpt | HoD (Dist) | NRW reduction | | | | | | |
| 2.13 Implement NRW reduction operations at each SMA | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Office | AM | NRW reduction | | | | | | |
| a Operation for invisible leakage | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | ditto | Tech Officers (Dist) | Leakage detection, NRW reduction | Pipe repair equipment | Pipe repair cost | | | | |
| b Operation for customer meter malfunction | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | ditto | ditto | Com loss | Customer meters | Installation, O&M cost | | | | |
| c Operation for illegal connection | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | ditto | HoU (Billing)/C | Com loss | | | | | | |
| 2.14 Monitor the progress of the NRW reduction operations of each SMA | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Area Office | AM | NRW reduction | | | | | | |
| a Operation for invisible leakage | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | AM | AAAM (Dist) | NRW reduction | | | | | | |
| b Operation for customer meter malfunction | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | AM | ditto | Com loss | | | | | | |
| c Operation for illegal connection | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | Plan | Actual | AM | AAAM (Dist) | Com loss | | | | | | |

Tentative Plan of Operation (PO)

| Activities | Year 1st Year | | | | Year 2nd Year | | | | Year 3rd Year | | | | Year 4th Year | | | | Responsible Person (Nigeria) | Other Major Inputs | Remarks | Achievements | Issue & Countermeasures | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------|---|----|-----|---------------|---------|----|-----|---------------|---|----|-----|---------------|---|----|-----|------------------------------|--------------------|---------|--------------|-------------------------|----|-------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | | | | | IV | Japan | Nigeria | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.15 Measure level of NRW of each SMA at the end of the respective operations | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Measure in/overflow | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Survey water consumption | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c Calculate NRW ratio | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <Documentation> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.16 Prepare a report on pilot projects, covering Activity 2-1-2-15 | Plan | | | | | Interim | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.17 Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials | Actual | | | | | Final | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Output 3: A mid-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 Establish a Working Group for NRW planning | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.2 Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.3 Conduct hydraulic and water pressure distribution analyses of the pipeline networks | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.4 Develop outlines for the mid-term strategic plan and its annual NRW reduction plan (approval by the Director) | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.5 Develop the first mid-term strategic plan (2018-2022) for approval by FCTA | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.6 Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.7 Develop a planning manual for NRW reduction | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Duration / Phasing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project Management and Coordination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.1 Organize Joint Coordination Committee | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.2 Develop Detailed Plan of Operation (DPO) for review and approval by JCC | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Tentative Plan of Operation (PO)

| Activities | Year 1st Year | | | | 2nd Year | | | | 3rd Year | | | | 4th Year | | | | Responsible Person (Nigeria) | Implementors (Nigeria) | Japanese Experts | Other Major Inputs | | Remarks | Achievements | Issue & Countermeasures | | |
|---|---------------|---|----|-----|----------|---|----|-----|----------|---|----|-----|----------|---|----|-----|------------------------------|-------------------------------------|------------------|--------------------|---|---------|--------------|-------------------------|---------|--|
| | Qr | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | | | | IV | Japan | | | | Nigeria | |
| 0.3 Develop Annual Plan of Operation (APO) for review and approval by JCC. | Plan | | | | | | | | | | | | | | | | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | Nigeria | APO will be prepared in parallel with FCTWB's annual recruit and capital plan. | | | | | |
| 0.4 Organize monthly technical meetings | Plan | | | | | | | | | | | | | | | | NRW Mgt Team, AM | ditto | | | Progress of previous month and plan for the next month, issues & solutions, etc discussed | | | | | |
| 0.5 Organize quarterly project meeting | Plan | | | | | | | | | | | | | | | | Dy. PM, NRW Mgt Team, AM | ditto | | | Progress of previous quarter and plan for the next quarter, issues & solutions, etc discussed | | | | | |
| 0.6 Conduct Joint Monitoring semi-annually | Plan | | | | | | | | | | | | | | | | ditto | ditto | | | Achievement of PDM and progress of PO monitored | | | | | |
| 0.7 Submit Monitoring Sheet to JICA Nigeria Office semi-annually | Plan | | | | | | | | | | | | | | | | To be determined Dy. PM | CA, Administrative Coordinator (AC) | | | | | | | | |
| 0.8 Monitoring Mission from JICA for Joint Review | Plan | | | | | | | | | | | | | | | | JICA HO | | | | | | | | | |
| 0.9 Organize information sharing seminars for FCTWB /FCTA, including Area Offices | Plan | | | | | | | | | | | | | | | | FCTWB | PM | | | | | | | | |
| 0.10 Collect and organize data for Indicators of PDM | Plan | | | | | | | | | | | | | | | | Dist.Dpt | NRW Mgt Team | | | | | | | | |
| a Develop criteria for capacity assessment for each level of the relevant staff (i.e. members of NRW Mgt Team and NRW Action Teams) | Plan | | | | | | | | | | | | | | | | Dist.Dpt | NRW Mgt Team Coordinator | | | | | | | | |
| b Conduct joint capacity assessment of the relevant staff | Plan | | | | | | | | | | | | | | | | Dist.Dpt | NRW Mgt Team | | | | | | | | |
| c Set reduction target for each PMA (by the first quarter of the second year) | Plan | | | | | | | | | | | | | | | | Dist.Dpt | NRW Mgt Team | | | | | | | | |
| d Collect and organize data for Indicators for semi-annual Joint Monitoring | Plan | | | | | | | | | | | | | | | | Dist.Dpt | NRW Mgt Team | | | | | | | | |
| Reports/Documents | Plan | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.11 Project Completion Report | Plan | | | | | | | | | | | | | | | | | Dist. Dpt | NRW Mgt Team | | | | | | | |
| Public Relations | Plan | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.12 Develop Project Website | Plan | | | | | | | | | | | | | | | | | Dist. Dpt | NRW Mgt Team | | | | | | | |
| 0.13 Preparation of public relation materials | Plan | | | | | | | | | | | | | | | | | Dist. Dpt | NRW Mgt Team | | | | | | | |
| Monitoring and Evaluation in the Post-Project period | Plan | | | | | | | | | | | | | | | | | FCTWB | PM | | | | | | | |
| 0.13 Post Monitoring by JICA | Plan | | | | | | | | | | | | | | | | | JICA | | | | | | | | |
| 0.14 Post Evaluation by JICA | Plan | | | | | | | | | | | | | | | | | JICA | | | | | | | | |

To Chief Representative of JICA Nigeria Office**PROJECT MONITORING SHEETS****Project Title : The Federal Capital Territory Reduction of Non-Revenue Water Project****Version of the Sheet: Ver. 1 (Term: October, 2014 - March, 2018)****Name: Akinori Miyoshi****Title: Chief Advisor****Submission Date: 6 November 2014****I. Summary****1 Progress**

1-1 Progress of Inputs

1-2 Progress of Activities

1-3 Achievement of Output

1-4 Achievement of the Project Purpose

1-5 Changes of Risks and Actions for Mitigation

1-6 Progress of Actions undertaken by JICA

1-7 Progress of Actions undertaken by Nigerian side

1-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

2-2 Cause

2-3 Action to be taken

2-4 Roles of Responsible Persons/Organization

3 Modification of the Project Implementation Plan

3-1 PO

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HQ. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

4 Preparation by Nigerian side toward after completion of the Project**II. Project Monitoring Sheet I & II (as attached)**

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

Project Period: October 2014 to March 2018

Implementing Organization: Federal Capital Territory Administration (FCTA) / Federal Capital Territory Water Board (FCTWB)

Direct Beneficiaries: FCTWB, relevant staff of FCTWB Headquarters and pilot Area Offices

Pilot Area Offices: Jabi, Garki I and Gudu

Version 1
Dated 6 Nov. 2014

| Narrative Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumption | Achievement | Remarks |
|--|--|--|---|-------------|---------|
| <p><Overall Goal> Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB</p> | <p>a. Annual NRW ratio is reduced to X% (*) at the end of the year 2021</p> <p>Note (*): Target value (X%), which is expected to be determined in the medium-term strategic plan for NRW reduction, shall be tentatively filled when the final draft was approved by the Director of FCTWB, which shall be finalized when the plan is approved by FCTA</p> | <p>a. Record of NRW ratio kept by Distribution Department</p> | <p>A. Policy support for NRW reduction is not discontinued Policy support for NRW reduction is not discontinued</p> | | |
| <p><Project Purpose> Capacity of FCTWB for NRW reduction is strengthened</p> | <p>a. The medium-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project.</p> <p>b. NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB</p> <p>c. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level</p> <p>d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**)</p> <p>Note (**): Target for each PMA is expected to be determined by the end of the first quarter of the second year</p> | <p>a. Date of approval of the plan b. Result of monitoring by NRW Management Team c. Results of joint assessment based on the criteria set by the Project d. Record of NRW ratio kept by Distribution Department</p> | <p>B. Natural disaster/ political instability/ economic crisis that affect the service area of FCTWB do not occur C. Activities to implement the medium-term strategic plan are not discontinued or delayed</p> | | |
| <p><Outputs> 1. Level of NRW of the service area of FCWTB is monitored regularly</p> | <p>1a. Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the first year of the Project</p> <p>1b. Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the first year of the Project</p> <p>1c. Quarterly NRW ratio of the service area of FCTWB is reported to the Board of Directors of FCTWB from the third quarter of the first year of the Project</p> | <p>1a. Monthly record of NRW ratio. 1b&1c. Material for meetings submitted by the Distribution Department</p> | <p>A. Staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) trained through the Project do not leave the office in large numbers</p> | | |
| <p>2. Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices (*1)</p> | <p>2a. Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations</p> <p>2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project</p> | <p>2a. Record of NRW ratio kept by the Distribution Department 2b. Date of approval of the manuals</p> | | | |
| <p>3. A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 (*2)</p> | <p>3a. By October 2017, draft medium-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval</p> <p>3b. By October 2017, an annual NRW reduction plan (2018) is incorporated in FCWTB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval</p> <p>3c. A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project</p> | <p>3a&3b. Date of official letter submitting draft strategic plan and annual recurrent and capital plan 3c. Date of approval of the manual</p> | | | |

Note (*1): NRW components targeted by Output 2 are (i) invisible leakage; (ii) customer meter malfunction; and (iii) illegal connection
Note (*2): A medium-term strategic plan is a five-year plan, which may include medium-term target, strategies and actions, timeframe, human resource requirement, on-the-job training mechanism, cost-benefit analysis of NRW reduction, etc. It is noted that NRW components addressed by the strategic plan are not limited to the ones mentioned in (*1) above; they shall be discussed and determined in developing the outline of the strategic plan (through Activity 3-4).

| Activities | Inputs | The Nigerian Side | The Japanese Side | Important Assumption |
|---|---|---|---|---|
| <p>1-1 Install bulk meters to water treatment plants 1 and 2 1-2 Measure monthly water production of water treatment plants 1, 2, 3, and 4 1-3 Tally the above water production data monthly 1-4 Calculate the monthly water consumption based on the billing data 1-5 Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4</p> | <p>Project Personnel 1. Project Director: Director of Economic Planning, Research and Statistic Department, FCTA 2. Project Manager: Director of FCTWB 3. Deputy Project Manager: HoD for Administration and Supply/FCTWB 4. Technical Managers (Also Leaders of NRW Management Team); HoD for Distribution and HoD for Commerce /FCTWB 5. Members of NRW Management Team. (FCTWB): - Head of Special Project Unit of Distribution Department (as Coordinator) - Relevant Head of Unit (HoU) and officers of the Distribution Department, Commerce Department, and Administration and Supply Department 6. Heads of other relevant Departments and Unit of FCTWB: HoD for Finance, HoD for Production, HoU for Planning Research and Statistics (PRS) 7. Members of NRW Action Team: Area Manager, Assistant Area Manager (Distribution), Assistant Area Manager (Commerce), technical officers (Distribution) and meter readers (Commerce) of each pilot Area Office 8. Other personnel mutually agreed upon as necessary</p> | <p>Japanese Experts 1. Chief Advisor / NRW Reduction Planning 2. Deputy Chief Advisor / NRW Reduction Planning 3. NRW Reduction Operations Management Technology 4. Leakage Detection 5. Commercial Loss 6. Hydraulic Analysis / GIS 7. Procurement 8. Other experts mutually agreed upon as necessary</p> | <p>Pre-Conditions A Furnished offices for Japanese Expert Team are secured at Headquarters and each Pilot Area Office of FCTWB B Project Personnel is assigned with the finalized list</p> | <p>A Natural disaster/political/instability/economic crisis that affect the project activities do not occur</p> |
| <p>2-1 Review existing NRW reduction operations at each pilot Area Office 2-2 Conduct capacity assessment of the relevant staff of each pilot Area Office 2-3 Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA(*3) 2-4 Prepare/update distribution network drawings for each PMA 2-5 Install water flow meters to each PMA and measure in/outflows monthly 2-6 Zone each PMA into Sub Metering Areas (SMA) 2-7 Isolate a SMA by installing valves 2-8 Update the distribution network drawings for each SMA 2-9 Measure an initial level of NRW of each SMA 2-10 Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA 2-11 Develop a NRW reduction operation plan of each SMA, including reduction target, for review by Head of Distribution Department 2-12 Review and approve NRW reduction operation plan of each SMA 2-13 Implement the NRW reduction operations at each SMA 2-14 Monitor the progress of the NRW reduction operations of each SMA 2-15 Measure level of NRW of each SMA at the end of the respective operations 2-16 Prepare a report on pilot projects, covering Activity 2-1~2-15 2-17 Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials</p> | <p>Land, Building and Facilities 1. Office building and facilities necessary for the implementation of the Project 2. Office spaces and necessary facilities for the Japanese Experts at the FCTWB Headquarters and each Pilot Area Office, including internet connection and air conditioners 3. Other facilities mutually agreed upon as necessary</p> | <p>Equipment 1. Bulk meters for water treatment plants 2. Water flow meters, valves, and customer meters for SMA 3. Leakage detection equipment for PMA 4. Pipe repair equipment for PMA 5. Vehicles (Pick-ups) 6. Other equipment mutually agreed upon as necessary</p> | <p>Issues & Countermeasures</p> | <p>Training of the Nigerian Project Personnel in Japan Four persons mutually agreed upon will be trained in Japan annually</p> |
| <p>3-1 Establish a Working Group for NRW planning (*4) 3-2 Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB 3-3 Conduct hydraulic and water pressure distribution analyses of the pipeline networks 3-4 Develop outlines of the medium-term strategic plan and its annual NRW reduction plan 3-5 Develop the first medium-term strategic plan (2018-2022) for approval by FCTA 3-6 Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA 3-7 Develop a planning manual for NRW reduction</p> | <p>Local Costs 1. Cost for installation, operation and maintenance of the provided equipment and cost for pipe repair at PMAs 2. Administration and operational costs, including costs for local travel for the Project Personnel</p> | | | |

Note (*3) Selection criteria of PMA are as follows: (i) Safety for night works is secured in measuring minimum night flow; (ii) Distribution network is separated and it is easy to isolate it in measuring NRW ratio; and (iii) NRW ratio is supposedly high.
Note (*4) Working Group for NRW planning would consist of Project Manager (as chair), Deputy Project Manager, Technical Managers, Head of Finance Dept., Head of Production Dept., and members of NRW Management Team.

Project Monitoring Sheet II (Revision of Plan of Operation)
Plan of Schedule and Actual Work Period

| Version Date | 1 5 Nov 2014 | 2014 | | | | | | | | | | | | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | Remarks | Milestones Comments |
|--|-----------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|--|--|--|--|--|--|--|--|--|---------|------------------------|
| | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | | | | | | | | | |
| <p>Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project</p> <p>Activities</p> <p>Output 1:</p> <p>1-1 Install bulk meters to water treatment plant 1-2 Measure monthly water production of water treatment plants 1, 2, 3, and 4 1-3 Find the above water production data 1-4 Calculate the monthly water consumption based on the billing data 1-5 Calculate monthly NRW rate on the basis of the data collected from Activities 1.3 and 1.4</p> <p>Output 2:</p> <p>2-1 Review existing NRW reduction program 2-2 Conduct capacity assessment of organization and the relevant staff 2-3 Develop a PMA for each Risk Area/Division on the selection criteria of PMA 2-4 Prepare a water distribution network and measure flow rates to each PMA 2-5 Install water flow meters to each PMA 2-6 Draw each PMA into GIS Mapping 2-7 Install a SMA by installing valves 2-8 Update the distribution network 2-9 Measure an initial level of NRW of each SMA 2-10 Calculate NRW rate 2-10a Select target NRW components (i.e., meter, pipe, valve, and other) for implementation, and legal connectivity of each SMA 2-10b Conduct monthly leakage audit 2-10c Conduct illegal connection 2-11 Develop a NRW reduction operation plan of each SMA, including reduction strategy by field of jurisdiction 2-12 Review and approve a NRW reduction plan 2-13 Implement NRW reduction operations of each SMA 2-14 Monitor the progress of the NRW reduction operations of each SMA 2-15 Operate for illegal connection 2-15a Monitor the progress of the NRW reduction operations of each SMA 2-15b Operate for illegal connection 2-15c Monitor the progress of the NRW reduction operations of each SMA 2-15d Monitor the progress of the NRW reduction operations of each SMA 2-15e Prepare a report on pilot project 2-17 Develop manuals for NRW reduction operations (i.e., technical drawing and water meters), including water meter manuals</p> <p>Output 3:</p> <p>3-1 Establish a Working Group for NRW reduction planning 3-2 Review existing plans, implementation manuals, etc. related to NRW reduction in FCTWA 3-3 Develop a FCTWA water meter program 3-4 Develop outlines of the medium-term NRW reduction plan (approved by the Director) 3-5 Develop the ten-year medium-term strategy 3-6 Develop an annual NRW reduction plan based on the strategic plan as an integral part of overall water resources management plan of FCTWA as approved by FCTA 3-7 Develop a planning manual for NRW reduction</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Each SMA =</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Project Monitoring Sheet II (Revision of Plan of Operation)

Responsibility of Members

Version Dated

1

6 Nov. 2014

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

| Activities | Responsible Organization (Nigeria) | Responsible Person (Nigeria) | Implementors | JICA Experts | Other Major Input | | Remarks | | | | |
|---|--|--|--|------------------------|-------------------------------------|--|---|---|---------------------------|--|--|
| | | | | | Japan | Nigeria | | | | | |
| | | | | | | | | | | | |
| Output-1 | | | | | | | | | | | |
| Level of NRW of the service area of FCTWB is monitored regularly | 1-1 | Install bulk meters to water treatment plants 1 and 2 | R/D WF | Dist. Dpt Prod. Dpt | HoU(Pipeline)/D HoU(Metering)/D | Tech Officers (Pipeline) | Chief Advisor (CA), Dy.CA CA, Dy.CA | Bulk meters | Installation, O&M cost | Prod Dpt will be consulted | |
| | 1-2 | Measure monthly water production of water treatment plants 1, 2, 3, and 4 | R/D WF | Dist. Dpt Prod. Dpt | HoU(Pipeline)/D HoU(Prod)/Prod | Tech Officers (Pipeline) Tech Officers (Prod) | CA, Dy.CA | | | If bulks are installed inside the plants, Prod Dept shall measure. | |
| | 1-3 | Tally the above water production data monthly | R/D WF | Dist. Dpt | HoU(Water Monitoring) | HoU(Water Monitoring) | CA, Dy.CA | | | | |
| | 1-4 | Calculate the monthly water consumption based on the billing data | R/D WF | Com Dpt | HoU(Billing)/C | Billing staff | CA, Dy.CA | Cost for software | | | |
| | 1-5 | Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4 | R/D WF | Dist. Dpt | HoU(Logistics)/D | Logistics officer | CA, Dy.CA | | | | |
| Output-2 | | | | | | | | | | | |
| Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices | 2-1 | Review existing NRW reduction operations at each pilot Area Office | R/D WF | Dist. Dpt, Com. Dpt | HoD(Dist)/(Com) | AM, AAM (Dist)/(Com) | CA, Dy.CA, NRW reduction | | | | |
| | 2-2 | Conduct capacity assessment of organization and the relevant staff | R/D WF | Dist. Dpt, Com. Dpt | HoD(Dist)/(Com) | NRW Mgt Team | CA and other Experts | | | | |
| | 2-3 | Identify and select a Pilot Metering Area (PMA) for each Pilot Area Office based on the selection criteria of PMA | R/D WF | Dist. Dpt, Com. Dpt | HoD(Dist)/(Com) | NRW Mgt Team AM, AAM (Dist)/(Com) | CA, Dy.CA, NRW reduction | | | | |
| | 2-4 | Prepare/update distribution network drawings for each PMA | R/D WF | Dist. Dpt | HoD(Dist) | HoU(Logistics)&officers HoU(GIS)&officers | NRW reduction, Hydraulic analysis | | | | |
| | 2-5 | Install water flow meters to each PMA and measure in/outflows monthly | R/D WF | Dist. Dpt | Area Manager(AM) | AAM(Dist) Tech Officers(Dist) | NRW reduction, Hydraulic analysis | Water flow meters | Installation and O&M cost | | |
| | 2-6 | Zone each PMA into Sub Metering Areas (SMA) | R/D WF | Dist. Dpt | HoU(Logistics)/D HoU(Metering)/D | AM, AAM(Dist)/(Com) HoU(GIS)&officers | NRW reduction, Hydraulic analysis | | | | |
| | 2-7 | Isolate a SMA by installing valves | R/D WF | Dist. Dpt | AM | Tech Officers(Dist) AAM(Dist) | NRW reduction | Valves | Installation and O&M cost | | |
| | 2-8 | Update the distribution network drawings for each SMA | R/D WF | Dist. Dpt | HoU(Logistics)/D | AAM(Dist),HoU(GIS)&officers HoU(Logistics)&officers | NRW reduction, Hydraulic analysis | | | | |
| | 2-9 | Measure an initial level of NRW of each SMA | R/D WF | Dist. Dpt | HoD(Dist) | | NRW reduction | | | | |
| | Measure in/outflows Survey water consumption Calculate NRW ratio | | | | Area Office | AAM(Dist) | Tech Officers(Dist) | NRW reduction | | | |
| | | | | | Area Office | AAM(Com) | Meter Readers(Com) | NRW reduction | | | |
| | | | | | Dist Dpt | HoU(Logistics)/D | Logistics Officer | NRW reduction | | | |
| | Each SMA | 2-10 | Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA | R/D WF | Dist. Dpt, Com. Dpt | AM | | NRW reduction | | | |
| | | | Detect invisible leakage | | Dist. Dpt | AAM(Dist) | Tech Officers(Dist) | Leakage detection | Detection equip. | O&M cost | Staff of Pipeline Unit (Dist) will join. |
| | | | Detect customer meter malfunction | | Com. Dpt | AAM(Com), HoU(Metering)/D | Meter Readers(Com) | Com Loss | | | |
| | | | Detect illegal connection | | Dist. Dpt, Com. Dpt | AAM(Dist)/(Com), HoU(Detect)/C | Meter Readers(Com) | Com Loss | | | Staff of Detection Unit (Com) will join. |
| | | 2-11 | Develop a NRW reduction operation plan of each SMA, including reduction target for review by Head of Distribution Department | R/D WF | Dist. Dpt | AM | AAM (Dist)/(Com) | NRW reduction, Leakage detection, Com Loss | | | |
| | | 2-12 | Review and approve NRW reduction operation plan of each SMA | R/D WF | Dist. Dpt | HoD(Dist) | Relevant HoUs | NRW reduction | | | |
| | | 2-13 | Implement NRW reduction operations at each SMA | R/D WF | Dist. Dpt, Com. Dpt | AM | | NRW reduction | | | |
| | | | Operation for invisible leakage | | Dist. Dpt | AAM(Dist) | Tech Officers(Dist) | Leakage detection | Repair equip. | Repair cost | |
| | | | Operation for customer meter | | Com. Dpt | AAM(Com), HoU(Metering)/D | AAM(Com), HoU(Metering)/D | Com Loss | Cust. Meters | Install, O&M cost | |
| | | Operation for illegal connection | | Dist. Dpt, Com. Dpt | AAM(Dist)/(Com), HoU(Detect)/C | AAM(Dist)/(Com), HoU(Detect)/C | Com Loss | | | | |
| | 2-14 | Monitor the progress of the NRW reduction operations of each SMA | R/D WF | Area Office | AM | | NRW reduction | | | | |
| | | Operation for invisible leakage | | Dist. Dpt | AAM(Dist) | Tech Officers(Dist) | Leakage detection | | | | |
| | | Operation for customer meter | | Com. Dpt | AAM(Com), HoU(Metering)/D | AAM(Com), HoU(Metering)/D | Com Loss | | | | |
| | | Operation for illegal connection | | Dist. Dpt, Com. Dpt | AAM(Dist)/(Com), HoU(Detect)/C | AAM(Dist)/(Com), HoU(Detect)/C | Com Loss | | | | |
| | 2-15 | Measure level of NRW of each SMA at the end of the respective operations | R/D WF | Area Office | AM | | NRW reduction | | | | |
| | | Measure in/outflows | | Area Office | AAM(Dist) | Tech Officers(Dist) | NRW reduction | | | | |
| | | Survey water consumption | | Area Office | AAM(Com) | Meter Readers(Com) | NRW reduction | | | | |
| | | Calculate NRW ratio | | Dist Dpt | HoU(Logistics)/D | Logistics Officer | NRW reduction | | | | |
| | 2-16 | Prepare a report on pilot projects, covering Activity 2-1-2-15 | R/D WF | Dist. Dpt, Com. Dpt | HoD(Dist)/(Com) | NRW Mgt Team, AM, | CA, Dy.CA, NRW reduction, Leakage detection, Com loss | | | | |
| | 2-17 | Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials | R/D WF | Dist. Dpt, Com. Dpt | HoD(Dist)/(Com) | NRW Mgt Team, AM, AAM (Dist)/(Com) | CA, Dy.CA, NRW reduction, Leakage detection, Com Coordinator | | | | |
| Output-3 | | | | | | | | | | | |
| A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output-1&2 | 3-1 | Establish a Working Group for NRW reduction planning | R/D WF | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | | |
| | 3-2 | Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB | R/D WF | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | | |
| | 3-3 | Conduct hydraulic and water pressure distribution analyses of the pipeline networks | R/D WF | Dist. Dpt | HoU(Logistics)/D HoU(Pipeline)/D | HoU(Logistics)&officers HoU(GIS)&officers HoU(Pipeline)&officers | Hydraulic analysis | | | | |
| | 3-4 | Develop outlines of the medium-term strategic plan and its annual NRW reduction plan (approval by the Director) | R/D WF | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | | |
| | 3-5 | Develop the first medium-term strategic plan (2018-2022) for approval by FCTA | R/D WF | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | | |
| | 3-6 | Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA | R/D WF | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | | |
| | 3-7 | Develop a planning manual for NRW reduction | R/D WF | FCTWB | PM | Working Group | CA, Dy.CA, NRW reduction | | | | |

Project Monitoring Sheet II (Revision of Plan of Operation)

Responsibility of Members

Version 1
Dated 6 Nov. 2014

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

| Inputs (the Japanese side) | | | Remarks |
|----------------------------|--|-----------|---------|
| JICA Expert | | | |
| 1 | Akinori MIYOSHI Chief Advisor / NRW Reduction Planning | R/D WP | |
| 2 | Taketoshi FUJYAMA Deputy Chief Advisor / NRW Reduction Planning | R/D WP | |
| 3 | Toru TOYODA NRW Reduction Operations Management | R/D WP | |
| 4 | Kiyoshi KIYAMA Leakage Detection Technology | R/D WP | |
| 5 | Takuji OKUBO Commercial Loss | R/D WP | |
| 6 | Shinta SEGAWA Hydraulic Analysis / GIS | R/D WP | |
| 7 | Kazuhiro ISHIIURA Procurement Management / Coordinator | R/D WP | |
| Equipment | | | |
| 1 | Leakage detection equipment *3PIMAs in Japan (JICA) | R/D WP | |
| 2 | Bulk meters (ultrasonic flow meter) *WTP in Japan (JICA Expert) | R/D WP | |
| 3 | Water meter, flow meter and valves *3PIMAs in Nigeria (JICA Expert) | R/D WP | |
| 4 | Pipe repair equipment *3PIMAs in Nigeria (JICA) | R/D WP | |
| 5 | Vehicles (Pickup truck) *Leakage Detection in Nigeria (JICA) | R/D WP | |
| 6 | GIS software, office equipment *FCTWB HQs in Nigeria (JICA) | R/D WP | |
| Local Consultant | | | |
| 1 | Modification of billing and collection System | R/D WP | |
| 2 | GIS and database training | R/D WP | |
| Training in Japan | | | |
| | | R/D WP | |

| Duration / Phasing | R/D | WP | | | | | | |
|--------------------|-----|----|--|--|--|--|--|--|
| | | | | | | | | |

| Monitoring Plan | | | Responsible Organization (Nigeria) | Responsible Person (Nigeria) | Implementors (Nigeria) | JICA Experts | Other Major Input | | Remarks |
|---|---|-----------|------------------------------------|------------------------------|--------------------------|------------------------|-------------------|---------|--|
| | | | | | | | Japan | Nigeria | |
| Planning, Monitoring and Coordination | | | | | | | | | |
| 1 | Organize Joint Coordination Committee (JCC) | R/D WP | FCTWB | PM | Dy. PM | CA and other Experts | | | |
| 2 | Develop Detail Plan of Operations (DPO) for review and approval by JCC | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 3 | Develop Annual Plan of Operations (APO) for review and approval by JCC | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 4 | Organize monthly technical meetings | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| 5 | Organize quarterly project meetings | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 6 | Conduct Joint Monitoring semi-annually | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team, AM | CA and other Experts | | | |
| 7 | Submit Monitoring Sheet to JICA Nigeria Office semi-annually | R/D WP | | | | CA, Dy.CA | | | |
| 8 | Monitoring Mission from JICA for Joint Review | R/D WP | JICA | JICA HQ | To be determined | | | | |
| 9 | Organize information sharing seminars for FCTWB/FCTA, including Area Offices | R/D WP | FCTWB | PM | Dy.PM | CA and other Experts | | | |
| 10 | Collect and organize data for Indicators of PDM | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| a | Develop criteria for capacity assessment for each level of the relevant staff (i.e. members of NRW Mgmt and Action Teams) | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| b | Conduct joint capacity assessment of the relevant staff | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| c | Prepare Capacity Development (CD) Plan | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| d | Set reduction target for each PMA by the first quarter of the second year | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| e | Collect and organize for Indicators for semi-annual Joint Monitoring | R/D WP | Dist. Dpt, Com. Dpt | NRW Mgt Team's Coordinator | NRW Mgt Team, AM | CA and other Experts | | | |
| Reports / Documents | | | | | | | | | |
| 11 | Work Plan | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team | | | | |
| 12 | Project Progress Report | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team | | | | |
| 13 | Project Completion Report | R/D WP | FCTWB | PM | Dy. PM, NRW Mgt Team | CA and other Experts | | | |
| Public Relations | | | | | | | | | |
| 14 | Develop Project Website | R/D WP | FCTWB | PM | NRW Mgt Team, HoU(PR) | CA, Dy.CA, Coordinator | | | |
| 15 | Preparation of public relations materials | R/D WP | FCTWB | PM | NRW Mgt Team, HoU(PR) | CA, Dy.CA, Coordinator | | | Public Relation Unit under Director(PM) will collaborate |
| Monitoring and Evaluation in the Post-Project period | | | | | | | | | |
| 16 | Post Monitoring by JICA (not described here) | | JICA | | | | | | |
| 17 | Post Evaluation by JICA (not described here) | | JICA | | | | | | |

Contents of the Project Completion Report (tentative)

I. Basic Information of the Project

- 1. Country**
- 2. Title of the Project**
- 3. Duration of the Project (Planned and Actual)**
- 4. Background (from Record of Discussions(R/D))**
- 5. Overall Goal and Project Purpose (from Record of Discussions(R/D))**
- 6. Implementing Agency**

II. Results of the Project

- 1. Results of the Project**
 - 1-1 Input by the Japanese side (Planned and Actual)
 - 1-2 Input by the Nigerian side (Planned and Actual)
 - 1-3 Activities (Planned and Actual)
- 2. Achievements of the Project**
 - 2-1 Outputs and indicators
(Target values and actual values achieved at completion)
 - 2-2 Project Purpose and indicators
(Target values and actual values achieved at completion)
- 3. History of PDM Modification**

III. Results of Joint Review

- 1. Results of Review based on DAC Evaluation Criteria**
- 2. Key Factors Affecting Implementation and Outcomes**
- 3. Evaluation on the results of the Project Risk Management**
- 4. Lessons Learnt**

IV. For the Achievement of Overall Goals after the Project Completion

- 1. Prospects to achieve Overall Goal**
- 2. Plan of Operation and Implementation Structure of the Nigerian side to achieve Overall Goal**
- 3. Recommendations for the Nigerian side**
- 4. Monitoring Plan from the end of the Project to Ex-post Evaluation**

PM Form 4 Project Completion Report

ANNEX 1: Results of the Project

(Lists of Dispatched Experts, Counterparts, Trainings, etc.)

ANNEX 2: List of Products

(Report, Manuals, Handbooks, etc.)

ANNEX 3: PDM (All versions of PDM)

ANNEX 4: R/D, M/M, Minutes of JCC

ANNEX 5: Monitoring Sheet

Appendix 5: Detail Plan of Operation



Appendix 6: Annual Plan of Operation

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Annual Plan of Operation

Version 1
Dated 8 Nov, 2014

| Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project | | | | | | | | | | | | | | | | | Version 1 Dated 8 Nov, 2014 | | | | |
|---|------|---|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----------------------------------|-----------------------------|-----------------------|--------------------------------|-----|-------------------|---------|---------|
| Activities | 2014 | 2014 | | | | 2015 | | | | | | | | Responsible Organization (Agency) | Responsible Person (Agency) | Implementers (Agency) | JCA Experts | | Other Major Input | | Remarks |
| | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | | | | Oct | Nov | Japan | Nigeria | |
| Output 1 | | | | | | | | | | | | | | | | | | | | | |
| Level of NRW of the surface area of FCTWB is monitored regularly | 1.1 | Install water meters to water treatment plants (Lands 2, 3 and 4) and design and install new design of chamber installation, commissioning and training | WP | | | | | | | | | | | | | | | | | | |
| | | Measure monthly water production of water treatment plants 1, 2, 3 and 4 | WP | | | | | | | | | | | | | | | | | | |
| | | 1.3. Find the above water production data monthly | WP | | | | | | | | | | | | | | | | | | |
| | | 1.4. Calculate the monthly water consumption based on the billing data | WP | | | | | | | | | | | | | | | | | | |
| Output 2 | | | | | | | | | | | | | | | | | | | | | |
| Without operational procedures for effective NRW reduction are established through pilot projects at Pilot Watering Area (PWAs) under pilot Area Office | 2.1 | Review existing NRW reduction operations at each pilot Area Office | WP | | | | | | | | | | | | | | | | | | |
| | | 2.2. Conduct capacity assessment of organization and the relevant staff | WP | | | | | | | | | | | | | | | | | | |
| | | 2.3. Identify and select a Pilot Watering Area (PWA) for each PWA Area Office based on the reduction criteria of PWA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.4. Prepare update distribution network layout for each PWA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.5. Install water flow meters to each PWA and measure inflows monthly | WP | | | | | | | | | | | | | | | | | | |
| | | 2.6. Zone each PWA into Sub Metering Areas (SMA) | WP | | | | | | | | | | | | | | | | | | |
| | | 2.7. Install a SMA by installing valves | WP | | | | | | | | | | | | | | | | | | |
| | | 2.8. Update the distribution network layout for each SMA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.9. Measure an initial level of NRW of each SMA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.10. Develop NRW components like installation, customer meter malfunction, and illegal connection of each SMA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.11. Develop a NRW reduction operation plan of each SMA, including reduction target for review by Head of Distribution Department | WP | | | | | | | | | | | | | | | | | | |
| | | 2.12. Review and approve NRW reduction operation plan of each SMA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.13. Implement NRW reduction operations of each SMA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.14. Monitor the progress of the NRW reduction operations of each SMA | WP | | | | | | | | | | | | | | | | | | |
| | | 2.15. Measure level of NRW of each SMA at the end of the respective operations | WP | | | | | | | | | | | | | | | | | | |
| | | 2.16. Prepare a report on pilot projects, covering activities and costs | WP | | | | | | | | | | | | | | | | | | |
| | | 2.17. Develop manuals for NRW reduction for Area Office managers and field operations (for technical officers and meter readers), including audiovisual materials | WP | | | | | | | | | | | | | | | | | | |
| Output 3 | | | | | | | | | | | | | | | | | | | | | |
| A medium-term strategic plan of FCTWB for NRW reduction is developed utilizing the results of Output 1&2 | 3.1 | Establish a Working Group for NRW reduction planning | WP | | | | | | | | | | | | | | | | | | |
| | | 3.2. Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB | WP | | | | | | | | | | | | | | | | | | |
| | | 3.3. Conduct hydraulic and water pressure distribution analyses of the pipeline networks | WP | | | | | | | | | | | | | | | | | | |
| | | 3.4. Develop policies of the medium-term strategic plan and its annual NRW reduction plan (approved by the Director) | WP | | | | | | | | | | | | | | | | | | |
| | | 3.5. Develop the 1st medium-term strategic plan (2015-2016) for approval by FCTA | WP | | | | | | | | | | | | | | | | | | |
| | | 3.6. Develop an annual NRW reduction plan based on the strategic plan as an integral part of the annual recurrent and capital plan of FCTWB for approval by FCTA | WP | | | | | | | | | | | | | | | | | | |
| | | 3.7. Develop planning manual for NRW reduction | WP | | | | | | | | | | | | | | | | | | |

Annual Plan of Operation

Version 1
 Dated 8 Nov. 2014

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

| Inputs (the Japanese side) | 2014 | | | 2015 | | | | | | | | | Remarks |
|---|--------|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|---------|
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | |
| JICA Expert | | | | | | | | | | | | | |
| 1 Airon MITSUI | WP | | | | | | | | | | | | |
| Chief Advisor / NRW Reduction Planning | Actual | | | | | | | | | | | | |
| 2 Takeuchi FUJIMURA | WP | | | | | | | | | | | | |
| Deputy Chief Advisor / NRW Reduction Planning | Actual | | | | | | | | | | | | |
| 3 Iwano TOSHIBA | WP | | | | | | | | | | | | |
| NRW Reduction Operations Management | Actual | | | | | | | | | | | | |
| 4 Koyohji NIJAMA | WP | | | | | | | | | | | | |
| Leakage Detection Technology | Actual | | | | | | | | | | | | |
| 5 Taniya CHUO | WP | | | | | | | | | | | | |
| Commercial Lens | Actual | | | | | | | | | | | | |
| 6 Shirota SEGAWA | WP | | | | | | | | | | | | |
| Hydraulic Analysis / GIS | Actual | | | | | | | | | | | | |
| 7 Katsuno ISHURA | WP | | | | | | | | | | | | |
| Procurement Management / Coordinator | Actual | | | | | | | | | | | | |
| Equipment | | | | | | | | | | | | | |
| 1 Leak type detection equipment | WP | | | | | | | | | | | | |
| *SFMAs in Japan (JICA) | Actual | | | | | | | | | | | | |
| 2 BUA meters (ultrasonic flow meter) | WP | | | | | | | | | | | | |
| *WIP in Japan (JICA Expert) | Actual | | | | | | | | | | | | |
| 3 Water meter, flow meter and valves | WP | | | | | | | | | | | | |
| *SFMAs in Nigeria (JICA Expert) | Actual | | | | | | | | | | | | |
| 4 Pipe repair equipment | WP | | | | | | | | | | | | |
| *SFMAs in Nigeria (JICA) | Actual | | | | | | | | | | | | |
| 5 Vehicles (Pick up truck) | WP | | | | | | | | | | | | |
| *Leakage Detection in Nigeria (JICA) | Actual | | | | | | | | | | | | |
| 6 GIS software, office equipment | WP | | | | | | | | | | | | |
| *FCIWS H2s in Nigeria (JICA) | Actual | | | | | | | | | | | | |
| Local Consultant | | | | | | | | | | | | | |
| 1 Modification of Billing and collection System | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 2 GIS and database training | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| Training in Japan | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| Duration / Phasing | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| Monitoring Plan | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Planning, Monitoring and Coordination | | | | | | | | | | | | | |
| 1 Organize Joint Coordination Committee (JCC) | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 2 Develop Initial Plan of Operations (IPO) for review and approval by JCC | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 3 Develop Annual Plan of Operations (APO) for review and approval by JCC | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 4 Organize monthly technical meetings | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 5 Organize quarterly project meetings | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 6 Conduct Joint Monitoring semi-annually | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 7 Submit Monitoring Sheet to JICA/Nigeria Office semi-annually | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 8 Monitoring Mission from JICA for Joint Review | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 9 Organize information sharing seminars for FCRIW/BFCIA, including Area Offices | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 10 Conduct and organize data for indicators of FCIW | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 11 Develop criteria for capacity assessment for each level of the relevant staff (e.g. members of NRW Mgt and Action Teams) | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 12 Conduct joint capacity assessment of the relevant staff in Nigeria Capacity Development (CD) Plan | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 13 Set reduction target for each FMA by the first quarter of the second year | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 14 Conduct and organize for indicators for semi-annual Joint Monitoring | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| Reports / Documents | | | | | | | | | | | | | |
| 11 Work Plan | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 12 Project Progress Report | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 13 Project Completion Report | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| Public Relations | | | | | | | | | | | | | |
| 14 Develop Project Website | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 15 Preparation of public relations materials | WP | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| Monitoring and Evaluation in the Post-Project period | | | | | | | | | | | | | |
| 16 Post-Monitoring by JICA (not described here) | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |
| 17 Post-Evaluation by JICA (not described here) | | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | | |

Appendix 7: Member List of Working Group
for NRW Reduction Planning

Handwritten signatures and initials in blue ink, including a stylized 'S', a signature that appears to be 'J. B.', and another signature that appears to be 'B.' with '2022' written below it.

Members of Working Group for NRW Reduction Planning

(1) Project Manager: Mr. Hudu Bello, Director of FCTWB

(2) Deputy Project Manager: Mr. S.T Bello, Head of Administration and Supply Department,
FCTWB

(3) Technical Manager: Engr. A. A. Nahuche, Head of Distribution Department, FCTWB
: Mr. Adis S. Muhammad, Head of Commerce Department, FCTWB

(4) Members of NRW Management Team (FCTWB)

(a) Distribution Department

| | Name of staff | Position in FCTWB | Remarks |
|----|----------------------------|--|------------------------------------|
| 1 | Abolade. R. Lawal | Head of Special Project Unit | Coordinator of NRW Management Team |
| 2 | Moh. Kabir Rabi | Head of Logistic Unit | |
| 3 | Musa Dikko | Head of pipeline Unit | |
| 4 | Shehu Suleiman | Head of GIS Unit | |
| 5 | Douglas E. Oloton | Head of Metering General | |
| 6 | A.O. Akande | Head of Metering Unit (AMR Meter) | |
| 7 | Yetunde Olaniyan | Head of Water Monitoring Unit | |
| 8 | Abdullahi Masaud | Head of Metering Unit (pre-paid Meter) | |
| 9 | Abubakar Ubale Abubakar | Civil Engr. II, Logistic Unit, | |
| 10 | Mohammed Dauda | Technical Officer , Pipeline Unit | |
| 11 | Ezeh Hilary | Surveyor, GIS Unit | |

(b) Commerce Department

| | Name of staff | Position in FCTWB | Remarks |
|---|------------------|---|---------|
| 1 | Isaac O. Owolabi | Head of Customer Care Unit | |
| 2 | Danjuma Isah | Head of Monitoring and Detection Unit | |
| 3 | Taiwo Adeyemi | Monitoring staff, Monitoring and Detection Unit | |
| 4 | Aliyu Maradun | Head Major Consumers | |
| 5 | Rose Akpan | Head of Billing Unit | |
| 6 | Suleman Agbawn | Billing Officer, Billing Unit | |

(c) Administration and Supply Department

| | Name of staff | Position in FCTWB | Remarks |
|---|------------------|--------------------------------|---------|
| 1 | Francisca Samuel | Head of Training/ Welfare Unit | |
| 2 | Akudike Ike D. | Head, Facility Management Unit | |

(5) Head of other relevant Departments and Unit (FCTWB)

| | Name of staff | Position in FCTWB | Remarks |
|---|-------------------|--|---------|
| 1 | Hafsat Ahmed Lawi | Head of Financial Department | |
| 2 | Aliyu Usman | Head of Reservoir Department | |
| 3 | Bunmi Olowookere | Head of Planning, Research and Statistics Unit | |
| 4 | Abbas A. Ahmed | Head of Public Relations Unit | |
| 5 | Vincent Obeh | Head of MIS Unit | |

(6) Observer (Federal Capital Development Authority: FCDA)

Two members will be nominated from FCDA.