

資料

資料

資料1. 調査団員・氏名

(1) 現地調査

| 団員名 | 分野 | 所属 |
|-------|--------------------|----------------------------|
| 大村 良樹 | 総括 | JICA 国際協力専門員 |
| 井上 啓 | 計画管理 | JICA 資金協力支援部準備室 事業調査第三課 |
| 阿部 信樹 | 業務主任/給水計画/運営維持管理計画 | (株) エヌジェーエス・コンサルタンツ |
| 石岡 正信 | 上水施設計画・設計 | (株) エヌジェーエス・コンサルタンツ |
| 露木 雅美 | 配水施設計画・設計/管路計画・設計 | オーピーシー (株) |
| 神野 亘啓 | 機械・電気設備計画 | (株) エヌジェーエス・コンサルタンツ |
| 安東 武智 | 施工計画/積算 | (株) エヌジェーエス・コンサルタンツ |

(2) 概要説明

| 団員名 | 分野 | 所属 |
|-------|--------------------|----------------------------|
| 大村 良樹 | 総括 | JICA 国際協力専門員 |
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| 石岡 正信 | 上水施設計画・設計 | (株) エヌジェーエス・コンサルタンツ |
| 安東 武智 | 施工計画/積算 | (株) エヌジェーエス・コンサルタンツ |

資料2. 調査工程

(1) 現地調査

| 日 順 | 月日 | 曜日 | 行動計画 | メンバー | | | | | | |
|--------|-------|----|---|------|----|----|----|----|----|----|
| | | | | 団長 | 井上 | 阿部 | 石岡 | 露木 | 神野 | 安東 |
| 1 | 8月25日 | 土 | 移動(日本ードバイ | | | ○ | ○ | | | |
| 2 | 8月26日 | 日 | ーナイロビ) | | | ○ | ○ | | | |
| 3 | 8月27日 | 月 | JICA事務所打合せ、MoWI表敬 | | | ○ | ○ | | | |
| 4 | 8月28日 | 火 | ナイロビ調査 | | | ○ | ○ | | | |
| 5 | 8月29日 | 水 | 移動(ナイロビーカカメガ) | | | ○ | ○ | | | |
| 6 | 8月30日 | 木 | LVNWSBとの協議 | | | ○ | ○ | | | |
| 7 | 8月31日 | 金 | 資料収集・現地踏査等 | | | ○ | ○ | | | |
| 8 | 9月1日 | 土 | 資料収集・現地踏査等 | | | ○ | ○ | | | |
| 9 | 9月2日 | 日 | 休み | | | ○ | ○ | | | |
| 10 | 9月3日 | 月 | 官団員(日本発)、資料収集・現地踏査等 | ○ | ○ | ○ | ○ | | | |
| 11 | 9月4日 | 火 | 官団員(ナイロビ着)、資料収集・現地踏査等 | ○ | ○ | ○ | ○ | | | |
| 12 | 9月5日 | 水 | 官団員(JICA事務所・大使館・MoWI表敬)、資料収 集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | | |
| 13 | 9月6日 | 木 | 官団員(カプサベット着)、資料収集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | | |
| 14 | 9月7日 | 金 | LVNWSBとの協議 | ○ | ○ | ○ | ○ | ○ | | |
| 15 | 9月8日 | 土 | 資料収集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | | |
| 16 | 9月9日 | 日 | 資料収集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 17 | 9月10日 | 月 | M/D協議、資料収集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 18 | 9月11日 | 火 | M/D協議、資料収集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 19 | 9月12日 | 水 | 官団員(ナイロビへ移動、M/D署名)、資料収集・現 地踏査等 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 20 | 9月13日 | 木 | 官団員(JICA事務所・大使館報告、ナイロビ発)、資料 収集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 21 | 9月14日 | 金 | 官団員(日本着)、資料収集・現地踏査等 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 22 | 9月15日 | 土 | 団内打合せ及び現地踏査 | | | ○ | ○ | ○ | ○ | ○ |
| 23 | 9月16日 | 日 | 休み | | | ○ | ○ | ○ | ○ | ○ |
| 24 | 9月17日 | 月 | 資料収集・現地踏査等 | | | ○ | ○ | ○ | ○ | ○ |
| 25 | 9月18日 | 火 | 資料収集・現地踏査等 | | | ○ | ○ | ○ | ○ | ○ |
| 26 | 9月19日 | 水 | 資料収集・現地踏査等 | | | ○ | ○ | ○ | ○ | ○ |
| 27 | 9月20日 | 木 | 資料収集・現地踏査等 | | | ○ | ○ | ○ | ○ | ○ |
| 28 | 9月21日 | 金 | 資料収集・現地踏査等 | | | ○ | ○ | ○ | ○ | ○ |
| 29 | 9月22日 | 土 | 団内打ち合わせ | | | ○ | ○ | ○ | ○ | ○ |
| 30 | 9月23日 | 日 | 休み | | | ○ | ○ | ○ | ○ | ○ |
| 31 | 9月24日 | 月 | 資料収集・現地踏査等 | | | ○ | ○ | ○ | ○ | |
| 32 | 9月25日 | 火 | 技術協議書署名 | | | ○ | ○ | ○ | ○ | |
| 33 | 9月26日 | 水 | 移動(カプサベットーナイロビ) | | | ○ | ○ | ○ | ○ | |
| 34 | 9月27日 | 木 | JICA事務所・大使館報告、移動(ナイロビードバイ) | | | ○ | ○ | ○ | ○ | |
| 35 | 9月28日 | 金 | 移動(ドバイー関空ー羽田) | | | ○ | ○ | ○ | ○ | |
| 36 | 9月29日 | 土 | 資料収集・現地踏査等 | | | | | ○ | | |
| 37 | 9月30日 | 日 | 休み | | | | | ○ | | |
| 38 | 10月1日 | 月 | 資料収集・現地踏査等 | | | | | ○ | | |
| 39 | 10月2日 | 火 | 資料整理、移動(カプサベットーナイロビ) | | | | | ○ | | |
| 40 | 10月3日 | 水 | 移動(ナイロビードバイ) | | | | | ○ | | |
| 41 | 10月4日 | 木 | 移動(ドバイー関空ー羽田) | | | | | ○ | | |

(2) 概要説明

| 日順 | 月日 | 曜日 | 行動計画 |
|----|-------|----|------------------------------|
| 1 | 7月8日 | 火 | 移動(日本ードバイ |
| 2 | 7月9日 | 水 | ーナイロビ) |
| 3 | 7月10日 | 木 | JICA事務所打合せ、水・灌漑省 基本設計概要書説明 |
| 4 | 7月11日 | 金 | 水・灌漑省 基本設計概要書説明 |
| 5 | 7月12日 | 土 | 資料整理 |
| 6 | 7月13日 | 日 | 資料整理 |
| 7 | 7月14日 | 月 | JICA事務所打合せ、大使館表敬、水・灌漑省 M/D協議 |
| 8 | 7月15日 | 火 | 水・灌漑省 M/D協議 |
| 9 | 7月16日 | 水 | M/D署名、大使館・JICA事務所報告 |
| 10 | 7月17日 | 木 | 資料整理、移動(ナイロビードバイ) |
| 11 | 7月18日 | 金 | 移動(ドバイー関空ー羽田) |

資料 3. 関係者（面談者）リスト

| 所属 | 氏名 | 職位 | 備考 |
|--|-------------------------|--|----|
| 水・灌漑省 Ministry of Water and Irrigation (MoWI) | Eng. David Stower, CBS | Permanent Secretary | |
| | Eng. Robert N. Gakubia | Director, Water Services | |
| | Eng. Peter O. Mangiti | Deputy Director, Donor Coordination | |
| | Eng. Tom O. Ogalo | Deputy Director, Planning/Design | |
| | Eng. I. G. Kimani | Desk Officer (JICA) | |
| | Eng. Chepysgon Chemeril | Staff in Charge of LNVWSB | |
| | Mr. Hideyuki Wakasa | JICA Expert | |
| ビクトリア湖北部水サー ビス委員会 Lake Victoria North Water Services Board (LVNWSB) | Eng. Diru Magomere | Chief Executive Officer | |
| | Eng. David M. Kimingi | Technical Manager | |
| | Mr. Bonface Wanyonyi | Finance and Administaration Manager | |
| | Eng. Claude K. Busieney | Assistant Development Manager | |
| | Eng, Elkawa Coech | Commissioner, External Finance | |
| 財務省 Ministry of Finance (MoF) | Mr. Charles M. Mutiso | Asia and Pacific Desk, External Resources Department | |
| カブサベットナンディ水 サービス会社 Kapsabet Nandi Water and Sanitation Company (KNWSC) | Mr. Gilbert Rotich | Acting General Manager | |
| 在ケニア日本大使館 | 大仲 幸作 | 二等書記官 | |
| JICA ケニア事務所 | 高橋 嘉行 | 所長 | |
| | 徳橋 和彦 | 次長 | |
| | 稲村 次郎 | 次長 | |
| | 井上 陽一 | 所員 | |
| | 江崎 千絵 | 所員 | |
| | Mr. John N. Ngugi | Senior Program Officer | |

資料 4. 討議議事録

(1) 基本設計現地調査時 M/D

MINUTES OF DISCUSSIONS
 BASIC DESIGN STUDY ON "THE PROJECT FOR AUGMENTATION OF
 WATER SUPPLY SYSTEM IN KAPSABET TOWN"
 IN THE REPUBLIC OF KENYA

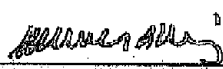
In response to a request from the Government of the Republic of Kenya (hereinafter referred to as "Kenya"), the Government of Japan decided to conduct a Basic Design Study (hereinafter referred to as "the Study") on the Project for Rehabilitation and Extension of Water Supply System for Kapsabet Town (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

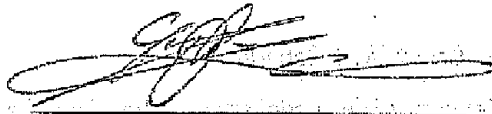
JICA sent to Kenya a Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Yoshiki OMURA, Senior Advisor, Institute for International Cooperation, JICA, and is scheduled to stay in the country from August 26 to October 3, 2007.

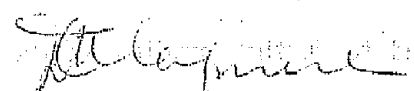
The Team held series of discussions with the officials concerned of the Government of Kenya and conducted a field survey in the study area.


In the course of discussions and field survey, both parties confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Nairobi, September 12, 2007


 Eng. Mahboub M. Maalim, GBS
 Permanent Secretary,
 Ministry of Water and Irrigation


 Eng. Yoshiki Omura
 Leader,
 Basic Design Study Team,
 Japan International Cooperation Agency
 (JICA)


 Eng. Diru Magomere
 Chief Executive Officer,
 Lake Victoria North Water Services Board


 Eng. Robert N. Gakubla, HSC
 Director Water Services,
 Ministry of Water and Irrigation

ATTACHMENT

1. Purpose of the Project

The purpose of the project is to improve the living conditions of the target area by providing potable water through procurement of equipment and construction of water supply facilities in Kapsabet Town.

2. Target Area of the Project

The target area of the project is Kapsabet Town (Kapsabet Township and its surrounding area) as shown in Annex-1.

3. Responsible and Implementing Organizations

- (1) The Responsible organization is the Ministry of Water and Irrigation.
- (2) The Implementing organization is the Lake Victoria North Water Services Board (hereinafter referred to as "LVNWSB"). LVNWSB has contracted with the Kapsabet Nandi Water and Sanitation Co. Ltd. (hereinafter referred to as "KNWSC") for providing water supply services in the area.
- (3) Organization charts of LVNWSB and KNWSC are shown in Annex-2.

4. Requested Components of the Project

Through discussions between the Kenyan side and the Japanese side, the Kenyan side finally confirmed the project components as described in Annex-3.

5. Japan's Grant Aid Scheme

- (1) The Kenyan side understood the Japan's Grant Aid Scheme explained by the Team, as described in Annex-4.
- (2) The Kenyan side also understood the necessary measures and budget allocation which are described in Annex-5, for smooth implementation of the Project.

6. Schedule of the Study

- (1) The consultant members of the Team will proceed to further studies in the country until October 3, 2007.
- (2) JICA will prepare the draft basic design report in English and dispatch a mission in order to explain its contents around February 2008.
- (3) In case that the contents of the report are accepted in principle by the Kenyan side, JICA will finalize the report and send it to the Kenyan side around April 2008.
- (4) The Kenyan side understood that execution of the Study did not imply the

Japanese Government's commitment of the project implementation.

7. Other Relevant Issues

(1) Change of the Project Title:

Both sides agreed to change the project title from "Rehabilitation and Extension of Water Supply System for Kapsabet Town" to "Augmentation of Water Supply System in Kapsabet Town".

(2) Changes from the original request.

a) Rehabilitation of the existing water treatment plant

Both sides agreed that the existing water treatment plant would not be rehabilitated in view of cost-effectiveness and efficiency of plant operation. Instead, a new water treatment plant of about 3,800m³/d capacity will be constructed.

b) Procurement of equipment and construction of small office

The Kenyan side requested the Japanese side to procure computers and software for customer services such as water rate calculation, issuing water bill and so on. Moreover the Kenyan side requested the Japanese side to construct a new service office building in order to provide better services to customers since the existing office has only one service counter and is in a dilapidated state.

The Japanese side noted the request.

(3) Fair Implementation of the Project

The Team explained that some information of both the draft and the final reports of the Study should be dealt with confidentially until the tender is closed, since disclosure of the information will affect fairness of tender procedure when the project proceeds to actual implementation stage.

The Kenyan side understood and agreed on careful handling of the reports and achieving fair tendering.

(4) Undertaking of the Kenyan side

Though general undertakings of the Kenyan side are shown in Annex-5, the Japanese side emphasized responsibilities of the Kenyan side to execute following matters and the Kenyan side agreed that:

a) Land acquisition.

The Team came to know that some part of the planned land for raw water main,

transmission main and distribution reservoirs are privately owned and requested the Kenyan side to secure the land in equitable manner and inform JICA of the result in writing.

b) Recruitment of technical/administrative staff of KNWSC

The Team explained that capability of operation and maintenance is one of the conditions for implementation and approval of the Project and recommended the Kenyan side to recruit some technical/administrative staff for KNWSC in order to strengthen the structure, business administration and sustainability of KNWSC.

c) Tax Payment

The Japanese side explained that Value Added Tax, customs duties and any other taxes and fiscal levy charges in Kenya arisen from the Project activities should be borne by beneficiary organizations as occasion arises. The Kenyan side understood that and made a commitment to secure some budget for refund of these taxes, if any.

Besides, the Kenyan side confirmed that the Government of Kenya shall accord privileges, exemptions and other benefits to the Team in accordance with the Agreement on technical cooperation between the Government of Japan and the Government of Kenya signed on April 30, 2004.

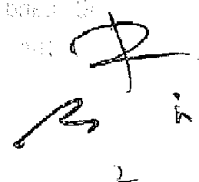
(5) Design period of the project

The Japanese side explained that as a general practice of Japan's Grant Aid Projects, the maximum design period might be around 2-3years after completion of the Project.

The Kenyan side requested that although Japan's Grant Aid projects provide for short emergency periods such as mentioned, this design should make provision for 10 to 20 years corresponding to the "future" and "ultimate" years of projection in accordance with the "Practice Manual for Water Supply Services" (2005) indicating in phases what components should be constructed and when during implementation of projects. Even though the Kenyan side understood that the current Japan's Grant Aid application can implement the components that are within the scope of the Aid, the Kenyan side emphasized it is difficult to change the infrastructure every 5 or so years.

After deliberation, the Kenyan side requested that provision be made in the design of the distribution mains so that the mains can cope with the demand beyond 2015 to avoid duplication of the pipeline in the immediate future.

The Japanese side agreed to convey the request to JICA Headquarters.



(6) Application of experience and lessons of similar project

The Japanese side referred to "The Project for Meru Water Supply" as a good example for capacity development and recommended the Kenyan side to utilize experience and lessons of the Meru project in order to improve the capability of operation & maintenance of KNWSC.

The Kenyan side agreed to utilize the experience of the project for Meru Water Supply and other Japan's ODA Projects.

(7) Soft component (Capacity Building)

The Kenyan side requested soft component such as training of operators and administrative staff for sustainable operation of water supply services.

The Japanese side also recognized importance of such training and agreed to convey the request to JICA Headquarters.

Annex-1: Target Area of the Project

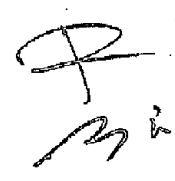
Annex-2: Organization Chart of the Lake Victoria North Water Services Board and the Kapsabet Nandi Water and Sanitation Co. Ltd.

Annex-3: Requested Components of the Project

Annex-4: Japan's Grant Aid Scheme

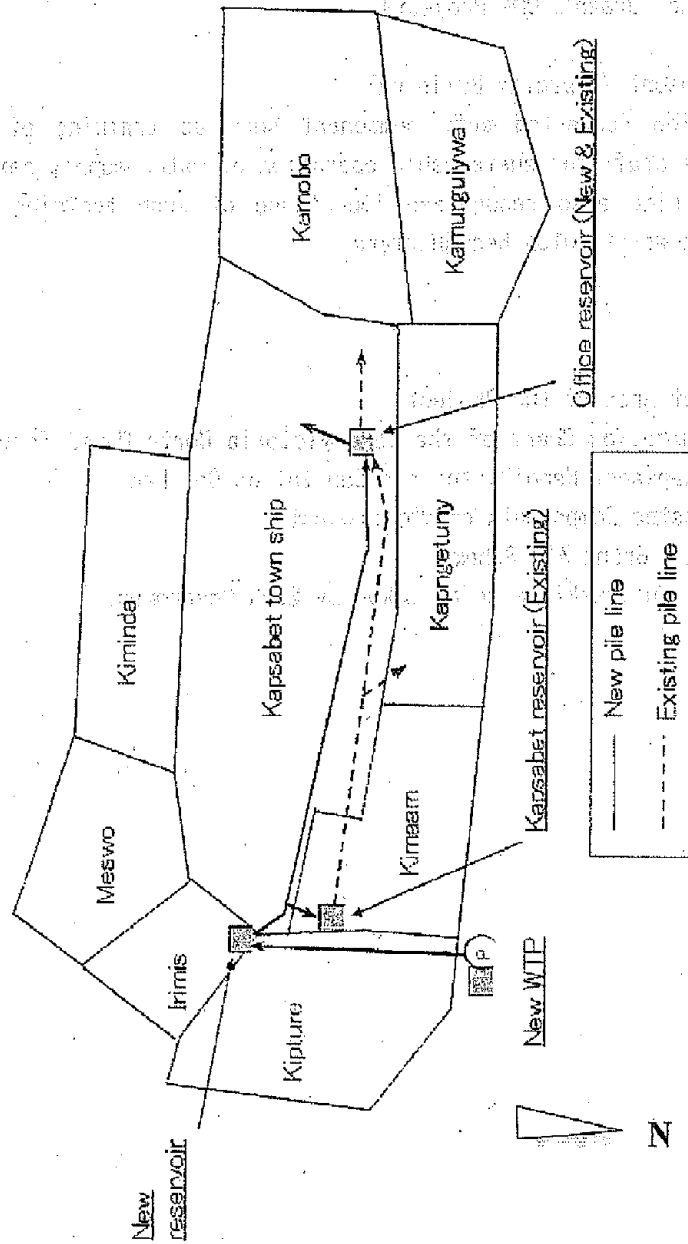
Annex-5: Major Undertakings to be taken by Each Government

End



Annex-1

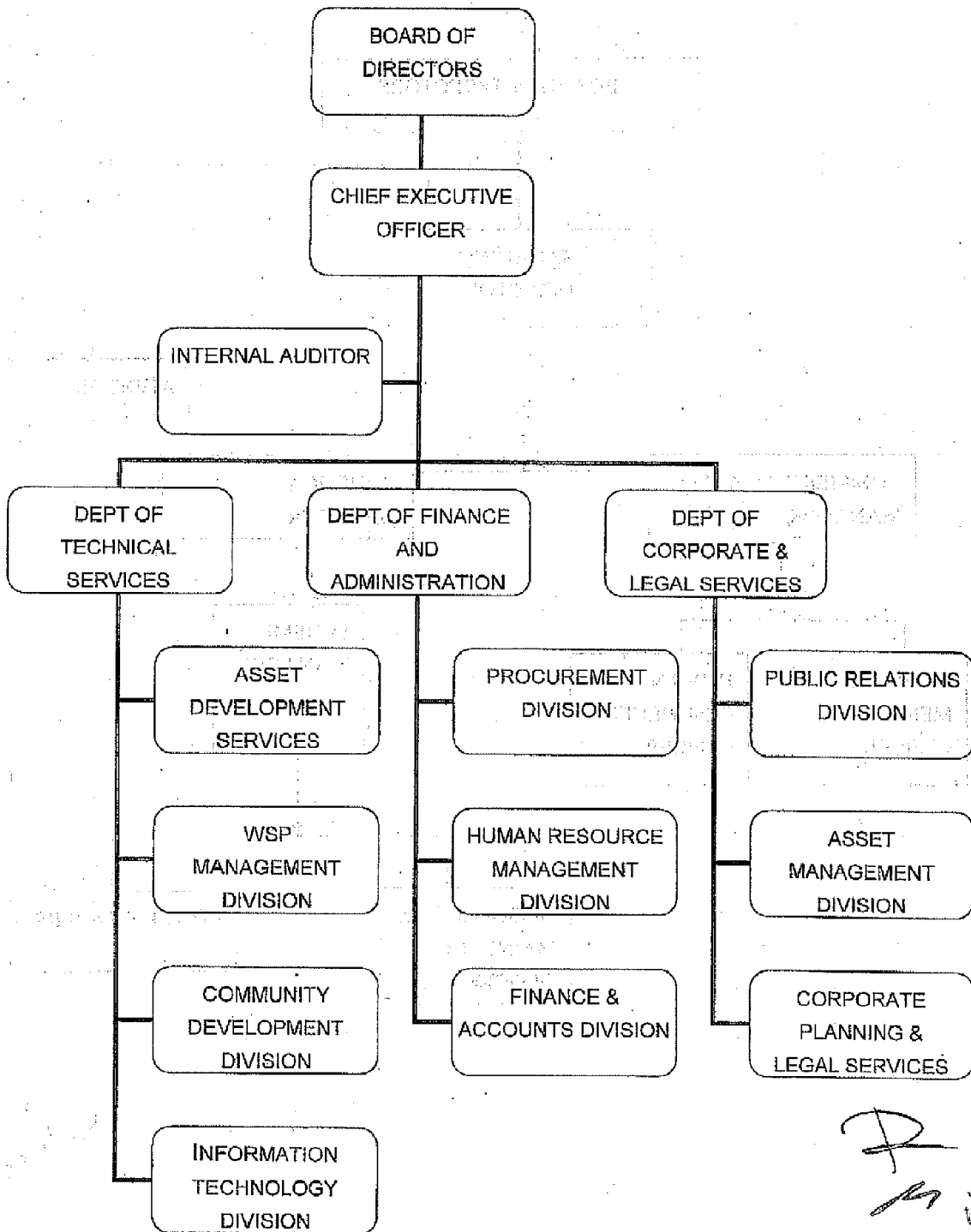
Target Area of the Project (Concept Study)



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Annex-2

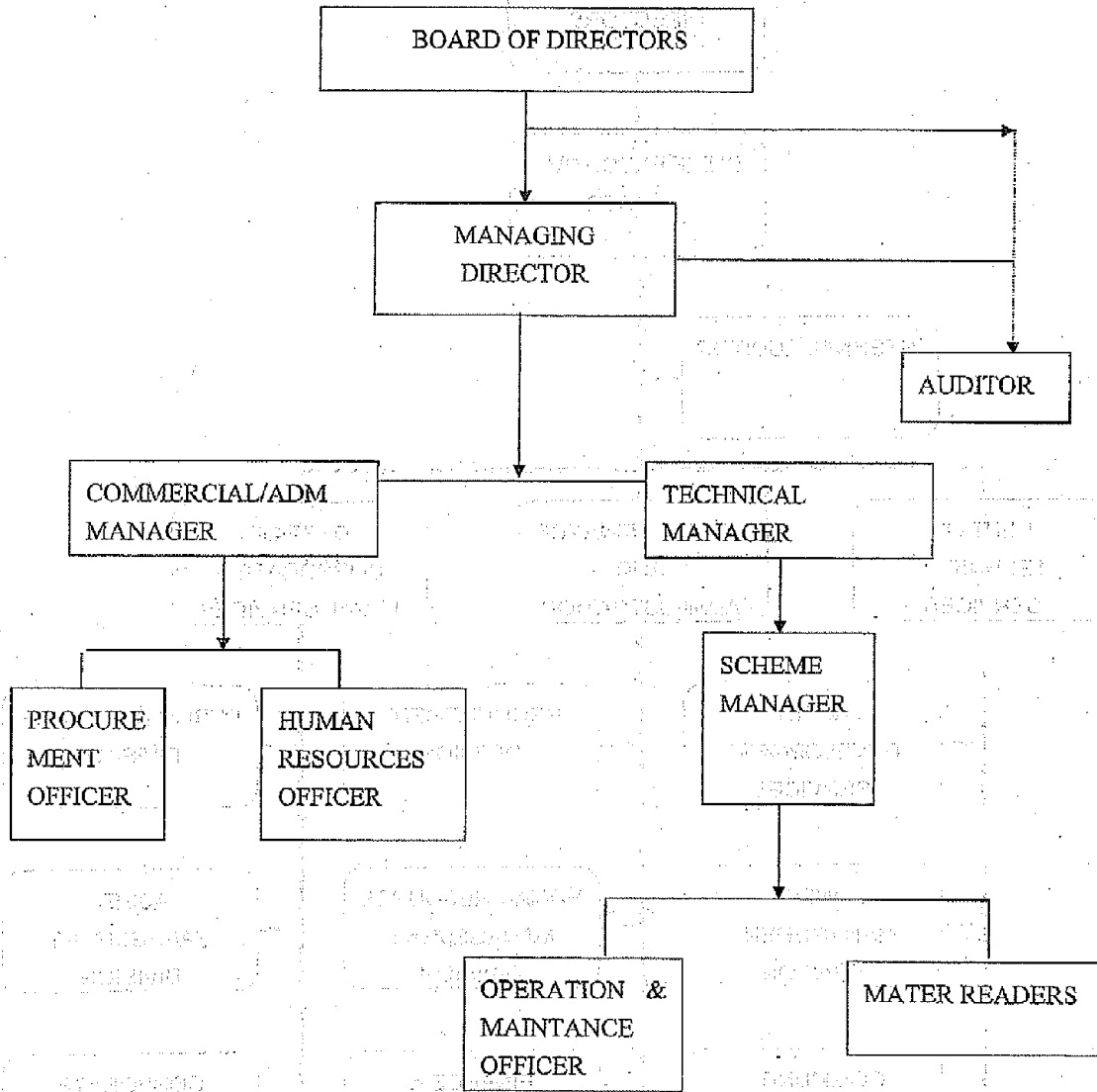
ORGANIZATION STRUCTURE FOR
THE LAKE VICTORIA NORTH WATER SERVICES BOARD (LVNWSB)



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Annex-2

KAPSABET NANDI WATER AND SANITATION COMPANY ORGANISATION CHART



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Annex-3

Requested Components of the Project

1. Construction

- Improvement of intake facilities
- Construction of water treatment plant
- Installation of raw water main,
- Installation of transmission pumps and pipelines
- Construction of distribution reservoirs
- Installation of distribution pipelines
- Construction of laboratory and store
- Construction of office cum warehouse

2. Equipment

- Water Meters
- Meter testing equipment
- Water Quality Analysis Equipment (for residual chlorine, pH, turbidity and jar testing)
- Tools Kits
- Spare Parts
- Computers and software for customer services

Note: Details of each component will be examined through further studies in Japan.

Annex-4

The Japan's Grant Aid Scheme

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

(1) Grant Aid Procedure

Japan's Grant Aid Program is executed through the following procedures.

| | |
|---------------------------------|--|
| Application | (Request made by a recipient country) |
| Study | (Basic Design Study conducted by JICA) |
| Appraisal & Approval | (Appraisal by the Government of Japan and Approval by Cabinet) |
| Determination of Implementation | (The Notes exchanged between the Governments of Japan and the recipient country) |

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Mission to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

(2) Basic Design Study**1) Contents of the Study**

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;
- b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
- c) confirmation of items agreed on by both parties concerning the basic concept of the Project;
- d) preparation of a basic design of the Project; and
- e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant

Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses a registered consulting firm selected through its own procedure (competitive proposal). The selected firm participates in the Study and prepares for a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country in order to maintain the technical consistency.

(3) Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for.

Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

5) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

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- a) to secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction;
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites;
- c) to ensure all expenses and prompt execution for unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
- d) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
- e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;

6) "Proper Use"

The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

8) Banking Arrangement (B/A)

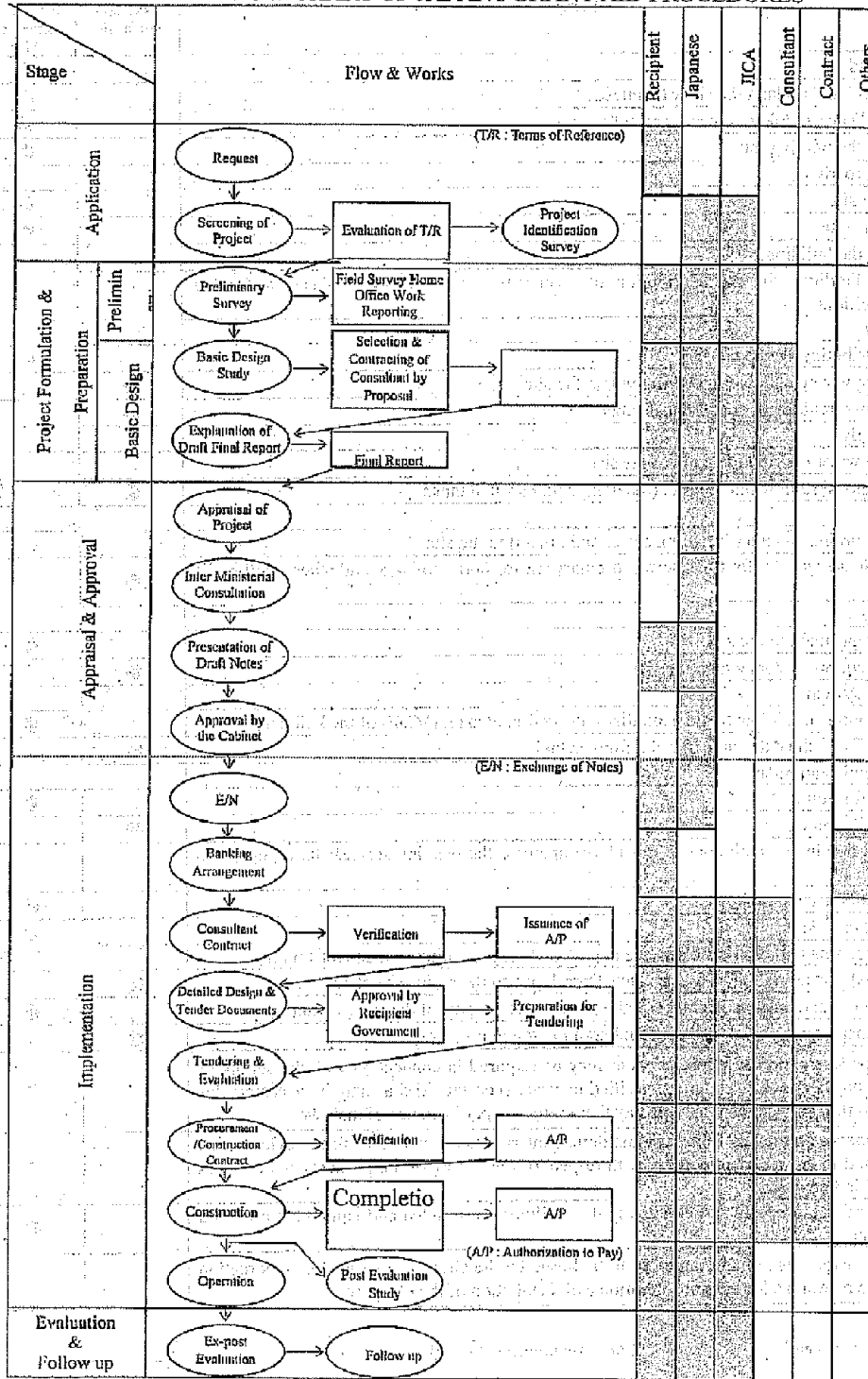
- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.
- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.



FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



Annex-5

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Major Undertakings to be taken by Each Government

| No | Items | To be covered by Grant Aid | To be covered by Recipient Side |
|----|---|----------------------------|---------------------------------|
| 1 | To secure land | | ● |
| 2 | To Clear, level and reclaim the site when needed | | ● |
| 3 | To construct gates and fences in and around the site | | ● |
| 4 | To construct the parking lot | | ● |
| 5 | To construct roads | | |
| | 1) Within the site | | ● |
| | 2) Outside the site | | ● |
| 6 | To construct the buildings | ● | |
| 7 | To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities | | |
| | 1) Electricity | | |
| | a. The distributing line to the site | | ● |
| | b. The drop wiring and internal wiring within the site | ● | |
| | c. The main circuit breaker and transformer | ● | |
| | 2) Water supply | | |
| | a. The city water distribution main to the site | | — |
| | b. The supply system within the site (receiving and elevated tanks) | ● | |
| | 3) Drainage | | |
| | a. The city drainage main (for storm, sewer and others) to the site | | ● |
| | b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site | ● | |
| | 4) Gas supply | | |
| | a. The city gas main to the site | | ● |
| | b. The gas supply system within the site | ● | |
| | 5) Telephone system | | |
| | a. The telephone trunk line to the main distribution frame/panel (MDF) of the building | | ● |
| | b. The MDF and the extension after the frame/panel | ● | |
| | 6) Furniture and Equipment | | |
| | a. General furniture | | ● |
| | b. Project Equipment | ● | |
| 8 | To bear the following commissions to a bank in Japan for the banking services based upon the B/A | | |
| | 1) Advising commission of A/P | | ● |
| | 2) Payment commission | | ● |
| 9 | To ensure unloading and customs clearance at port of disembarkation in recipient country | | |
| | 1) Marine (Air) transportation of the products from Japan to the recipient country | ● | |
| | 2) Tax exemption and custom clearance of the products at the port of disembarkation | | ● |
| | 3) Internal transportation from port of disembarkation to the project site | ● | |
| 10 | To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work. | | ● |
| 11 | To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract. | | ● |
| 12 | To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant | | ● |
| 13 | To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment | | ● |

(B/A: Banking Arrangement)

(A/P: Authorization to Pay)

Note: Gas Supply (No. 7-4) is not applicable.

(2) 基本設計概要説明時 M/D

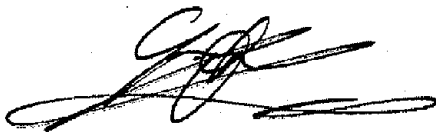
MINUTES OF DISCUSSIONS
on
The Basic Design Study on
the Project for Augmentation of Water Supply System in Kapsabet Town
(Explanation of Draft Final Report)

In August 2007, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Augmentation of Water Supply System in Kapsabet Town (hereinafter referred to as "the Project") to Republic of Kenya (hereinafter referred to as "Kenya"), and through discussion, field survey, and technical examination of the results of the survey in Japan, JICA prepared a Draft Final Report of the Basic Design study.

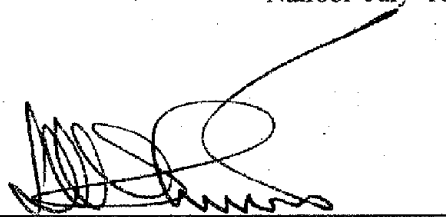
In order to explain and to consult with the Government of Kenya on the components of the Draft Final Report, JICA sent to Kenya the Draft Final Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. OMURA Yoshiki, Senior Advisor, Institute for International Cooperation, JICA, from July 8 to 18, 2008.

As a result of discussions, both sides confirmed the main items described on the attached sheets.

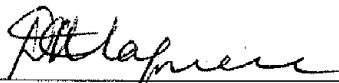
Nairobi July 16, 2008



Eng. OMURA Yoshiki
Leader,
Basic Design Study Team,
Japan International Cooperation Agency (JICA)



Eng. David Stower, CBS
Permanent Secretary,
Ministry of Water and Irrigation



Eng. Diru Magomere
Chief Executive Officer,
Lake Victoria North Water Services Board



Eng. Robert N. Gakubia, HSC
Director of Water Services,
Ministry of Water and Irrigation

ATTACHMENT

1. Components of the Draft Final Report

The Kenyan side agreed and accepted in principle the components of the Draft Final Report explained by the Team.

2. Japan's Grant Aid scheme

The Kenyan side understood the Japan's Grant Aid Scheme and would take the necessary measures and allocate necessary budget properly for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented. The Grant Aid Scheme and necessary measures were described in the Annex 4 and Annex 5 of the Minutes of Discussions signed by both sides on September 12, 2007 (hereinafter referred to as "the Previous M/D").

3. Responsible and Implementing Agency

- (1) The Responsible organization is the Ministry of Water and Irrigation.
- (2) The Implementing organization is the Lake Victoria North Water Services Board (hereinafter referred to as "LVNWSB"). LVNWSB has contracted the Kapsabet Nandi Water and Sanitation Co. Ltd. (hereinafter referred to as "KNWSC") for providing water supply services in the Project area.

4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of Kenya by the end of October 2008.

5. Other Relevant Issues

(1) Project Cost Estimate

The Team explained to the Kenyan side the project cost estimate as attached in Annex 1. Both sides confirmed that this cost estimate was provisional and would be examined further by the Government of Japan for its approval as the Grant. Furthermore, both sides confirmed that this project cost estimate should never be duplicated in any form nor released to any other party(s) until the relevant contracts are awarded by LVNWSB. This embargo is for securing fairness of tender procedure.

(2) Land Acquisition

The Kenyan side explained that based on the Previous M/D, the Kenyan side proceeded to secure the land for the proposed New Reservoir but at this moment the payment has not been effected. The Team emphasized land acquisition was prerequisite to the cabinet approval of the Japanese Government. Therefore, the Team strongly requested the Kenyan side to complete the land acquisition and submit a copy of the "Title Deed", which indicates land ownership, to JICA Kenya Office by the end of August 2008. LVNWSB committed itself to clear this issue by the

time.

(3) Plan for securing personnel of the KNWSC

The Team recommended the Kenyan side to employ one (1) technical manager by the commencement of the construction works, one (1) accountant manager by the end of October 2010 and additional fifteen (15) technical, sales and administrative staff for KNWSC by the end of March 2011 when the construction works of the Project would be completed and also recommended to employ ten (10) more staff by 2015 for smooth operation and maintenance of the water supply system. The Kenyan side agreed to employ appropriate number of staff for KNWSC in accordance with the Draft Final Report.

(4) Installation of service pipe and water meters

The Team proposed to install 400 service pipes and procure 1,700 water meters in the Project, and explained all the water meters should be installed properly by the Kenyan side at its own expense including service pipes installation for 1,300 households by the end of 2012. The Kenyan side understood that proposal made by the Team and committed to install all water meters procured by the Japanese side. In addition, as prerequisite for sustainability of the Project, the Kenyan side would allocate budget for the purchase and installation of approx. 4,400 water service pipes and 4,600 water meters starting from FY 2009/10 until 2011/12.

(5) Budget arrangement for operation and maintenance of the water supply facilities

The Team explained the estimated cost for management, operation and maintenance of water supply facility in Kapsabet Town as described in Annex-2 and requested the Kenyan side to allocate necessary budget for LVNWSB and KNWSC. The Kenyan side undertook to subsidize operation and maintenance cost of KNWSC during the construction period until 2012.

(6) Undertakings of the Kenyan side

In addition to the above undertakings, the Team requested the Kenyan side to carry out followings:

- a) Abide by major undertakings of the Government of Kenya regarding Japan's general grant aid scheme.
- b) Arrange for counterpart personnel
- c) Construct fences and electric power lines at the proposed water treatment plant and distribution reservoirs
- d) Improve / maintain access roads to construction sites
- e) Obtain related licenses and permits including right of way for pipelines
- f) Facilitate customs clearance for imported equipment and materials
- g) Secure lands for site office, base camp and stockyard for Japanese contractor and consultant

The Kenyan side agreed to the above.

(7) Capacity Development

Both sides concurred on the necessity of a technical assistance program so-called "Soft Component Program" for KNWSC in the Project and confirmed the contents of Soft Component Program as follows:

- Capacity enhancement of operation and maintenance skills of water supply facilities for technical staff of KNWSC
- Capacity enhancement of management and administration skills of KNWSC staff

The Kenyan side committed to deploy counterpart personnel to implement the Soft Component Program and bear their local cost.

(8) Tariff Study

With regard to management and administration aspects of water services, the Kenyan side requested the Team to carry out a study for water tariff revision for Kapsabet Town. The Team replied that the revision of water tariff should be the Kenyan side's mandate basically, but in the soft component program, a Japanese expert(s) would be able to support the Kenyan side's study for water tariff.

The Kenyan side understood the comment by the Team.

8
End

Confidential

Annex-1

Project Cost Estimates

Table-A. Cost borne by the Government of Japan

| Work Items | Amounts (million JPY) | |
|---|-----------------------|---------------------------------------|
| Water Supply Facilities · Rehabilitation of Existing Intake Weir · Construction of Water Treatment Plant · Construction of Service Reservoirs · Construction of Water Conveyance, Transmission and Distribution Pipelines · Installation of Service Pipes (400 connectics) | 1,550 | |
| Provision of Equipment and Materials · Water Meters including accessory such as saddle clamp, ferrule and piping materials · Water Meter Calibration Equipment · Water Quality Measurement Equipment · Spare Parts · Tools · Equipment and Software for billing/accounting system | 67 | 1,617 |
| Detailed Design, Construction/Supervision and Soft Component | | 231 |
| Total | | 1,848 (US\$ 15.348 million) |

Table-B. Costs borne by the Government of Kenya

| Work Items (Period 2009-2011) | Qty. | Unit | Amounts (thousand Kshs) |
|---|-----------|-------|---------------------------------------|
| Fence Construction | | | |
| New Water Treatment Plant | 420 | m | 1,203 |
| New Reservoir | 270 | m | 766 |
| Office Reservoir | 255 | m | 729 |
| Power Line for Water Treatment Plant | 1 | Site | 266 |
| Power Line for New Reservoir | 1 | Site | 475 |
| Power Line for Office Reservoir | 1 | Site | 208 |
| Installation of Water Meters | 400 | Units | 1,167 |
| Improvement/Maintenance of Access Roads to construction sites | 500 | m | 2,133 |
| Land Acquisition/Way Leave | 1 | lot | 2,000 |
| Vehicle (for softcomponent) | 1 *4) | Unit | 3,473 |
| Total Cost | | | 12,420 (US\$ 0.185 million) |
| (Period 2009/2010-2015) | | | |
| Installation of Service Pipes | 5,700 *1) | conn. | 13,025 |
| Installation of Water Meters | 5,900 *2) | Units | 17,326 |
| Service Pipe | 4,400 *3) | conn. | 25,652 |
| Water Meter | 4,600 *3) | Units | 20,929 |
| Total Cost | | | 76,932 (US\$ 1,146 million) |
| Grand Total Cost | | | 89,352 (US\$ 1,331 million) |

*1) 1,300(materials provided by Japan)+4,400(materials procured by Kenya) = 5,700 conn.

*2) 1,300(materials provided by Japan)+4,600(materials procured by Kenya) = 5,900 Units

*3) Materials procured by Kenya

*4) Based on the request of KNWSC

Annex-2

Annual Construction and O&M Costs

Table-C. Annual Construction Costs to be borne by Government of Kenya

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | Total |
|-----------------------|------------------|--------------------|--------|--|-------|-------|-------|------|--------|
| | Land Acquisition | Construction works | | Completion/Works by Kenya side (Installation of service pipe & water meters) | | | | | |
| Costs (thousand Kshs) | 2,000 | 26,276 | 39,319 | 8,669 | 5,674 | 4,634 | 2,780 | 0 | 89,352 |

Annual disbursement of Table-B.

Table-D. O&M Costs

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|--|------|------|------|-------|-------|-------|-------|-------|-------|
| No. of connections | 338 | 400 | 900 | 2,900 | 4,200 | 5,200 | 6,000 | 6,500 | 6,500 |
| Water production (m ³ /day) | 550 | 550 | 550 | 550 | 2,700 | 3,000 | 3,300 | 3,600 | 3,600 |
| O&M costs (million Kshs/yr) | 4.03 | 4.66 | 5.46 | 5.71 | 19.10 | 21.10 | 24.17 | 26.48 | 27.53 |

Note:

The above costs to be borne by the Government of Kenya are based on 2007 prices and 5% of annual price escalation.






(3) 技術協議書 (基本設計現地調査時)

TECHNICAL NOTE

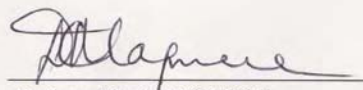
**ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR AUGMENTATION FOR WATER SUPPLY
SYSTEM IN KAPSABET TOWN
IN THE REPUBLIC OF KENYA**

**AGREED UPON BETWEEN LAKE VICTORIA NORTH WATER
SERVICES BOARD
AND
JICA STUDY TEAM**

25 SEPTEMBER, 2007



Mr. Nobuki ABE
Chief Consultant
JICA Study Team



Engineer Diru MAGOMERE
Chief Executive Officer
Lake Victoria North Water Services
Board (LVNWSB), Kakamega,
The Republic of KENYA



After a series of discussions during the field survey in Kenya from 26th August 2007 through 25th September 2007, the following points were agreed between Lake Victoria North Water Services Board (LVNWSB), Ministry of Water and Irrigation, the Republic of KENYA and the JICA Study Team (Team). Based on the agreement as well as the Minutes of Discussion signed on 12 September 2007, the Team will further analyze the results of field survey in consultation with JICA and concerned parties in Japan and will prepare a draft final report which includes the layout and design of the facilities and/or equipment for the Project.

1. Planning Frame of Augmentation of Water Supply System in Kapsabet Town

- | | |
|------------------------------|---|
| (1) Target year: | 2015 |
| (2) Service area: | Kapsabet Township and its surrounding area |
| (3) Population to be served: | 32,500 |
| (4) Daily water demand: | 3,600 m ³ /day (including, water loss) |

2. Request Components of the Project

Construction

- (1) Improvement of intake facility
- (2) Installation of raw water transmission main
- (3) Construction of water treatment plant
- (4) Installation of transmission pumps
- (5) Installation of transmission main
- (6) Construction of distribution reservoirs
- (7) Installation of distribution pipelines

Equipment

- (1) Water meters
- (2) Water quality analysis equipment (for Residual chlorine, pH, Turbidity and Jar testing)
- (3) Tools kits
- (4) Spare parts
- (5) Computers and software for custom services

3. Availability of Water Source from the Kabutie River

The Team explained the result of river flow analysis for the Kabutie River (ANNEX-A) which implies that there is a possibility of water shortage against the planned intake water volume of 3,800 m³/day in 10 year occurrence probability. With regard to this, LVNWSB understood that available water source to be tapped from the Kabutie River might be suppressed in a certain period of the drought year.

4. Raw Water Transmission Main from Intake to Water Treatment Plant

The Team explained the result of hydraulic analysis of raw water transmission main (ANNEX-B) and there is no necessity of raising the weir height in rehabilitation of the existing intake weir by replacement of the pipe with a larger diameter. LVNWSB understood the said measure.

5. Diagram of Water Supply Facilities from Intake to Distribution Reservoir

The Team explained the schematic diagram of the major water supply facilities from intake to

distribution reservoir (ANNEX-C). Particularly, among them, the Team emphasized that provision of a junction chamber in raw water transmission main and introduction of surface washing to sand filters of water treatment plant would be effective for O&M. LVNWSB understood the arrangements of the proposed water supply facilities.

6. Distribution Network

The Team explained the concept of the distribution network with presenting the schematic diagram (ANNEX-D). LVNWSB understood the basic concept of water distribution network.

7. Design standards

In principle, "Practical Manual for Water Supply Services in Kenya 2005." will be adopted for designing the above water supply facilities. According to the circumstances, however, Japanese design criteria and other standards adopted internationally shall be referred to.

8. Land Acquisition

LVNWSB will undertake letter of consent for some part of the planned land for raw water main, water treatment plant, transmission main and distribution reservoirs. LVNWSB promised to submit a copy of certificate of the land acquisition to Japanese side upon acquired.

9. Strengthening Staffs for Water Services Provider

LVNWSB recognized the necessity of strengthening the structure, business administration and sustainability of Kapsabet Nandi Water Sanitation Company (KNWSC) and promised to recruit technical/administrative staff of KNSWC in due time.

10. Soft component

The necessity of following fields of soft component was recognized.
 Training of O&M of water supply facilities and water leakage detection/repair/prevention
 Strengthening of metering, billing and administrative capability
 As for strengthening of metering, billing and administrative capability, LVNWSB will guide the staff of KNSWC in collaboration with other competent water services providers.

11. Water Rights/EIA

With regard to extraction of water from the Kabutie River, it is necessary that water rights be granted. LVNWSB will take appropriate action for getting water rights as earliest. In case that EIA is a condition for applying water rights, LVNWSB shall take due procedure.

ANNEX-A. Water flows of Kabutie River in dry season

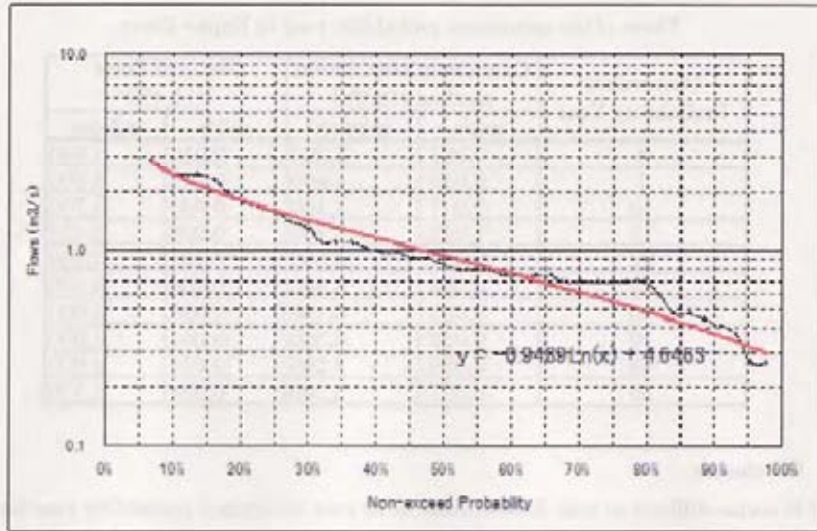
1. Kimondi river flows

Minimum flows of Kimondi River in each year

| Year | Low flow m3/s | Year | Low flow m3/s |
|------|------------------|------|------------------|
| 1965 | 0.901 | 1986 | 0.736 |
| 1966 | 0.686 | 1987 | 0.270 |
| 1967 | 0.408 | 1988 | 0.686 |
| 1968 | 0.736 | 1989 | 1.026 |
| 1969 | 0.788 | 1990 | 1.316 |
| 1970 | 0.736 | 1991 | 0.270 |
| 1971 | 0.450 | 1992 | 0.476 |
| 1972 | 0.962 | 1993 | 1.397 |
| 1973 | 0.788 | 1994 | 0.686 |
| 1974 | 0.843 | 1995 | 3.158 |
| 1975 | 0.736 | 1996 | 2.446 |
| 1976 | 0.962 | 1997 | 0.788 |
| 1977 | 0.901 | 1998 | 2.856 |
| 1978 | 3.317 | 1999 | 2.446 |
| 1979 | 2.323 | 2000 | 1.093 |
| 1980 | 0.686 | 2001 | 1.763 |
| 1981 | 0.476 | 2002 | 1.972 |
| 1982 | 0.377 | 2003 | 0.686 |
| 1983 | 1.572 | 2004 | 1.665 |
| 1984 | 0.686 | 2005 | 1.093 |
| 1985 | 0.595 | 2006 | 1.085 |
| | | 2007 | 2.531 |

Exceed and non-exceed probability

| No. | Year | Minimum Discharge | Exceed Probability $W=i/(n+1)$ | Non-exceed Probability $W=100\% \cdot i/(n+1)$ |
|-----|------|-------------------|-----------------------------------|---|
| 1 | 1987 | 0.270 | 2.3% | 97.7% |
| 2 | 1991 | 0.270 | 4.5% | 95.5% |
| 3 | 1982 | 0.377 | 6.8% | 93.2% |
| 4 | 1967 | 0.408 | 9.1% | 90.9% |
| 5 | 1971 | 0.450 | 11.4% | 88.6% |
| 6 | 1981 | 0.476 | 13.6% | 86.4% |
| 7 | 1992 | 0.476 | 15.9% | 84.1% |
| 8 | 1985 | 0.595 | 18.2% | 81.8% |
| 9 | 1966 | 0.686 | 20.5% | 79.5% |
| 10 | 1980 | 0.686 | 22.7% | 77.3% |
| 11 | 1984 | 0.686 | 25.0% | 75.0% |
| 12 | 1988 | 0.686 | 27.3% | 72.7% |
| 13 | 1994 | 0.686 | 29.5% | 70.5% |
| 14 | 2003 | 0.686 | 31.8% | 68.2% |
| 15 | 1968 | 0.736 | 34.1% | 65.9% |
| 16 | 1970 | 0.736 | 36.4% | 63.6% |
| 17 | 1975 | 0.736 | 38.6% | 61.4% |
| 18 | 1986 | 0.736 | 40.9% | 59.1% |
| 19 | 1969 | 0.788 | 43.2% | 56.8% |
| 20 | 1973 | 0.788 | 45.5% | 54.5% |
| 21 | 1997 | 0.788 | 47.7% | 52.3% |
| 22 | 1974 | 0.843 | 50.0% | 50.0% |
| 23 | 1965 | 0.901 | 52.3% | 47.7% |
| 24 | 1977 | 0.901 | 54.5% | 45.5% |
| 25 | 1972 | 0.962 | 56.8% | 43.2% |
| 26 | 1976 | 0.962 | 59.1% | 40.9% |
| 27 | 1989 | 1.026 | 61.4% | 38.6% |
| 28 | 2006 | 1.085 | 63.6% | 36.4% |
| 29 | 2000 | 1.093 | 65.9% | 34.1% |
| 30 | 2005 | 1.093 | 68.2% | 31.8% |
| 31 | 1990 | 1.316 | 70.5% | 29.5% |
| 32 | 1993 | 1.397 | 72.7% | 27.3% |
| 33 | 1983 | 1.572 | 75.0% | 25.0% |
| 34 | 2004 | 1.665 | 77.3% | 22.7% |
| 35 | 2001 | 1.763 | 79.5% | 20.5% |
| 36 | 2002 | 1.972 | 81.8% | 18.2% |
| 37 | 1979 | 2.323 | 84.1% | 15.9% |
| 38 | 1996 | 2.446 | 86.4% | 13.6% |
| 39 | 1999 | 2.446 | 88.6% | 11.4% |
| 40 | 2007 | 2.531 | 90.9% | 9.1% |
| 41 | 1998 | 2.856 | 93.2% | 6.8% |
| 42 | 1995 | 3.158 | 95.5% | 4.5% |
| 43 | 1978 | 3.317 | 97.7% | 2.3% |



Thomas Plot

$$Y = -0.9489 \times \ln(X) + 4.6463$$

Flows of the occurrence probability year in Kimondi River

| Occurrence Probability Year | Flows | |
|-----------------------------|-------|--------|
| | m3/s | m3/day |
| 5 | 0.49 | 42,200 |
| 7 | 0.42 | 36,500 |
| 10 | 0.38 | 32,500 |
| 15 | 0.34 | 29,500 |
| 20 | 0.33 | 28,100 |
| 25 | 0.32 | 27,200 |
| 30 | 0.31 | 26,700 |
| 40 | 0.30 | 25,900 |
| 45 | 0.30 | 25,700 |
| 50 | 0.30 | 25,600 |

2. Kabutie River flows

Estimation of flows in Kabutie River using the Kimondi River flows.

- 1) Catchment correlation method: 12.6%
- 2) Ratio of Kabutie flow to Kimondi: 11.4%

Flows of the occurrence probability year in Kaptie River

| Occurrence Probability Year | Catchment correlation method (12.6%) | | Ratio of flows (11.4%) | |
|-----------------------------|--------------------------------------|--------|------------------------|--------|
| | m3/s | m3/day | m3/s | m3/day |
| 5 | 0.061 | 5,300 | 0.056 | 4,800 |
| 7 | 0.053 | 4,600 | 0.048 | 4,200 |
| 10 | 0.047 | 4,100 | 0.043 | 3,700 |
| 15 | 0.043 | 3,700 | 0.039 | 3,400 |
| 20 | 0.041 | 3,500 | 0.037 | 3,200 |
| 25 | 0.040 | 3,400 | 0.036 | 3,100 |
| 30 | 0.039 | 3,400 | 0.035 | 3,000 |
| 40 | 0.038 | 3,300 | 0.034 | 3,000 |
| 45 | 0.038 | 3,200 | 0.034 | 2,900 |
| 50 | 0.037 | 3,200 | 0.034 | 2,900 |

3. Conclusion

- 1) It seems difficult to take 3,800m3/day in 10 year occurrence probability year but 5 year's of that is possible.

Minimum flows were appeared in 4th to 5th March 1987 and 4th to 6th March in 1991.

In 1987 year

Catchment correlation method: less than 4,000m3/day flow continued 12days and less than 5,000m3/day continued 33days

Ratio of Kabutie flow to Kimondi: less than 4,000m3/day flow continued 28days and less than 5,000m3/day continued 38days

In 1991 year

Catchment correlation method: less than 4,000m3/day flow continued 9days and less than 5,000m3/day continued 20days

Ratio of Kabutie flow to Kimondi: less than 4,000m3/day flow continued 19days and less than 5,000m3/day continued 25days

- 2) In drought year, 3,800m3/day water is not able to taken for about 30days.

Flows condition in 1987

| 1987 Year | Date | Kimondi River | | Kaptie River | |
|-----------|------|---------------|--------|--------------------------------------|-------------------------|
| | | m3/s | m3/day | Catchment correlation method (12.6%) | Ratio of flows (.11.4%) |
| | | | | m3/day | m3/day |
| Jan | 26 | 0.514 | 44,400 | 5,600 | 5,100 |
| | 27 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 28 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 29 | 0.441 | 38,100 | 4,800 | 4,300 |
| | 30 | 0.441 | 38,100 | 4,800 | 4,300 |
| | 31 | 0.408 | 35,300 | 4,400 | 4,000 |
| Feb | 1 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 2 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 3 | 0.370 | 32,000 | 4,000 | 3,600 |
| | 4 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 5 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 6 | 0.347 | 30,000 | 3,800 | 3,400 |
| | 7 | 0.347 | 30,000 | 3,800 | 3,400 |
| | 8 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 9 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 10 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 11 | 0.411 | 35,500 | 4,500 | 4,000 |
| | 12 | 0.514 | 44,400 | 5,600 | 5,100 |
| | 13 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 14 | 0.441 | 38,100 | 4,800 | 4,300 |
| | 15 | 0.441 | 38,100 | 4,800 | 4,300 |
| | 16 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 17 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 18 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 19 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 20 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 21 | 0.441 | 38,100 | 4,800 | 4,300 |
| | 22 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 23 | 0.598 | 51,700 | 6,500 | 5,900 |
| | 24 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 25 | 0.347 | 30,000 | 3,800 | 3,400 |
| | 26 | 0.347 | 30,000 | 3,800 | 3,400 |
| | 27 | 0.320 | 27,600 | 3,500 | 3,100 |
| | 28 | 0.320 | 27,600 | 3,500 | 3,100 |
| Mar | 1 | 0.320 | 27,600 | 3,500 | 3,100 |
| | 2 | 0.294 | 25,400 | 3,200 | 2,900 |
| | 3 | 0.294 | 25,400 | 3,200 | 2,900 |
| | 4 | 0.270 | 23,300 | 2,900 | 2,700 |
| | 5 | 0.270 | 23,300 | 2,900 | 2,700 |
| | 6 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 7 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 8 | 0.788 | 68,100 | 8,600 | 7,800 |

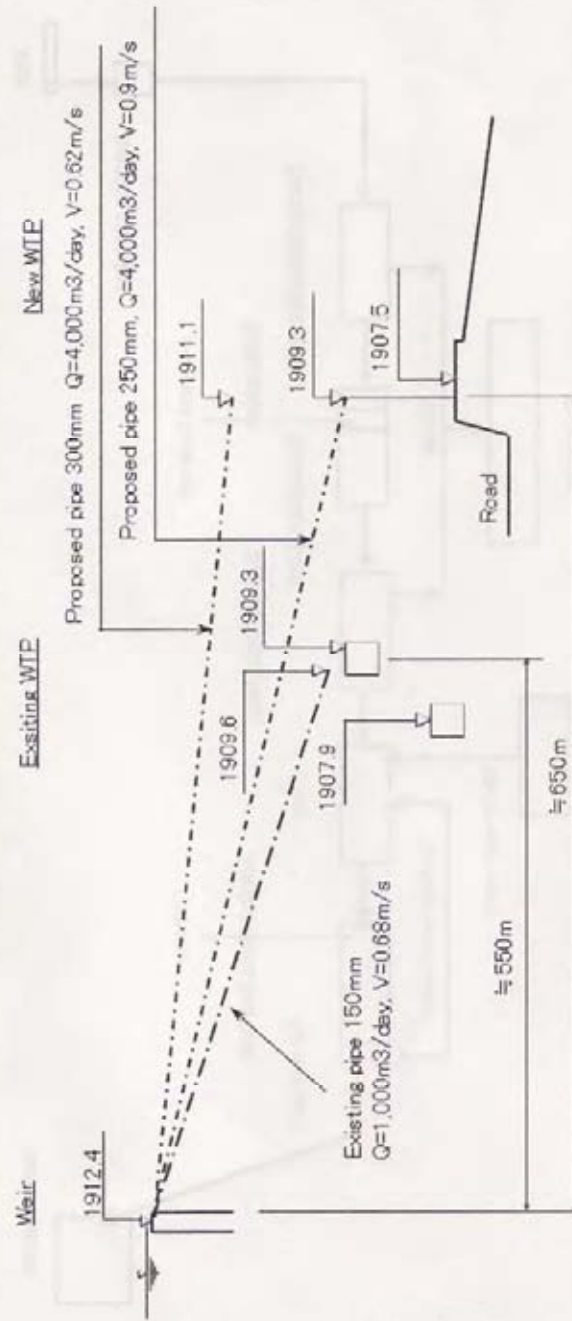
20

Flows condition in 1991

| 1991 Year | | Kimondi River | | Kaptie River | |
|-----------|-------|---------------|--------|--|-----------------------------------|
| Date | | m3/s | m3/day | Catchment correlation method (12.6%) m3/day | Ratio of flows (.11.4%) m3/day |
| Feb | 9 | 0.553 | 47,800 | 6,000 | 5,400 |
| | 10 | 0.553 | 47,800 | 6,000 | 5,400 |
| | 11 | 0.514 | 44,400 | 5,600 | 5,100 |
| | 12 | 0.514 | 44,400 | 5,600 | 5,100 |
| | 13 | 0.514 | 44,400 | 5,600 | 5,100 |
| | 14 | | | | |
| | 15 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 16 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 17 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 18 | 0.476 | 41,100 | 5,200 | 4,700 |
| | 19 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 20 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 21 | 0.408 | 35,300 | 4,400 | 4,000 |
| Mar | 22 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 23 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 24 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 25 | 0.441 | 38,100 | 4,800 | 4,300 |
| | 26 | 0.408 | 35,300 | 4,400 | 4,000 |
| | 27 | 0.377 | 32,600 | 4,100 | 3,700 |
| | 28 | 0.347 | 30,000 | 3,800 | 3,400 |
| | 1 | 0.320 | 27,600 | 3,500 | 3,100 |
| | 2 | 0.320 | 27,600 | 3,500 | 3,100 |
| | 3 | 0.294 | 25,400 | 3,200 | 2,900 |
| | 4 | 0.294 | 25,400 | 3,200 | 2,900 |
| | 5 | 0.270 | 23,300 | 2,900 | 2,700 |
| | 6 | 0.270 | 23,300 | 2,900 | 2,700 |
| 7 | 0.294 | 25,400 | 3,200 | 2,900 | |
| 8 | 0.320 | 27,600 | 3,500 | 3,100 | |
| 9 | 0.377 | 32,600 | 4,100 | 3,700 | |
| 10 | 0.408 | 35,300 | 4,400 | 4,000 | |
| 11 | 0.476 | 41,100 | 5,200 | 4,700 | |
| 12 | 0.553 | 47,800 | 6,000 | 5,400 | |
| 13 | 0.640 | 55,300 | 7,000 | 6,300 | |

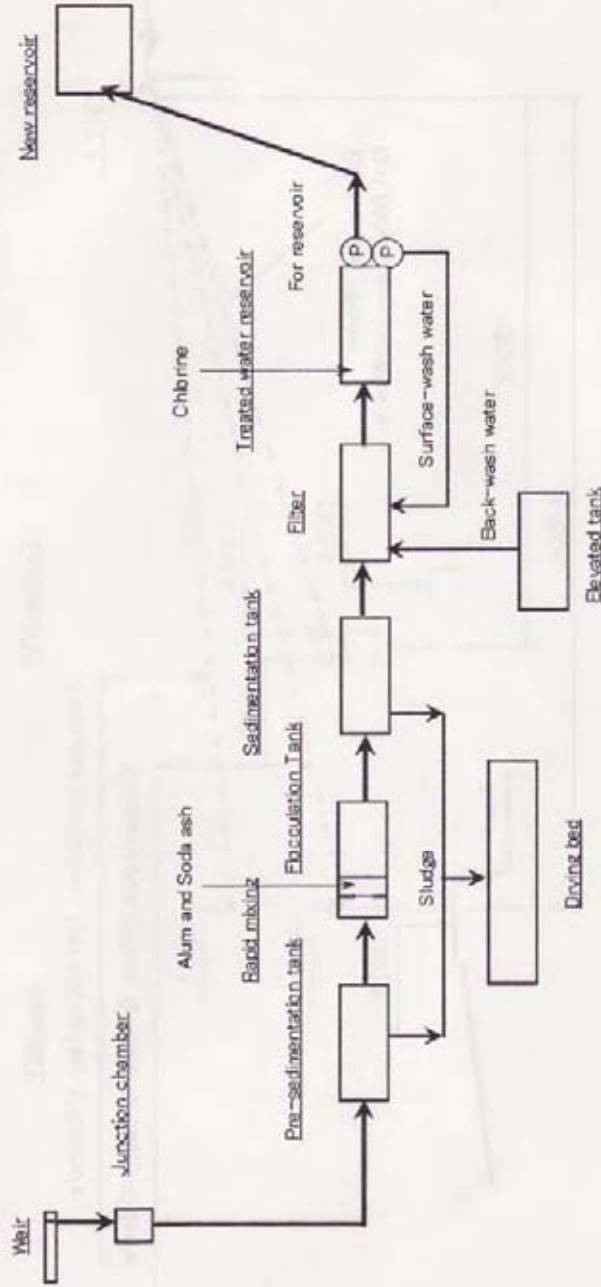
ANNEX-B Raw water transmission main from intake weir to water treatment plant

1. Hydraulic gradient are shown in the next figure. Existing weir level is enough to convey the raw water to new treatment plant.



A-7

ANNEX-C Diagram from intake, water treatment plant to new reservoir.

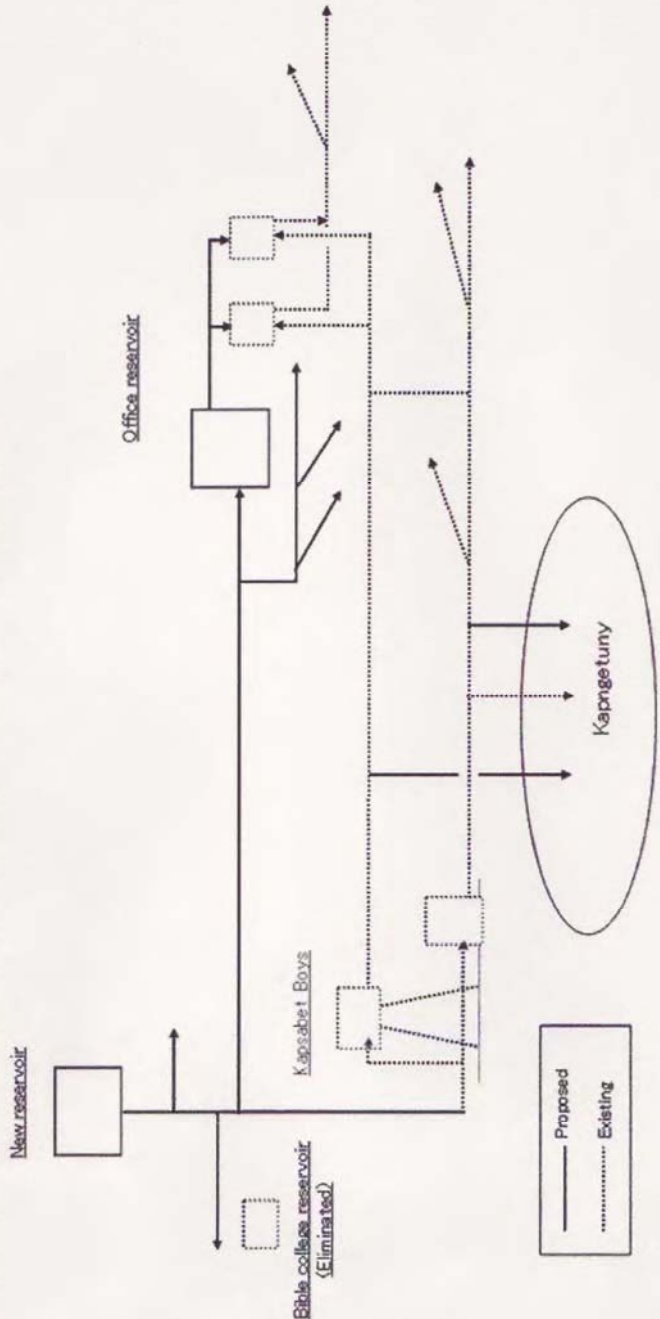


A-8

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ANNEX-D Distribution network

1. Basically new distribution pipe will not be connected to existing pie except Kapngeturu area.



A-9

2 (B)