

スリ・ランカ  
上水道分野  
プロジェクト形成調査結果資料  
(内部検討資料)

平成11年3月

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上水道分野  
プロジェクト形成調査結果資料  
(内部検討資料)

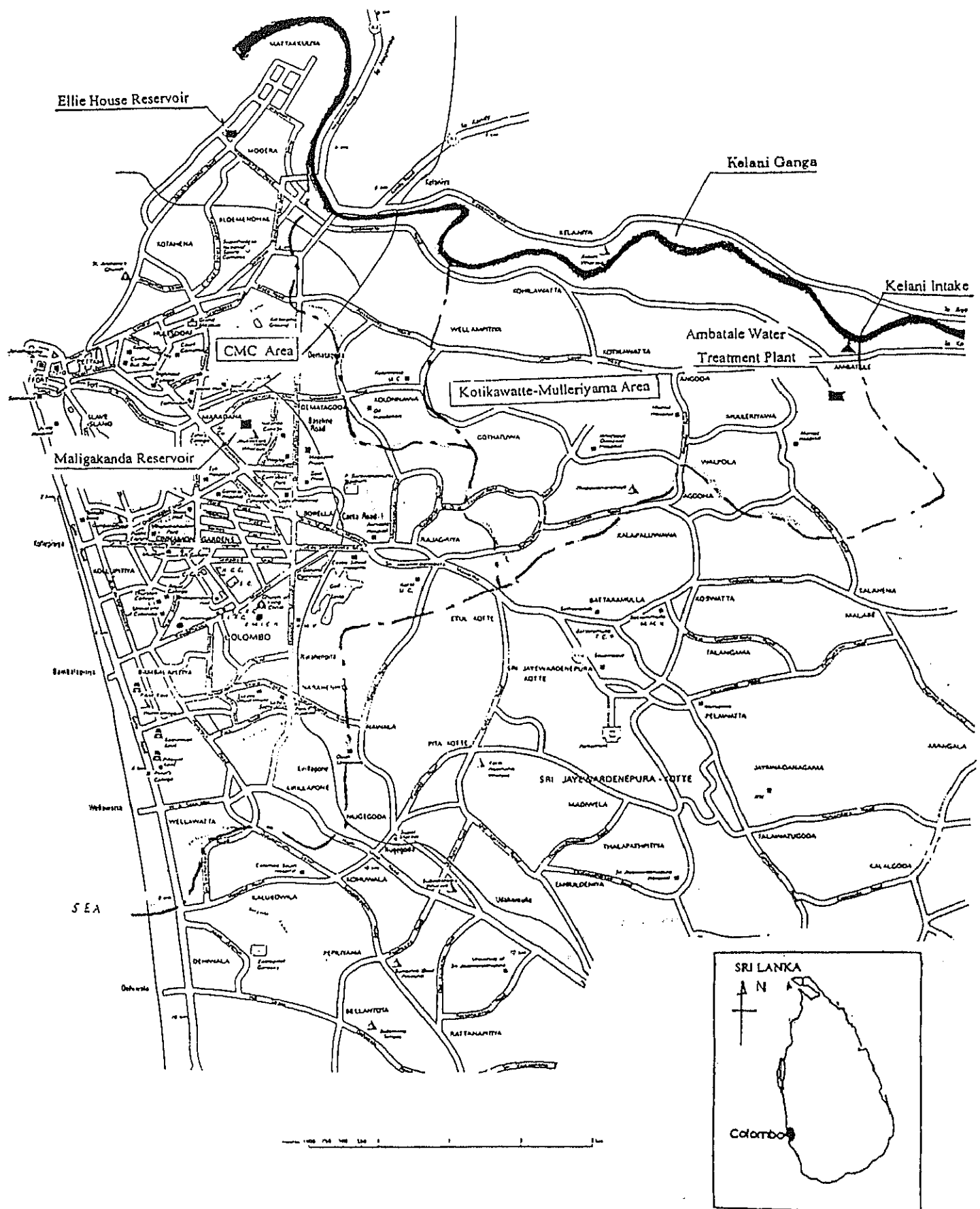
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## Location Map





# 目 次

## 地 図

1 調査の目的 .....	1
2 調査団の構成 .....	1
3 調査日程 .....	2
4 調査結果概要 .....	2
(1) 案件形成協議概要 .....	2
(2) S/W（案）協議概要 .....	3
(3) 調査団長名のレター .....	5
(4) 結論 .....	5
(5) 検討事項 .....	6
(6) 事務所依頼事項 .....	6
5 今後の予定 .....	6
参考資料 .....	7
主要面会者リスト .....	9
調査団長発出レター .....	10
OECD審査ミッションM/D .....	30
対処方針会議資料 .....	68
報告公電 .....	75
別FAX公信 .....	77

## 1. 調査の目的

### (1) 調査の目的

スリ・ランカ国政府より要請されているコロombo市における無収水削減のための円借款事業に関し、同事業の実施設計部分を連携D/Dとして実施することについて先方政府の意向を確認し、案件形成（要請書の作成支援等）を行う。

あわせて、開発調査以外の技術協力スキームについても、同円借款事業との連携の可能性を検討する。

なお、先方政府が連携D/Dのスキームを理解しかつ当方による実施を要望する場合には、上記に加え、可能な範囲でS/W（案）の骨子についても協議するものとする。

### (2) 調査の背景・経緯

大コロombo圏（580km<sup>2</sup>、人口290万人）の水道はケラニ川を主水源として同圏人口の48％に給水しているが、同圏の水需要は近年急速に伸びており、水資源量の確保及び関連水道施設の整備は緊急の課題である。

こうした状況に対し、JICAは「大コロombo圏給水拡張計画調査」（94年11月調査終了）を実施し、2020年までの水需要に対処する同圏給水マスタープランの見直し、2010年を目標年次とするカル川を新規水源とした水道システム確立に係るフィージビリティ調査を実施した。97年には、同調査結果に基づき、OECDにより「カル川水源開発・給水拡張事業」に係る円借款が供与されている。また、90年以降、OECDではこの他に「コロombo東部上水道事業」を初めとした給配水拡張整備に協力している。

一方、本年2月に実施された「コロombo東部上水道事業」に係る援助効果促進調査（SAPS）では、大コロombo圏の無収水は47％であり、特にコロombo市に限れば57％と際だって高いことが指摘された。同圏の水源が限られていることから、将来的な需要増に対応するためには、上記事業の実施に加え、コロombo市の無収水を削減することが不可欠であると考えられる。

現在、スリ・ランカ国政府から、コロombo市（Colombo Municipal Council；CMC）における無収水率削減のための円借款が要請されており、実施設計部分を連携D/Dとして実施することが期待されるが、連携D/Dは本年度から採用された新たなスキームということもあり、現在までのところ開発調査としての正式要請はなされていない。また、円借款要請に含まれている無収水削減プログラムは、技術協力のスキームでアクションプログラムを作成することにより、効果的な事業実施が可能となる。

かかる状況を踏まえ、本調査では、上記「調査の目的」に記す調査・検討を行い、JICAによる協力の可能性を検討するものである。

## 2. 調査団の構成

氏名	担当分野	派遣期間	現職
藤谷 浩至	総括	99.1.23～1.30 (8日間)	JICA 社会開発調査部 社会開発調査第二課 課長代理
中川 享之	調査企画	99.1.23～1.30 (8日間)	JICA 社会開発調査部 社会開発調査第二課 職員

### 3. 調査日程

日順	月日	曜日	宿泊地	調査行程
1	1/23	土	コロンボ	東京発（12：00/SQ997）→シンガポール着（18：20）※ シンガポール発（21：00/SQ402）→コロンボ着（22：40）
2	1/24	日	〃	午前：団内打ち合わせ 午後：現地踏査（コロンボ市内給配水施設、配水池） OECE審査ミッションとの打合せ
3	1/25	月	〃	午前：JICA事務所打合せ 午後：住宅・建設・公共事業省表敬 国家上下水道公社との協議
4	1/26	火	〃	午前：国家上下水道公社との協議 午後：日本大使館表敬 現地踏査（OECEカル河水源開発・給水拡張事業「シャンティ生活改善パイロット・スキーム」）
5	1/27	水	〃	国家上下水道公社との協議
6	1/28	木	〃	午前：財務計画省外資局表敬・協議 午後：国家上下水道公社との協議
7	1/29	金	〃	午前：財務計画省外資局、住宅・建設・公共事業省との協議 午後：日本大使館、JICA/OECE事務所報告 現地踏査（コロンボ市内漏水修理工事現場ほか） （中川） コロンボ発（23：55/SQ401）
8	1/30	土	東京	（中川） →シンガポール着（05：45） シンガポール発（08：35/JL712）→東京着（15：55）  （藤谷） コロンボ発（01：40/TG308）→バンコク着（06：00）※※

※ OECE審査ミッション（1/17～1/30）の後半日程に合流。先方関係機関との主要な協議はOECE審査ミッションと共同で行った。

※※藤谷団長は本件に引き続きタイ国コクインナン導水計画調査（IT/R協議）に参团（H11.1.30～H11.2.3）。

### 4. 調査結果概要

標記調査団は、平成11年1月24日よりコロンボ市において現地踏査・協議を行い、1月29日、別添4のとおりスリ・ランカ国住宅・建設・公共事業省に対し調査団長名にてレターを発出した。

調査概要については以下のとおり。

#### （1）案件形成（TOR作成支援）協議概要

調査団は、JICAスリ・ランカ事務所及びOECE審査ミッションとの協議を踏まえ、1月25日、住宅・建設・公共事業省ならびに国家上下水道公社に対し瑕疵担保責任を含む連携D/Dスキームに係る説明を行い、スリ・ランカ側の理解を得た。

TOR（案）は案件採択を必ずしも確約するものではないことを説明の上、翌26日及び27日の両日にわたりOECE審査ミッションを交え案件形成に係る協議を行った結果、



TOR内容について概ね当方で合意した。  
TOR骨子は以下のとおり（別添4参照）。

ア 予備調査

- ①コロンボ市水供給に係る既存調査のレビュー
- ②現状の水需要のレビュー
- ③既存給水施設の供給能力の分析・評価
- ④貧困地区、公共水栓等における無収水の実態把握

イ 大中口径管・小口径管のリハビリに係る詳細設計

- ①既存大中口径管及びバルブの現状詳細調査
- ②現状の漏出量の詳細調査
- ③既存配水管網図のレビュー
- ④小口径管及びバルブのリハビリ計画策定のためのモデル地区の選定
- ⑤大・中口径配水システムのリハビリ計画
- ⑥小口径配水システムのリハビリ計画

ウ Maligakanda配水池及びEllie House配水池のリハビリに係る詳細設計

- ①施設計画及び設計
- ②配水池内既存関連施設の移転計画
- ③断水対策を含めた工事計画

エ Kottikawatte地区及びMulleriyama地区の水供給に係る詳細設計

- ①既存給配水システムのレビュー
- ②施設計画及び設計
- ③工事計画

オ 無収水削減に係るアクションプランの策定

- ①漏水コントロール及び運営計画
  - ・漏水検知
  - ・違法接続対策
  - ・メーター検診、料金徴収改善
  - ・計画住宅地区の漏水削減
- ②低所得者層の住環境改善
  - ・公共水栓改善
  - ・貧困層居住地区対策

カ 事業費積算

キ 無収水削減アクションプランに係るワークショップの開催

ク プロジェクト評価及び提言

ケ 実施計画の策定

コ 仕様書及び入札図書の作成

(2) S/W（案）協議概要

調査団は、案件形成に係る協議結果を踏まえ、OECD審査ミッションを交え1月27日及び28日の両日にわたり、先方関係機関との間でS/W（案）に係る協議を行った。

S/W（案）は、案件採択を約するものではなく、また案件採択までの間で内容の変更があり得ることを説明した。協議での主な確認事項は以下のとおり（別添4参照）。

ア 本調査団の経緯及び位置づけ

今回調査の経緯（OECFとの関係）及び位置づけ（案件採択を確約するものではない）を説明し、スリ・ランカ側の理解を得た。

イ 連携D/Dスキーム

連携D/Dスキームについて説明を行い、瑕疵担保責任を含めスリ・ランカ側の合意を得た。

ウ 上位目標

本調査の上位目標は、水供給システムの改善を通じ住民により質の高いサービスを提供することである旨、先方より説明があった。

エ 調査対象地域

小口径管及びバルブのリハビリについては、OECFとスリ・ランカ側との合意に基づき、コロombo市内の「コロombo1」地区のみが対象である旨、先方より説明があった。

オ 技術移転

スリ・ランカ側から、漏水コントロール及び管網のリハビリに係るカウンターパート研修を実施してもらいたい旨、言及があった。また、本格調査期間中、料金徴収、会計、在庫管理等に関するワークショップを開催してもらいたい旨、言及があった。

カ 調査実施体制

Project Implementation Unit（PIU）に関し、スリ・ランカ側から構成メンバー等の詳細についてはOECFと協議中との説明があったため、協議の進捗及び結果についてはJICAスリ・ランカ事務所に適宜報告するよう要請した。

キ 配水管網のデジタル・マッピング化

ノルウェー政府による協力が予定されていることが判明したため、OECFではマッピングは含まないこととした。そこでD/Dにおいては、マッピングについては既存管網図に新規情報を追加するにとどめ、マッピングそのものは行わないであろう旨述べた。

ク 小口径管の及びバルブ詳細設計

小口径管の詳細設計に関しては、典型的な地区を選定してプロトタイプ的设计を行い、その結果から「コロombo1」地区全体を推計すること、また、従ってある程度の誤差を有する実施設計とならざるを得ないことを説明し、スリ・ランカ側の合意を得た。

ケ Maligakanda配水池のリハビリ計画

工事期間中の断水対策のため、配水池敷地内にある事務所を別の場所に移転しそこに追加の配水池を設けることが必要であること、またOECFは事務所移転計画をコンポーネントに含めている旨、スリ・ランカ側から言及があった。そこでD/Dを実施する場合には、現事務所と同レベルの事務所の設計、費用の積算までが含まれるであろう旨、調査団は述べた。

コ Kottikawatte地区及びMulleriyama地区の水供給に係る詳細設計

同地域の配水施設増強計画は基本的に世銀による調査結果に基づいているため、D/Dにおいて、最適案選定のため同レポートのレビューを行うよう、先方より要請があった。

#### サ 無収水削減に係るアクションプランの策定

スリ・ランカ側から、貧困層居住地区におけるアクションプランについては低所得者層の住環境改善の観点から策定してもらいたい旨、言及があった。

また、本格調査において、アクションプランに含められるべき具体的内容として、以下のアイデアが出された。

- ・漏水検知及び改修工事に係る技術的アドバイス
- ・NWSDB財務セクションとエリアオフィサーとの情報共有システム
- ・料金徴収、会計、在庫管理等に係る運営マニュアルの作成
- ・合法的かつ合理的な水利用促進のための住民啓蒙活動
- ・公共水栓から戸別接続への住民参加による改善計画
- ・水利用増加に伴う排水システムの改善

なお、これら、アクションプランの中で実施される具体的内容については、今後更に検討、協議した上で、S/W署名までに確定することとした。

#### シ レポート

種類、部数についてS/W案の通りで異存ない旨、先方が表明した。

#### ス 車輛

調査に必要な車輛の提供については、スリ・ランカ側から予算的な制約等から困難となる可能性がある旨、言及があった。

#### セ 調査の継続性

調査の継続性の観点から、D/Dを実施したコンサルタントが、OECFポーシオンであるS/Vについても実施するよう、先方から要望が出された。調査団は、本件についてはOECFとスリランカ側とで、協議、決定されるべきである旨説明した。

### (3) 調査団長名のレター

先方との協議内容及び結果について、主管官庁である住宅・建設・公共事業省に対し、調査団長名のレターを発出した。

また、同写しを財務計画省外資局、国家上下水道公社、在スリ・ランカ日本大使館、OECF駐在員事務所、JICAスリ・ランカ事務所あてに発出した。

### (4) 結論

作成されたTORは、スリ・ランカ国政府から日本国政府に対し間もなく発出される予定である。

既存配水施設の改善は、限られた水源の有効利用及び事業体の経営改善の観点から意義が高く、また無収水削減プログラムは技術協力的な性格も有することから連携D/D案件としての必要性も認められる。

今次調査では、国家上下水道公社を始め、先方関係機関の本件に対する要望が極めて高いことが確認された。また、OECF審査ミッションも、本案件については、D/D部分をOECFポーシオンに含めない形でM/Dを取りまとめている。従って、T/Rが日本国政府宛提出された後、できるだけ早期に採択すべき案件と思料する。

また、本件調査はソフト的な性格も有することから、他の技術協力スキーム（専門家、協力隊員等）との組み合わせより効果を高めることについても、帰国後に可

能性を検討したい。

#### (5) 検討事項

今回調査では、OECF「カル河水源開発・給水拡張事業」に係る「シャンティ生活改善パイロット・スキーム」現場を視察した。同スキームは、住民参加型により大コロombo圏の貧困層居住地区（シャンティ）における水道・下水・排水を整備し住民の生活改善を図ることを目的としており、青年海外協力隊の参画も得て実施されているが、本件調査のアクションプラン策定にあたっても参考にすべきものと思われる。

#### (6) 事務所依頼事項

以下の事項について、JICAスリ・ランカ事務所に依頼した。

##### ア TOR発出支援

TORについては、国家上下水道公社及び住宅・建設・公共事業省に対し、TOR(案)を手交した。本案については速やかに外交ルートを通じ日本国政府に要請するよう依頼したが、進捗状況のフォロー並びに、在スリ・ランカ国日本大使館からの指示があれば必要な側面支援につき協力願いたい。

##### イ PIU実施体制

本件調査では、Project Implementation Unit (PIU) の設立について先方より説明があったが、構成メンバー等については、OECFサイドでも現在の体制案では必ずしも十分ではない、との認識で、コロombo事務所が今後フォローするとのことであったので、適宜進捗状況及び検討結果について情報を入手し、連絡願いたい。

##### ウ S/W署名及び役務団員の派遣

案件採択、別途指示が出されたのち、概ね別添（案）に基づきS/Wを署名することになるが、事務所サイドによる署名の可能性も高いので、あらかじめ承知おき願いたい。

なお、本格調査の実施計画策定のため、別途指示後、役務団員を派遣予定。

#### 5. 今後の予定

別途指示後、役務団員の派遣及びS/Wの署名を行う。S/W署名約4カ月後、本格調査を開始予定。

# 参考資料



## 主要面会者リスト

### Ministry of Finance and Planning

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### JICAスリ・ランカ事務所

狩野 良昭

所長

永石 雅史

副参事

### 青年海外協力隊

今里 いさ

シニア隊員

小椋 知子

村落開発普及隊員

January 29, 1999

Mr. V. K. Nanayakkara,  
Secretary to the Ministry of Housing and Urban Development

Dear Sir ,

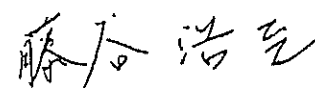
Subject : Project Formulation Study on Water Supply of Colombo City  
in the Democratic Socialist Republic of Sri Lanka

Thank you very much for your kind cooperation for our Project Formulation Study Team (JICA Mission). I am pleased to inform you that our Team have successfully completed our tasks and that the main results are as follows.

1. It was Informed to JICA Mission that NWSDB would officially submit the request and its Terms of Reference (T/R) (Appendix I ) of "The Detailed Design Study on the Project for Reduction of Non-Revenue Water in the Greater Colombo area in the Democratic Socialist Republic of Sri Lanka".
2. Based on the T/R, JICA Mission prepared draft Scope of Work for the Study (S/W) as a discussion material (Appendix II ) under the condition that it did not mean any commitment on the implementation of the Study. It is not finalized yet and would be subject to change until the decision of the implementation of the Study is made by the Government of Japan.
3. Sri Lanka side and JICA Mission held a series of discussions on the T/R and draft S/W. The main issues discussed between organizations concerned and JICA Mission are noted in Appendix III.

I will also report these result to the organizations concerned in Japan after my returning.

Sincerely yours ,



Koji Fujiya

Leader of the Project Formulation Study Team ,  
Japan International Cooperation Agency (JICA)

CC :Mr. J. H. J. Jayamaha      Director General

Dr. N. Sunil K. N. de Silva      Chairman

Mr. Kawamura

First Secretary

Mr. Koga

Chief Representative

Mr. Kano

Resident Representative

Department of External Resources ,  
Ministry of Finance and Planning

National Water Supply and Drainage Board

Embassy of Japan

OECD Colombo Office

JICA Sri Lanka Office



**APPLICATION FOR THE  
TECHNICAL COOPERATION (DEVELOPMENT STUDY)  
BY THE GOVERNMENT OF JAPAN**

**1. Project Digest**

- (1) Project Title: Detailed Design Study on the Project for Reduction of Non-Revenue Water in the Greater Colombo area in the Democratic Socialist Republic of Sri Lanka
- (2) Location: Colombo Municipal Council (CMC) area and Kotikawatte - Mulleriyawa Areas
- (3) Implementing agency: National Water Supply and Drainage Board (NWS&DB)  
 Number of the staff of the Agency: 7462  
 Budget allocated to the Agency: SL Rs. 4,136,000,000.00  
 Organization chart: Attached
- (4) Justification of the project:  
 The present water loss ratio in Greater Colombo is estimated at 33%, and the figure in CMC is 36%. The present Non-Revenue Water (NRW) ratio in CMC is estimated at 57%.

If the level continues, Greater Colombo will face water shortage before the year 2001. According to water demand projection based on the data used in the demand projection for Kalu Ganga Water Supply Project, the water shortage is anticipated after the year 2003 and approximately 70,000 m<sup>3</sup>/d of water will be short in 2006 even the Stage I of Phase I for Kalu Ganga Water Project is implemented on time, in case that the present level of water loss will continue.

In contrast, if rehabilitation programme for reduction of NRW is carried out for CMC area, water shortage of Greater Colombo will not occur severely even though water loss level outside CMC is assumed to continue at the present level.

Moreover, it should be stressed that water resources for Greater Colombo is limited as the Kelani River, which covers 80% of water supply, has been almost fully developed as a water source. Therefore, the development of another water source, Kalu Ganga, was planned in order to meet increasing demand. However, even though Stage I of

Phase I for Kalu Ganga Project, of which the cost was estimated at about Rs. 5.8 billion, will be completed as planned with the capacity of 60,000m<sup>3</sup>/d in 2003, approximately 70,000m<sup>3</sup>/d of water will be short in 2006 if the rehabilitation programme is not implemented. Therefore, it is easily understood that if the rehabilitation programme is not implemented, a significant capital investment on water resources development will be further required.

Additionally, from the financial viewpoints, the rehabilitation programme will bring NWSDB two types of benefit. Firstly, the water treatment plants in Greater Colombo will be able to decrease the water production by the amount of decreased water loss thanks to the rehabilitated pipes and valves. This decrease of production will benefit NWSDB in the form of variable cost savings at the water treatment. Secondly, thanks to the activities for NRW reduction, which will be conducted in combination with the rehabilitation programme, those unregistered users will be converted to legalized customers. Also as a result of the NRW reduction activities, those already registered customers who illegally use a part of their consumption will be detected and their unbilled consumption will become billed consumption. Those two types of benefit will be estimated at Rs. 900 million altogether.

In conclusion, the implementation of the rehabilitation programme in CMC area in conjunction with the NRW reduction programme is essential for sustainability of water supply for Greater Colombo.

- (5) Desirable time of commencement of the project: as early as possible after the commitment of the Japanese Yen Loan
- (6) Prospective funding source: Japanese Government (Japanese Yen Loan)
- (7) Other relevant projects:
  - ADB pilot project (conducted since 1996),
  - Clean Settlement Programme under the financial assistance of IDA,
  - Community Water Supply and Sanitation Project under the finance of ADB, Greater Colombo Mapping of distribution system assisted by the Norwegian Government
  - French assisted distribution system modeling project.

## **2. Terms of reference of the proposed Study**

### **(1) Necessity of the Study**

High ratio of system leakage of water needs urgent improvement because of limited water resources in Colombo. NRW reduction will also increase the revenue and improve the financial situation, which contributes to offer better service on water supply.

### **(2) Necessity of the Japanese Technical Cooperation**

Since the rehabilitation programme and NRW reduction programme had been formulated through the Special Assistance for Project Sustainability (SAPS) assisted by Overseas Economic Cooperation Fund of Japan (OECF). These programmes are also anticipated to be implemented under the financial assistance of OECF. The Detailed Design Study of the programmes is also expected to be conducted with getting the technical assistance of Japan, which has close cooperation with Japanese Yen Loan.

### **(3) Objectives of the Study**

- 1) To conduct a detailed design in order to prepare the tender documents of the following projects agreed on between the Overseas Economic Cooperation Fund (hereinafter referred to as "OECF") and the Government of Sri Lanka, which will contribute to improvement of the efficiency and NRW reduction of the existing water supply system in CMC,
  - a. Rehabilitation program for large diameter pipes and valves
  - b. Rehabilitation program for small diameter pipes and valves
  - c. Rehabilitation program for Maligakanda and Ellie House Reservoirs
  - d. Improvement program of water distribution system to Kotikawatte - Mulleriyawa Areas
- 2) To formulate action plans for NRW reduction and prepare the necessary tender documents, which are also agreed on between OECF and the Government of Sri Lanka, and
- 3) To pursue technology transfer to the counterpart personnel in the course of the Study.

### **(4) Areas to be covered by the Study**

The Study shall cover the whole area of CMC and Kotikawatte - Mulleriyawa Areas.

### **(5) Study Organization**

National Water Supply and Drainage Board (hereinafter referred to as "NWS&DB") shall act as a counterpart agency to the Japanese Study Team and also as a coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

Project Implementation Unit (hereinafter referred to as "PIU"); will be established under the Addl. GM (CMR) of NWS&DB for the implementation of the project. The counterpart team of the Study will be included in PIU.

A steering committee will be also established under the Chairman Secretary, M/HUD for the coordination and advise to PIU.

NWSDB will, as the executing agency of the project, take responsibilities that may arise from the products of the Study.

(6) Scope of the Study

1). Preliminary Study

- (a) Review of the previous studies and projects related to the water supply system and water demand in C.M.C, Kotikawatte - Mulleriyawa Areas.
- (b) Estimate of the present water demand by districts
- (c) Analysis and assessment of the capacity of the existing water supply system
- (d) Understanding of the condition of NRW through field reconnaissance
  - I. tenement gardens
  - II. public stand posts
  - III. others

2). Detailed Design for rehabilitation of large diameter pipes and small pipes

- (a) Detailed survey on the present conditions of large diameter pipes and valves which should be rehabilitated or reinforced
- (b) Investigation on the present water leakage
- (c) Review of existing distribution maps
- (d) Selection of typical districts for prototype design of the rehabilitation program of small diameter pipes and valves
- (e) Rehabilitation plan of large diameter pipes and valves
- (f) Rehabilitation plan of small diameter pipes and valves

- 3). Detailed Design for rehabilitation of Maligakanda and Ellie House Reservoirs
  - (a) Facility plan and design
  - (b) Relocation plan of the existing related facilities
  - (c) Construction plans including counter measures to water suspension during the construction period
- 4). Detailed Design for enhancement of water supply to Kotikawatte - Mulleriyawa Areas
  - (a) Review of existing water supply system
  - (b) Facility plan and design
  - (c) Construction plan
- 5). Formation of NRW reduction action plan
  - (a) Leakage Control and its operational plan
    - a) Planning for water leakage detection
    - b) Planning for reduction of illegal connection
    - c) Planning for improvement of metering, billing and collection
    - d) Planning for wastage reduction in apartment housing areas
  - (b) Low Income Settlement Environment Improvement
    - a) Planning for improvement of public standpost management
    - b) Planning for rational water use in tenement gardens
- 6). Cost estimation of each projects
- 7). Workshop on the NRW reduction action plan
- 8). Project Evaluation on social impact and recommendation
- 9). Implementation Program
- 10). Preparation of specifications, cost estimates and drafts tender document for each project in conformity with "the Guidelines for Procurement under OECF loans"

- (7) **Study Schedule**  
The Study should be started at the earliest possible date and about 14 months period will be required for the Study.
- (8) **Expected Major Outputs of the Study**  
Draft Tender Documents for each projects of the programme (the components of the projects are changeable during the Study). The Draft Tender Documents should be composed of the designs and drawings, specifications, Bill of Quantities, cost estimates, and other necessary documents for tender.
- (9) **Request of the Study to other Donor Agencies: None**

### **3. Construction supervision**

Construction supervision shall not be part of this consultancy assignment, and shall be covered under the OECF component of this project.

However, in order to maintain continuity, there is a possibility that the same consultant is appointed for the construction supervision stage, with the concurrence of OECF and GOSL. This part of the contract shall be a separate contract and negotiated under OECF and GOSL procurement procedures.

### **4. Facilities and information for the Study Team**

- (1). **Assignment of counterpart personnel of the implementing agency for the Study:**  
Required personnel will be assigned to the Study Team and PIU will be establish by the commencement of the Study.
- (2). **Available data, information, documents. Maps etc., related to the Study (Please attach the list)**
  - a) Final Report on Special Assistance for Project Sustainability (SAPS) for Towns East of Colombo Water Project (SL-P19) – February 1998
  - b) Final Report on Special Assistance for Project Formation (SAPROF) on The Kalu Ganga Water Supply Project for Greater Colombo, Volume1, Main Report – January 1997
  - c) Greater Colombo Wastewater and Sanitation Master Plan, Volume I & II, Final Report – April 1993.
- (3). **Information on the security conditions in the Study area**

## **5. Global Issues**

### **(1) Environmental components:**

Improvement of water supply service level will contribute to improve the living environment and sanitary condition in the Study area.

### **(2) Anticipated environmental impact and constraint:**

Impacts to the residents in tenement gardens and users of standposts have to be carefully considered and mitigation measures to the impacts should be provided especially at the beginning stage of the project implementation.

### **(3) Anticipated impacts on women caused by the project**

## **6. Undertaking of the Government of Sri Lanka**

### **(1) In order to facilitate the smooth conduct of the Study, the Government of Sri Lanka will take the following necessary measures:**

- 1) To secure the safety of the Japanese Study team (hereinafter referred to as "the Team").
- 2) To permit the members of the Team to enter, leave and sojourn in Sri Lanka for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees.
- 3) To exempt the members of the Team from taxes, duties, fees and any other charges on equipment, vehicles, machinery and other materials brought into and out of Sri Lanka for the conduct of the Study.
- 4) To exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study.
- 5) To provide necessary facilities to the Team for the remittances as well as the utilization of the funds introduced into Sri Lanka from Japan in connection with the implementation of the Study.
- 6) To secure permission for the Team to enter into private properties or restricted areas for the implementation of the Study.
- 7) To secure permission for excavation, road blocking, detour, and so on if

necessary for the Study,

- 8) To secure permission for the Team to take all data and documents including photographs and maps related to the Study out of Sri Lanka to Japan.
  - 9) To provide medical services as needed. Its expenses shall be chargeable to the members of the Team.
- (2) The Government of Sri Lanka shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Team.
- (3) NWS&DB shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:
- 1) Available data and information related to the Study,
  - 2) Counterpart personnel and supporting staff,
  - 3) Necessary number of vehicles with drivers for the Team
  - 4) Suitable office space with necessary equipment in Colombo, and
  - 5) Credentials or identification cards to the member of the Team.

On behalf of the Government of Sri Lanka

Signed:

Date:

**Dr. N.S.K.N. de Silva**  
**Chairman**  
**National Water Supply & Drainage Board**

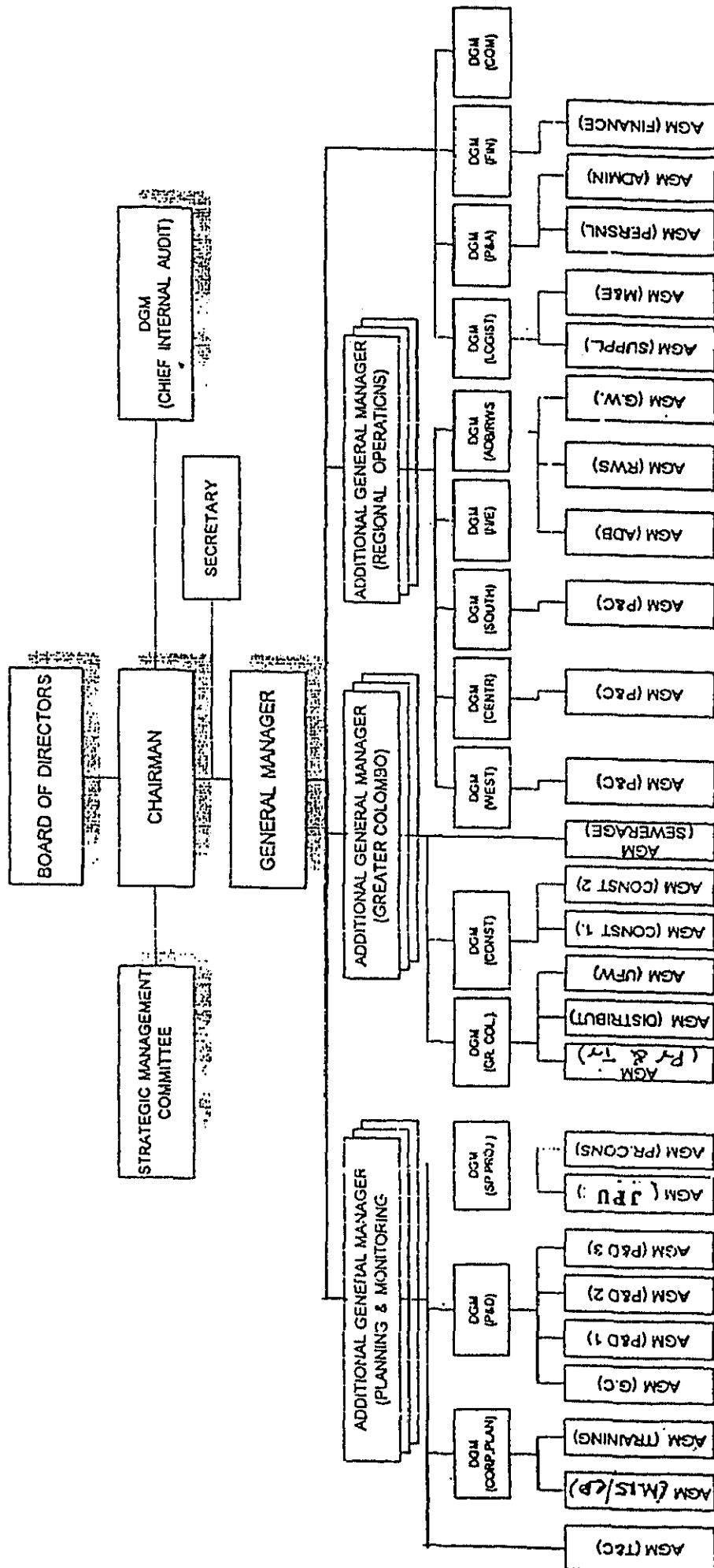
Signed:

Date:

**Mr. V.K.Nanayakkara**  
**Secretary,**  
**Ministry of Housing & Urban Development**



**NATIONAL WATER SUPPLY AND DRAINAGE BOARD  
REVISED ORGANIZATION STRUCTURE**



(DRAFT)  
SCOPE OF WORK  
FOR  
THE DETAILED DESIGN STUDY  
ON  
THE PROJECT FOR REDUCTION OF NON-REVENUE WATER  
IN  
THE GREATER COLOMBO AREA  
IN  
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA  
AGREED UPON BETWEEN  
MINISTRY OF HOUSING AND URBAN DEVELOPMENT,  
NATIONAL WATER SUPPLY AND DRAINAGE BOARD,  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

Colombo, 1999

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J. H. J. Jayamaha  
Director (Japan Division)  
Department of External Resources  
Ministry of Finance and Planning

---

Yoshiaki Kano  
Resident Representative  
Japan International Cooperation Agency  
Sri Lanka Office

WITNESSED BY

---

V. K. Nanayakkara  
Secretary  
Ministry of Housing and Urban Development

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Ryutaro Koga  
Chief Representative  
The Overseas Economic Cooperation  
Fund of Japan  
Colombo Office

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N. Sunil K. N. de Silva  
Chairman  
National Water Supply and Drainage Board

## I. INTRODUCTION

In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "the Government of Sri Lanka"), the Government of Japan decided to conduct a Detailed Design Study on the Project for Reduction of Non-Revenue Water in Greater Colombo Area in the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of Sri Lanka.

The present document sets forth the scope of work for the Study.

## II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. To conduct a detailed design in order to prepare the tender documents of the following projects agreed on between the Overseas Economic Cooperation Fund (hereinafter referred to as "OECF") and the Government of Sri Lanka, which will contribute to improvement of the efficiency and NRW reduction of the existing water supply system in Colombo Municipal Council (CMC),
  - a. rehabilitation program for large diameter pipes and valves
  - b. rehabilitation program for small diameter pipes and valves
  - c. rehabilitation program for Maligakanda and Ellie House Reservoirs
  - d. improvement program of water distribution system to Kotikawatte and Mulleriyawa Areas
2. To formulate action plans for NRW reduction and prepare the necessary tender documents, which are also agreed on between OECF and the Government of Sri Lanka, and
3. To pursue technology transfer to the counterpart personnel in the course of the Study.

## III. STUDY AREA

The Study shall cover the whole area of CMC and Kotikawatte and Mulleriyawa Areas.

## IV. STUDY ORGANIZATION

National Water Supply and Drainage Board (hereinafter referred to as "NWSDB") shall act as a counterpart agency to the Japanese Study Team and also as a coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

Project Implementation Unit (hereinafter referred to as "PIU") will be established under the Additional General Manager of NWSDB for the implementation of the project. The counterpart

team of the Study will be included in PIU.

A Steering committee will be also established under the Secretary of the Ministry of Housing and Urban Development, for the coordination and advise to PIU.

NWSDB will, as the executing agency of the project, take responsibilities that may arise from the products of the Study.

## V. SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Study will cover the following:

### 1. Preliminary Study

- (1) Review of the previous studies and projects related to the water supply system and water demand in CMC, Kotikawatte and Mulleriyawa Areas.
- (2) Estimate of the present water demand by districts
- (3) Analysis and assessment of the capacity of the existing water supply system
- (4) Understanding of the condition of NRW through field reconnaissance
  - (a) tenement gardens
  - (b) public stand posts
  - (c) others

### 2. Detailed Design for rehabilitation of large diameter pipes and small pipes

- (1) Detailed survey on the present conditions of large diameter pipes and valves which should be rehabilitated or reinforced
- (2) Investigation on the present water leakage
- (3) Review of existing distribution maps
- (4) Selection of typical districts for prototype design of the rehabilitation program of small diameter pipes and valves
- (5) Rehabilitation plan of large diameter pipes and valves
- (6) Rehabilitation plan of small diameter pipes and valves

### 3. Detailed Design for rehabilitation of Maligakanda and Ellie House Reservoirs

- (1) Facility plan and design
- (2) Relocation plan of the existing related facilities
- (3) Construction plans including counter measures to water interruption during the construction period

### 4. Detailed Design for for the enhancement of water supply to Kotikawatte and Mulleriyawa Areas

- (1) Review of existing water supply system
- (2) Facility plan and design
- (3) Construction plan

### 5. Formulation of NRW reduction action plan

- (1) Leakage control and its operational plan
  - (a) planning for water leakage detection
  - (b) planning for reduction of illegal connection
  - (c) planning for improvement of metering, billing, collecting
  - (d) planning for wastage reduction in apartment housing areas

- (2) Low Income Settlement Environmental Improvement
    - (a) planning for improvement of public stand posts management
    - (b) planning for rational water use in tenement gardens
6. Cost estimation of each projects
7. Workshop on the NRW reduction action plan
8. Project Evaluation on social impact and recommendation
9. Implementation Program
10. Preparation of specifications, cost estimates and draft tender document for each projects in conformity with "the Guidelines for Procurement under OECF loans"

## VI. SCHEDULE OF THE STUDY

The tentative schedule of the Study is shown in the attached sheet of Annex.

## VII. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Sri Lanka:

1. Inception Report:  
Twenty (20) copies at the commencement of the study in Sri Lanka. This report will describe the Study schedule, methodology and Study Team members' assignment as well as the outline of the field survey.
2. Draft Final Report and Draft Tender Documents:  
Twenty (20) copies of Draft Final Report and ten (10) copies of Draft Tender Documents at the end of the Study in Sri Lanka. The Sri Lanka side shall submit their comments within one (1) month after the receipt of the Draft Final Report and Draft Tender Documents.
3. Final Report and revised Draft Tender Documents:  
Twenty (20) copies of Final Report and ten (10) copies of revised Draft Tender Documents within one (1) month after the receipt of the comments on the Draft Final Report and Draft Tender Documents.
4. Monthly Reports and Design Reports:  
Ten (10) copies each. The progress of the Study will be reported by month. Besides, Design Reports will be submitted after the completion of the design of each project component.

## VIII. UNDERTAKINGS OF THE GOVERNMENT OF SRI LANKA

1. To facilitate the smooth conduct of the Study, the Government of Sri Lanka will take the

following necessary measures:

- (1) to secure the safety of the Japanese Study team (hereinafter referred to as "the Team").
  - (2) to permit the members of the Team to enter, leave and sojourn in Sri Lanka for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees.
  - (3) to exempt the members of the Team from taxes, duties, fees and any other charges on equipment, vehicles, machinery and other materials brought into and out of Sri Lanka for the conduct of the Study.
  - (4) to exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study.
  - (5) to provide necessary facilities to the Team for the remittances as well as the utilization of the funds introduced into Sri Lanka from Japan in connection with the implementation of the Study.
  - (6) to secure permission for the Team to enter into private properties or restricted areas for the implementation of the Study.
  - (7) to secure permission for excavation, road blocking, detour, and so on if necessary for the Study.
  - (8) to secure permission for the Team to take all data and documents including photographs and maps related to the Study out of Sri Lanka to Japan.
  - (9) to provide medical services as needed. Its expenses shall be chargeable to the members of the Team.
2. The Government of Sri Lanka shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Team.
3. NWSDB shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:
- (1) Available data and information related to the Study,
  - (2) Counterpart personnel and supporting staff,
  - (3) Necessary number of vehicles with drivers for the Team
  - (4) Suitable office space with necessary equipment in Colombo, and
  - (5) Credentials or identification cards to the member of the Team.

## VIII. UNDERTAKINGS OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, the Team to Sri Lanka,
2. to pursue technology transfer to counterparts personnel in the course of the Study.

## IX. CONSULTATION

JICA and NWSDB will consult with each other in respect of any matter that may arise from or in connection with the Study.

# ANNEX

## The Detailed Design Study on the Project for Non-Revenue Water in Greater Colombo Area in the Democratic Socialist Republic of Sri Lanka

### TENTATIVE SCHEDULE

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WORK IN SRI LANKA															
WORK IN JAPAN															
REPORT PRESENTATION															

NOTE IC/R : Inception Report  
DF/R : Draft Final Report  
F/R : Final Report

**Minutes of  
Project Formulation Study on Water Supply of Colombo City  
in the Democratic Socialist Republic of Sri Lanka**

The Project Formulation Study Team of Japan International Cooperation Agency (JICA Mission) was dispatched to Sri Lanka from January 23 to January 30 to discuss project formulation on water supply system in Colombo.

At the same time, a mission of Overseas Economic Cooperation Fund (OECF) visited Sri Lanka for the appraisal of proposed Japanese Yen Loan projects. The Government of Sri Lanka requested to the Government of Japan to conduct a detailed design study of the Project for Reduction of Non-Revenue Water (hereinafter referred to as "the Study"), which is included to the proposed projects, by using a development study scheme.

JICA Mission carried out a field reconnaissance in the study area and had a series of discussions with the organizations concerned such as Ministry of Housing and Urban Development (hereinafter referred to as "MHUD"), National Water Supply and Drainage Board (hereinafter referred to as "NWSDB"), Colombo Municipal Council (hereinafter referred to as "CMC") and OECF mission on the Terms of Reference of the Study (T/R) and draft Scope of Work for the Study (Draft S/W) under the condition that it did not mean any commitment on the implementation of the Study. The list of those who attended these discussions is shown in the Annex.

The main issues discussed are as follows :

**1. Position of JICA Mission**

JICA Mission explained the background(relationship with the OECF project), position(non-committable basis), and tasks of this mission and Sri Lanka side understood it.

**2. Detailed Design as Development Study Scheme**

JICA Mission explained about the detailed design conducted as a development study scheme. In case that the Detailed Design of the project is conducted under the Japanese Technical Assistance scheme (Development Study Scheme), Sri Lanka side will take responsibilities that may arise from the products of the Study. Sri Lanka side understood and agreed.

**3. Overall Goal of the Study**

NWSDB explained that the overall goal of the Study is to contribute to provide better water supply service to the residents through the improvement of the efficiency of water supply system.

**4. Study Area**

NWSDB explained that the rehabilitation plan of small diameter pipes and valves in the Study would only cover the CB1 area, which is a part of CMC area, based on the agreement between OECF and the Government of Sri Lanka.

**5. Technical Transfer to the Counterpart Personnel**

NWSDB expressed the request of counterpart training program on leakage control and distribution pipe rehabilitation in case that the Study would be carried out. NWSDB also expressed their expectation that workshop would be conducted on billing system, accounting, stock management etc., during the Study.

**6. Project Implementation Unit (PIU)**

NWSDB explained that they are discussing with OECF about the members and structure of PIU. JICA Mission requested that JICA Sri Lanka Office would be informed and included in the



progress and conclusion of the discussion..

## **7. Distribution Mapping**

NWSDB explained that Digital mapping of distribution system will be conducted under the assistance of Norwegian Government and that OECF project excluded digital mapping system. JICA Mission said that the Study would only add the new information of the present condition of distribution system acquired in the Study on the existing maps and would not include mapping itself.

## **8. Detailed Design for Small Diameter pipes and valves**

JICA Mission explained that the detailed design study for the rehabilitation of small diameter and valves would at first select typical districts for prototype design and then presume the whole area of CB1. The accuracy would be different with that of the other components. NWSDB understood the situation and agreed it.

## **9. Rehabilitation of Maligakanda Reservoir**

NWSDB explained that the office building in the surrounding area of Maligakanda Reservoir had to be relocated because the additional reservoir would be constructed at that space to avoid the water suspension during the construction period. They also explained that the relocation plan is included in the OECF project. JICA Mission said that the design and cost estimate of the new building, which would be the same level and same area with the ones before relocation, could be included in case that the Study would be decided to be carried out.

## **10. Enhancement of Water Supply to Kotikawatte and Mulleriyawa Areas**

NWSDB explained that the present plan of the water supply enhancement would be basically based on the World Bank Report. NWSDB recognized that the review of the plan should be conducted to conform best alternative plan.

## **11. Non-Revenue Water Reduction Action Plan**

Sri Lanka side stressed that Non-Revenue Water Reduction Action Plan in tenement gardens should be formulated from the view point of low income settlement environment improvement. About the concrete activities which could be included in the formulation of the action plan the following ideas and plans are submitted :

- Giving technical advice for leak detection and repair work
- Planning of information system connected between financial section and area offices
- Making operational manuals for billing, accounting, and inventory control etc..
- Public education plan for legal and rational water use
- Improvement plan of water supply system from stand posts to house connection by community participation
- Improvement plan of drainage system in tenement gardens accompanied with the increase of water supply

These ideas and plans should be deeply discussed again and concrete activities fixed by the signing of S/W in case that the Study would be decided to be carried out.

## **12. Reports**

About the numbers and types of reports mentioned in the Draft S/W, NWSDB expressed that they had no objection.

## **13. Vehicles**

NWSDB expressed that the provision of necessary number of vehicles may not be fulfilled because of budgetary and administrative constraint.

#### 14. Continuity of the Project

Sri Lanka side expressed their desire that the consultant appointed in Detailed Design Stage should continue to be assigned in the Construction Supervision Stage, which is covered under the OECF project. JICA Mission suggested that the consultant service in the Supervision Stage should be discussed and decided between OECF and Sri Lanka side.

## LIST OF ATTENDANCE

**(Sri Lankan side)**

## Ministry of Finance and Planning

Mr. J. H. J. Jayamaha

Director (Japan Division) , Department of External Resources

## Ministry of Housing and Urban Development

Mr. V. K. Nanayakkara

Secretary

Mr. C. H. De Tissera

Additional Secretary (Technical)

## National Water Supply and Drainage Board (NWSDB)

Dr. N. Sunil K.N. de Silva

Chairman

Mr. W. A. Karunaratne

General Manager

Mr. S. Weeraratne

Additional General Manager (Colombo Metropolitan Region)

Mr. K. M. N. S. Fernando

Additional General Manager (Planning and Monitoring)

Mr. S. K. H. Perera

Deputy General Manager (Planning and Designs)

Mr. H. G. Tilakaratne

Deputy General Manager (Greater Colombo)

Ms. T. P. Lamabadnsuriya

Assistant General Manager (Planning and Designs)

Mr. D. H. K. Samaranayake

Assistant General Manager (Non-Revenue Water)

Mr. D. N. J. Ferdinando

Assistant General Manager (Japanese Project Unit)

Ms. P. N. S. Yapa

Assistant General Manager (Operation)

Mr. R. H. Ruvinis

Chief Engineer (Planning and Designs)

Mr. G. B. N. Wimalasuriya

Project Manager (SAPS)

Mr. Takahiro Mukai

JICA Expert (Water Supply Planning)

## Colombo Municipal Council (CMC)

Mr. S. G. V. D. H. Gunasekera

Director Engineering (Water and Drainage)

Water Supply Division

**(Japanese side)**

## JICA Project Formulation Study Team

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Assistant Resident Representative

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Institutional. Analysis Div. Project Development Dep.

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Country Officer , 3rd Div., Operations Dep. III

Mr. Norio Kawai

Technical Advisor

Mr. Andrew Homewood

Senior Consultant

MINUTES OF DISCUSSIONS

ON

PROJECT FOR REDUCTION OF NON-REVENUE WATER

BETWEEN

THE OVERSEAS ECONOMIC COOPERATION FUND

AND

THE GOVERNMENT OF THE DEMOCRATIC SOCIALIST REPUBLIC  
OF SRI LANKA

Date: January 29th, 1999

Minutes of Discussions  
on  
Project for Reduction of Non-Revenue Water  
between  
The Overseas Economic Cooperation Fund  
and  
The Government of The Democratic Socialist Republic of Sri Lanka

Date: January 29th, 1999

Place: Colombo, Sri Lanka

Following the discussions regarding the proposed Project for Reduction of Non-Revenue Water (hereinafter "the Project") between the Government of Japan (hereinafter referred to as "GOJ") mission and the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "GOSL") officials in December 1998, the Overseas Economic Cooperation Fund (hereinafter referred to as "OECF") mission has since its arrival on January 17, 1999, carried out a field survey and had detailed discussions with the officials of Ministry of Finance and Planning (hereinafter referred to as "MOFP"), Ministry of Housing and Urban Development (hereinafter referred to as "MHUD") and National Water Supply and Drainage Board (hereinafter referred to as "NWSDB"), the Executing Agency, to study the feasibility of the Project.

The OECF mission and the officials of MOFP, MHUD and NWSDB hereby confirm the results of their discussions as follows subject to approval by the competent higher authorities on both sides. The OECF mission has stated that the results of the discussions will be reported to GOJ and will taken into account by GOJ in arriving at decision regarding the loan relating to the Project. The officials of MOFP, MHUD and NWSDB have stated that they had no objection to this.

1.The OECF mission and the officials of MOFP, MHUD and NWSDB confirm the description of the Project and its estimated cost as detailed in Annex I attached hereto.

2 The OECF mission and the officials of MOFP, MHUD and NWSDB confirm the implementation schedule, estimated annual fund requirement, and measures to be adopted for the implementation of the Project as in Annex II attached hereto.

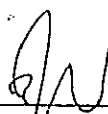
3. The OECF mission and the officials of MOFP, MHUD and NWSDB confirm the main points discussed as in Annex III attached hereto.

For the OECF mission

For the Government of Sri Lanka



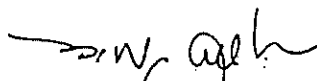
Hachiro Ida  
Director  
3rd Division  
Operation Department II



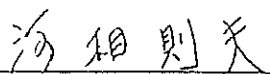
Dixon N. Laweera  
Secretary  
Ministry of Finance and Planning



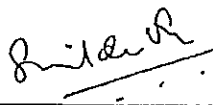
Tomoki Matsuda  
Country Officer  
3rd Division  
Operation Department II



V. K. Nanayakkara  
Secretary  
Ministry of Housing & Urban Development



Norio Kawai  
Technical Advisor  
1st Technical Division  
Technical Department



N. S. K. N. de Silva  
Chairman  
National Water Supply & Drainage Board

## 1. Description of Project

### (1) Objectives

The Greater Colombo area is located in the southeast of Sri Lanka with rapid development. The water demand is also growing very rapidly and it is expected that a serious water shortage will happen in the near future.

However, the existing Non-Revenue Water(NRW) level in the Greater Colombo area is 47% as of the year 1997, that level in the Colombo Municipal Council(CMC) is rather higher as estimated at 57%. The magnitude of NRW is giving a serious impact to water supply system in the Greater Colombo area. It indicates that abating NRW firstly in the CMC would be an effective strategy to reduce NRW with a certain degree in the entire Greater Colombo area. The target of NRW reduction of the project is to reduce the present level; 57% in the CMC to below 30% by the year 2005.

The Project aims to rehabilitate/enhance the water supply system for stable supply in the CMC as well as in the entire Greater Colombo area.

### (2) Location

The main site of the Project is the CMC, including the other Greater Colombo area. A location map of the Project is given as Attachment I.

### (3) Executing Agency

The Executing Agency of the Project is National Water Supply and Drainage Board.

### (4) Scope of work

The scope of work to be carried out under the Project is summarized as follows;

- (a) Rehabilitation of Large Diameter Pipes and Valves
- (b) Rehabilitation of Small Diameter Pipes and Valves
- (c) Rehabilitation of Maligakanda and Ellie House Reservoirs
- (d) Kottikawatte-Mulleriyawa Water Supply Enhancement
- (e) Leak Repair and Illegal Connection Reduction
- (f) Low Income Settlement Environment Improvement
- (g) Consulting Service

Detailed scope of work is described in Attachment II attached hereto.

## 2. Estimated Cost

Category	Foreign Currency (Million Yen)	Local Currency (Million Rs.)	Total (Million Yen)
(a) Civil Works	1,560	804	3,047
(b) Leak Repair and Illegal Connection Reduction	30	39	104
(c) Low Income Settlement Environment Improvement	72	42	149
(d) Price Escalation	76	125	307
(e) Physical Contingency	175	101	361
(f) Consulting Service	148	46	233
(g) Tax and Duties	0	340	630
(h) Interest During Construction	129	0	129
Total	2,190	1,497	4,960

Detailed cost estimate is in Attachment III.

### Note:

- Base year used in estimated cost: January, 1999
- Exchange rate: US\$1=¥122=Rs.66.1    Rs.1=¥1.85
- Assumed rate of price escalation
  - Foreign currency: 1.9% per year
  - Local currency: 5.2% per year
- Physical contingency: 10%
- Assumption of interest during construction
  - Consulting service portion: 0.75%
  - The other portion of the consulting service: 1.3%

\*GOSL requested GOJ to conduct the detail design of consulting service as a development study of JICA. The cost of detail design stage is not fixed and may be revised in case that GOJ decided to conduct the detail design.



### 1.Implementation Schedule

The implementation for the Project is as detailed in the Attachment IV. The schedule was drawn up on the assumption that the Loan Agreement will be concluded in June, 1999.

### 2.Estimated Annual Fund Requirements

Fiscal Year (Apr.-Mar.)	Foreign Currency (Million Yen)	Local Currency (Million Rs.)	Total Cost (Million Yen)
1999	12	18	44
2000	74	67	199
2001	1,182	640	2,365
2002	798	544	1,804
2003	124	229	548
Total	2,190	1,497	4,960

Detailed annual fund requirement is in Attachment V .

### 3.Measures to be adopted

#### (1) Procurement

Number of contract package shall be one (1) for water supply rehabilitation work. Procurement shall be carried out in accordance with the "Guidelines for Procurement under OECF Loans" dated December, 1997.

#### (2) Consultant

Draft terms of reference and manning schedule for the consulting services is in Attachment VI attached hereto. Selection of the Consultants shall be done in accordance with the "Guidelines for the Employment of Consultants by the OECF Borrowers" dated December, 1997.

#### (3) Budgetary Appropriation

The GOSL and NWSDB shall take necessary measures to secure the funds for project implementation, which is not by the OECF loan.

#### (4) Implementation of the Project

The GOSL and NWSDB shall take all the necessary measures necessary to implement the Project smoothly and effectively.

## Main Points Discussed

## 1. Scope of Work

## (a) Modification of Scope of Work from SAPS report

The OECF mission and the officials of NWSDB agreed to modify the scope of work from the scope identified in the final report on Special Assistance for Project Sustainability for Towns East of Colombo Water Supply Project of February 1998 (SAPS Report) as follows;

## a) Mapping System

The SAPS Report recommended to include geographical information system (GIS) as a mapping system in the scope of work. This GIS component is to be deleted, since NORAD agreed, in October 1998, to provide assistance including water distribution mapping systems with GIS for Greater Colombo Area, which can be used for preparation of detail design of the Project.

## b) Rehabilitation of Reservoir

It is programmed in SAPS Report that rehabilitation of Maligakanda Reservoir would be split into two phases, construction of additional reservoir in Stage I and rehabilitation of existing reservoir in Stage II. In view of rapidly growing demand in service area, new construction and rehabilitation of Maligakanda Reservoir are to be implemented under the Project (Stage I).

## (b) Formulation of Detail Action Programme

The Project envisages to tackle with the problem of Non Revenue Water in comprehensive way and Action Programme needs to be formulated with due attention, specially for leak abatement and Illegal connection portion and low income settlement environment improvement portion. Attachment VII and Attachment VIII are the temporary Action Programme, which are prepared by the OECF mission. The OECF mission requested the NWSDB to submit the detailed Action Programme, for the above two portions by the Loan Negotiations and the NWSDB officials agreed.

## 2. Detail Design for the Project

Consulting services for the detail design of the project has been requested to JICA via Embassy of Japan on a grant basis. A JICA mission for project formation has been in Colombo in close coordination with the OECF mission. GOSL shall submit an application for the technical cooperation study to GOJ with the details of the scope of services. The draft application is as per Attachment IX. As the request of the detailed design study is under consideration by GOJ, the scope of consulting services covered under the Project is limited to (1) assist NWSDB in tendering, (2) supervise rehabilitation works, and (3) assist NWSDB in implementing NRW Reduction Programmes and other related work.

## 3. Implementation Organization

Establishment of Project Implementation Unit (PIU) for smooth implementation of the Project has been considered and NWSDB formulated an organization plan of PIU. The OECF mission pointed out that the organization plan needs to be reviewed since the role and responsibility of each element are not clearly defined. NWSDB agreed to work out the organization plan again, and submit it to OECF by the loan negotiation.

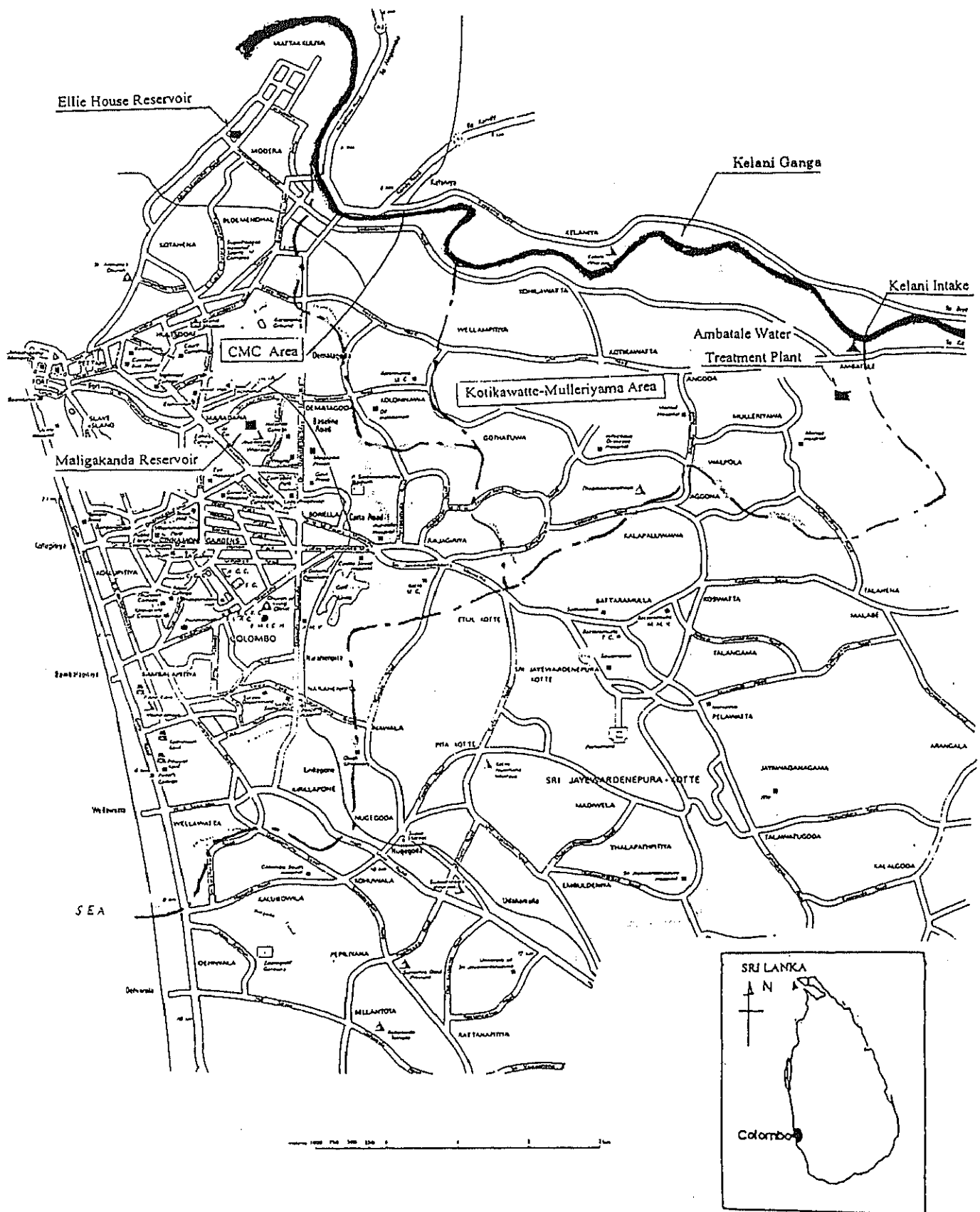
4. **Project Implementation**  
The implementation of the Project involves a number of road works. The OECF mission expressed its concern on miscoordination with agencies involved and delay in obtaining permissions from such agencies in timely manner. NWSDB officials agreed to coordinate with other agencies concerned and make every effort for smooth implementation of the Project.
5. **Environmental Clearance**  
The officials of NWSDB stated that the Project requires neither EIA nor IEE in terms of Part IV C of the National Environmental Act dated August 18, 1998. The Environmental Checklist is as per Attachment X.
6. **Operation and Maintenance**  
Operation and maintenance (O/M) of facilities rehabilitated under the Project is a vital factor for maintaining sustainability of the Project. Under the Project, consulting services are provided for O/M training, preparation of manuals, organizing workshop, and financial management. NWSDB officials agreed to gain maximum benefits of consulting services for efficient and effective operation and maintenance of facilities.
7. **Financial Management Improvement**
  - (a) **Objective**  
Both sides agree that financial management in the NWSDB requires further improvement. Building professional capabilities is essential. Proper inventory management is also a key to improvement.
  - (b) **Measures**  
Both sides recognize the need for training staff in financial as well as commercial functions. Both sides also recognize that NWSDB's stores and inventory management plan need to be implemented.
8. **Water Tariffs**
  - (a) **Objective**  
Both sides agreed on NWSDB's key objectives for setting an optimal tariff to ensure that NWSDB can improve its financial performance and achieve its long term objective of full financial viability. Such objectives are that tariffs should be:
    - a) cost reflective and ensure the financial viability of NWSDB;
    - b) achieve social acceptability, i.e. tariffs are affordable so that the poorest groups can meet their basic needs; and
    - c) reflect the true cost of water in order to achieve allocative efficiency.
  - (b) **Measures:**
    - a) Domestic tariffs are still low in comparison to socially affordable limits. They need to be increased over the short to medium term to such limits. Steep increases in tariffs need to be avoided;

- b) Tariffs need to be increased each year by a price adjustment mechanism (PAM) in the form of a  $[RPI - X]$  formula, where RPI stands for Retail Price Index and X for efficiency improvement index. This will ensure that inflationary costs are recovered and efficiency gains are realized. An efficiency study is necessary to identify cost efficiencies and set efficiency targets in the PAM;
  - c) Cross subsidization of domestic by non domestic customers needs to be gradually decreased.
9. Subsidization by the GOSL
- (a) OECF recognizes the recent efforts by NWSDB in improving its financial situation.
  - (b) In order to maintain financial viability of NWSDB, both sides recognize that NWSDB's capital expenditure has to be subsidized by GOSL.
  - (c) The NWSDB stated that the present on-lending rate of 10% from GOSL to NWSDB and Goods and Services Tax appear to be major factors in the build up of cost recovery. The OECF side suggested to continue discussions on these issue among NWSDB, GOSL and OECF.

## Attachment List

Attachment I: Location Map  
Attachment II: Detailed Scope of Work  
Attachment III: Detailed Cost Estimate  
Attachment IV: Implementation Schedule  
Attachment V: Detailed Annual Fund Requirement  
Attachment VI: Draft Terms of Reference  
Attachment VII: Action Program for leakage and illegal connection  
Attachment VIII: Action Program for Low Income Settlement Improvement  
Attachment IX: Draft Application for the Technical Cooperation  
Attachment X: Environmental Checklist

## Location Map



### Detailed Scope of Civil Works

The following scope of work is agreed for the cost estimates of the water supply rehabilitation works under the Project.

#### (a) Rehabilitation and Reinforcement of Large Diameter Pipes and Valves

There are two components to repair the water supply system in the CMC.

① Objective: Improvement of the hydraulic conditions including leakage reduction

Location: The whole area of CMC

Total length for rehabilitation: 28.45km(with pipe scraping and lining/replacement)

Range of pipes for rehabilitation: 10" to 30"

② Objective: Reinforcement of distribution line

Location: The northern area of CMC

Total length for reinforcement: 8.8km

Range of pipes for reinforcement: 300mm to 500mm

#### (b) Rehabilitation and Reinforcement of Small Diameter Pipes and Valves

There are also two components to improve the water supply system and to implement the Minimum Night Flow on the basis of waste districts.

① Objective: Rehabilitation of distribution line

Location: The northern area of CMC

Total length: 33km(1/4 of total distribution lines in )

Range of pipes: 50mm to 150mm

② Objective: Replacement of the distribution line

Location: The northern area of CMC

Total length: 5.55km

#### (c) Rehabilitation of Maligakanda and Ellie House Reservoirs

① Makigakanda Reservoir: New construction(28,400m<sup>3</sup>), Rehabilitation(36,300m<sup>3</sup>), and Relocation(3,000m) of the existing office.

② Ellie House Reservoir: Rehabilitation(36,300cu.m.)

#### (d) Water System Enhancement in Kottikawatta-Mulleriyawa area

① Reservoir(capacity: 2,000cu.m), Water tower, and Distribution line(length:4,710m, range:75mm-150mm), Transmission line(length :2,400m,range500mm) etc.

\*Draft Scope of NRW Reduction Programmes is as per attachments VII and VIII.

## DETAILED COST ESTIMATE OF THE PROJECT

(a) CIVIL WORK (I.II.III.IV)

Rp. I = Yen

2.0

## I. REHABILITATION OF LARGE DIAMETER PIPES &amp; VALVES IN CMC INCLUDING PIPE REINFORCEMENT

REHABILITATION OF LARGE DIAMETER PIPES & VALVES IN CMC INCLUDING PIPE REINFORCEMENT									
	diameter (mm)	Quantity	unit	Unit Price		Cost			Remarks
				Rs	Yen	Rs	Yen	Eq.Yen	
1 PRIORITY VALVES TO BE REHABILITATED (INCLUDING LEAK REPAIR)									
Procurement	750	1	pcs	32,785	2,396,817	32,785	2,396,817	2,462,387	
Replacement(installation)	750	1	pcs	17,221	24,412	17,221	24,412	58,854	
	700	1	pcs	15,656	22,193	15,656	22,193	53,505	
	500	1	pcs	10,693	15,158	10,693	15,158	36,544	
	450	1	pcs	9,721	13,780	9,721	13,780	33,222	
	350	4	pcs	7,304	10,353	29,216	41,412	99,844	
	300	12	pcs	6,377	9,041	76,524	108,492	261,540	
	250	14	pcs	5,744	8,142	80,416	113,988	274,820	
	200	15	pcs	5,066	7,182	75,990	107,730	259,710	
	150	3	pcs	4,977	7,055	14,931	21,165	51,027	
Refurbish(Minor Repair)	750	2	pcs	11,481	136,115	22,962	272,230	318,154	
	700	2	pcs	10,437	112,562	20,874	225,124	266,872	
	525	1	pcs	7,129	41,650	7,129	41,650	55,908	
	500	2	pcs	7,129	41,650	14,258	83,300	111,816	
	450	2	pcs	6,481	34,756	12,962	69,512	95,436	
	400	1	pcs	5,891	27,946	5,891	27,946	39,728	
	375	7	pcs	5,356	20,699	37,492	144,893	219,877	
	350	1	pcs	4,869	13,521	4,869	13,521	23,259	
	300	24	pcs	4,251	12,606	102,024	302,544	506,592	
	250	29	pcs	3,829	10,866	111,041	315,114	537,196	
	225	17	pcs	3,603	9,701	61,251	164,917	287,419	
	200	13	pcs	3,377	8,537	43,901	110,981	198,783	
	175	11	pcs	3,348	7,249	36,828	79,739	153,395	
	150	5	pcs	3,318	5,959	16,590	29,795	62,975	
Valve Cover		271	pcs	60	3,020	16,260	818,420	850,940	7,319,803
Sub-Total									
2 PIPE MAIN REHABILITATION (INCLUDING LEAK REPAIR)									
	inches								
Scraping and Lining	CI 30	3,000	m	3,648	19,654	10,944,000	58,962,000	80,850,000	
	CI 21	1,150	m	3,085	16,581	3,547,750	19,068,150	26,163,650	
	CI 20	4,500	m	2,681	16,581	12,064,500	74,614,500	98,743,500	
	CI 18	800	m	2,167	16,767	1,733,600	13,413,600	16,880,800	
	CI 15	5,500	m	2,309	15,647	12,699,500	86,058,500	111,457,500	
	CI 12	9,800	m	2,125	11,309	20,825,000	110,828,200	152,478,200	
	CI 10	3,700	m	1,889	11,309	6,989,300	41,843,300	55,821,900	
Road Reinstatement		2,276	m2	1,608		3,659,808	0	7,319,616	50m pich x 4m2
Sub-Total									549,715,166
3 PIPE REINFORCEMENT (NEW INSTALLATION)									
Procurement	DIP 500	1,100	m	2,889	25,684	3,177,900	28,252,400	34,608,200	
	DIP 450	2,300	m	2,366	21,029	5,441,800	48,366,700	59,250,300	
	DIP 400	1,500	m	2,059	18,312	3,088,500	27,468,000	33,645,000	
	DIP 350	400	m	1,545	13,733	618,000	5,493,200	6,729,200	
	DIP 300	3,500	m	1,229	10,930	4,301,500	38,255,000	46,858,000	
Installation	DIP 500	1,100	m	171	1,346	188,100	1,480,600	1,856,800	
	DIP 450	2,300	m	144	1,125	331,200	2,587,500	3,249,900	
	DIP 350	400	m	135	1,067	54,000	426,800	534,800	
	DIP 300	2,300	m	111	870	255,300	2,001,000	2,511,600	
Road Reinstatement		9,150	m2	1,608		14,713,200	0	29,426,400	1.5 m2/m
Sub-Total									218,670,200
TOTAL FOR ITEM I (Oct.1997)						105,510,443	564,684,283	775,705,169	

TOTAL FOR ITEM I (JAN. 1999)

110,996,986

575,413,284

780,757,709



II REHABILITATION OF SMALLER DIAMETER PIPES & VALVES IN CB-1 AREA  
IN COMBINATION WITH NRW REDUCTION PROGRAMMES

	diameter (mm)	Quantity	unit	Unit Price		Cost			Remarks
				Rs	Yen	Rs	Yen	Eq.Yen	
1 VALVES TO BE REHABILITATED (INCLUDING LEAK REPAIR)									
Valve Supply	150	0	pcs	4,305	25,129	0	0	0	
	100	0	pcs	2,826	25,129	0	0	0	
	75	0	pcs	2,444	21,732	0	0	0	
	50	1	pcs	2,400	21,346	2,400	21,346	26,146	
Valve Installation	150	15	pcs	4,977	7,055	74,655	105,825	255,135	
	100	150	pcs	4,764	6,755	714,600	1,013,250	2,442,450	
	75	61	pcs	4,764	6,755	290,604	412,055	993,263	
	50	1	pcs	4,764	6,755	4,764	6,755	16,283	
Refurbish	150	15	pcs	3,318	5,959	49,770	89,385	188,925	
	125	10	pcs	3,176	5,759	31,760	57,590	121,110	
	100	140	pcs	3,176	5,759	444,640	806,260	1,695,540	
	75	61	pcs	3,176	5,590	193,736	340,990	728,462	
	50	1	pcs	3,176	5,570	3,176	5,570	11,922	
Surface Cover		529	pcs	60	3,020	31,740	1,597,580	1,661,060	
Sub-Total									8,140,296
2 MAIN PIPE REHABILITATION (SCRAPING & LINING OR REPLACEMENT INCLUDING LEAK REPAIR AND DISCONNECTION OF ILLEGAL PIPES)									
	inch								
Scraping and Lining	CI 7	695	m	2,012	9,424	1,398,340	6,549,680	9,346,360	
	CI 6	3,370	m	2,012	9,424	6,780,440	31,758,880	45,319,760	
	CI 5	1,274	m	1,409	6,597	1,795,066	8,404,578	11,994,710	
	CI 4	20,040	m	1,207	5,654	24,188,280	113,306,160	161,682,720	
	CI 3	7,935	m	604	2,827	4,792,740	22,432,245	32,017,725	
	CI 2	138	m	402	1,885	55,476	260,130	371,082	
Road Reinstatement		2,676	m2	1,608		4,303,008	0	8,606,016	50m pich x 4m2
Sub-Total									269,338,373
3 MAIN PIPE REPLACEMENT (INCLUDING LEAK REPAIR AND DISCONNECTION OF ILLEGAL CONNECTIONS)									
Procurement	PVC 150	1,070	m	459	454	491,130	485,780	1,468,040	
	PVC 100	4,480	m	218	215	976,640	963,200	2,916,480	
	PVC 75		m	109	108	0	0	0	
	PVC 50		m	65	65	0	0	0	
Installation	PVC 150	1,070	m	152	1,200	162,640	1,284,000	1,609,280	
	PVC 100	4,480	m	150	1,180	672,000	5,286,400	6,630,400	
	PVC 75		m	75	590	0	0	0	
	PVC 50		m	45	354	0	0	0	
Road Reinstatement		5,550	m2	1,608		8,924,400	0	17,848,800	1.0 m2/m
Sub-Total									30,473,000
4 LEAK DETECTION & WASTE DISTRICT INCLUDING PROVISION FOR MNF MEASUREMENT									
Supply of Listening Sticks		10			20,000		200,000	200,000	
Supply of Ultrasonic Flowmeter		4			700,000	0	2,800,000	2,800,000	
Chamber for Flow Measurement		40		50,000		2,000,000	0	4,000,000	
Sub-Total									7,000,000
5 COMMUNICATION PIPE FOR NEW CONNECTIONS AND REPLACEMENT INCLUDING LEAK REPAIR, REPLACEMENT OF ILLEGAL PIPES									
Supply of MDPE		57,500	m		300	0	17,250,000	17,250,000	kubota 20mm x 1.2
Installation		57,500	m	45		2,587,500	0	5,175,000	
Road Reinstatement		2,375	m2	1,608		3,819,000	0	7,638,000	0.5 m2/connection
Preparation of Public Education Material				5,000,000		5,000,000	0	10,000,000	
Sub-Total									
6 PUBLIC TAP REPLACEMENT AND RELOCATION									
Tap only		1,020	pcs	500		510,000	0	1,020,000	
Tap with post		102	pcs	1,000		102,000	0	204,000	
Total replace		816	pcs	6,000		4,896,000	0	9,792,000	
Sub-Total									11,016,000
7 SUPPLY OF METER									
		23,000	pcs		5,000	0	115,000,000	115,000,000	
8 METER WORKSHOP									
						8,700,000	750,000	18,150,000	
TOTAL FOR ITEM II(Oct.1997)									
						83,996,505	331,187,659	499,180,669	

TOTAL FOR ITEM II(Jan.1999) 88,364,323 337,480,225 500,954,223

# DETAILED COST ESTIMATE OF THE PROJECT

## III. REHABILITATION OF RESERVOIR

### 1. Ellie House Reservoir

	capacity(cu.m)	Rs/cu.m	Total (Rs)	F.C.(Yen)	L.C.(Rs)	Total (Yen)
Rehabilitation	36,300	4,000	145,200,000	29,040,000	130,680,000	290,400,000

### 2. Maligakanda Reservoir

	capacity(cu.m)	Rs/cu.m	Total (Rs)	F.C.(Yen)	L.C.(Rs)	Total (Yen)
New Construction	28,400	8,000	227,200,000	45,440,000	204,480,000	454,400,000
Rehabilitation	36,300	4,000	145,200,000	29,040,000	130,680,000	290,400,000

	capacity(sq.m)	Rs/sq.m	Total (Rs)	F.C.(Yen)	L.C.(Rs)	Total (Yen)
Office Relocation	3,000	16,000	48,000,000	9,600,000	43,200,000	96,000,000

	F.C.(Yen)	L.C.(Rs)	Total (Yen)
TOTAL FOR III item(Oct,1997)	113,120,000	509,040,000	1,131,200,000

	F.C.(Yen)	L.C.(Rs)	Total (Yen)
TOTAL FOR III item(Jan,1999)	115,269,280	535,510,080	1,105,962,928

## IV Kottikawatte-Mulleriyawa Water Supply Enhancement

	F.C.(Yen)	L.C.(Rs)	Total (Yen)
TOTAL FOR IV item(Jan,1999)	532,733,200	68,800,800	660,014,680

## V Civil Work Total (I,II,III,IV)

	F.C.(Yen)	L.C.(Rs)	Total (Yen)
TOTAL FOR (a)CIVIL WORK(Jan,1999)	1,560,895,989	803,672,189	3,047,689,539

(b) Leak Repair Costs Estimate

1. Distribution Pipeline (2" to 8")

1-1 Cost per 1 Leak

	Rs.	Yen.	Total Eq. Yen	Remarks
Excavation, Back-filling, Fitting	5,600		11,200	
Materials		12,800	12,800	
Road reinstatement	2,000		4,000	
Total	7,600	12,800	28,000	

\* NWS&DB's result in 1997

1-2 Number of repair

Numbers of distribution leaks per month were 260 in CMC area in 1998.

Supposing, 130 leaks will be repaired under this component.

(1/2 would be repaired by CMC and NWSDB)

Terms of contract will be 18 months.

1-3 Total Cost

	Rs.	Yen.	Total Eq. Yen	Remarks
Cost per 1 leak	7,600	12,800	28,000	
No. of Leaks	2,340	2,340		130*18
Total cost	17,784,000	29,952,000	65,520,000	

2. Service Connection

2-1 Cost per 1 Leak

	Rs.	Yen.	Total Eq. Yen	Remarks
Excavation, Back-filling, Fitting	320		640	
Materials	1,120		2,240	
Road reinstatement	750		1,500	
Total	2,190		4,380	

\* NWS&DB's result in 1997

2-2 Number of repair

Numbers of service connection leaks per month were 1,000 in CMC area in 1998.

Supposing, 500 leaks will be repaired under this component.

(1/2 would be repaired by CMC and NWSDB)

Terms of contract will be 18 months.

### 2-3 Total Cost

	Rs.	Yen.	Total Eq. Yen	Remarks
Cost per 1 leak	2,190		4,380	
No. of Leaks	9,000			500*18
Total cost	19,710,000		39,420,000	

### 3. Grand Total of Cost

	Rs.	Yen.	Total Eq. Yen	Remarks
Distribution Pipeline	17,784,000	29,952,000	65,520,000	
Service Connection	19,710,000		39,420,000	
Grand Total (Oct, 1997)	37,494,000	29,952,000	104,940,000	

Total for (b) Leak Repair Work Rs39,443,688 ¥30,521,088 ¥103,491,911 (Jan, 1999)

## (c) LOW INCOME SETTLEMENT ENVIRONMENTAL IMPROVEMENT

LOW INCOME SETTLEMENT ENVIRONMENTAL IMPROVEMENT									
	diameter (mm)	Quantity	unit	Unit Price		Cost			Remarks
				Rs	Yen	Rs	Yen	Eq.Yen	
1 IMPROVEMENT OF DISTRIBUTION PIPELINE FOR LOW INCOME SETTLEMENT									
PIPE REINFORCEMENT		30	pcs	1,250,000	2,350,000	37,500,000	70,500,000	145,500,000	
Sub-Total									145,500,000
2 REPLACEMENT AND RELOCATION OF PUBLIC TAPS IN LOW INCOME SETTLEMENT									
Tap only		450	pcs	500		225,000	0	450,000	
Tap with post		50	pcs	1,000		50,000	0	100,000	
Total replace		350	pcs	6,000		2,100,000	0	4,200,000	
Sub-Total									4,750,000
TOTAL FOR C (Oct,1997)						39,875,000	70,500,000	150,250,000	

TOTAL FOR C (Jan,1999)      41,948,500      71,839,500      149,444,225

DETAILED COST ESTIMATE OF CONSULTING SERVICE

			M/M	RENUMERATION	F/C	L/C	TOTAL
				Yen/Rs.	Yen	Rs.	Yen
1) REHABILITATION OF LARGE DIAMETER PIPES & VALVES INCLUDING PIPE REINFORCEMENT TEAM (1 UNIT)							
1-1 DESIGN STAGE							
PIPELINE ENGINEER	Foreign Consultant	8	2,500,000	15,000,000			
TEAM LEADER/WATER SUPPLY ENGINEER	Foreign Consultant	8	2,500,000	15,000,000			
WATER SUPPLY ENGINEER	Local Consultant	8	150,000		900,000		
SPECIFICATION ENGINEER	Local Consultant	3	150,000		450,000		
DRAFT MAN	Local Consultant	12	25,000		300,000		
PERDIEM FOR F/C	Rs. 9,000 /day	18			4,880,000		
CAR RENT	Rs. 80,000 /month	18			1,080,000		
MISCELLANEOUS	above 10 %				3,000,000	759,000	
			1-1 TOTAL		33,000,000	8,349,000	48,445,850
1-2 CONSTRUCTION SUPERVISION STAGE							
TECHNICAL ADVISOR/PIPELINE ENGINEER	Foreign Consultant	8	2,500,000	15,000,000			
TEAM LEADER/WATER SUPPLY ENGINEER	Local Consultant	18	150,000		2,700,000		
PIPE SCRAPING & LINING SUPERINTENDENT	Local Consultant	18	150,000		2,700,000		
PIPE LAYING SUPERINTENDENT	Local Consultant	18	150,000		2,700,000		
SURVEY ASSISTANT	Local Consultant	38	25,000		900,000		
PERDIEM FOR F/C	Rs. 9,000 /day	6			1,820,000		
CAR RENT	Rs. 80,000 /month	38			2,180,000		
MISCELLANEOUS	above 10 %				1,500,000	1,278,000	
			1-2 TOTAL		18,500,000	14,058,000	42,507,300
2) REHABILITATION OF SMALL DIAMETER PIPES AND VALVES TEAM (2 UNITS)							80,952,950
TECHNICAL ADVISOR/DISTRIBUTION ENGINEER	Foreign Consultant	8	2,500,000	15,000,000			
PERDIEM FOR F/C	Rs. 9,000 /day	12			3,240,000		
CAR RENT	Rs. 80,000 /month	54			3,240,000		
MISCELLANEOUS	above 10 %				1,500,000	648,000	
					18,500,000	7,128,000	29,888,800
3) LEAK ABATEMENT TEAM (2 UNITS)							
TECHNICAL ADVISOR/LEAK ABATEMENT SPECIAL	Foreign Consultant	8	2,500,000	15,000,000			
PERDIEM FOR F/C	Rs. 9,000 /day	8			1,820,000		
CAR RENT	Rs. 80,000 /month	54			3,240,000		
MISCELLANEOUS	above 10 %				1,500,000	488,000	
					18,500,000	5,346,000	28,390,100
4) TENEMENT GARDEN TEAM (3 UNITS)							
TEAM LEADER/WATER SUPPLY ENGINEER	Local Consultant/NGO	18	150,000		2,700,000		
NRW ENGINEER	Local Consultant/NGO	18	150,000		2,700,000		
SOCIOLOGIST (3)	Local Consultant/NGO	54	150,000		8,100,000		
CAR RENT	Rs. 80,000 /month	54			3,240,000		
MISCELLANEOUS	above 10 %				0	1,874,000	
					0	18,414,000	34,085,900
5) ILLEGAL CONNECTION TEAM outside Tenement Gardens (1 UNIT)							
SOCIOLOGIST	Local Consultant/NGO	18	150,000		2,700,000		
CAR RENT	Rs. 80,000 /month	54			3,240,000		
MISCELLANEOUS	above 20 %				0	1,188,000	
					0	7,128,000	13,188,800
6) KOTIKAWATTE & MULLERIYAWA SUPPLY ENHANCEMENT TEAM (1 UNIT)							
6-1 DESIGN STAGE							
DISTRIBUTION ENGINEER (DEMAND REVIEW)	Foreign Consultant	2	2,500,000	5,000,000			
CIVIL & WATER SUPPLY ENGINEER	Foreign Consultant	10	2,500,000	25,000,000			
STRUCTURE ENGINEER	Foreign Consultant	2	2,500,000	5,000,000			
MECHANICAL ENGINEER	Foreign Consultant	2	2,500,000	5,000,000			
ELECTRICAL ENGINEER	Foreign Consultant	2	2,500,000	5,000,000			
CIVIL & WATER SUPPLY ENGINEER	Local Consultant	12	150,000		1,800,000		
SPECIFICATION ENGINEER	Local Consultant	3	150,000		450,000		
DRAFTMAN	Local Consultant	12	25,000		300,000		
SOIL TEST					1,000,000		
PIPE SURVEY	Rs. 3,000 /km	35 km			105,000		
LAND SURVEY	Rs. 25,000 /ha	2 ha			50,000		
PERDIEM FOR F/C	Rs. 9,000 /day	18			4,880,000		
CAR RENT	Rs. 80,000 /month	18			1,080,000		
MISCELLANEOUS	above 10 %				4,500,000	984,500	
			6-1 TOTAL		49,500,000	10,809,500	89,127,575
6-2 CONSTRUCTION SUPERVISION STAGE							
CIVIL & WATER SUPPLY ENGINEER	Local Consultant	18	150,000		2,700,000		
CAR RENT	Rs. 80,000 /month	18			1,080,000		
MISCELLANEOUS	above 10 %				0	378,000	
			6-2 TOTAL		0	4,158,000	7,892,300

7) MALIGAKANDA & ELLIE HOUSE RESERVOIRS REHABILITATION

7-1 DESIGN STAGE

STRUCTURE ENGINEER	Foreign Consultant	8	2,500,000	15,000,000	
ARCHITECT	Foreign Consultant	8	2,500,000	15,000,000	
CIVIL ENGINEER	Foreign Consultant	2	2,500,000	5,000,000	
MECHANICAL ENGINEER	Foreign Consultant	1.5	2,500,000	3,750,000	
ELECTRICAL ENGINEER	Foreign Consultant	1.5	2,500,000	3,750,000	
STRUCTURE ENGINEER	Local Consultant	8	150,000		900,000
MECHANICAL ENGINEER	Local Consultant	2	150,000		300,000
ELECTRICAL ENGINEER	Local Consultant	2	150,000		300,000
ARCHITECT	Local Consultant	8	150,000		900,000
SPECIFICATION ENGINEER	Local Consultant	8	150,000		900,000
DRAFTMAN (2)	Local Consultant	12	25,000		300,000
SOIL TEST					1,000,000
LAND SURVEY	Rs. 25,000 /ha	2 ha			50,000
PERDIEM FOR F/C	Rs. 9,000 /day	17			4,590,000
CAR RENT	Rs. 80,000 /month	18			1,080,000
MISCELLANEOUS above	10 %			4,250,000	1,032,000
7-1 TOTAL				48,750,000	11,352,000

87,751,200

7-2 CONSTRUCTION SUPERVISION STAGE FOR ELLIE HOUSE AND NEW MALIGAKANDA RESERVOIR

CIVIL & STRUCTURAL ENGINEER	Foreign Consultant	4	2,500,000	10,000,000	
MECHANICAL ENGINEER	Foreign Consultant	1	2,500,000	2,500,000	
ELECTRICAL ENGINEER	Foreign Consultant	1	2,500,000	2,500,000	
CIVIL & STRUCTURAL ENGINEER	Local Consultant	18	150,000		2,700,000
CONSTRUCTION SUPERVISORS STRUCTURE	Local Consultant	38	25,000		900,000
PERDIEM FOR F/C	Rs. 9,000 /day	8			1,820,000
CAR RENT	Rs. 80,000 /month	18			1,080,000
MISCELLANEOUS above	10 %			1,500,000	830,000
7-2 TOTAL				18,500,000	8,930,000

29,320,500

7-3 SAME FOR EXISTING MALIGAKANDA RESERVOIR

7-3 TOTAL 18,500,000 8,930,000 29,320,500

8) PROJECT MANAGEMENT

CO-PIU MANAGER	Foreign Consultant	36	2,500,000	90,000,000	
OFFICE BOY		72	8,000		432,000
PERDIEM FOR F/C	Rs. 9,000 /day	36			9,720,000
CAR RENT	Rs. 80,000 /month	36			2,160,000
MISCELLANEOUS above	10 %			9,000,000	1,231,200
				99,000,000	13,543,200

124,054,920

GRAND TOTAL 521,548,545

OECF TOTAL 232,895,520

The Construction Supervision of consulting service is funded by the OECF as Yen Loan

Form 4

[illegible]

< For Consulting Service >

2003/5 Construction Supervision Stage (Civil Works Action Programme) 2003/4

2001/11 Superision (Kottikavette-Muller) v. v. 2003/4

2000's ← Supervision (Moligakanda, Ellie House, Pasovoir) 2003/14

Project Manager for Construction Supervision Stage

Attachment IV



## Annual Fund Requirement

No	Work Name	Annual Fund Requirement (F/C: Mil Yen, L/C: Mil Yen, Figure in ()): Mil Yen, Total: Mil Yen)											
		1999FY			2000FY			2001FY			2002FY		
		F/C	L/C	Total	F/C	L/C	Total	F/C	L/C	Total	F/C	L/C	Total
1	Civil Work	1,580.1	803.7	1,486.8	3,046.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Leak Repair Work	30.5	39.5	70.0	103.5	10.2	13.2	23.4	26.3	0.0	0.0	0.0	0.0
3	Low Income Settlement Environment In	71.8	41.9	77.5	149.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Sub-total (1 - 3)	1,682.4	885.1	1,537.4	3,299.8	10.2	13.2	23.4	26.3	0.0	0.0	0.0	0.0
5	Price Escalation (F/C: 1.9%, C/S 2%)	76.0	125.1	231.4	307.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Physical Contingency (10%)	72.8	101.0	186.9	360.7	1.0	1.3	3.5	4.5	0.0	0.0	0.0	0.0
7	Sub-total (4 - 6)	1,912.3	1,111.2	2,055.7	3,967.9	1.2	1.5	3.8	4.5	0.0	0.0	0.0	0.0
8	Tax (15%)	0.0	321.7	595.2	595.2	0.0	3.1	5.7	0.0	0.0	0.0	0.0	0.0
9	Total (7 - 8)	1,912.3	1,432.9	2,650.9	4,563.1	1.2	1.7	4.3	4.5	0.0	0.0	0.0	0.0
10	IDC (1.3%)	127.1	0.0	0.0	127.1	0.5	0.0	0.5	2.2	0.0	0.0	0.0	0.0
11	Consulting Service	148.5	45.6	84.4	232.9	0.0	0.0	0.0	22.3	61.5	12.6	84.8	32.1
12	Tax (15%)	0.0	18.9	34.9	34.9	0.0	0.0	0.0	0.0	0.0	8.9	12.7	0.0
13	Total	148.5	64.5	119.3	267.8	0.0	0.0	0.0	22.3	61.5	19.5	97.5	32.1
14	IDC (0.75%)	2.1	0.0	0.0	2.1	0.0	0.0	0.0	0.3	0.6	0.0	0.4	0.4
15	Total Project Cost	2,190.0	1,497.4	2,770.2	4,950.1	1.7	1.7	4.3	74.4	67.3	83.6	2,365.3	798.2
16	IDC (10 - 14)	129.3	0.0	0.0	129.3	0.5	0.0	0.5	2.5	27.8	0.0	21.8	48.4
17	Tax (8 - 13)	0.0	340.8	630.1	630.1	0.0	3.1	5.7	0.0	13.9	0.0	164.8	304.9
Note		4 Physical Contingency 10 %											
1 Exchange Rate		1US\$ = 122YEN 1US\$ = 68.1Rc 1Rc = 1.85YEN											
2 Base Year of Cost Estimation		January, 1999											
3 Price Escalation		Foreign: 1.9 % Local: 5.2 %											
4 Physical Contingency		Civil Work: 10 %											
5 F/C: Foreign Currency													
L/C: Local Currency													
Total		2,319.3	1,838.2	2,400.3	5,580.2	2.2	4.8	4.8	76.9	95.4	84.6	2,630.1	843.1

**Draft Terms of Reference for Consulting Services  
for  
Project for Reduction of Non-Revenue Water**

**1. Introduction**

The Non-Revenue Water (NRW) level in Greater Colombo was as high as 47% in 1997. However, the level in Colombo Municipal Council (CMC) is rather higher at 57%. The target of NRW reduction of the Project is to reduce the present level of 57% in CMC to less than 30% by the year 2005. The Project aims to reduce NRW through the implementation of rehabilitation and enhancement of the water supply system and associated NRW Reduction Programmes in Greater Colombo Area.

**2. Scope of the Project**

The scope of the Project consists of the followings:

- (1) Rehabilitation and reinforcement of large diameter pipes and valves in CMC area
- (2) Rehabilitation and replacement of small diameter pipes and valves in northern part of CMC(-CBI area)
- (3) Rehabilitation of Maligakanda and Ellie House reservoirs
- (4) Enhancement of water supply system in Kottikawatte-Mulleriyawa area
- (5) Leakage abatement and reduction of illegal connections in Greater Colombo
- (6) Encouragement of individual connections to public stand post users and illegal connectors
- (7) Assistance to NWSDB for improvement of financial management

**3. Objectives of the Services**

NWSDB, through GOSL, is planning to request GOJ a grant assistance to cover detail design of the Project as a development study of Japan International Cooperation Agency (JICA). The Consultants employed under this contract to be financed by OECF Loan shall provide services for smooth and effective project implementation and related works to NWSDB, which include among others;

- (1) assist NWSDB in tendering for rehabilitation works and procurement of equipment,
- (2) supervise rehabilitation works, and
- (3) assist NWSDB in implementing leakage abatement and reduction of illegal connection, and encouragement of individual connections, and other related work.

**4. Scope of Services**

**(1) Assistance in Tendering**

In tendering stage for rehabilitation work contract and procurement of equipment by NWSDB, the tasks of the Consultant shall be

- assistance in evaluation of pre-qualification applications,
- assistance in evaluation of bids, and
- assistance in contract negotiations.

(2) Construction Supervision

In construction stage of rehabilitation works for items (1) - (4) of the Scope of the Project above, the Consultant shall be

- examining and approving the contractor's schedule, drawing and documents,
- issuing instructions to the contractor and supervising the construction,
- monitoring and controlling the progress of work,
- controlling quality and quantity of work,
- issuing all certificates of payments and other certificate to the contractor,
- inspecting and testing all construction materials on the site as necessary,
- monitoring and controlling environmental impact during construction,
- providing training for operation and maintenance,
- preparing operation and maintenance manual, and
- organizing workshop to share lessons learned after completion of the Project.

(3) Implementation of NRW Reduction Programmes

In implementation stage of the programmes of leakage abatement and reduction of illegal connection, and encouragement of individual connections, items (5) - (6) of the Scope of the Project above, the Consultant shall undertake the followings:

- providing training for implementation of the programmes,
- issuing instructions to the contractor/worker and supervising their works,
- monitoring and supervising of progress of the programmes,
- controlling quality and quantity of works, and
- monitoring and controlling environmental impact during implementation.

(4) Financial Management

- review the progress of recommended actions made by the consultants for detail design,
- design and conduct training programme to the Financial and Commerce Divisions of NWSDB, and
- review NWSDB's stores and inventories management plan and propose action plans.

(5) Others

In addition to the above, the Consultant shall undertake the followings:

- keeping close coordination with consultants employed under related projects and studies,
- assisting the NWSDB in coordinating with the OECF,
- preparing monthly progress report, and
- preparing project completion report.

## Action Program for Leakage Abatement & Illegal Connection Reduction

### Leakage Abatement

#### **Background and Objectives**

It is reported in SAPS report that there are number of visible leaks which have not been attended without being repaired. There is a considerable backlog of leak repair due to limited resource and systematic approach for leak abatement. This is urgent work and to conduct leak repair work intensively will definitely reduce the NRW ratio.

Following two steps are proposed in the SAPS report in the action programme for leak abatement.

- Step-1 To repair visible leaks at first and reduce the level of leakage to a certain level as soon as possible**
- Step-2 To implement district waste metering to assess the level of leakage for the development of systematic reduction strategy for further reduction of leakage and maintaining the reduced level**

Under the proposed NRW reduction project, the OECF agreed to assist the NWSDB for the implementation of leak abatement. Followings are preliminary action program proposed by the mission based on the SAPS report and the Mission request the NWSDB to formulate a more detail action for leak abatement.

#### **Action Programme**

##### Priority work items

- 1) Priority work items to reduce visible leakage
  - a) to locate and repair all visible leaks
  - b) to shorten lead time for repair of main pipe leaks and service connection leaks to 24 hours and 48 hours, respectively
  - c) to improve the quality of repair materials, service connection materials and quality of workmanship for repair
  - d) to establish information system among external agencies on development work to make precaution for incidental leaks due to construction work
  - e) to control sufficient depth of service connections
- 2) Priority work items to implement district waste metering to assess leakage level
  - a) to review the existing waste district maps and set up new waste district maps
  - b) to carry out district waste metering
  - c) to carry out night sounding or other leak detection methods in high leak areas
  - d) to establish recording system on leak information

##### Organizational Set up

Under the supervision of NWSDB, two leak teams are proposed to be organized. The number of staffs and TOR of each staff need to be carefully planned.

## **Illegal Connection Reduction**

### **Back Ground and Objectives**

According to the SAPS report, it estimates the number of illegal connections in Greater Colombo approximately as 20,000 and most of them exist in CMC area. As a result, illegal connections are contributing to the large part of NRW and reduction of illegal connections would definitely reduce the ratio of NRW substantially. The OECF agreed to assist the NWSDB for the implementation of illegal connection reduction.

### **Action Programme and Organizational Set up**

Under the SAPS report, it is proposed to identify illegal connections by house to house survey. As majority of illegal connections outside tenement gardens are considered to be by-passing meters or extending hose to public stand posts committed by registered customers. Therefore the analysis on zero-less than 10 m<sup>3</sup> consumption users by inspecting billing records is also effective to identify these illegal users. Moreover, it is a very important task to follow up to confirm that these connections are in the billing cycle after regularizing them.

One team is proposed to be set up, in order to attend the work under the SAPS study. The NWSDB need to come up with more complete plan.

## Action Program for Low Income Settlement Environment Improvement - Reduction of Stand Post and Promotion of Individual Connection-

### Background and Objectives

There are more than thousand low income settlements in CMC area and those settlements are called Tenement Garden. The living environment in those settlements are bad and many problems are related to water, such as insufficient water supply, insufficient drainage or sewerage system and so on. With regard to water supply, those settlements depends provision of water on stand post, which is one factor of NRW. Some cases, the tariff is paid by the local authorities, however, cost recovery is not accrued from beneficiaries. The reduction of stand post and promotion of individual connection are the policy of the NWSDB to solve this problem.

The OECF and the NWSDB has been working on this issue as the Pilot Scheme under the Kalu Ganga Water Supply Project. The exercise of the Pilot Project has been going well, and in one of the pilot area, Badowita, about thousand low income households are going to be provided with water on individual connection basis.

Based on the experience from the Pilot Scheme, the OECF agreed to continue assistance for the reduction of stand post and promotion of individual connection. Also, this needs to be tackled in comprehensive way, in which not only water supply side but also drainage and sewerage system needs to be considered since without proper drainage system, their living conditions may worsen with the increase of consumed water.

At the implementation stage, the prescriptions to solve the problems differ depend on the situation of each low income settlement so that involvement of local people is crucial part for the successful implementation of the project. The OECF propose to set up the team with involvement of those who have experience working with low income households, such as local NGOs or Japan Overseas Cooperation Volunteer (JOCV) while implementing the project and pay due attention to the real needs of local people. In addition, local people should be encouraged to participate during planning, construction and maintenance period.

### Action Programme

#### Priority work items

- 1) Analyze the current situation of low income settlement
- 2) Identify the priority sites with due consideration of UDA designated area for re-housing
- 3) Organize work shop for resident in identified sites
- 4) Identify priority work necessary for the identified sites related to water
- 5) Prepare the action programme for each sites
- 6) Prepare the Design (water supply can be done by NWSDB and other work, such as sewerage design or drainage design should be done by either local authorities, contractor or related agencies)
- 7) Strengthen the community group by conducting awareness program regarding water issues
- 8) If community agreed to participate in construction, prepare community contract

- 9) Supervise the progress of community work
- 10) Prepare maintenance plan with due consideration of community participation

#### Organizational Set up

Appoint or hire a task manager for the project and contract out field work to local NGOs. A task manager has to be a supervisor for overall work and a coordinator for all stakeholders and participants.

**APPLICATION FOR THE  
TECHNICAL COOPERATION (DEVELOPMENT STUDY)  
BY THE GOVERNMENT OF JAPAN**

DRAFT

### 1. Project Digest

- (1) Project Title: Detailed Design Study on the Project for Reduction of Non-Revenue Water in the Greater Colombo area in the Democratic Socialist Republic of Sri Lanka
- (2) Location: Colombo Municipal Council (CMC) area and Kotikawatte - Mulleriyawa Areas
- (3) Implementing agency: National Water Supply and Drainage Board (NWS&DB)  
 Number of the staff of the Agency: 7462  
 Budget allocated to the Agency: SL Rs. 4,136,000,000.00  
 Organization chart: Attached
- (4) Justification of the project:  
 The present water loss ratio in Greater Colombo is estimated at 33%, and the figure in CMC is 36%. The present Non-Revenue Water (NRW) ratio in CMC is estimated at 57%.

If the level continues, Greater Colombo will face water shortage before the year 2001. According to water demand projection based on the data used in the demand projection for Kalu Ganga Water Supply Project, the water shortage is anticipated after the year 2003 and approximately 70,000 m<sup>3</sup>/d of water will be short in 2006 even the Stage I of Phase I for Kalu Ganga Water Project is implemented on time, in case that the present level of water loss will continue.

In contrast, if rehabilitation programme for reduction of NRW is carried out for CMC area, water shortage of Greater Colombo will not occur severely even though water loss level outside CMC is assumed to continue at the present level.

Moreover, it should be stressed that water resources for Greater Colombo is limited as the Kelani River, which covers 80% of water supply, has been almost fully developed as a water source. Therefore, the development of another water source, Kalu Ganga, was planned in order to meet increasing demand. However, even though Stage I of



Phase I for Kalu Ganga Project, of which the cost was estimated at about Rs. 5.8 billion, will be completed as planned with the capacity of 60,000m<sup>3</sup>/d in 2003, approximately 70,000m<sup>3</sup>/d of water will be short in 2006 if the rehabilitation programme is not implemented. Therefore, it is easily understood that if the rehabilitation programme is not implemented, a significant capital investment on water resources development will be further required.

Additionally, from the financial viewpoints, the rehabilitation programme will bring NWSDB two types of benefit. Firstly, the water treatment plants in Greater Colombo will be able to decrease the water production by the amount of decreased water loss thanks to the rehabilitated pipes and valves. This decrease of production will benefit NWSDB in the form of variable cost savings at the water treatment. Secondly, thanks to the activities for NRW reduction, which will be conducted in combination with the rehabilitation programme, those unregistered users will be converted to legalized customers. Also as a result of the NRW reduction activities, those already registered customers who illegally use a part of their consumption will be detected and their unbilled consumption will become billed consumption. Those two types of benefit will be estimated at Rs. 900 million altogether.

In conclusion, the implementation of the rehabilitation programme in CMC area in conjunction with the NRW reduction programme is essential for sustainability of water supply for Greater Colombo.

- (5) Desirable time of commencement of the project: as early as possible after the commitment of the Japanese Yen Loan
- (6) Prospective funding source: Japanese Government (Japanese Yen Loan)
- (7) Other relevant projects:
  - ADB pilot project (conducted since 1996),
  - Clean Settlement Programme under the financial assistance of IDA,
  - Community Water Supply and Sanitation Project under the finance of ADB, Greater Colombo Mapping of distribution system assisted by the Norwegian Government
  - French assisted distribution system modeling project.

## 2. Terms of reference of the proposed Study

### (1) Necessity of the Study

High ratio of system leakage of water needs urgent improvement because of limited water resources in Colombo. NRW reduction will also increase the revenue and improve the financial situation, which contributes to offer better service on water supply.

### (2) Necessity of the Japanese Technical Cooperation

Since the rehabilitation programme and NRW reduction programme had been formulated through the Special Assistance for Project Sustainability (SAPS) assisted by Overseas Economic Cooperation Fund of Japan (OECF). These programmes are also anticipated to be implemented under the financial assistance of OECF. The Detailed Design Study of the programmes is also expected to be conducted with getting the technical assistance of Japan, which has close cooperation with Japanese Yen Loan.

### (3) Objectives of the Study

- 1) To conduct a detailed design in order to prepare the tender documents of the following projects agreed on between the Overseas Economic Cooperation Fund (hereinafter referred to as "OECF") and the Government of Sri Lanka, which will contribute to improvement of the efficiency and NRW reduction of the existing water supply system in CMC,
  - a. Rehabilitation program for large diameter pipes and valves
  - b. Rehabilitation program for small diameter pipes and valves
  - c. Rehabilitation program for Maligakanda and Ellie House Reservoirs
  - d. Improvement program of water distribution system to Kotikawatte - Mulleriyawa Areas
- 2) To formulate action plans for NRW reduction and prepare the necessary tender documents, which are also agreed on between OECF and the Government of Sri Lanka, and
- 3) To pursue technology transfer to the counterpart personnel in the course of the Study.

### (4) Areas to be covered by the Study

The Study shall cover the whole area of CMC and Kotikawatte - Mulleriyawa Areas.

### (5) Study Organization

National Water Supply and Drainage Board (hereinafter referred to as "NWS&DB") shall act as a counterpart agency to the Japanese Study Team and also as a coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

Project Implementation Unit (hereinafter referred to as "PIU"); will be established under the Addl. GM (CMR) of NWS&DB for the implementation of the project. The counterpart team of the Study will be included in PIU.

A steering committee will be also established under the Chairman Secretary, M/HUD for the coordination and advise to PIU.

NWSDB will, as the executing agency of the project, take responsibilities that may arise from the products of the Study.

(6) Scope of the Study

1). Preliminary Study

- (a) Review of the previous studies and projects related to the water supply system and water demand in C.M.C, Kotikawatte - Mulleriyawa Areas.
- (b) Estimate of the present water demand by districts
- (c) Analysis and assessment of the capacity of the existing water supply system
- (d) Understanding of the condition of NRW through field reconnaissance
  - I. tenement gardens
  - II. public stand posts
  - III. others

2). Detailed Design for rehabilitation of large diameter pipes and small pipes

- (a) Detailed survey on the present conditions of large diameter pipes and valves which should be rehabilitated or reinforced
- (b) Investigation on the present water leakage
- (c) Review of existing distribution maps
- (d) Selection of typical districts for prototype design of the rehabilitation program of small diameter pipes and valves
- (e) Rehabilitation plan of large diameter pipes and valves
- (f) Rehabilitation plan of small diameter pipes and valves

- 3). Detailed Design for rehabilitation of Maligakanda and Ellie House Reservoirs
  - (a) Facility plan and design
  - (b) Relocation plan of the existing related facilities
  - (c) Construction plans including counter measures to water suspension during the construction period
- 4). Detailed Design for enhancement of water supply to Kotikawatte - Mulleriyawa Areas
  - (a) Review of existing water supply system
  - (b) Facility plan and design
  - (c) Construction plan
- 5). Formation of NRW reduction action plan
  - (a) Leakage Control and its operational plan
    - a) Planning for water leakage detection
    - b) Planning for reduction of illegal connection
    - c) Planning for improvement of metering, billing and collection
    - d) Planning for wastage reduction in apartment housing areas
  - (b) Low Income Settlement Environment Improvement
    - a) Planning for improvement of public standpost management
    - b) Planning for rational water use in tenement gardens
- 6). Cost estimation of each projects
- 7). Workshop on the NRW reduction action plan
- 8). Project Evaluation on social impact and recommendation
- 9). Implementation Program
- 10). Preparation of specifications, cost estimates and drafts tender document for each project in conformity with "the Guidelines for Procurement under OECF loans"

- (7) Study Schedule  
The Study should be started at the earliest possible date and about 14 months period will be required for the Study.
- (8) Expected Major Outputs of the Study  
Draft Tender Documents for each projects of the programme (the components of the projects are changeable during the Study). The Draft Tender Documents should be composed of the designs and drawings, specifications, Bill of Quantities, cost estimates, and other necessary documents for tender.
- (9) Request of the Study to other Donor Agencies: None

### **3. Construction supervision**

Construction supervision shall not be part of this consultancy assignment, and shall be covered under the OECF component of this project.

However, in order to maintain continuity, there is a possibility that the same consultant is appointed for the construction supervision stage, with the concurrence of OECF and GOSL. This part of the contract shall be a separate contract and negotiated under OECF and GOSL procurement procedures.

### **4. Facilities and information for the Study Team**

- (1). Assignment of counterpart personnel of the implementing agency for the Study:  
Required personnel will be assigned to the Study Team and PIU will be establish by the commencement of the Study.
- (2). Available data, information, documents. Maps etc., related to the Study (Please attach the list)
- a) Final Report on Special Assistance for Project Sustainability (SAPS) for Towns East of Colombo Water Project (SL-P19) – February 1998
  - b) Final Report on Special Assistance for Project Formation (SAPROF) on The Kalu Ganga Water Supply Project for Greater Colombo, Volume1, Main Report – January 1997
  - c) Greater Colombo Wastewater and Sanitation Master Plan, Volume I & II, Final Report – April 1993.
- (3). Information on the security conditions in the Study area

## 5. Global Issues

### (1) Environmental components:

Improvement of water supply service level will contribute to improve the living environment and sanitary condition in the Study area.

### (2) Anticipated environmental impact and constraint:

Impacts to the residents in tenement gardens and users of standposts have to be carefully considered and mitigation measures to the impacts should be provided especially at the beginning stage of the project implementation.

### (3) Anticipated impacts on women caused by the project

## 6. Undertaking of the Government of Sri Lanka

### (1) In order to facilitate the smooth conduct of the Study, the Government of Sri Lanka will take the following necessary measures:

- 1) To secure the safety of the Japanese Study team (hereinafter referred to as "the Team").
- 2) To permit the members of the Team to enter, leave and sojourn in Sri Lanka for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees.
- 3) To exempt the members of the Team from taxes, duties, fees and any other charges on equipment, vehicles, machinery and other materials brought into and out of Sri Lanka for the conduct of the Study.
- 4) To exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study.
- 5) To provide necessary facilities to the Team for the remittances as well as the utilization of the funds introduced into Sri Lanka from Japan in connection with the implementation of the Study.
- 6) To secure permission for the Team to enter into private properties or restricted areas for the implementation of the Study.
- 7) To secure permission for excavation, road blocking, detour, and so on if

necessary for the Study,

- 8) To secure permission for the Team to take all data and documents including photographs and maps related to the Study out of Sri Lanka to Japan.
  - 9) To provide medical services as needed. Its expenses shall be chargeable to the members of the Team.
- (2) The Government of Sri Lanka shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Team.
- (3) NWS&DB shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:
- 1) Available data and information related to the Study,
  - 2) Counterpart personnel and supporting staff,
  - 3) Necessary number of vehicles with drivers for the Team
  - 4) Suitable office space with necessary equipment in Colombo, and
  - 5) Credentials or identification cards to the member of the Team.

On behalf of the Government of Sri Lanka

Signed:

Date:

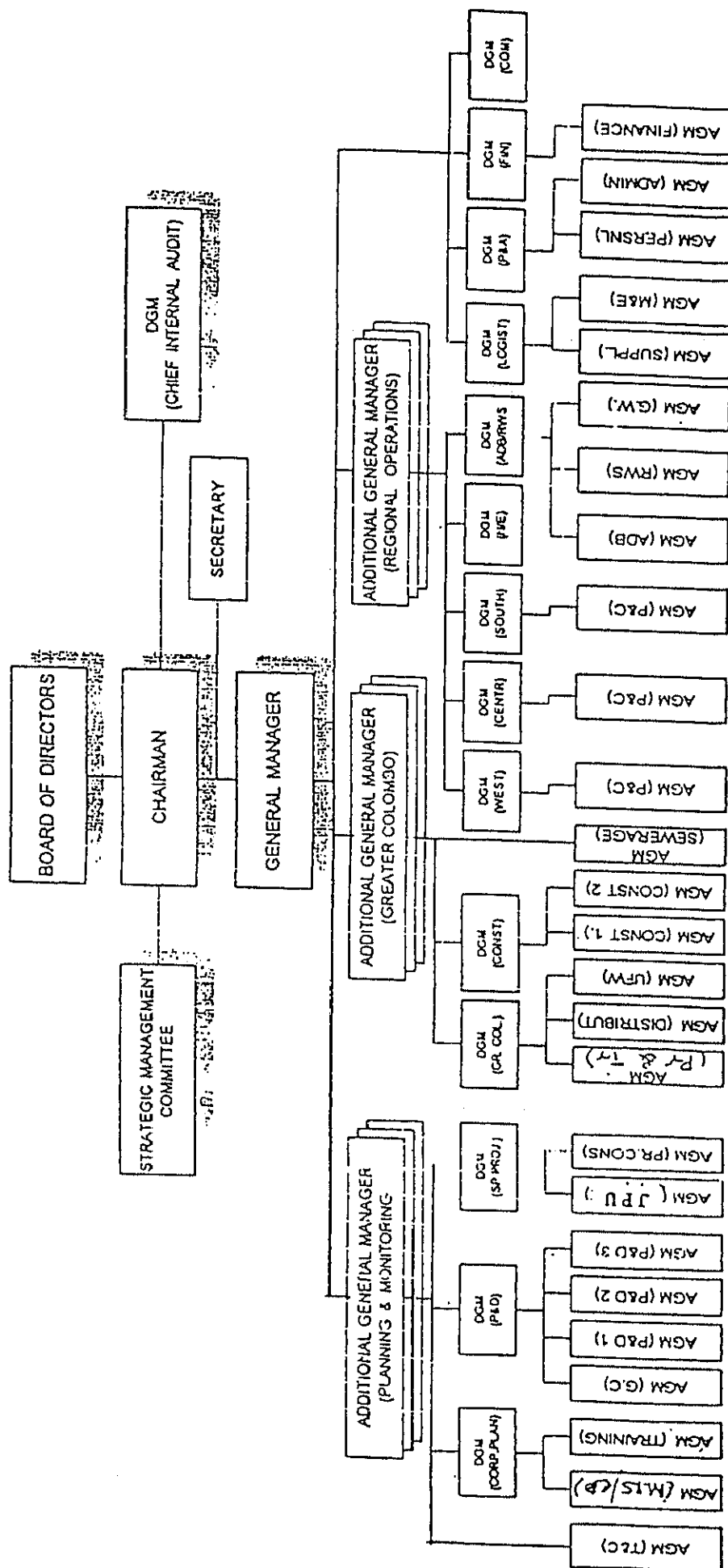
**Dr. N.S.K.N. de Silva**  
**Chairman**  
**National Water Supply & Drainage Board**

Signed:

Date:

**Mr. V.K.Nanayakkara**  
**Secretary,**  
**Ministry of Housing & Urban Development**

**NATIONAL WATER SUPPLY AND DRAINAGE BOARD  
REVISED ORGANIZATION STRUCTURE**





Environmental Checklist (Water supply)

	Check items	Major	Small	None	Not Clear	Problems	Action & Countermeasures Planned	Remarks
Pollution	1. Air pollution resulting from chlorination 2. Soil erosion following the filling of trees, etc., as a result of facility construction, and consequent deterioration of water quality downstream 3. Noise and vibration around the pump-out station and water purification plant 4. Ground subsidence 5. Treatment of sludge from water purification plant		✓	✓ ✓		Applies to the pumping station for Katsuragi - Mutsunuma.	There would be a buffer zone as in other similar facilities.	
Natural Environment	1. Effect of construction of the facility on the ecology 2. Effect on landscape			✓ ✓				
Human Environment	1. Effect of construction of the facility on the historical and cultural heritage 2. Effect on existing infrastructure 3. Effect on other water uses		✓	✓ ✓		<del>Due to</del> Piping may cause damage to other utilities, i.e., power, telecom.	Maps of existing utilities and tracing techniques will be used to minimize possible damage.	
Others	1. Effect on the environment during construction period 2. Environmental monitoring	✓		✓		Could disrupt flow of traffic	Shall be co-ordinated with the Road & Traffic authorities.	

note: If the project contains dam construction as a component, the checklist for hydropower should also be referred.

スリ・ランカ国  
プロジェクト形成調査（上水道分野）  
対処方針（案）

1. 調査の目的
2. 調査団の構成
3. 調査日程
4. 調査概要
5. 要請書作成支援に係る対処方針
6. S/W（案）に係る対処方針
7. その他の協議・確認事項及び留意点
8. 今後の予定

（添付資料）

団員名簿及び調査日程表

平成11年1月14日

国際協力事業団  
社会開発調査部

## 1. 調査の目的

### (1) 調査の目的

スリ・ランカ国政府より要請されているコロンボ市における無収水削減のための円借款事業に関し、同事業の実施設計部分を連携D/Dとして実施することについて先方政府の意向を確認し、案件形成（要請書の作成支援等）を行う。

あわせて、開発調査以外の技術協力スキームについても、同円借款事業との連携の可能性を検討する。

なお、先方政府が連携D/Dのスキームを理解しかつ当方による実施を要望する場合には、上記に加え、可能な範囲でS/W（案）の骨子についても協議するものとする。

### (2) 調査の背景・経緯

大コロンボ圏（580km<sup>2</sup>、人口290万人）の水道はケラニ川を主水源として同圏人口の48％に給水しているが、同圏の水需要は近年急速に伸びており、水資源量の確保及び関連水道施設の整備は緊急の課題である。

こうした状況に対し、JICAは「大コロンボ圏給水拡張計画調査」（94年11月調査終了）を実施し、2020年までの水需要に対処する同圏給水マスタープランの見直し、2010年を目標年次とするカル川を新規水源とした水道システム確立に係るフィージビリティ調査を実施した。97年には、同調査結果に基づき、OECDにより「カル川水源開発・給水拡張事業」に係る円借款が供与されている。また、90年以降、OECDではこの他に「コロンボ東部上水道事業」を初めとした給配水拡張整備に協力している。

一方、本年2月に実施された「コロンボ東部上水道事業」に係る援助効果促進調査（SAPS）では、大コロンボ圏の無収水は47％であり、特にコロンボ市に限れば57％と際だって高いことが指摘された。同圏の水源が限られていることから、将来的な需要増に対応するためには、上記事業の実施に加え、コロンボ市の無収水を削減することが不可欠であると考えられる。

現在、スリ・ランカ国政府から、コロンボ市（Colombo Municipal Council；CMC）における無収水率削減のための円借款が要請されており、実施設計部分を連携D/Dとして実施することが期待されるが、連携D/Dは本年度から採用された新たなスキームということもあり、現在までのところ開発調査としての正式要請はなされていない。また、円借款要請に含まれている無収水削減プログラムは、技術協力のスキームでアクションプログラムを作成することにより、効果的な事業実施が可能となる。

かかる状況を踏まえ、本調査では、上記「調査の目的」に記す調査・検討を行い、JICAによる協力の可能性を検討するものである。

## 2. 調査団の構成

別添1のとおり

## 3. 調査日程

別添1のとおり

## 4. 調査概要

### (1) 現地調査前国内作業

#### ア. 関連資料・情報の収集・検討

特に、「コロンボ東部上水道事業」に係る援助効果促進調査（SAPS）

(OECF;平成10年2月)、「大コロombo圏給水拡張計画調査」(JICA;94年11月)に留意する。

- イ. 調査対処方針の検討・作成
- ウ. T/R(案)の検討、作成
- エ. S/W(案)の検討、作成
- オ. 現地調査に係る質問書の作成

(2) 現地調査項目

- ア. 連携D/Dスキーム説明
- イ. 先方政府の意向確認(実施体制、受入機関、事業実施の意向、開発調査以外の技術協力との連携の可能性等)
- ウ. T/Rの内容協議、作成支援
- エ. 可能な範囲でのS/W(案)の協議
- オ. 現地踏査(コロombo市内給配水施設、配水池、コロombo近郊2市の給配水施設)
- カ. 既存資料及び情報の収集(ローカルコンサルタント、NGO、他ドナーの援助動向等)
- キ. 調査実施上の留意点の確認

(3) 現地調査後国内作業

- ア. 調査結果のとりまとめ
- イ. 今後の対応方針の検討

5. T/R作成支援に係る対処方針

以下の対処方針にて、T/Rの内容協議、作成支援を行う。T/R骨子は以下のとおりとするが、具体的なT/R(案)は現地での先方との協議を踏まえて作成し、先方に提示するものとする。

(1) 先方政府に対する連携D/Dスキーム説明、意向確認

以下の点を説明し、先方の了解を得る。

- ア. 連携D/Dは、OECFとの連携に基づき、OECFによる審査を踏まえて実施されるが、M/P及びF/Sと同様にJICAの開発調査として実施されるものであり、円借款事業のように先方政府機関が発注者となるものではない。
- イ. 連携D/Dにより実施される実施設計分以外のコンサルティングサービス(入札補助、施工監理)については、従来どおり円借款事業によるものである。
- ウ. 瑕疵担保責任については、日本側は責任を負わず、その旨口上書及びS/Wで確認することとなる。
- エ. 連携D/Dの実施範囲は次のとおりとなる。
  - ・ 調査の範囲はDraft Tender Documents作成までとする。
  - ・ 土地収用、EIAに係る計画の策定及び費用積算はJICAで行うが、行政的対応は先方政府が責任をもって行う。

また、瑕疵担保責任に係る説明ぶりは、次のとおりとする。

- ・ 基本的認識として、無償で行われる技術協力の性格上、当方が瑕疵を担保することは、法的に困難である。
- ・ D/Dを実施するコンサルタントとJICAとの契約はD/Dの成果品提出をもって完了するが、瑕疵が問題となるのは多くは同契約終了後、施工時である。しかし、このような段階においてJICAが設計の見直しまたは設計変更をコンサルタントに求めることは、JICA内部での手続き面から不可能である。(むしろ、円借款事業の中

での設計変更により対応する方が円滑であり、現実的な解決策と考えられる。)

- ・ただし、設計時の瑕疵を可能な限り排除するために、本格調査団からMonthly Reportを先方政府へ提出、報告することによって設計内容及び進捗を先方政府へ周知させ、また先方政府にあってはステアリングコミッティ等を設置して、設計内容を十分検討することが必要である。当然ながら、JICAとしても本格調査実施中の設計監理を十分に行うこととする。

## (2) 調査名

和文名を「スリ・ランカ国コロombo市上水道改修事業実施設計調査」とし、英文名を「The Detailed Design Study on the Project for Non-Revenue Water in the Colombo Municipality Council in the Democratic Socialist Republic of SRI LANKA」とする。

## (3) 調査目的

ア. コロンボ市の無収水削減のため、以下の項目について詳細設計 (D/D) を行い、仕様書及び入札図書を作成する。

### ①リハビリプログラム

- ・コロンボ市内の大・中口径配水システムのリハビリ
- ・コロンボ市内の小口径配水システムのリハビリ
- ・コロンボ市主要配水池のリハビリ (Maligakanda配水池、Ellie House配水池)
- ・コロンボ近郊2市 (Kottikawatte、Mulleriyama) の給配水施設の増強

### ②無収水削減プログラムに係るアクション・プログラムの実施計画作成

- ・漏水調査
- ・公共水栓改善
- ・貧困層居住地区対策
- ・違法接続対策
- ・メーター検診改善
- ・計画住宅地区)

イ. 本件調査を通じ、スリ・ランカ国側カウンターパート (C/P) に技術移転を行う。

## (4) 調査対象地域

コロンボ市全域、Maligakanda配水池・Ellie House配水池及びコロンボ近郊2市 (Kottikawatte、Mulleriyama) とする。

## (5) 調査実施体制

調査実施機関は、国家上下水道公社 (National Water Supply and Drainage Board ; NWSDB) であることを確認する。

また、調査を円滑に実施するため、関係機関 (主として住宅建設公共事業省、NWSDB、CMCを想定) によるステアリングコミッティ、ならびにNWSDBを中心とした事業実施ユニット (Project Implimentation Unit ; PIU) を創設することを提案し、先方の意向を確認する。PIUは、NWSDB職員、CMC職員、外国人コンサルタント、ローカルコンサルタントを主体として構成することが想定されるが、詳細については先方の意向を確認するものとする。

## (6) 本格調査の調査項目

調査項目の骨子は、次のとおりとする。

### ア. 予備調査

- ①コロンボ市の水供給に係る既存調査のレビュー
- ②現状の水需要のレビュー
- ③既存給水施設の供給能力の分析・評価

- ④貧困地区、公共水栓等における無収水の実態把握
- ⑤計画フレームの確認

イ. 詳細設計

- ①既存大口径管及びバルブの現状に係る詳細調査
- ②現状の漏出量の詳細調査
- ③既存配水管網及びバルブのマッピング
- ④小口径管及びバルブのリハビリ計画策定のためのモデル地区の選定
- ⑤大・中口径配水システムのリハビリ計画
- ⑥小口径配水システムのリハビリ計画
- ⑦Maligakanda配水池及びEllie House配水池リハビリのための施設計画・設計
- ⑧Kottikawatte地区及びMulleriyama地区の給配水施設計画・設計
- ⑨断水対策を含めた工事計画
- ⑩無収水削減に係るアクションプランの策定（漏水調査、公共水栓改善、貧困層居住地区対策、違法接続対策、メーター検診改善、計画住宅地区）
- ⑪事業費積算

ウ. 無収水削減アクションプランに係るワークショップの開催

エ. プロジェクト評価及び提言

オ. 実施計画の策定

- ①組織・制度計画
- ②マネージメント・マニュアルの作成を含む運営維持管理計画
- ③実施スケジュール及び資金計画の作成
- ④施工管理のためのコンサルタントのTORの作成

カ. 仕様書及び入札図書の作成

また、調査実施上の留意点として、以下の項目を確認する。

- ①地中埋設されている管網のリハビリ、特に小口径管についてはある程度の誤差を有する実施設計とならざるを得ないので、その点について先方の理解を得る。
- ②既存配水管網及びバルブのマッピングについては、先方の意向及び既存の図面の整備状況等を確認する。
- ③無収水削減プログラムにより一時的に不利益を被る可能性がある貧困層に対し、必要な配慮につき先方に確認する。

(7) 本格調査期間

全体調査期間は、14ヵ月を目処とすることを提案する。

(8) 成果品

- ア. 成果品の種類、部数及び提出時期は概ね次表のとおりとするが、先方との協議により変更可とする。
- イ. 本調査では、「5. (3) 調査目的」に示す5つのサブ・プロジェクトが想定されるが、入札図書の分け方については、先方及びOECDの意向を確認することとする。
- ウ. 成果品の提出先はPIUとする。また、月報によりPIUに対し進捗報告を行うこととする。
- エ. 各成果品（図面、積算資料等）については、成果品の確認及び先方のオーナーシップを高める観点から、成果品毎に随時PIUに提出し、PIU側の署名を求める

こととする。

報告書	提出時期	部数
着手報告書 (IC/R)	現地調査開始時	英文20部
最終報告書 (案) (DF/R) 入札図書 (案)	調査開始約13ヵ月後	英文20部 (入札図書は10部)
最終報告書 (F/R) 入札図書及び原図 1 式	調査開始約14ヵ月後	英文20部 (入札図書は10部)
月報	毎月	英文10部

(9) 便宜供与

調査に必要な車輛、調査団用のオフィス、電話回線の提供等、スリ・ランカ側の便宜供与事項を確認する。

(10) カウンターパート研修員の受け入れ

開発調査におけるカウンターパート研修制度を紹介し、先方の意向を確認する。

(11) 技術移転セミナーの開催

本格調査実施中に技術移転を目的としたセミナーを開催する制度がある旨スリ・ランカ側に説明し、先方の意向を確認する。

6. S/W (案) に係る対処方針

先方政府が連携D/Dのスキームを理解しかつ当方による実施を要望する場合には、要請書の作成支援に加え、可能な範囲でS/W (案) の骨子についても協議することとする。また、以下の点に留意する。

(1) S/W及びMM署名者及び署名方法の確認

署名者は我が方はJICA事務所長もしくは事前調査団（さらに先方との詰めが残された場合）とし、先方は住宅建設公共事業省及びNWSDBの責任ある長とする旨提案する。なお、witnessはOECF首席駐在員とする。

ただし、署名に当たっては、瑕疵担保責任に係る口上書交換が行われることが確認されることとする。

(2) 役務提供コンサルタントの派遣・情報収集

本案件採択後に、S/W (案) の内容を詰めるために必要な情報・資料を収集するため、役務提供コンサルタントを派遣する。あわせて、必要に応じ、本格調査時の現地再委託調査の範囲、ローカルコンサルタント及びNGOの実態・能力の把握、他ドナーの動向等の情報収集も行う。

7. その他の協議・確認事項及び留意点

(1) T/R (案) 及びS/W (案) の内容は前述のとおりとするが、スリ・ランカ側からの修正・追加等の要望が、調査の本質に関わらずかつ調査工程・調査経費に多大な影響を及ぼさない場合には、調査団内の判断でT/R (案) 及びS/W (案) を現地で作成するものとする。

(2) 調査結果については、在スリ・ランカ日本大使館、OECFコロボ駐在員事務所及びJICAスリ・ランカ事務所に報告するとともに、公電発出を依頼する。

(3) 先方との協議内容及び結果については、調査団長名のレターにて記録を残し、スリ・

ランカ側のしかるべき責任ある長に対し発出するものとする。

8. 今後の予定

2月上旬：帰国報告会

以 上



取扱注意

電信

## 基礎調査第二課 御 中

注意  
電報の取り扱いは慎重に願います。

主 管

経協開

平成11年 1月27日12時13分

スリ・ランカ 発

本 省 着

外 務 大 臣 殿

杉山 洋二大使

プロジェクト形成調査（下水道分野）

第69号 （取扱注意） 至急（優先処理）

貴信経協開P第21号に関し、

本件プロジェクト形成調査（団長藤谷JICA社会開発部社会開発調査第二課課長代理、中川JICA職員）については、26日、当館に冒頭引用貴信を接到の後、26日午後に調査団に当館に来訪を求め、次のとおり意見交換を行った（当館川村対応、当地JICA事務所永石所員同席）。

## 1. 円借款関連D/Dの周知状況

調査団より、円借款関連D/Dについて実施主体である国家上下水道公社の認識が低いとの指摘があったところ、当館よりは、これまでのところ大蔵計画省及び住宅・都市開発省に対してのみ説明を行い実施機関に対しては説明していないことから、調査団に対して、この機会を捉え実施主体に対するスキーム説明を依頼した。

## 2. 「ス」側TORの作成状況

本件については、大蔵計画省よりは、JICA調査団到達時までにはTOR案の作成を行う旨連絡を受けていたが、調査団によれば、実施主体の国家上下水道公社においては、今回の円借款関連D/Dは新規スキーム

## 電 信

ムであることもありTORは作成されていなかった由。調査団としては持参したTOR案を提示し、右を基に27日までに内容を決定していく由。

## 3. OECF審査ミッションとの連携

既に調査団はOECF審査ミッションと合流し、実施主体である国家上下水道公社との打ち合わせを行っており、協議を通じた円借款のスコープの変動を適宜把握している。なお、調査団はOECF審査ラップ・アップ協議に出席するとのことであったため、当館より、右ラップ・アップ協議は一連の「ス」側とOECFミッションとの協議包括の場であり、途中から参画している調査団の位置付けを十分確認の上対応されることを依頼しておいた。

## 4. S/W案の取り扱い

調査団より、S/W案についても、国家上下水道公社と協議の上、結果を団長よりの書簡として国家上下水道公社長官宛配布し、大蔵計画省、住宅・都市開発省についてはコピー送付を計画している旨説明越した。右に対して、当館より、S/Wは最終的にJICAと住宅・都市開発次官とで署名されるべきものと解しており、事前のS/W協議においても住宅・都市開発次官の参画の重要性につき指摘しおいた。本件については、調査団とJICAスリ・ランカ事務所において検討を進めることとされた。

## 5. 瑕疵担保責任免除について

調査団より、本件採択に際して、瑕疵担保責任免除についての口上書交換について当館に対して要請越したところ、当館より、既に大蔵計画省に対しては説明し瑕疵担保責任免除につき了解を得た上で要請が発出されている旨説明しつつ、口上書案については既に貴本省より送付されていることもあり了解する旨回答した。(了)

## 要処理

GMC00037 GM21213-11

平成11年 1月26日 10時52分 本 省 発

外 務 大 臣 発

平成11年 1月26日 8時56分 スリ・ランカ 着

杉 山 洋 二 大 使 宛

プロジェクト形成調査（上水道分野）

経協開F第21号 （取扱注意） 要処理 Q211FZE

（以下FAX送信 GM21213-11）

貴電第29号に関し、

1月14日にスリ・ランカ上水道分野プロジェクト形成調査の対処方針会議が開かれ、概要以下のとおりの議論が行われたところ、右議論を踏まえて対処方針（案）を修正した上で、今回調査を実施することとするので、然るべく対応ありたい。（JICAより提出された対処方針（案）を別添する。本会議出席者は、開発協力課早川調査員、有償資金協力課村田事務官、JICA社会開発調査部社会開発調査2課宮本課長、同藤谷課長代理、同小林課長代理、同中川職員、同基礎調査部基礎調査2課飯村職員、同国総研大村国際協力専門員、OECF業務2部3課井田課長、同松田課員、総務部業務課坂本課長代理、開発企画部開発企画課中川調査役。）

1. JICA社調2課宮本課長、及び調査団（藤谷団長、社調2課中川職員）より、別添対処方針案につき説明の後、以下の補足説明があった。

（1）本プロ形調査団は、円借款候補案件であるコロombo市上水道修復計画に係わる円借款連携D/Dの実質的な予備調査（要請内容の確認、調査内容に関する協議等）を行うものである。本事業に係わる「ス」側の連携D/Dの要請意図は確認済みであるが、正式要請がなされていないため、今回調査団でも先方の意図につき確認を行う。

（2）本事業については、要請が接到していないため、今のところ開発調査の採択を決定できる状況にないが、他方、連携D/Dの円滑な実施という観点からは、1月後半のOECF現地審査ミッション派遣と同時にD/Dの実質的な予備調査を行う調査団を派遣することが望まれる。このため、今回、試験的にプロジェクト形成調査という形で実質的なJICAD/Dの予備調査ミッションを派遣することとなった。

（3）社調2課としては、本事業が円借款連携D/D第1号であり、OECFとよく連絡をとりつつ進めていきたい。

2. 上記の説明に関して以下のやりとりがあった。

（外務省開協課早川調査員）

(1) 既採択済みの連携D/D5件については、全てOECFの審査が先行し、その結果を受けてJICAが事前（予備）調査を行うという順序であったが、今回の調査では、初めてOECF現地審査とJICAの実質的なD/D予備調査を同時に行うことになった。これまでの議論の中でも、このような形でOECF審査ミッションとJICA予備（事前）調査団を同時派遣することを目指していたわけであるが、今回、これが初めて実現したことになる。他方、この同時派遣方式の際に留意してほしいのは、OECFの現地審査が進むにつれて、当該事業のスコップ、実施体制、工期等が当初の予定から変更される可能性がある点。その場合、OECF審査ミッションが今回のJICAプロ形調査団に変更の内容をタイミングよく伝達しないと、OECFの審査結果とJICAの今回調査結果に不整合が生じる恐れがある。従って、OECFは、現地で審査の進捗状況の情報等をJICAプロ形調査団に遅滞なく伝達してほしい。

(2) 本事業D/Dの現在のステータスについてだが、当方としては、客年末に

「ス」大蔵省より口上書が提出されているため、既に正式に「ス」の要請意図は確認されておりT/Rのみ未提出という段階であるという認識である。

(3) 瑕疵担保責任の免除については、「ス」では問題とならないかもしれないが、調査団が提示するT/R案の中の「ス」側 Undertaking 事項に、あらかじめ瑕疵担保責任の免除条項を含めておくとのよいのではないか。そうすれば、S/W協議の前に、瑕疵担保責任の免除を明確に確認できる。

(4) 今回調査の協議の進捗状況によっては、S/W案についても先方と協議することだが、S/W案については、本格的に先方と協議を行う前に、当省が事前に内容を確認しておく必要があるため、仮に今回プロ形調査中にS/W案を協議する場合は、後で変更が十分可能な形にしておいてほしい。また、S/Wの内容についてだが、OECDとの事前の打ち合わせを十分に行ってほしい。これまで、対「ス」開発調査では標準的なパターンのS/Wを締結してきているが、他方、今までの連携D/D案件では、若干標準パターンのもものと異なるS/Wを締結してきているので、既存連携D/D案件のS/Wも踏まえてS/W案を作成したい。

(JICA 藤谷 団長) T/R及びS/Wの原案は出発前には準備していくつもりであり、OECDとも事前に協議していく所存。また、S/W案については、先方と協議を行う前に、JICA本部経由で外務省開発協力課に事前に確認をもらう形にしたい。

(OECD 坂本) 今後のタイムスケジュール如何。

(JICA 藤谷) 外務省から別途指示(調査実施をJICAに指示するもの)をもらうタイミングによるが、別途指示をもらってから事前(予備)調査団派遣までには、公示の準備から調査団派遣手続までを含めると2ヶ月弱かかる。ただし今回事業については、別途指示後、官ベースの事前(予備)調査団を再度派遣することはせず、事前(予備)調査としては、役務提供コンサルタントのみを派遣し補足的な情報収集等を行わせる予定。

(OECD 坂本) 既に採択済みの連携D/D5件で行ったように、S/W締結は役務提供コンサルタントの派遣前もしくは派遣中にでも現地JICA事務所が行うことは可能ではないか。もし可能な場合、今回のプロ形調査後に「ス」側よりT/Rが提出され、これを受けて外務省から別途指示が出た後には、すぐS/Wは署名可能になるということか。

(JICA 藤谷) 別途指示が出れば現地事務所がS/W署名することは可能。ただし、S/W署名が終わっても、すぐ本格調査団契約のための公示実施ができるわけではない。公示するまでには、事前(予備)調査を実施する役務提供コンサルタントの調査が終わることが必要。S/Wを役務提供コンサルタント派遣前に締結しても、役務提供コンサルタントの作業中に締結しても、本格調査開始の時期は変わらないところ、別途指示後すぐにS/W署名するほど急ぐ必要はないと考えている。

(外務省 早川) 円借款のプレッジのタイミング如何。S/W署名は円借款のプレッジとタイミングを合わせて行なうべき。

(外務省有償課村田事務官) 1月後半にOECFが現地審査を行うので、2月後半前後から我が方政府部内でOECF審査結果の検討と円借款供与方針案の協議が開始される。なお、来年度ブレッジになると、所得水準の上昇に伴って対「ス」円借款の供与条件が変更されると見込まれることから、今次対「ス」円借款のブレッジは可能であれば今年度内に行いたいと考えている。

(外務省早川) 役務提供コンサルタントの調査の時期(注:早くて3月後半から派遣)も考えると、円借ブレッジに合わせてS/Wを締結すればよい。

(OECF 2部3課井田課長) 対処方針案5.(3)の「調査目的」には、コロンボ市内の配水システムのリハビリが含まれている一方で、同案5.(6)の「調査項目」の中には、「コロンボ市内の配水管のリハビリに係わる施設計画・設計」という項目が含まれていないので、右項目を(6)に含めてほしい。

(JICA 藤谷) 当初より、配水管のリハビリの施設計画・設計は調査対象に入るつもりであったが、対処方針案の方もはっきり分かるように修正する。

(OECF 坂本) T/R案、S/W案等は、「ス」側に置いてくるのか。

(JICA 藤谷) 通常のプロ形では、調査団と先方の間の合意議事録のようなものは作らず、今回もM/Mを結ぶつもりはないが、例えば団長からのレターという形のように、何らかの形でT/R案及びS/W案を「ス」側に置いてこようと考えている。

JICA