ASIAN DEVELOPMENT BANK

TAR: SRI 36173

TECHNICAL ASSISTANCE
(Financed by the Japan Special Fund)

TO THE

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

FOR PREPARING THE

GREATER COLOMBO WASTEWATER PROJECT

December 2004

CURRENCY EQUIVALENTS

(as of 8 December 2004)

Currency Unit	–	Sri Lanka rupee/s (SLRe/SLRs)
SLRe1.00	=	$0.0095
$1.00	=	SLRs104.97

ABBREVIATIONS

ADB	–	Asian Development Bank
CBO	–	community-based organization
CMC	–	Colombo Municipal Council
EIA	–	environmental impact assessment
IEE	–	initial environmental examination
KPI	–	key performance indicators
LA	–	local authority
MUDWS	–	Ministry of Urban Development and Water Supply
NGO	–	nongovernment organization
NWSDB	–	National Water Supply and Drainage Board
O&M	–	operation and maintenance
PPMS	–	project performance monitoring system
PPTA		project preparatory technical assistance
TA	–	technical assistance
UDA	–	Urban Development Authority

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Water supply, sanitation and waste management
Subsector	–	Waste management
Theme	–	Environmental sustainability
Subtheme	–	Urban environmental improvement

NOTE

In this report, "$" refers to US dollars.

This report was prepared by a team consisting of M.T. Kho, M. Thiruchelvam, and N.M. Amerasinghe, South Asia Department.

I. INTRODUCTION

1. During the Country Programming Mission in 2001, the Government of Sri Lanka confirmed its request for technical assistance (TA) from the Asian Development Bank (ADB) to prepare the Greater Colombo Wastewater Project. After further discussions, the Government and ADB agreed that a TA[1] would be provided in 2004, and the proposed loan in 2006 subject to approval by ADB's Board of Directors. A Fact-Finding Mission was conducted in Colombo, Sri Lanka, from 27 September to 4 October 2004 to prepare the TA. The Mission held discussions with the External Resources Department (ERD), Ministry of Urban Development and Water Supply (MUDWS), National Water Supply and Drainage Board (NWSDB), Colombo Municipal Council (CMC), and Central Environmental Authority (CEA) to reach an understanding on the TA objectives, scope, costs, and implementation arrangements. The Mission also consulted the Coast Conservation Department, Marine Pollution Prevention Authority, and National Aquatic Resources Agency on issues relating to the coastal environment. The preliminary project framework is attached as Appendix 1.

II. ISSUES

2. The sewerage network is limited to a small area serving approximately 25% of Greater Colombo, and a large section of it is old and in urgent need of rehabilitation. Effective sewage disposal is a necessary condition, not only for growth but to protect the environment from increasing levels of pollution resulting from various development activities.

3. During the Fact-Finding Mission, the Government confirmed as a priority area the rehabilitation and expansion of the Greater Colombo[2] sewerage system. The Government acknowledges that due to lack of finances and institutional capacity, investment to rehabilitate and to expand the sewerage network will be done through concessionary foreign financing, while possibly outsourcing some functions in the operation and maintenance (O&M) of the sewage disposal systems.

4. Built between 1906 and 1920, and substantially rebuilt and extended with financing from the World Bank and Saudi Fund in the 1980s, some parts of the system need urgent repair. There are two long outfalls, one located in the northern part of Colombo at Mutwal and another in the southern part of Colombo at Wellawatta. The outfall at Mutwal is damaged. The sewer pipes, approximately 300 kilometers long, are partly suffering from acid attack. Eighteen pumping stations are not operating efficiently, suffering from breakdowns. Out of 67 pumps, 25-30% are not working, with the pump water seal and priming systems either broken or in very poor condition. Due to its poor condition and a low rate of connection, the system cannot perform to full capacity.

5. Improvement of system performance, complemented by a higher rate of connection, will help achieve sustainability in O&M. Consumers need to be encouraged to connect where feasible, instead of relying on on-site sanitation. In addition, there is a need to address illegal connections that have diverted wastewater into the canals. The system is also experiencing frequent overflows, resulting in further diversion of wastewater to canals and lakes in Colombo.

6. NWSDB is aware of these problems and realizes the potential of improving the O&M of the sewerage system. The system, which was transferred to NWSDB in 1996, was traditionally operated and maintained by CMC. Although NWSDB is the owner of the sewerage system, O&M has been undertaken primarily by CMC. With no contractual agreement between NWSDB

[1] The TA first appeared in *ADB Business Opportunities* (Internet edition) on 1 September 2004.
[2] Greater Colombo, as defined in this study, comprises (i) the Colombo Municipal Council area, (ii) sewered areas of Dehiwala-Mt. Lavinia Municipal Council, and (iii) Kollonawa Urban Council area.

and CMC that specifies performance standards and penalties for nonperformance, there are no clear institutional arrangements for maintaining and operating the system. With no sewerage tariff being charged to water users connected to the system, CMC relies heavily on property taxes to help pay for O&M of the system.

7. Both parties have recognized the efficiencies that could be gained through performance-based O&M contracts. However, lack of experience in this area and unclear institutional arrangements have prevented both parties from working toward a cost-efficient arrangement for O&M.

8. The Government recognizes the need to introduce cost-recovery through tariffs to ensure sustainability in the O&M of the sewerage system. The Government has moved to initiate plans for the introduction of a sewerage tariff. Cabinet approval for the introduction of the sewerage charge was obtained in September 2002. NWSDB Board approval has also been obtained and gazette notification has been prepared and forwarded to the Attorney General's Department for opinion. However, a tariff is yet to be instituted. MUDWS in the meantime continues its work on reviewing the proposed sewerage charges.

9. The needs of low-income households, particularly the urban poor, which comprise half of the population of Colombo, have yet to be addressed (Appendix 2 gives the summary initial poverty and social analysis). The absence of sewerage connections in most areas occupied by the urban poor calls for other solutions. Where it will not be feasible for them to connect, on-site sanitation will meet their wastewater management needs. The poor have suffered from lack of access, as well as a lack of awareness of the negative environmental impacts of illegally dumping wastewater onto canals and lakes. Addressing the sanitation needs of low-income households, including those of the urban poor, will form part of improving wastewater management in Greater Colombo. As part of its Poverty Reduction Program, CMC has initiated programs to build sanitation systems in selected areas of low-income communities. These steps will need to be further augmented to ensure access of low-income households to sanitation.

10. As the Government faces the challenging task of managing wastewater through the sewerage system and on-site sanitation, it will have to seek cost-efficient ways of delivering the service, involving private sector where appropriate. The private sector can be encouraged to participate in the service of emptying and treating sewage in the Greater Colombo area, helping the Government achieve its goal of effectively managing wastewater. The private sector can also be called upon to operate and maintain parts of the system, and help improve system performance.

11. The Government has already drafted the Water Services Reform Bill for the water sector. The bill introduces specificity in licensing service providers, setting tariffs, service standards, efficiency indicators, consumer rights and obligations, and dispute resolution. Although the bill was contested by local authorities (LAs), a redrafted bill has been completed and is to be submitted to Parliament. Pending the passage of the redrafted bill, the Government is now contemplating how private sector participation can best be encouraged and regulated within the existing laws.

12. Within the given framework, the TA will prepare a project to rehabilitate the Greater Colombo sewerage system, support further reforms in institutional arrangements, and seek further progress in sector reforms that will make O&M of Greater Colombo sewerage system sustainable in the long run. The TA will also focus on improving sanitation in the Greater Colombo area.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

13. The objective of the consultancy is to prepare a project that is suitable for ADB financing. The proposed investments will primarily include rehabilitation and upgrading of the sewer network and pumping stations, and repairs to the sewer outfalls. In addition, institutional and capacity-building components will be formulated to improve asset management, financial management, and O&M of the sewerage system. For on-site sanitation, the proposed investment project will focus on the implementation of improved design and installation, and possible institutional and technological options for emptying, treating, and disposing of septage. Sanitation solutions for the low-income groups and poor communities will be addressed. The consultancy will also develop procurement documents for components identified as priorities and for which designs are available.

14. The TA will (i) increase the capacity of Greater Colombo institutions to manage wastewater, (ii) provide all necessary information to prepare a project to undertake the physical rehabilitation and upgrade of the Greater Colombo sewerage system and improvement of on-site sanitation, and (iii) implement the necessary institutional and policy reforms to ensure financially and institutionally sustainable solutions for the Greater Colombo sewerage system. The TA will prepare a project to support and advance current policy reforms in the sector. The TA will also design a public consultation strategy to be followed during the TA and updated during project processing by ADB.

B. Methodology and Key Activities

15. Greater Colombo, as defined in this study, comprises (i) the CMC area, (ii) sewered areas of Dehiwala-Mt. Lavinia Municipal Council, and (iii) Kollonawa Urban Council area. For on-site sanitation, the project area will be Greater Colombo as defined above and five adjacent LAs within Western Province for the purpose of developing a pilot program. Four LAs will be confirmed at the inception. The possible five areas will be (i) Avissawella, (ii) Bandaragama, (iii) Kaluthara, (iv) Moratuwa, and (v) Panadura. The TA activities will be in three areas:

(i) **On-site facilities (outside sewered areas).** The scope will include (a) implementation of improved design and installation, and (b) possible institutional and technological options for emptying, treating and disposing of septage.

(ii) **Main sewered areas.** The scope will include (a) further institutional change; (b) institutional development in asset management planning and environmental monitoring; (c) performance-based contracting for efficient O&M; (d) strategy to include low-income and underserved settlements; (e) capital works programs for collection, treatment, and disposal; (f) a financial management strategy, including a review of policies related to connection charges; and (g) associated procurement packages for capital works that are part of the project to be designed.

(iii) **Commercial and institutional wastewater.** The focus will be on designing pretreatment standards for wastewater generated by small-scale industries discharging within the sewer network (e.g., gas service stations, hotels, and hospitals that discharge wastewater into the sewer/drainage system). The consultants will also design standard pretreatment facilities for small-scale industries (e.g., service stations, hotels, and restaurants) to meet the proposed discharge standards.

16. For both on-site facilities and main sewered areas, the focus will be on solutions for the urban poor. Possible technical solutions may include (i) constructing permanent connections to the sewers with chambers to allow the easy emptying of the contents of on-site facilities; (ii) providing individual portable chemical toilets for use in association with such chambers; (iii) on-site facilities already commonly used; (iv) constructing shallow sewer systems, but taking account of the fact that many households do not have internal plumbing to use water as a carrier; (v) coordinating other aid-assisted projects that work in these areas; (vi) giving low-income groups access to the main sewerage system; and (vii) constructing small bore systems to take liquid wastes to the sewers.

17. The TA will also prepare (i) a strategy for implementing tariff and cost recovery in the wastewater sector; (ii) an investment project suitable for financing by ADB and following ADB's policies; and (iii) economic and financial feasibility studies, as well as environmental and social impact assessments of proposed capital works. The TA will provide all information necessary for the preparation of a loan project following ADB's operational guidelines.

18. Additional activities to be undertaken during the TA include (i) conducting stakeholder consultations and workshops, (ii) making required studies and surveys, and (iii) preparing required reports. The project team will also carry out policy dialogue to ensure participation and commitment of the Government in required policy and institutional changes.

C. Cost and Financing

19. The total cost of the TA is estimated at $1,150,000 equivalent, comprising $500,000 in foreign exchange and $650,000 equivalent in local currency cost. The entire foreign exchange cost of $500,000 and $350,000 equivalent in local currency will be financed on a grant basis by the Japan Special Fund, funded by the Government of Japan. The Government of Sri Lanka will contribute the remaining local currency cost of $300,000 for office accommodation, counterpart staff support, and other administrative expenses and will provide all information required for the TA activities. The Government of Sri Lanka has been informed that approval of the TA does not commit ADB to finance any ensuing project. Detailed cost estimates are in Appendix 3.

D. Implementation Arrangements

20. MUDWS will be the Executing Agency of the TA and will be responsible for overall coordination with ADB. NWSDB is a key implementing agency and CMC will be a co-implementing agency for activities related to the sewered area of Colombo. NWSDB will provide full administrative and technical support to the consultants and will coordinate all activities under the TA with other Government agencies. NWSDB will provide the consultants with adequate office space and sufficient means of communication. NWSDB will appoint a full-time project director by 31 January 2004.

21. Before the consultants begin fieldwork, MUDWS will establish a TA steering committee, chaired by the secretary of MUDWS, and consisting of senior officials of NWSDB and CMC; representatives of the main LAs (except CMC), Ministry of Finance, Ministry of Provincial Councils and Local Government, Western Provincial Council, Urban Development Authority (UDA), CEA, Coast Conservation Department, Marine Pollution Prevention Authority, aid-agencies and ADB. The steering committee will meet at least once every 2 months during project implementation to discuss the reports of the consultants after the inception, midterm, and final workshops, or upon achievement of key milestones by the consultants.

22. A project-level working group will be established, chaired by the Project Management Unit of NWSDB and with members from CMC, main LAs, UDA, CEA, and civil society advocacy

groups to coordinate project-level activities. The working group will meet at least once a month during TA implementation.

23. The TA will be implemented over 7 months from April 2005 to October 2005. Consulting services for the TA will total 67 person-months (14 international and 46 domestic), excluding inputs of local institutions that will conduct a survey of baseline socioeconomic conditions, willingness to pay, attitude toward grey water, supply of software and sewer system modeling, and outfall modeling in the coastal areas. Inputs of a legal firm to draft model performance contracts (Appendix 4, para 8) are also excluded. An international firm will be engaged to organize the TA activities and produce the intermediate and final outputs for review and approval by MUDWS and ADB. The experts to be provided by the firm will include wastewater engineers, structural engineer, hydraulic engineer, mechanical and electrical engineer, quantity surveyor, procurement specialist, environmental specialist, project economist, social/gender development specialist, institutional development specialist, public utility finance specialist, financial analyst, resettlement specialist, information technology and network specialist, and public awareness consultant. Outline terms of reference are in Appendix 4.

24. The TA will provide equipment such as computers and other office equipment that the consultant will purchase in accordance with ADB's *Guidelines for Procurement.* The equipment will be handed over to NWSDB upon completion of the TA. The TA will also provide funds for workshops, surveys, and studies to be conducted by the consultants under arrangements acceptable to ADB.

25. The consultants will be selected and engaged in accordance with ADB's *Guidelines on the Use of Consultants,* and other arrangements satisfactory to ADB for engaging domestic consultants. A full technical proposal with the quality- and cost-based selection method will be used to select the consulting firm. The consultants will prepare (i) an inception report, due within 1 month of TA commencement; (ii) an interim report, due within 4 months of TA commencement; (iii) a draft final report, due within 6 months of TA commencement; and (iv) a final report, upon completion of the TA study. During implementation, the consultants will organize three workshops in Colombo to discuss the inception, interim, and draft final reports. Tripartite meetings will be held immediately after the workshops for the inception, interim, and draft final reports. The consultants will also organize participatory meetings throughout TA implementation, to disseminate information on the project and incorporate feedback from local stakeholders in the project design.

IV. THE PRESIDENT'S DECISION

26. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $850,000 on a grant basis to the Government of Sri Lanka for preparing the Greater Colombo Wastewater Project, and hereby reports this action to the Board.

PRELIMINARY PROJECT FRAMEWORK

Design Summary	Performance Indicators and Targets	Monitoring Mechanisms	Assumptions and Risks
Goal Improved wastewater management in Greater Colombo	Reduced pollution loads to canals and other water bodies in Greater Colombo	Periodic monitoring by National Water Supply and Drainage Board (NWSDB) Colombo Municipal Council (CMC) Public Health Department statistical reports	
Purpose Improve asset and management of the Greater Colombo sewerage system	Development and implementation of performance-based indicators for asset management in the sewered areas .	Asset condition surveys by NWSDB	**Assumptions** Willingness to connect to the sewerage system and pay associated tariffs
Develop institutional capacity to improve financial and asset management in the sector	Implementation of a performance-based contract between the asset owner and asset operators	Number of contract condition violations and public reports and complaints	Readiness of both parties to implement performance-based contracts
Implement cost recovery in the sewerage sector	Implementation of the sewerage charge	Annual financial statements of NWSDB	Timely institution of tariffs to achieve cost recovery
Improve access to appropriate sanitation by underserved areas within the sewered area and areas outside the sewered areas	Increased number of sewerage connections (domestic, institutional, and industrial) in the sewered areas Increased number of on-site sanitation facilities	Connection reports Customer billing database local authority permits	**Risks** Delays in project implementation Political will for implementation of contractual obligations
Outputs[1]			
Activities[1]			
Inputs[1]			

[1] To be developed during technical assistance implementation.

INITIAL POVERTY AND SOCIAL ANALYSIS

A. Linkages to the Country Poverty Analysis

Is the sector identified as a national priority in country poverty analysis?	☒ Yes ☐ No	**Is the sector identified as a national priority in country poverty partnership agreement?**	☒ Yes ☐ No

Contribution of the sector or subsector to reduce poverty in Sri Lanka :

The national policy accords priority to the water and sanitation sector to improve the living standards of people. Greater access of the poor to water and sanitation, among others, is considered a vital area in the strategies adopted for poverty reduction.

The project will include improvement of the sewerage system and sanitation in underserved communities, including those adjacent to the canals, where community toilet facilities are badly used, and sewage leaks into the canals or toilets directly discharge to the canals. These are the same areas where grey water is disposed of haphazardly on surface soil and to the canals, and where pollution could be a contributor to higher incidence of certain diseases, such as cholera and dengue.

B. Poverty Analysis **Targeting Classification: General intervention**

What type of poverty analysis is needed?

A large population live scattered in varying sizes of settlements throughout the municipal areas of Colombo, Dehiwala-Mt. Lavinia. A 1998 survey covering the municipal area of Colombo recorded 54,511 units, distributed in 1,704 settlements. The settlements have a population of 350,000, representing 43% of the city population. A more recent study revealed that 56% of poor families in the city do not have access to adequate and reliable drinking water, only 33% of the households have individual toilet facilities, 65% use shared toilet facilities and 2% have no toilet facilities at all.

A poverty impact analysis for components of the project will need to be undertaken during the project preparatory technical assistance (TA).

C. Participation Process

Is there a stakeholder analysis? ☒ Yes ☐ No

Is there a participation strategy? ☒ Yes ☐ No

Key stakeholders of the project are the: (i) Ministry of Urban Development and Water Supply, (ii) National Water Supply and Drainage Board, (iii) Colombo Municipal Council (CMC), (iv) local authorities, (v) poor and vulnerable groups, (vi) citizens of the project area, and (vii) firms engaged in waste collection. Most were consulted extensively during the small-scale TA[1] The proposed TA will conduct baseline socioeconomic surveys including willingness to pay and attitude toward grey water.

CMC has periodically sought the participation of nongovernment organizations (NGOs) in its projects. During the TA, key stakeholders including NGOs and community-based organizations (CBOs) will be encouraged to participate in workshops to give their views on the proposed project.

D. Gender Development

Strategy to maximize impacts on women:

Since women are mainly engaged in domestic activities and perform the key roles of wife, mother, and social collaborator, their roles make them the main spokespersons of their families. Their participation in activities generated by the interplay of community-based agents such as CBOs and NGOs is considered significant.
Women's visibility in the sector depends on what benefits accrue to them from the sector. In a shanty and slum settlement where health and sanitation are critical issues, women have to use common toilets; and where the natural instinct for privacy usually inherent in women is not respected, there is a strong willingness among them to participate

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in order to address their fears. In summary, the strategy to enlist women in participation should incorporate aspects such as project benefits to be disseminated through CBOs and NGOs.
Has an output been prepared? ☐ Yes ☒ No

E. Social Safeguards and other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
Resettlement	☐ Significant ☒ Not significant ☐ None	To be further confirmed during the TA	☐ Full ☐ Short ☒ None
Affordability	☐ Significant ☐ Not significant ☐ None	To be determined. This will have to be closely monitored upon formulation of a cost-recovery strategy for the operation and maintenance of the sewerage system.	☐ Yes ☐ No
Labor	☐ Significant ☐ Not significant ☐ None	To be determined. This is not considered significant unless services will be outsourced to the private sector. The TA will examine CMC's experience in solid waste management so as to understand the impact on labor of any proposed institutional arrangements.	☐ Yes ☐ No
Indigenous Peoples	☐ Significant ☐ Not significant ☒ None		☐ Yes ☒ No
Other Risks and/or Vulnerabilities	☐ Significant ☐ Not significant ☒ None		☐ Yes ☒ No

[1] ADB. 2003. *Small-Scale Technical Assistance for Greater Colombo Waste Water Management Sector Review.* Manila.

COST ESTIMATES AND FINANCING PLAN

($'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing[a]			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	413.0	0.0	413.0
ii. Domestic Consultants	0.0	147.0	147.0
b. International Travel	35.0	0.0	35.0
c. Reports and Communication	0.0	11.0	11.0
2. Office Equipment[b]	14.0	0.0	14.0
3. Studies, Surveys, and Legal Input	0.0	110.0	110.0
4. Workshops	0.0	3.0	3.0
5. Local Transport	0.0	10.0	10.0
6. Office and Administrative Services	0.0	22.0	22.0
7. Representative for Contract Negotiations	0.0	7.0	7.0
8. Contingencies	38.0	40.0	78.0
Subtotal (A)	**500.0**	**350.0**	**850.0**
B. Government of Sri Lanka Financing			
1. Office Accommodation and Utilities	0.0	100.0	100.0
2. Remuneration and Per Diem of Counterpart Staff	0.0	180.0	180.0
3. Steering Committee/Project Implementation Meetings and Other Logistical Support	0.0	20.0	20.0
Subtotal (B)	**0.0**	**300.0**	**300.0**
Total	**500.0**	**650.0**	**1,150.0**

[a] Financed by the Japan Special Fund, funded by the Government of Japan.

[b] Office equipment (5 desktop computers, uninterrupted power supply, software, 2 laser printers, 1 inkjet color printer, 1 scanner, 1 photocopier with document collator, 1 facsimile machine, 6 desktop telephones, and 5 cellular telephones) will be purchased by the consultants in accordance with ADB's *Guidelines for Procurement*. The equipment will be handed over to the National Water Supply and Drainage Board upon completion of the technical assistance.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS[1]

1. The consultants will be selected and engaged in accordance with the Asian Development Bank's (ADB) *Guidelines on the Use of Consultants,* and other arrangements satisfactory to ADB for engaging domestic consultants. A full technical proposal with the quality- and cost-based selection method will be used to select the consulting firm.

A. Scope of the Consultancy

1. On-Site Facilities (Outside Sewered Areas)

2. The consultant will conduct a sample survey to confirm the public attitude to the disposal of domestic wastewater including grey water, and willingness to pay for service to be provided by the local authorities (LAs) of emptying septage on a regular basis. The consultant will become familiar with existing manuals, guidelines, new regulations, and existing practices to develop suitable designs for domestic wastewater treatment for different soil permeabilities (e.g., high groundwater areas and coastal areas). The consultant, in consultation with the LAs, will also determine training needs and develop a training program for efficient implementation of the proposed options. On the basis of the results, the consultant will develop a public awareness campaign for effective dissemination.

3. The consultant will study and develop an environment-friendly and economical method to treat wastewater from gully emptying tanks, and thereafter develop the bidding documents to evaluate, negotiate, and contract for a pilot project.

2. Main Sewered Areas

4. **Customer Enumeration Survey.** The consultant will begin by using and analyzing existing data to determine more accurate figures of the actual number of connections, including illegal connections. The information will be used to establish key performance indicators (KPI) in the service contracts (e.g., number of connections to be made per month) and connection policies. The consultant will design a survey and recommend any necessary hardware and software–both to be carried out during project implementation–to construct a database that indicates water sources and presence of sewer connections. The database will be linked to the existing National Water Supply and Drainage Board (NWSDB) customer roll. The consultant therefore must also investigate the necessary administrative changes including appropriate cost-sharing arrangements. The consultant will then identify an investment and training program to implement the recommendations.

5. **Financial Strategy**. The consultant will update any previous studies on sewerage tariff conducted by NWSDB, Colombo Municipal Council (CMC), and LAs (e.g., Associated Management Services produced a report on a sewerage tariff in 2000). On the basis of the results, the consultant will provide a tariff model to meet efficient operation and maintenance (O&M) (O&M includes annual infrastructure renewals cost) of the system. This should be done in consultation with Government people involved in tariff regulating mechanisms, reform programs, and policies (this section may not be needed and may be dropped if the proposed sewerage changes are implemented). The consultant will update a willingness-to-pay survey and develop a strategy for implementing a cost-recovery tariff in the medium term. This strategy

[1] The consultants will perform their work based on existing comprehensive studies, which may require revision and updating as necessary. One such study is the Greater Colombo Wastewater Management Review, completed in August 2004 and funded through a small-scale technical assistance by the Asian Development Bank.

should also include the mechanism to educate the public on the expected benefits to the customer and the environment.

6. **Institutional Development in Asset Management Planning.** The consultant will provide a most appropriate sewer system modeling software to use and to be developed to best practice asset management standards. The consultant will also undertake limited manhole and flow surveys to build and verify the model (for those sections where the asset details are available) and develop an asset management plan. The consultant will further develop a management information systems (MIS) to put NWSDB in a competitive position to bid for service contracts on an open transparent basis in the future. Such MIS will include (i) asset management software, (ii) financial information and cost analysis for operational activities, (iii) compliance sampling and monitoring, and (iv) quality assurance systems. The consultant will also identify institutional requirements for monitoring (e.g., environmental monitoring), and develop a program and investment plan to institutionalize performance monitoring of the sewerage system.

7. **Training and Public Disclosure.** For this activity, the consultant will develop (i) a training plan for managing the MIS; (ii) a manual of best practices for asset management, which will include sewer connection, O&M, etc.; and (iii) a model for public response and disclosure program for the sector. All these will be implemented as part of the project.

8. **Furthering Institutional Change.** The consultant will review the adequacy of the draft Water Services Reform Bill and the proposed alternatives pending its passage. Taking this into consideration, the consultant will draft model performance[2] (based on KPI developed, para. 4) contracts between the asset owner and the asset operator (may be a separate institute or even a department within the same institute) based on the institutional arrangements suggested and agreed upon during the small-scale technical assistance (SSTA). The consultant will develop cost models for the individual contracts to assist in determining the initial contract values based on best practice asset management standards developed above. The contractual agreement should include a provision for outsourcing services by the asset owner and the asset operator. The consultant will identify possible areas for outsourcing under the overall institutional arrangements.

9. **Asset Management Plan and Initial Capital Works Program.** The consultant will assess, prioritize, and define in detail the capital works program for the main sewered areas. This activity will primarily consist of rehabilitation works based on the recommendations in the Department for International Development (DFID)-funded study of 1999,[3] and updated by the SSTA as well as any available updates to the structural development plans. It should also include any other updates and other works proposed or undertaken by NWSDB and CMC. Any proposed option must have technical, financial, economical, and environmental viability, and may need to include a phased program for treatment and disposal. Having developed a capital works program in consultation with NWSDB, CMC, and ADB, the consultant will develop draft procurement documents for packages identified as priorities and for which designs are available. For other packages, the consultant will develop conceptual designs and identify further works to be included in the investment phase or as turnkey contracts. The consultant will develop a sample terms of reference for a design, management, and supervision consultancy for use during implementation of the Project.

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[2] Inputs from a legal firm will be required.

[3] Department for International Development. 1999. *Sewerage Rehabilitation Proposals for Colombo.* W S Atkins International Limited, National Water Supply and Drainage Board.

10. **Improving Sewage Services to Low-Income and Underserved Areas.** The consultant will create a database of the various underserved areas showing types of existing sanitation facilities and other relevant data considered useful. The consultant will then prioritize the areas needing development in accordance with the ongoing initiatives of the LA and Government of Sri Lanka policies, and develop program for improving sanitation in the high-density areas. This component will build on lessons learned from ADB and other aid-assisted projects and technical assistance.

3. Industrial, Commercial, and Institutional Wastewater

11. The consultant will develop discharge standards for industrial, commercial, and institutional wastewater channelled into the sewer network. The consultant will also design standard pretreatment facilities for small-scale industries (e.g., service stations, hotels, and restaurants) to meet the proposed discharge standards.

4. Environmental and Social Analyses

12. **Environmental Analysis**. The consultant will review all environmental acts, guidelines, and procedures related to water quality, water resources, solid wastes, and effluents at national, provincial, and local levels and assess whether additional safeguards are necessary for a safe and environment-friendly project (include the Marine Pollution Prevention Act that is currently being revised, Coast Conservation Act, National Environmental Act, and the standards of the Sri Lanka Standards Institute); and recommend environmental standards and monitoring and enforcement mechanisms to ensure that procedures in place can assess the impact of the various programs that will be implemented.

13. The consultant will review all environmental baseline data pertinent to the project sites including physical and ecological resources as well as socioeconomic and cultural components; in addition to those presented in other documents, screen for other potential environmental impacts, characteristics, magnitude, distribution among the identified affected group, and their duration; recommend appropriate mitigating measures, where necessary, and associated mitigation costs; determine the appropriate treatment and disposal that need to be met, taking into consideration marine- vs land-based treatment; and address the issue of wastewater diversion into canals, lakes, and water bodies.

14. The consultant will undertake modeling of existing and proposed sewage discharge through a deep-sea outfall. This activity will include projections of absolute pollutants mass (biochemical oxygen demand, chemical oxygen demand, total suspended solids, total nitrogen and fecal coliform, among other indicators) and concentrations at diffuser and key distances from it. At the outfall and key distance points (such as the nearest shore point), the consultant will make a visual inspection/examination as well as conduct environmental sampling and pollutant analysis.

15. The consultant will prepare an initial environmental examination (IEE) and its summary for all proposed project components, and assess whether a full environmental impact assessment (EIA) will be required. All environmental assessments and examinations will be conducted in accordance with ADB's *Environment Policy Operations Manual Section F1*, ADB's *Environmental Policy* and *ADB's Environmental Guidelines* (http://www.adb.org/Environment/default.asp), as well as Sri Lanka's environmental regulations. The IEE/EIA should have recommendations for environmental mitigating measures, associated costs, and monitoring systems. The consultant will prepare IEE/EIA in close consultation with appropriate Government agencies and obtain the required approvals.

16. The consultant will also prepare the environmental and social impact assessments of the proposed capital works, and options for on-site sanitation and industrial waste. The study will include any resettlement or land acquisition that would be needed.

17. **Social Analysis.** The consultant will accomplish the following tasks: (i) survey the project beneficiaries by gender and income group (baseline socioeconomic survey); (ii) estimate the number of project beneficiaries with income below the official poverty line, conduct affordability analysis, determine willingness to pay and connect, identify vulnerable groups (including ethnic minorities), assess project impacts (both direct and indirect), assess socioeconomic benefits and possible negative impacts, in accordance with ADB's *Guidelines for Incorporation of Social Dimensions in ADB Operations, Gender Checklist for Water Supply and Sanitation* and the *Handbook on Poverty and Social Analysis*; (iii) carry out and document public consultation to ensure the participation of key stakeholders in service planning during the feasibility study and TA implementation; (iv) collect and analyze health data, including morbidity and mortality rates due to waterborne diseases; (v) develop a project performance monitoring system (PPMS) to estimate benefits and impacts, including relevant benchmarks; and evaluate project performance, following ADB's PPMS guidelines; and (vi) review the poverty situation in the project area and assess the project's impact on the poor. The consultant will also prepare a gender analysis and a poverty impact assessment of the Project in accordance with ADB's guidelines.

18. Regarding resettlement, the consultant will (i) survey and interview people losing their land, income, housing, or other assets to ensure proper participation; (ii) assess the willingness of people to be resettled, adequacy of the compensation budget, and organizational structure to implement the resettlement action plan; (iii) check and confirm that no minority nationalities are affected; (iv) help prepare the English version of the resettlement plan and its summary in accordance with the Government's national policy on resettlement and ADB's *Handbook on Resettlement* and *Policy on Involuntary Resettlement;* (v) document the mechanisms for public information, beneficiary consultation, and grievance procedures, and recommend measures to enhance public involvement and participation, particularly of women and poor households; and (vi) recommend ways to improve grievance procedures for resettlement planning and implementation. The consultant will also ensure that (i) the resettlement plans prepared meet ADB standards and requirements, and (ii) the English and local language versions of the resettlement plan are submitted to ADB. Resettlement plans will be disclosed to affected persons before submitting them to ADB, and will be prepared in full consultation with affected persons.

19. **Stakeholder Consultation.** The consultant will identify key stakeholders, including civil society advocacy groups that need to be involved in the project preparatory technical assistance (PPTA) and project implementation. The consultant will prepare a stakeholder consultation strategy and methodology for implementation during the PPTA and during project implementation to ascertain that (i) the proposed project meets the needs of Greater Colombo households, including those with low income; (ii) the proposed project complies with ADB's safeguard policies on environment and resettlement; and (iii) sufficient consultation is conducted where private sector participation is recommended. The stakeholder consultation strategy will be incorporated in the project framework.

5. Project Costs and Financing Plan

20. The consultant will use the COSTAB program to (i) estimate costs in detail; (ii) compile and present procurement contract packages for international competitive bidding, international

shopping, local competitive bidding, force account, and consulting services, clearly indicating packages to be financed by the ADB loan in line with ADB's *Guidelines for Procurement*; and (iii) prepare detailed financing and disbursement plans.

21. **Economic Analysis**. The consultant will conduct economic analysis of the project in accordance with ADB's *Guidelines for the Economic Analysis of Projects*. The consultant will (i) describe the macroeconomic and sectoral context within which the project will be implemented; (ii) update the wastewater discharge forecast and demand projections for water in the project area by user group (domestic, industrial, agricultural, commercial, and others); (iii) assess the project alternatives and identify the least-cost option; (iv) review tariff levels and structure for each subproject and assess the need to increase tariffs and charges in the short and medium term, taking into account ADB's position on tariffs (please refer to Economics and Research Department's Technical Note No. 9 and No. 10 and related ADB reports); and (v) identify all quantifiable and nonquantifiable project economic benefits by comparing with- and without-project scenarios.

22. **Financial Analysis and Financial Management Assessment.** The consultant will make a financial analysis of each subproject and financial management assessment of executing/implementing agencies in accordance with ADB's *Framework for the Economic and Financial Appraisal of Water Projects,* and *Guidelines for the Financial Governance and Management of Investment Projects*. The consultant will (i) review water and wastewater tariff level and structure, and determine their adequacy by comparing them with the project's average incremental financial cost; (ii) assess the mechanisms for approval of water and wastewater tariff increases; (iii) recommend any improvement, taking into consideration the full cost recovery requirement, cross subsidy, affordability, and future operating capacity replacement and expansion (capital investment) and debt repayment; (iv) recommend a plan for tariff increase in line with any national water and wastewater tariff guidelines; (v) assess the financial viability of the project; estimate the project's financial internal rate of return; and perform sensitivity and risk analyses, including switching values and calculation of the project's real weighted average cost of capital; and suggest appropriate financial covenants.

B. Reporting Requirements and Expertise

23. The required reports will consist of an inception report, an interim report, a draft final report, and a final report. The consultant will organize three workshops in Colombo to discuss the inception, interim, and draft final reports. The consultant will also organize participatory meetings throughout TA implementation, to disseminate information on the project and incorporate feedback from local stakeholders in the project design.

24. The experts (person-months are enclosed in parenthesis) to be provided by the firm will include wastewater engineers (14), structural engineer (3), hydraulic engineer (3), mechanical and electrical engineer (3), quantity surveyor (5), procurement specialist (3), environmental specialist (7), project economist (4), social/gender development specialist (3), institutional development specialist (5), public utility finance specialist (2), financial analyst (4), resettlement specialist (2), information technology and network specialist (4), and public awareness consultant (2).