Updated Environmental Assessment and Review Framework

August 2015

SRI: Greater Colombo Water and Wastewater Management Improvement Investment Program

Prepared by the National Water Supply and Drainage Board and Colombo Municipal Council for the Asian Development

CURRENCY EQUIVALENTS

(as of 3 August 2015)

Currency unit	–	Sri Lanka rupee/s (SLRs)
SLRs1.00	=	$0.00747
$1.00	=	SLRs133.760

ABBREVIATIONS

ADB	–	Asian Development Bank
CEA	–	Central Environment Authority
CCD	–	Coast Conservation Department
CITES	–	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMC	–	Colombo Municipal Council
CMS	–	Convention on Migratory Species of Wild Animals
DMA	–	district metering area
DSIC	–	design, supervision, and institutional consultant
EARF	–	environmental assessment and review framework
EMP	–	environmental management plan
EIA	–	environmental impact assessment
GN	–	Grama Niladhari
GoSL	–	Government of Sri Lanka
GRC	–	grievance redressal committee
GRM	–	grievance redress mechanism
IEE	–	initial environmental examination
IUCN	–	International Union for Conservation of Nature and Natural Resources
MASC	–	management advisory and supervision consultant
MFF	–	multitranche financing facility
MPALG&DG	–	Ministry of Public Administration, Local Government and Democratic Governance
MUD&WSD	–	Ministry of Urban Development, Water Supply and Drainage
NRW	–	non-revenue water
NWSDB	–	National Water Supply and Drainage Board
PAA	–	project approving authority
PMU	–	project management unit
PPTA	–	project preparatory technical assistance
PRO	–	public relations officer
REA	–	rapid environmental assessment
RoW	–	right-of-way
RSC-WC	–	Western Central Regional Support Center
SLSI	–	Sri Lanka Standards Institute
SPS	–	Safeguard Policy Statement
TOR	–	terms of reference
WTP	–	water treatment plant
WWTP	–	wastewater treatment plant

WEIGHTS AND MEASURES

km	–	kilometer
km^2	–	square kilometer
m^2	–	square meter
mm	–	millimeter
m^3/day	–	cubic meter per day

NOTE{S}

In this report, "$" refers to US dollars.
“SLRs” and “₹” refer to Sri Lankan rupees.

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I. INTRODUCTION

A. Overview

1. The Greater Colombo Water and Wastewater Management Improvement Investment Program is a key infrastructure initiative of the Government of Sri Lanka, which aims to deliver better urban water supply and wastewater services in an effective and efficient manner in the Greater Colombo Area. The impact of the investment program will be improved urban environment and quality of life for the residents of Greater Colombo. The expected outcome will be improved water and wastewater service and management efficiency in Greater Colombo. The expected outputs are (i) rehabilitated water supply network and reduced non-revenue water (NRW) in Colombo City; (ii) improved wastewater services in Greater Colombo; (iii) institutionally strengthened, reformed, and more capable service providers; and (iv) a successfully managed and implemented investment program. The program is to be implemented from 2013 to 2020.

2. The investment program uses a multitranche financing facility (MFF) investment approach, and in accordance with ADB's Safeguard Policy Statement (SPS, 2009), requires the preparation of an environmental assessment and review framework (EARF).[1]

B. Purpose of EARF

3. The purpose of this EARF is to do the following: (i) describe the proposed projects in the MFF; (ii) explain the general anticipated environmental impacts of the projects to be financed under the proposed loan; (iii) specify the requirements that will be followed in relation to project screening and categorization, assessment, and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements and, where applicable, safeguard criteria that are to be used in selecting projects and/or components; (iv) assess the adequacy of the clients' capacity to implement national laws and ADB's requirements, and identify needs for capacity building; (v) specify implementation procedures, including the budget, institutional arrangements, and capacity development requirements; (vi) specify monitoring and reporting requirements; and (vii) describe the responsibilities of the clients and of ADB in relation to the preparation, implementation, and progress review of safeguard documents of projects. The project selection will be in accordance with the environmental project selection criteria as outlined in this EARF.

4. This EARF is prepared based on (i) ADB's SPS, 2009, and (ii) the Government of Sri Lanka National Environmental Act (NEA) and its amendments. All environmental assessment is required to follow the procedures outlined in this EARF. Any component included in the investment program will comply with government environmental requirements and ADB's SPS, 2009. All environmental documents will be endorsed and approved by the implementing agencies, NWSDB, and CMC, for respective projects, and cleared by ADB.

5. The EARF ensures that all projects under the investment program, in the entirety of their project cycle, will not deteriorate or interfere with the environmental sensitivity of a project area, but rather improve environmental quality.

[1] The preparation of safeguard frameworks aims to clarify safeguard principles and requirements governing screening and categorization, environmental assessment, and preparation and implementation of environmental plans of subprojects to be prepared after loan approval.

C. Updating of the EARF for Project 3

6. Investments under the MFF were originally to be four (4) projects. Projects 1 and 2 focus on reducing non-revenue water and improving water service efficiency in Colombo City. Projects 3 and 4 will include improvements in wastewater services and expand the service coverage to other areas of Greater Colombo. Projects 3 and 4 have been combined as Project 3 thus EARF has been updated to be consistent with the investment components.

D. Investment Program Components

7. Projects with required work components of infrastructure and service improvement up to the planning horizon 2020 have been identified and are placed as Appendix 1.

8. The executing agencies are the Ministry of Urban Development, Water Supply and Drainage (MUD&WSD) and the Ministry of Public Administration, Local Government and Democratic Governance (MPALG&DG). The implementing agencies are National Water Supply and Drainage Board (NWSDB) for water supply components and Colombo Municipal Council for wastewater components. Project management units (PMUs) will be established in each implementing agency. The NWSDB PMU will be assisted by the management advisory and supervision consultant (MASC), and the CMC PMU will be assisted by the design, supervision, and institutional consultants (DSIC). Provision is made under the investment program for funding the costs of PMUs as well as the cost of consultants[2] to provide assistance in project management and related capacity building. Such support is considered essential to the implementation of the investment program, particularly in light of the lack of experience of National Water Supply and Drainage Board (NWSDB) and Colombo Municipal Council (CMC) with projects this large, implemented through separate design and construction contracts.

9. Project 1 is category B in accordance with ADB's SPS, 2009. During project preparation, a draft initial environmental examination (IEE) was prepared for the water supply project. Under Project 1, the following types of physical works are planned: (i) supply and installation of flow meters and pressure transducers including reporting software; (ii) supply and delivery of leak detection special equipment and large diameter pipe special equipment; (iii) provision of vehicles; (iv) supply and laying of pipes for replacement and reinforcement of distribution system north of Colombo City area; (v) supply and laying of pipes for replacement and reinforcement of distribution system in center of Colombo City area; and (vi) construction of two buildings for NRW offices.

10. Project 2 is category B in accordance with ADB's SPS, 2009. During project preparation a draft IEE was prepared for the south part of Colombo city subproject. Physical works proposed under the subproject include (i) Supply, laying, construction and rehabilitation of distribution networks; (ii) descaling, relining and replacement of large water pipes; (iii) replacement of spaghetti lines; (iv) reinforcement of DI pipes; (v) supply and installation of sluice valves and tee connections; (vi) supply and installation of fire hydrants and chambers; (vii) construction and rehabilitation of pump houses; and (viii) construction and rehabilitation of office/ training buildings.

11. The IEEs concluded that the project will have only small-scale, localized impacts on the environment which are readily mitigated. The potential adverse environmental impacts are mainly related to the construction period, which can be minimized by the mitigating measures and environmentally sound engineering and construction practices. Therefore, no significant

[2] MASC for NWSDB and DSIC for CMC.

environmental impacts are anticipated. Mitigation measures and monitoring plans were proposed in the environmental management plan (EMP), which forms part of the IEE.

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Environmental Legislation

12. The requirement for environmental assessment in Sri Lanka is established by the National Environment Act No. 47 (1980), amendment to the act (1988), Act No. 56 Section 23A, environmental impact assessment (EIA) regulation under Part 4C, under the provision of Section 23Z. The procedures are defined in the EIA Regulations, Gazetted No. 772/22 (1993). The regulations specify activities for which environmental assessment is mandatory, and those which could occur within project are as follows:

(i) projects that fall within 100 m from the boundaries of or within any area declared under (a) the National Heritage Wilderness Act No. 3 (1988); (b) the Forest Ordinance (Chapter 451);
(ii) whether or not such areas are wholly or partly within the coastal zone as defined in the Coast Conservation Act No. 57 (1981); and
(ii) projects that fall within sensitive areas.

13. Sensitive areas are defined in the EIA Regulations as:

(i) any erodable area declared under the Soil Conservation Act (1951, 1953);
(ii) any flood area declared under the Flood Protection Ordinance (1924, 1955);
(iii) any flood protection area declared under the Land Reclamation and Development Corporation Act (1968, 1982);
(iv) any reservation beyond the full supply level of a reservoir;
(v) any archaeological reserve, ancient, or protected monument as defined or declared under the Antiquities Ordinance (1965);
(vi) any area declared under the Botanic Gardens Ordinance (1928, 1973);
(vii) areas within or less than 100 m from the boundaries of any area declared under the Forest Ordinance and National Heritage and Wilderness Act (1988);
(viii) areas within or less than 100 m from the boundaries of any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (1937);
(ix) areas within or less than 100 m from the high flood level contour of a public lake, as defined by the Crown Lands Ordinance (1947, 1949, 1956), including those declared under Section 71 of the ordinance;
(x) areas 60 m or less from the bank of a public stream as defined in the Crown Lands Ordinance, with a width of more than 25 m at any point; and
(xi) areas declared under the Urban Development Authority Act No. 41 (1978) and Act No 4 (1982) Section 29 (this indicates in its definition that laws are valid to the areas of the local authorities).

14. The requirement for EIA and the level of study required are determined by the Central Environment Authority (CEA) after submission by the proponent of a project information document (PID), plus supporting information if relevant. There are two possible outcomes:

(i) Categorical exclusion: The activity is not on the list of prescribed projects in the EIA regulations, is not in or near a sensitive area, has not been the subject of public protest, and it is clear from the PID and supporting information that the

project will have no significant environmental impacts. Environmental clearance is granted (with or without conditions) and the project may proceed; and

(ii) all other projects require environmental assessment, and the CEA establishes a scoping committee to decide on the level of study (EIA or IEE) and prepare terms of reference (TOR). Alternatively, if the project lies wholly within the jurisdiction of a single government agency, CEA may refer the project to this authority (as the project approving agency) to administer the EIA process. A technical review committee reviews the completed EIA or IEE report and recommends whether environmental clearance shall be granted; the final decision is made by CEA.

15. There are further compliance requirements prescribed by other certain legislation, in particular the Coast Conservation Act, which requires clearance by the Coast Conservation Department (CCD) for any development activity or structure in the coastal zone[3]. If the CEA or CCD requires any additional environmental studies, NWSDB and CMC will be responsible for conducting these, and complying with any conditions set by these agencies in granting approval.

16. No development or encroachment of any kind is permitted in archaeological reserves declared under the Antiquities Ordinance No. 9 (1940) as amended (Section 34). The Director General of Archaeology is empowered to conduct an archaeological impact assessment of areas that may be affected by development or other projects proposed by the government or any person.

17. No construction activities are permitted in national reserves[4] and forest reserves[5]. Sanctuaries, also declared under the Fauna and Flora Protection Ordinance, may include privately held land. Clearance from the Department of Wildlife Conservation is required if construction is proposed in sanctuaries. Construction within a 1-mile (1.6 km) radius of a national reserve, sanctuary, or buffer zone needs permission from the Department of Wildlife Conservation. Any construction taking place in close proximity to a forest reserve must be approved and cleared by the Forest Department. Any development activity within a fishery reserve[6] requires the permission and approval of the Director of Fisheries and Aquatic Resources.

18. In addition to environmental clearance, approval from CMC and CEA for site clearance will be obtained before construction begins.

19. The Sri Lanka Standards Institute (SLSI) is the national standards body of Sri Lanka,

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[3] The coastal zone is defined in the Coast Conservation Act No. 57 of 1981 "as the area lying within a limit of 300 m landward from mean high water line (MHWL). In the case of rivers, streams, lagoons, or any other body of water connected to the sea, either permanently or periodically, the landward boundary extends to a limit of 2 km measured perpendicular to the straight baseline drawn between the natural entrance points thereof and includes waters of such rivers, streams, and lagoons or any other body of water so connected to the sea." In consideration of the tsunami event of December 2004, the government declared that "a 100-m buffer zone from the permanent vegetation line of the beach front should be delineated for any new construction in the west and south coast from Kala Oya river mouth (Gange Wadiya) to Kinindi Oya river mouth, and a 200-m buffer zone from the permanent vegetation line of the beach front should be delineated for any new construction in the east and the north coast from Kinindi Oya river mouth to Kala Oya (Gange Wadiya)". All permits for the development activities within the buffer zone will be issued by the Director, Coast Conservation

[4] National reserves are under the jurisdiction of the Department of Wildlife Conservation as per Fauna and Flora Protection Ordinance No. 2 of 1937 as amended.

[5] Forest reserves are under the jurisdiction of the Forest Department per Forest Ordinance of 1907 as amended.

[6] Certain areas adjoining earmarked reservoirs and water bodies can be declared as a fishery reserve with the concurrence of the Minister of Wild Life and Natural Resources.

established under the Bureau of Ceylon Standards Act No. 38 of 1964. All applicable SLSI standards are presented in Appendix 2.

20. A summary of government environmental compliance requirements applicable to the project is presented in Table 1.

Table 1: Summary of Environmental Compliance Requirements of Project Components for EARF Consideration

Investment Program Component	Subcomponent	Applicable Legislation	Statutory Requirement	Authorizing Body
Water supply	All subcomponents in sensitive areas	National Environment Act	Environmental Clearance	Central Environment Authority
	All subcomponents falling within the coastal zone and buffer zone	Coast Conservation Act	Clearance	Coastal Conservation Department
	All subcomponents that require site clearance	Municipal Councils Ordinance No.29 (1947) and Urban Councils Ordinance No. 61 (1939)	Clearance	Colombo Municipal Council
	All subcomponents that require cutting of trees	Felling of trees (Control) Act No. 9 (1951)	Tree-cutting permit	Forest Department
	All subcomponents within 1-mile (1.6km) radius of a national reserve, sanctuary, or buffer zone	Fauna and Flora Protection Ordinance No. 2 (1937 as amended)	Clearance	Department of Wildlife Conservation
	All subcomponents in proximity to a reserve forest	Forest Ordinance No. 16 (1907 as amended)	Clearance	Forest Department
	All subcomponents in and around fishery reserve	Fisheries and Aquatic Resources Act No.2 (1996)	Clearance	Director of Fisheries and Aquatic Resources
	All subcomponents in proximity of archaeological reserves	Antiquities Ordinance No. 9 (1940 as amended)	Clearance	Department of Archaeology
Sewerage	All subcomponents in sensitive areas	National Environment Act	Environmental Clearance	Central Environment Authority
	All subcomponents listed in Government Notification No.1159/22 of 2000	National Environment Act	Environmental protection license	Central Environment Authority
	All subcomponents falling within the coastal zone and buffer zone	Coast Conservation Act	Clearance	Coastal Conservation Department
	All subcomponents that require site clearance	Municipal Councils Ordinance No.29 (1947) and Urban Councils Ordinance No. 61 (1939)	Clearance	Colombo Municipal Council
	All subcomponents that require cutting of trees	Felling of trees (Control) Act No. 9 (1951)	Tree-cutting permit	Forest Department
	All subcomponents within 1-mile (1.6km) radius of a national reserve, sanctuary, or	Fauna and Flora Protection Ordinance No. 2 (1937 as amended)	Clearance	Department of Wildlife Conservation

Investment Program Component	Subcomponent	Applicable Legislation	Statutory Requirement	Authorizing Body
	buffer zone			
	All subcomponents in proximity to a reserve forest	Forest Ordinance No. 16 (1907 as amended)	Clearance	Forest Department
	All subcomponents in and around fishery reserve	Fisheries and Aquatic Resources Act No.2 (1996)	Clearance	Director of Fisheries and Aquatic Resources
	All subcomponents in proximity of archaeological reserves	Antiquities Ordinance No. 9 (1940 as amended)	Clearance	Department of Archaeology
	All components discharging effluents and emissions	Standards issued by the Sri Lanka Standards institute and Central Environment Authority	Clearance	Central Environment Authority

21. Table 2 summarizes the application procedures for the main environmental permits, and Appendixes 3 and 4 illustrate the process of obtaining environmental clearance and a CCD permit.

Table 2: Summary of Procedure for Obtaining Environmental Permits Required by the Government of Sri Lanka

Legislation	Regulatory Agency	Summary of Procedure	Time Scale
1. Central Environmental Authority - environment impact assessment/initial environmental examination (IEE/EIA) clearance (see Appendix 2)			
National Environmental Act No. 47 of 1980 and amended Act No. 56 of 1988; Government Gazette No. 772/22 of 24 June 1993 and No. 859/14 of 23 February 1995	Central Environmental Authority (CEA)	1. Proponent to submit project information document to CEA	During feasibility stage 36 days
		2. CEA to designate project approving authority (PAA)	
		3. PAA to issue scoping; issue of terms of reference (ToR) for the EIA/IEE	
		4. Proponent to conduct the environmental assessment and submit report to PAA	About 60-90 days
		5. PAA to check adequacy	14 days
		6. For EIA, report will be open for public comments	30 days
		7. Technical review committee (TRC) to review report and forwarding comments	36 days
		8. PAA to recommend to CEA issuance of clearance	
2. Coast Conservation Department (Appendix 3			
Under Section 5, 14, 15 and 16 of Coast Conservation Act No. 57 of 1981	Coast Conservation Department (CCD)	1. Proponent to submit application to CCD	During feasibility stage
		2. CCD to issue ToR for EIA/IEE	About 14 days
		3. Proponent to conduct the environmental assessment and submit report to CCD	About 60-90 days
		4. For EIA, CCD will (i) invite Coast Conservation Advisory	120 days (maximum)

Legislation	Regulatory Agency	Summary of Procedure	Time Scale
		Council for comments; and (ii) open report for public comments	
		5. CCD to review comments	
		6. CCD to issue permit	
3. Archeological impact assessment survey			
Under Section 47 read with Section 43(b) of Antiquities (Amendment) Act No. 24 of 1998; Gazette Notification No. 1152/14 dated 04.10.2000	Department of Archaeology (DA)	1. Proponent to submit application to DA	During feasibility stage About 30 days
		2. DA regional office to conduct preliminary observation and submit report to DA	
		3. (i) If there are no antiquities according to the recommendation and observation report, land will be released for the project.	
		(ii) If the preliminary observation report has proposed to carry out an archaeological impact assessment survey, steps will be taken to conduct the survey, including scoping with other agencies.	30 days
		4. DA to call for quotations and award contract for archaeological impact assessment (AIA) survey	
		5. Selected agency to conduct AIA survey and submit report to DA	42 days
		6. DA to submit AIA report to minister in charge of approval	About 30 days
		7. DA to issue approval	

AIA = archaeological impact assessment, CCD = Coast Conservation Department, CEA = Central Environmental Authority, DA = Department of Archeology, EIA = environmental impact assessment, IEE = initial environmental examination, PAA = project approving agency, ToR = terms of reference.

B. Applicable International Environmental Agreements

22. In addition to national rules and regulations, international conventions such as the International Union for the Conservation of Nature (IUCN), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Migratory Species of Wild Animals (CMS), and the Ramsar Convention on Wetlands of International Importance are applicable for selection and screening of projects under restricted or sensitive areas. Sri Lanka is a party to these conventions.

23. **International Union for the Conservation of Nature (IUCN).** The IUCN Red List of Threatened Species (also known as the IUCN Red List or Red Data List), founded in 1963, is a comprehensive inventory of the global conservation status of plant and animal species. The IUCN is an authority on the conservation status of species. A series of Regional Red Lists is produced by countries or organizations, which assess the risk of extinction of species within a

political management unit[7]. The IUCN Red List is set upon precise criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. The aim is to convey the urgency of conservation issues to the public and policy makers, as well as helping the international community reduce species extinction.

24. **Convention on Migratory Species of Wild Animals (CMS).** CMS was adopted in 1979 and entered into force on 1 November 1983. CMS, also known as the Bonn Convention, recognizes that local authorities must be the protectors of migratory species that live within or pass through their national jurisdictions, and aims to conserve terrestrial, marine, and avian migratory species throughout their ranges. Migratory species threatened with extinction are listed on Appendix I of the convention. CMS parties strive towards strictly protecting these species, conserving or restoring the places where they live, mitigating obstacles to migration, and controlling other factors that might endanger them. Migratory species that need or would significantly benefit from international cooperation are listed in Appendix II of the convention, and CMS encourages the range states to conclude global or regional agreements.

25. **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).** This international agreement between governments aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES was first formed in the 1960s. Annually, international wildlife trade is estimated to be worth billions of dollars, and includes hundreds of millions of plant and animal specimens. The trade is diverse, ranging from live animals and plants to a vast array of wildlife products derived from them, including food products, exotic leather goods, wooden musical instruments, timber, tourist curios, and medicines. Levels of exploitation of some animal and plant species are high and the trade in them, together with other factors such as habitat loss, is capable of heavily depleting their populations and even bringing some species close to extinction. Many wildlife species in trade are not endangered, but the existence of an agreement to ensure the sustainability of the trade is important in order to safeguard these resources for the future. Because the trade in wild animals and plants crosses borders between countries, the effort to regulate it requires international cooperation to safeguard certain species from over-exploitation.

26. **Ramsar Convention on Wetlands of International Importance 1971.** The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Ramsar Convention is an international treaty for the conservation and sustainable utilization of wetlands The Ramsar Convention is the only global environmental treaty that deals with a particular ecosystem. According to the Ramsar list, there are five designated wetlands in Sri Lanka which are required to be protected. Activities undertaken in the proximity of Ramsar wetlands will follow the guidelines of the convention. Sri Lanka presently has five sites designated as wetlands of international importance, with a surface area of 32,372 ha.

27. **United Nations Educational, Scientific, and Cultural Organization (UNESCO) World**

[7] The 2007 National Red List of Threatened Fauna and Flora of Sri Lanka has been jointly prepared by the International Union for the Conservation of Nature (IUCN) in Sri Lanka and the Ministry of Environment and Natural Resources. The publication can be downloaded from www.nationalredlist.org/App_Files_Uploaded/Sri%20Lanka%20Red%20List%202007.pdf. According to the 2007 National Red List Table 15 (Distribution of threatened fauna and flora in the administrative districts of Sri Lanka), the following are the identified threatened species in Colombo District: 3 butterflies, 10 fresh water fishes, 2 amphibians, 3 reptiles, 5 birds, 8 mammals, and 22 flora.

Heritage Convention. The most significant feature of the 1972 World Heritage Convention is that it links together in a single document the concepts of nature conservation and the preservation of cultural properties. The convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two. The convention defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List. The convention sets out the duties of states parties in identifying potential sites and their role in protecting and preserving them. By signing the convention, each country pledges to conserve not only the World Heritage sites in its territory, but also to protect its national heritage. The states parties are encouraged to integrate the protection of the cultural and natural heritage into regional planning projects, set up staff and services at their sites, undertake scientific and technical conservation research, and adopt measures which give this heritage a function in the day-to-day life of the community. It also encourages states parties to strengthen the appreciation of the public for World Heritage properties and to enhance their protection through educational and information projects.

28. There are no designated wetlands reported within the assessed project areas during project preparation. In subsequent tranches, if any floral and faunal species and habitation, listed under Ramsar, IUCN, CMS, CITES, or UNESCO World Heritage Sites are reported within the project influence areas, then the responsibility for taking necessary actions in accordance with these international conventions will lie with the executing and implementing agencies

E. Institutional Capacity

29. NWSDB is responsible for the preparation of environmental assessment report and monitoring of safeguards issues for water supply components. NWSDB has successfully ensured environmental management and monitoring under ongoing locally and foreign funded water supply improvement projects within and in surrounding areas of Colombo City[8]. However, responsibility for environmental monitoring is generally fragmented and overlapping between different units within NWSDB, and there does not appear to be a unified database or consistent monitoring and reporting procedures.

30. CMC is responsible for the preparation of an environmental assessment report and monitoring of safeguards issues for wastewater components. CMC have successfully ensured the environmental management and monitoring under the ongoing ADB-funded Greater Colombo Wastewater Improvement Project[9]. However, CMC has no dedicated wastewater unit, separate accounting, or tariff for wastewater services, and lacks adequate capacity to manage the city wastewater services efficiently.

31. The executing and implementing agencies of the investment program require capacity building measures for (i) a better understanding of the program-related environmental issues; and (ii) to strengthen their role in implementation of mitigation measures and subsequent monitoring.

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[8] (i) Greater Colombo Water Rehabilitation Project (JICA funded); (ii) Kelani Right Bank Project (DANIDA funded); (iii) SETA Project for the Construction of a 10 Million Gallon per Day Water Treatment Plant at Ambatale (Spain funded); (iv) NRW Capacity Development Project (JICA funded); (v) Kalu Ganga Project: Cast Iron Pipe Replacement in Colombo City (JICA funded); and (vi) Cast Iron Pipe Replacement (rehabilitation funds of NWSDB)

[9] The Greater Colombo Wastewater Improvement Project is a $100-million loan approved in 9 September 2009. The project aims to improve urban environment, public health, and quality of life for urban and suburban residents in Colombo. The expected outcome of the project is improved wastewater management performance in Greater Colombo. The project will (i) rehabilitate and upgrade wastewater infrastructure and sanitation in Colombo, (ii) strengthen planning, asset management, and operational capacity, and (iii) build capacity for project management and policy compliance.

Trainings and awareness workshops are included in the investment program. The primary focus of the trainings and workshops are to enable staff to conduct impact assessments and carry out environmental monitoring and implement the EMPs. After participating in such activities, the participants will be able to make environmental assessments for subsequent projects, conduct monitoring of environmental plans, understand government and ADB requirements for environmental assessment, management, and monitoring (short- and long-term), and incorporate environmental features into future project designs, specifications, and tender/contract documents and carry out necessary checks and balances during project implementation.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

32. Preliminary lists of projects have been identified (Appendix 1) and environmental impacts during design, pre-construction, construction, and operation will be reviewed and assessed for each project. During project construction and implementation, impacts on the physical environment such as water, air, soil, and noise, and on the biological environment, like flora and fauna and socioeconomic environment, will be carefully assessed by the project environmental specialists.

33. As the projects will be of small scale and often involve improvement or rehabilitation of the existing system and facilities, it is anticipated that impacts will be temporary and of short duration. In such cases, mitigation measures, i.e., control of air, dust pollution, checking of water and noise pollution, and protection of biological environment can address adverse impacts. Other measures, such as preparation and implementation of traffic management plans during pipe-laying, will also be done in coordination with the consultant teams, local police, contractors, and the public. Occupational safety measures and other health and hygienic conditions, including careful handling of public utilities along with social aspects, will be considered, and impacts and mitigation measures elaborated on in the EMPs.

34. Anticipated environmental impacts for the assessed project are provided in the IEE report. For subsequent projects to be funded by the project, anticipated impacts during design, construction, and operation are identified in Table 3.

Table 3: Anticipated Environmental Impacts Due to Project Implementation

Impact Field	Anticipated Impact on the Environment
A. Water Supply	
Design Phase	
Environmental clearances	EC, consents and permits are required (Table 2) in order to implement the project, If not pursued on time, this can delay the project. Necessary environmental clearance and permits have to be obtained and must follow the guidelines issued by authorities.
Utilities	Telephone lines, electric poles and wires, and water pipes (old) existing within right-of-way (ROW) require shifting without disruption to services.
Water supply	Health risk due to closure of existing water supply, such as community tanks, water stations, and privately-owned small water pipes
Social and cultural resources	Ground disturbance can uncover and damage archaeological and historical remains. Impact on sites of cultural/religious importance during pipe-laying
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Locations may cause encroachment/impact either directly or indirectly on adjacent environments. It may also include impacts on the people who might lose their homes or livelihoods due to the

Impact Field	Anticipated Impact on the Environment
	project activities
Traffic	Traffic flow will be disrupted if routes for delivery of construction materials and temporary blockages during construction activities are not planned and coordinated.
Construction phase	
Sources of materials	Extraction of materials can disrupt natural land contours and vegetation, resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and waterlogging, and water pollution.
Air quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction, resulting in dust and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons
Surface water quality	Mobilization of settled silt materials, runoff from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality.
Noise levels	Increase in noise level due to earth-moving and excavation equipment and the transportation of equipment, materials, and people. Operation of heavy equipment and machines in the nighttime can cause nuisance to the surrounding environment/ people.
Ecological resources	Felling of the trees affects terrestrial ecological balance.
Existing infrastructure and facilities	Disruption of service and damage to existing infrastructure located alongside roads, in particular electric poles and community-scheme water supply pipes
Landscape and aesthetics	Solid wastes as well as excess construction materials create unacceptable aesthetic conditions
Accessibility	Traffic problems and conflicts in ROW. Roads, people, and businesses may be disturbed by repeated trenching.
Socioeconomic – Income	Impede the access of residents and customers to nearby shops. Shops may lose business temporarily.
Occupational health and safety	Occupational hazards which can arise during construction (e.g., trenching, falling objects, etc.).
Community health and safety	Community hazards can arise during construction (e.g., open trenches, air quality, noise, falling objects, etc.). Trenching on concrete roads using pneumatic drills will cause noise and air pollution. Traffic accidents and vehicle collision with pedestrians during material and waste transportation
Construction waste	Trenching will produce additional amounts of waste soil. Accumulation of debris waste materials and stockpiling can cause environmental visual pollution. Descaling activities will produce contaminated water and sediments and inappropriate disposal practices can contaminate land and waterways
Work camps	Temporary air and noise pollution from machine operation, and water pollution from storage and use of fuels, oils, solvents, and lubricants. This may cause conflict with residents and problem of waste disposal and disruptions to residents
Social and cultural resources	Risk of archaeological chance finds. Sites of social/cultural importance (schools, hospitals, religious places, tourism sites) may be disturbed by noise, dust, vibration, and impeded access.
Clean-up operations, restoration and rehabilitation	Impacts on social or sensitive receptors when post-construction requirements are not undertaken, e.g. proper closure of camp, disposal of solid waste, and restoration of land after project construction.
Operation and maintenance phase	
General maintenance	Maintenance activities may cause disturbance to sensitive receptors, dust, and increase in noise level.

Impact Field	Anticipated Impact on the Environment
Economic development	Impediments to residents and businesses during routine maintenance
B. Sewerage	
Design phase	
Site suitability	Locations may cause encroachment or impact either directly or indirectly on adjacent environments. Sensitive environmental areas and community proximity must be included in the assessment of site suitability.
Discharge standards	The WWTPs must be designed to meet the government effluent discharge standards specified by SLSI and CEA (Appendix 2).
Environmental clearances	EC, consents, and permits are required (Table 2) in order to implement the project. If not pursued on time, this can delay the project. Necessary environmental clearances and permits have to be obtained and must follow the guidelines issued by the authorities.
Utilities	Telephone lines, electric poles and wires, and water pipes (old) existing within right-of-way (ROW) require shifting without disruption to services.
Water supply	Health risk due to closure of existing water supply such as community tanks, water stations, and privately-owned small water pipes
Social and cultural resources	Ground disturbance can uncover and damage archaeological and historical remains. Impact on sites of cultural/religious importance during pipe-laying
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Locations may cause encroachment/impact either directly or indirectly on adjacent environments. It may also include the impacts on the people who might lose their homes or livelihoods due to the project activities.
Traffic	Traffic flow will be disrupted if routes for delivery of construction materials and temporary blockages during construction activities are not planned and coordinated.
Construction phase	
Sources of materials	Extraction of materials can disrupt natural land contours and vegetation, resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and waterlogging, and water pollution.
Air quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction resulting in dust and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons
Surface water quality	Mobilization of settled silt materials, runoff from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality.
Noise levels	Increase in noise level due to earth-moving and excavation equipment and the transportation of equipment, materials, and people. Operation of heavy equipment and machines in the nighttime can cause nuisance to the surrounding environment/ people.
Ecological resources	Felling of the trees can affect terrestrial ecological balance.
Existing infrastructure and facilities	Disruption of service and damage to existing infrastructure located alongside roads, in particular electric poles and community-scheme water supply pipes
Landscape and aesthetics	Solid wastes as well as excess construction materials create unacceptable aesthetic conditions.
Accessibility	Traffic problems and conflicts in ROW. Roads, people, and businesses may be disturbed by repeated trenching.

Impact Field	Anticipated Impact on the Environment
Socioeconomic – Income	Impede the access of residents and customers to nearby shops. Shops may lose business temporarily
Occupational health and safety	Occupational hazards which can arise during construction (e.g., trenching, falling objects, exposure to toxic gases during sewer replacement, health hazards due to accumulated sludge in sewer pipes, etc.)
Community health and safety	Community hazards which can arise during construction (e.g., open trenches, air quality, noise, falling objects, etc.). Trenching on concrete roads using pneumatic drills will cause noise and air pollution. Traffic accidents and vehicle collision with pedestrians during material and waste transportation
Construction waste	Trenching and open excavation will produce additional amounts of waste soil. Accumulation of debris waste materials and stockpiling can cause environmental visual pollution.
Work camps	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants. This may cause conflict with residents and problem of waste disposal and disruptions to residents.
Social and cultural resources	Risk of archaeological chance finds. Sites of social/cultural importance (schools, hospitals, religious place, tourism sites) may be disturbed by noise, dust, vibration, and impeded access.
Clean-up operations, restoration and rehabilitation	Impacts on social or sensitive receptors when post construction requirements are not undertaken, e.g. proper closure of camp, disposal of solid waste, and restoration of land after project construction.
Operation and maintenance phase	
General maintenance	Maintenance activities may cause disturbance to sensitive receptors, dusts, and increase in noise level.
Air quality	Sensitive receptors (e.g. hospitals, schools, churches) may be affected temporarily by increased traffic and related impacts during pipe sewer network maintenance
Biodiversity fauna and flora	The proposed development is situated within an existing built-up area where the wastewater infrastructures already exist. No areas of ecological diversity occur within the project location. Due to the nature and locality of the project, there is unlikely to any significant impacts on biodiversity within the area during maintenance works The use of fertilizers and herbicides in maintenance of newly planted trees, landscape and vegetation may, however, affect the environment.
Land uses	Due to the location and nature of the project, there will be interference with access during maintenance works. Existing public transport facilities and operations will be affected by the road closure and detours. There will be disruptions to health services, education services, local businesses, transport services, and pedestrian movements due to traffic and maintenance-related noise, visual, and air pollution.
Health and safety	Danger of operations and maintenance-related injuries Safety of workers and general public must be ensured. Poor waste management practices and unhygienic conditions at the improved facilities can breed diseases. Standing water due to inadequate storm water drainage systems and inadequate waste management practices pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies, and rats. The use of hazardous chemicals in the WWTPs can pose potential environmental, health, and safety risks.
Noise and vibrations	Sensitive receptors (hospitals, schools, churches) may be affected temporarily by increased traffic and related impacts. Disturbance from after-hours work

Impact Field	Anticipated Impact on the Environment
Workers' conduct	Maintenance workers on site disrupting adjacent land uses by creating noise, generating litter, and possible loitering
Solid waste	Solid waste residuals which may be generated by the WWTPs include sludge, process residuals, used filtration membranes, spent media, and miscellaneous wastes. Process residuals primarily consist of settled suspended solids from source wastewater and chemicals added in the treatment process.
Wastewater	Wastewater from the WWTPs includes filter backwash and supernatant liquid from the sludge beds/ponds. These waste streams may contain suspended solids and organics from the raw water, dissolved solids, high or low pH, heavy metals, etc. All wastewater must meet government effluent discharge standards specified by SLSI and CEA (Appendix 2).
Hazardous chemicals	Water treatment involves the use of chemicals for coagulation, disinfection, and water conditioning.
Economic development	Impediments to residents and businesses during routine maintenance
Bio-aerosols	Bio-aerosols (i.e., particles in the air consisting wholly or partially of microorganisms) are of particular concern to the health of workers and surrounding communities, and have been shown to be the source of reduced pulmonary function and increased respiratory disease for those in immediate proximity of WWTPs
Air emissions and odors	Air emissions from wastewater treatment operations may include hydrogen sulfide, methane, ozone (in the case of ozone disinfection), volatile organic compounds (such as from industrial discharges), gaseous or volatile chemicals used for disinfection processes (e.g., chlorine and ammonia), and bio-aerosols. Odors from treatment facilities can also be a nuisance to workers and the surrounding community.

IV. ENVIRONMENTAL ASSESSMENT FOR PROJECTS AND COMPONENTS

35. Prior to the preparation of each periodic financing request (PFR), the applicability and relevance of each safeguard framework for environmental assessment will be reviewed by MUD&WSD and MPALG&DG and updated to ensure relevance and consistency with applicable legal frameworks of Sri Lanka and ADB's safeguard policies, as amended from time to time.

36. In all cases, for each new PFR preparation, Sri Lanka will review ongoing projects to check on the status of compliance with the safeguard plans and frameworks, and submit the review reports to ADB, together with other required safeguard documents relevant to the projects included in the tranche being processed. In any case, if major noncompliance is discovered in the course of the review of ongoing projects, a corrective action plan will be prepared and submitted to ADB.

A. Environmental Guidelines for Project Selection

37. Based on the preliminary studies conducted during the project preparation stage and the environmental assessment conducted for the sample project, the investment program is classed as category B and unlikely to require EIA for any project in accordance with the national environmental assessment regulation. However, the EARF recognizes the possibility of category A projects for the following reasons:

(i) the unknown locations, descriptions, and scope of future projects; and

(ii) WWTPs and/or pipes crossing or adjacent to the coastal zones or sensitive areas and extent and significance of impacts to surrounding community.

38. Projects that would directly affect the core and buffer zones of national reserves, protected areas, and highly valued cultural property will be strictly avoided, or the project components causing potential impacts relocated or suitable alternatives found.

39. Improvements in the domestic water supply give rise to greater quantities of wastewater. With the current emphasis on environmental health and water pollution issues, there is an increasing awareness of the need to dispose of these wastewaters safely and beneficially. NWSDB will coordinate with CMC in requiring end users to connect to the wastewater system.

40. For completeness, additional criteria[10] that prohibit inclusion of a project in the investment program are as follows:

(i) production or activities involving harmful or exploitative forms of forced labor[11] or child labor[12];
(ii) production of or trade in any product or activity deemed illegal under Sri Lankan laws or regulations or international conventions and agreements, or subject to international phaseouts or bans, such as (a) pharmaceuticals[13], pesticides, and herbicides[14], (b) ozone-depleting substances[15], (c) polychlorinated biphenyls[16] and other hazardous chemicals[17], (d) wildlife or wildlife products regulated under CITES[18], and (e) transboundary trade in waste or waste products[19];
(iii) production of or trade in weapons and munitions, including paramilitary materials;
(iv) production of or trade in alcoholic beverages, excluding beer and wine[20];
(v) production of or trade in tobacco[20;]
(vi) gambling, casinos, and equivalent enterprises;
(vii) production of or trade in radioactive materials[21], including nuclear reactors and components thereof;
(viii) production of, trade in, or use of unbonded asbestos fibers[22]
(ix) commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and

[10] Adapted from ADB SPS, 2009. Appendix 5
[11] Forced labor means all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty.
[12] Child labor means the employment of children whose age is below the host country's statutory minimum age of employment or employment of children in contravention of International Labor Organization Convention No. 138 "Minimum Age Convention" (www.ilo.org).
[13] A list of pharmaceutical products subject to phaseouts or bans is available at http://www.who.int.
[14] A list of pesticides and herbicides subject to phaseouts or bans is available at http://www.pic.int
[15] A list of the chemical compounds that react with and deplete stratospheric ozone resulting in the widely publicized ozone holes is listed in the Montreal Protocol, together with target reduction and phaseout dates. Information is available at http://www.unep.org/ozone/montreal.shtml
[16] A group of highly toxic chemicals, polychlorinated biphenyls are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.
[17] A list of hazardous chemicals is available at http://www.pic.int
[18] A list is available at http://www.cites.org.
[19] As defined by the Basel Convention; see http://www.basel.int.
[20] This does not apply to project sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a project sponsor's primary operations.
[21] This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any equipment for which ADB considers the radioactive source to be trivial and adequately shield.
[22] This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.

(x) marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species.

41. Therefore, the projects are not anticipated to have significant environmental impacts. Projects will be primarily designed to improve public and environmental health and quality of life for both poor and non-poor residents. Guidelines for project selection in Table 4 provide further guidance to avoid or minimize adverse impacts during the identification and finalization of projects.

Table 4: Environmental Criteria for Project Selection

	Components	Environmental Selection Guidelines	Remarks
1.	Overall selection guideline (applicable to all components)	Comply with all requirements of relevant national, state, and local laws, rules, and guidelines.	See Section II of this EARF
		Avoid where possible land acquisition and involuntary resettlement where possible, including impacts on vulnerable persons.	See resettlement framework
		Avoid where possible locations in protected areas, including notified reserved forests or biodiversity conservation hotspots (wetlands, national reserves, forest reserves, and sanctuaries).	Approval from concerned authority if unavoidable
		Project location shall not result in destruction/disturbance to historical and cultural places/values.	
		Avoid where possible, and minimize to extent feasible, facilities in locations with social conflicts.	
		Avoid tree-cutting where possible, and if any trees have to be removed, plant two new trees for every one that is lost.	Approval from Forest Department
		Retain mature roadside trees which are important/valuable or historically significant. If any trees have to be removed, plant two new trees for every one that is lost.	
		Avoid involuntary resettlement by prioritizing rehabilitation over new construction, using vacant government land where possible, and taking all possible measures in design and selection of site or alignment to avoid resettlement impacts.	
		Designs must be consistent with ADB SPS, 2009 and follow the resettlement framework prepared for the project and agreed on by the government and ADB.	See resettlement framework
		Reflect inputs from public consultation and disclosure for site selection.	All consultations should be documented and concerns expressed by public addressed in IEEs.
2.	Water supply	Comply with all requirements of relevant national law. Locate all new facilities/buildings at least 100 m from houses, shops, or any other premises used by people, thus establishing a buffer zone to reduce the effects of noise and dust and the visual appearance of the site.	See Section II of this EARF Distance restriction may be reviewed depending on site availability, buffer zone planning, and odor-control technology.
		Locate all new facilities/buildings at sites where there is no risk of flooding or other hazards that might impair functioning of, or present a risk of damage to, existing water treatment plants, reservoirs, or their environs.	

	Components	Environmental Selection Guidelines	Remarks
		Consult the Department of Archaeology regarding the archaeological potential of proposed sites of buildings, primary mains, and distribution network to ensure that these are located in areas where there is a low risk of chance finds.	
		Locate pipelines within road right-of-way (ROW) as far as possible, to reduce the acquisition of new land.	
		Ensure that pipeline routes do not require the acquisition of land from private owners in amounts that are a significant proportion of their total land holding (>10%).	
		Ensure that communities who relinquish land needed for pipelines or other facilities are provided with an improved water supply as part of the scheme.	
		Ensure that water supplied to consumers meets national drinking water standards at all times, and confirm this by regular monitoring at the WTP and in domestic premises.	
		Ensure that improvements in the water supply system are combined with improvements in wastewater and drainage to deal with the increased discharge of domestic wastewater.	
3.	Facilities/buildings	Only projects proposed or requested by the relevant agencies shall be considered for implementation.	
		Projects shall involve improvements within the boundary of existing facilities only.	
		Ensure that any facilities involving hazardous or polluting materials (e.g. waste disposal) are designed to national and international standards and to protect human health, both within and outside the facility.	
		Where new facilities are required, these shall be sited on vacant government land and ROWs where feasible	
		Ensure that water and waste disposal in constructed facilities are designed to national and international standards	
4.	Sewerage	Comply with all requirements of relevant national, state, and local laws, rules, and guidelines.	
		Site selection process shall avoid land acquisition and involuntary resettlement where possible, including impacts on vulnerable persons.	See resettlement framework.
		Locate WWTP preferably 50 m from any inhabited areas, in locations where no urban expansion is expected in the next 20 years, so that people are not affected by odor or other nuisance from the WWTP.	Distance restriction may be reviewed depending on the technology adopted for the treatment of wastewater, site plant availability, and buffer zone planning.
		Locate WWTP at sites where there is a suitable means of disposal for the treated wastewater effluent.	
		Locate WWTP at sites where there is no risk of flooding or other hazards that might impair functioning of the WWTP and present a risk of damage to the plant or its environs.	Flood statistics data of the project area needs to be reviewed.
		Project will be implemented only with consent of Central Environment Authority Consult the relevant records of national and/or local archaeological agencies regarding the archaeological potential of proposed sites of WWTP, pumping stations, and main sewers, to ensure that these are located in areas where there is a low risk of chance finds.	

	Components	Environmental Selection Guidelines	Remarks
		Locate sewage pipelines within the right of ways of roads to eliminate acquisition of new land.	
		Avoid locating sewage pumping stations and wet wells within 50 m of any inhabited areas, and within 100 m of sensitive sites such as hospitals, schools, temples, etc. to minimize nuisance impacts from odor, rodents, etc.	Distance restriction may be reviewed depending on the technology adopted, suitable land availability, and buffer zone planning.

EARF= environmental assessment and review framework, IEE= initial environmental examination, RoW= right of way, SPS= safeguards policy statement, WTP= water treatment plant, WWTP= wastewater treatment plant.

B. Environmental Assessment Procedures for Projects

1. Screening and Classification/Categorization

42. As soon as sufficient information on a project works is available, MASC environment management specialist and DSIC environment specialist will conduct screening to determine the works' environmental category by completing ADB's rapid environmental assessment (REA) checklists in Appendix 5 and submitting this for review to the respective PMU, which will determine if the component would require environmental assessment and/or environmental clearance as per national requirements. If required, the PMUs will contact CEA for necessary endorsement, and the CEA may appoint a project-approving authority and issue terms of reference for the study.

43. PMUs will submit completed REA checklist to ADB for review. To ensure that the project meets ADB's environmental safeguard requirements, as stipulated in the SPS 2009, projects will be screened, and the level of environmental assessment required (EIA/IEE) will be determined. It is anticipated that most eligible projects will fall into either category B or C, as projects will be of small scale and often involve improvement or rehabilitation of the existing system/facilities. While category C projects will not require an environmental assessment, environmental implications will be reviewed.

2. Preparation of Environmental Assessment Report

44. Environmental assessment documents prepared under the project will, to the extent possible, meet both ADB and Government of Sri Lanka requirements in order to streamline the environmental procedures required by both ADB and government.

45. For projects projected to have potentially significant adverse environmental impacts (categorized as A), an EIA will be prepared. For projects with some adverse environmental impacts, but which are expected to be less significant than those of category A projects, an IEE is required. Appendix 1 of ADB's SPS, 2009 provides the specific outlines and contents to be followed while preparing EIAs/IEEs. Appendix 6 provides the outline of an ADB EIA or IEE report. Also, the IEE prepared during project preparation provides a good sample which can be followed for preparation of environmental assessments in subsequent tranches.

46. For preparing EIA and IEE, relevant primary data will be generated and secondary data collected for project-influenced sites. An assessment of project impacts and risks on biodiversity and natural resources will also be undertaken. Issues regarding natural and critical habitats will be covered in the EIA/IEE report. In case of projects located within buffer zone of protected areas, a review of management plans and consultation with concerned management staff of the protected area, local communities, and key stakeholders will be undertaken and reflected in the

EIA/IEE report. Pollution prevention for conservation of resources, particularly technology for management of process wastes, will be addressed in the EIA/IEE report. Occupational health safety and community health safety will be properly addressed in the EMP section of the EIA/IEE report. In case projects are likely to have adverse impacts on physical cultural resources, appropriate mitigation measures will to be planned and reflected in the EIA/IEE. EIA/IEE will also reflect meaningful consultation and disclosure process with a provision for grievance redress mechanism.

47. ADB requires that an EMP must be developed as part of the EIAs/IEEs. EMPs describe the environmental management measures that will be carried out to mitigate negative impacts or enhance the environment during implementation of a project, and the environmental monitoring to be conducted to ensure that mitigation is provided and is effective in reducing impacts, or to determine the long-term impacts of a project. EMPs will outline specific mitigation measures, environmental monitoring requirements, and related institutional arrangements, including budget requirements for implementation. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the project is designed, constructed, and operated in compliance with applicable laws and regulations and meets the requirements specified in this document. The level of detail and complexity of the environmental planning documents and the priority of the identified measures and actions will be commensurate with the project's impacts and risks. Key considerations include mitigation of potential adverse impacts to the level of "no significant harm to third parties," the "polluter pays" principle, the precautionary approach, and adaptive management.

48. If some residual impacts are likely to remain significant after mitigation, the EMP will also include appropriate compensatory measures (offset) that aim to ensure that the project does not cause significant net degradation to the environment. Such measures may relate, for instance, to conservation of habitat and biodiversity, preservation of ambient conditions, and greenhouse gas emissions. Monetary compensation in lieu of offset is acceptable in exceptional circumstances, provided that the compensation is used to provide environmental benefits of the same nature and is commensurate with the project's residual impact.

49. All EIAs/IEEs and EMPs will be conducted prior to the award of construction contracts. The bid documents will include the requirement to incorporate necessary resources to implement the EMP. The EMP will form part of the contract document, and, if required, will need to be further updated during the construction phase of a project.

3. Environmental Audit of Existing Facilities

50. For projects involving facilities and/or business activities that already exist or are under construction, the implementing agencies will undertake an environment audit, including on-site assessment, to identify past or present concerns related to impacts on the environment. The objective of the compliance audit is to determine whether actions were in accordance with ADB's safeguard principles and requirements for borrowers/clients, and to identify and plan appropriate measures to address outstanding compliance issues. Where noncompliance is identified, a corrective action plan agreed on by ADB and the implementing agencies will be prepared. The plan will define necessary remedial actions, the budget for such actions, and the time frame for resolution of noncompliance. The audit report (including corrective action plan, if any) will be made available to the public in accordance with the information disclosure requirements of ADB SPS, 2009. For environment category A projects involving facilities and/or business activities that already exist or are under construction, the implementing agency will submit the audit report to ADB to disclose on ADB's website. If a project involves an upgrade or expansion of existing

facilities that has potential impacts on the environment, the requirements for environmental assessments and planning specified in ADB SPS, 2009 will apply in addition to compliance audit.

C. Review of Environmental Assessment Reports

51. On completion, EIAs/IEEs will be reviewed initially by respective PMUs. In the case where an environmental clearance is required, the EIAs/IEEs are to be forwarded to the CEA for approval. NWSDB and CMC will forward the EIAs/IEEs for ADB's review.

52. For subproject processing, the steps to be followed are shown in Table 5. Implementation of the subproject will be governed by government's environmental acts, rules, regulations, and standards. These regulations impose restrictions on activities to minimize/mitigate likely impacts on the environment. It is the responsibility of the executing and implementing agencies to ensure projects are consistent with the legal framework, whether national or municipal/local. Compliance is required in all stages of the project including design, construction, and operation and maintenance. Stricter requirements apply in case the result of ADB's classification is different from that of the government's National Environmental Act No. 47, 1980 and Amendment Act No. 56, 1988.

Table 5: Environmental Procedures for Project Processing

Project Stage	ADB Procedure	Government of Sri Lanka Procedure
Subproject identification	REA checklist	Categorization according to schedule and general/specific conditions in the government's National Environmental Act
	Categorization (A/B/C): PMU to review the REA checklists and reconfirm the categorization	Screening of preliminary information - Filing of project information to Central Environment Authority (CEA) - Filing of permit application with Coast Conservation Department (CCD)
	Meets subproject selection criteria	- CEA to designate project-approving authority (PAA) - Initial permit review and site visit by CCD to determine if "prescribed project," or if IEE or EIA required
	Stricter requirement applies in case the result of ADB's classification is different from that of the government's National Environment Act	
Detailed design	EIA/IEE	- PAA to issue scoping and terms of reference (TOR) for the IEE
	For projects involving facilities and/or business activities that already exist or are under construction, the borrower/client will undertake an environment and/or social compliance audit, including on-site assessment, to identify past or present concerns related to impacts on the environment, and involuntary resettlement. The objective of the compliance audit is to determine whether actions were in accordance with ADB's safeguard principles and requirements for borrowers/clients, and to identify and plan appropriate measures to address outstanding compliance issues. Where noncompliance is identified, a corrective	- Preparation of draft EIA/IEE as per TOR

Project Stage	ADB Procedure	Government of Sri Lanka Procedure
	action plan agreed on by ADB and the borrower/client will be prepared. The plan will define necessary remedial actions, the budget for such actions, and the time frame for resolution of noncompliance. The audit report (including corrective action plan, if any) will be made available to the public in accordance with the information disclosure requirements of the Safeguard Requirements 1–3. For environment category A projects involving facilities and/or business activities that already exist or are under construction, the borrower/client will submit the audit report to ADB to disclose on ADB's website. If a project involves an upgrade or expansion of existing facilities that has potential impacts on the environment and involuntary resettlement, the requirements for environmental and social impact assessments and planning specified in Safeguard Requirements 1-3 will apply in addition to compliance audit.	
	Public consultation will be carried out in a manner commensurate with the impacts of affected communities. The consultation process and its results are to be documented and reflected in the environmental assessment report.	
	Disclosure: For category A: Disclosure on ADB's website of a draft full EIA (including the draft EMP) at least 120 days prior to the ADB Board consideration, and/or EARF before project appraisal where applicable; the final EIA; updated EIAs and corrective action plans; and environmental monitoring reports. For category B: Disclosure on ADB's website of the final IEE; updated IEEs and corrective action plans; and environmental monitoring reports. In addition, for all categories, environmental information will be in an accessible place and in a form or language understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.	
	Mitigation measures specified in IEE/EIA study incorporated in project design	Mitigation measures specified in IEE/EIA study incorporated in project design
	Identify and incorporate environmental mitigation and monitoring measures (including the EMP) into bid/contract documents.	
Appraisal	EMP and other environmental covenants are incorporated into the facility framework agreement, loan/project agreement, and facility administration memorandum (FAM)	- PAA to check adequacy of EIA/IEE report - For EIA, report will be open for public comments (30 days) - Technical review committee to review EIA/IEE report
Approval	KMC to design and implement all subproject facilities in accordance with the	Environmental clearance decision within 36 days of the receipt of recommendations of the

Project Stage	ADB Procedure	Government of Sri Lanka Procedure
	EARF and environmental assessments agreed upon, and in compliance with the government's environmental laws and regulations and ADB SPS. ADB to review and clear EIA/IEE prior to approval and issuance of tender documents during detailed design stage. Complete EIA/IEE disclosed to public	technical review committee
Contract award	Obtain necessary environmental clearances, consents, and NOCs prior to contract award. Implementation of EMP including monitoring plans based on EIA/IEE findings to be incorporated into bidding documents and civil award contracts.	Necessary environmental clearance obtained prior to commencing any construction or land preparation.
Implementation	Periodic monitoring reports Periodic (6-monthly) monitoring report from PMU Submission of annual monitoring report to ADB	Project to submit half-yearly compliance monitoring reports by 31 July and 31 January. All compliance reports are public documents and displayed on website of concerned regulatory authority.

ADB = Asian Development Bank, CCD = Coast Conservation Department, CEA = Central Environment Authority, EIA = environmental impact assessment, EMP = environmental management plan, FAM = facility administration memorandum, IEE = initial environmental examination, PAA = project approving authority, PMU = project management unit, REA= rapid environmental assessment.

V. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation and Information Disclosure

53. Meaningful stakeholder consultation and participation is part of the project preparation and implementation strategy. A consultation and participation program has been prepared for the investment program and will be implemented with the assistance of consultants, a nongovernment organization (NGO), and media contractors. By addressing stakeholder needs, there is greater awareness of the benefits and "ownership" of the investment program among stakeholders, which in turn contribute to sustainability. The consultation process during the project preparation has solicited inputs from a wide range of stakeholders, including government officials, NGOs, residents of the north and central Colombo City, marginalized/vulnerable beneficiary groups, and project-affected persons (APs).

54. Consultation, participation, and disclosure will ensure that information is provided and feedback on proposed project design is sought early, right from the project preparation phase, so that the views/preferences of stakeholders including potential beneficiaries and affected people can be adequately considered in project design, and continue at each stage of project preparation, processing, and implementation. Affected persons (APs) will be consulted at various stages in the project cycle to ensure: (i) incorporation of views/concerns of APs on compensation/resettlement assistance and environmental impacts and mitigation measures; (ii) inclusion of vulnerable groups in project benefits; (iii) identification of help required by APs during rehabilitation, if any; and (iv) avoidance of potential conflicts for smooth project implementation. It will also provide adequate opportunities for consultation and participation to all stakeholders and inclusion of the poor, vulnerable, marginalized, and project-affected persons in the project process. Relevant information about any major changes to project scope will be shared with beneficiaries, affected persons, vulnerable groups, and other stakeholders.

55. A variety of approaches can be adopted. At minimum, stakeholders will be consulted regarding the scope of the environmental and social impact study before work commences, and they will be informed of the likely impacts of the project and proposed mitigation once the draft EIA/IEE and resettlement plan reports are prepared. The reports will record the views of stakeholders and indicate how these have been taken into account in project development. Consultations will be held with a special focus on vulnerable groups.

56. The key stakeholders to be consulted during project preparation, EMP implementation, and project implementation include:

(i) beneficiaries;
(ii) elected representatives, community leaders, religious leaders, and representatives of community-based organizations;
(iii) local NGOs;
(iv) local government and relevant government agency representatives, including local authorities responsible for land acquisition, protection, and conservation of forests and environment, archaeological sites, religious sites, and other relevant government departments;
(v) residents, shopkeepers, and business people who live and work alongside the roads where pipes will be laid and near sites where facilities will be built; custodians, and users of socially and culturally important buildings;
(vi) PMU staff and consultants; and
(v) ADB and the Government of Sri Lanka.

B. Information Disclosure

57. Information is disclosed through public consultation and making relevant documents public locations. The following documents will be submitted to ADB for disclosure on its website:

(i) For category A projects:
  (a) draft EIA (including the draft EMP) at least 120 days prior to management approval of the periodic financing request report;
  (b) final EIA;
  (c) a new or updated EIA and corrective action plan prepared during project implementation, if any;
  (d) environmental monitoring reports; and
  (e) for projects involving facilities and/or business activities that already exist or are under construction, environmental audit report.
(ii) For category B projects:
  (a) final IEE;
  (b) a new or updated IEE and corrective action plan prepared during project implementation, if any; and
  (c) environmental monitoring reports.

58. NWSDB and CMC will send written endorsement to ADB for disclosing these documents on ADB's website. NWSDB and CMC will also provide relevant safeguards information in a timely manner, in an accessible place and in a form and languages understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.

C. Grievance Redress Mechanism

59. A project-specific grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of AP's concerns, complaints, and grievances about the social and environmental performance at the level of the project. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project.

60. **Common GRM.** A common GRM will be in place for social, environmental, or any other grievances related to the investment program; the RP and IEE will follow the grievance redress mechanism described below, which is developed in consultation with key stakeholders. The GRM will provide an accessible and trusted platform for receiving and facilitating resolution of affected persons' grievances related to the project. The multi-tier GRM for the project is outlined below, each tier having time-bound schedules and with responsible persons identified to address grievances and seek appropriate persons' advice at each stage, as required.

61. The citywide public awareness campaign will ensure that awareness on grievance redress procedures is generated through the campaign, using electronic, radio, and print media. The implementing NGO will ensure that poor and vulnerable households are made aware of grievance redress procedures and entitlements, and will help ensure that their grievances are addressed.

62. APs will have the flexibility of conveying grievances/suggestions by dropping grievance redress/suggestion forms in complaints/suggestion boxes or through telephone hotlines at accessible locations, by e-mail, by post, or by writing in a complaints register in the NWSDB area engineer's and CMC's offices. Appendix 5 has the sample grievance registration form. Careful documentation of the name of the complainant, date of receipt of the complaint, address/contact details of the person, location of the problem area, and how the problem was resolved will be undertaken. The respective PMU safeguard officers[23] will be responsible for timely grievance redressal on environmental and social safeguards issues and for registration of grievances, related disclosure, and communication with the aggrieved party.

63. **Grievance redress process.** In case of grievances that are immediate and urgent in the perception of the complainant, the contractor and supervision personnel from the PMU/MASC/DSIC[24] on-site will provide the most easily accessible contact for quick resolution of grievances. Contact phone numbers and names of the PMU safeguards officers, MASC and DSIC safeguards specialists[25], and contractor site engineer will be posted at all constructions sites in visible locations. In tenement gardens, the point of contact will be the contractor/supervision personnel that will involved in community mobilization and awareness generation among such communities. The contractors and supervision personnel of PMU/MASC/DSIC and/or the project NGO can immediately resolve issues on-site in consultation with each other, and will be required to do so within 7 days of receipt of a complaint/grievance. If required, the advice of the area engineer and/or the concerned Grama Niladhari (GN) officer as well as the assistance of concerned PMU safeguards officers[22] and MASC/DSIC safeguard specialists[24] will be sought, for resolution of the issue by any one or all of them jointly.

[23] NWSDB PMU will have a social development and safeguards officer while CMC PMU will have one environment officer and one resettlement officer, PMU.
[24] NWSDB PMU, CMC PMU, MASC for NWSDB, and DSIC for CMC.
[25] (i) MASC environmental management specialist and resettlement specialist; and (ii) DSC environment specialist and resettlement specialist

64. All grievances that cannot be redressed within 7 days at field level will be jointly reviewed by the concerned PMU safeguards officers[22] and MASC/DSIC safeguards specialist[24], who will attempt to resolve them within 15 days, enlisting the assistance of the local representative of CEA and other concerned stakeholders, as required.

65. The concerned project director will refer major issues to the grievance redressal committee (GRC)[26], which will resolve them within 30 days, and very major issues that are beyond the jurisdictional authority of the GRC or those that have the potential to cause social conflicts or environmental damage will be referred directly to the program steering committee (PSC)[27]. Grievances which the GRC is unable to resolve within 30 days will also be referred to the PSC. All paperwork (details of grievances) needs to be completed by the concerned PMU safeguards officers[22,] facilitated by the project public relations officer, and circulated to the respective GRC and PSC members at least a week in advance of the scheduled meetings. All decisions taken by the GRC and PRC will be communicated to the APs by the project public relations officer.

66. Despite the project GRM, an aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM, and is not dependent on the negative outcome of the GRM.

67. **Composition of GRC and PSC.** The grievance redress committee (GRC) will have the project director, PMU safeguards officers (convener)[22], the public relations officer, the divisional secretary (chairperson), the director of the implementing NGO in tenement gardens, the concerned deputy general manager (DGM), NWSDB for the Western Central Region and assistant general manager (AGM) in charge of NRW, the area engineer, NWSDB, representatives of affected persons, community-based organizations (CBOs), and eminent citizens as members. The GRC must have at least two women members.

68. The local representative of CEA and representatives of Road Development Authority, Provincial Road Development Authority, CMC, and concerned GN officers may be invited to GRC meetings as and when required. Presence of at least five members, including one AP/civil society representative, is necessary for resolutions to be passed.

69. **Recordkeeping.** Records will be kept by concerned PMU of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome.

70. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the respective PMU offices, NWSDB's NRW office, area engineer's office, CMC office, and on the web, as well as reported in monitoring reports submitted to ADB on a

[26].The grievance redress committee (GRC) will have the following as members: divisional secretary as chairperson, CWSSIP project director, PMU social development/safeguards officer as the convener, project public relations officer, director of the project NGO, concerned NWSDB deputy general manager (DGM) for the Western Central Region and assistant general manager (AGM) in charge of NRW, the area engineer, NWSDB, representatives of APs, community-based organizations (CBOs), and eminent citizens. The GRC must have at least two women members

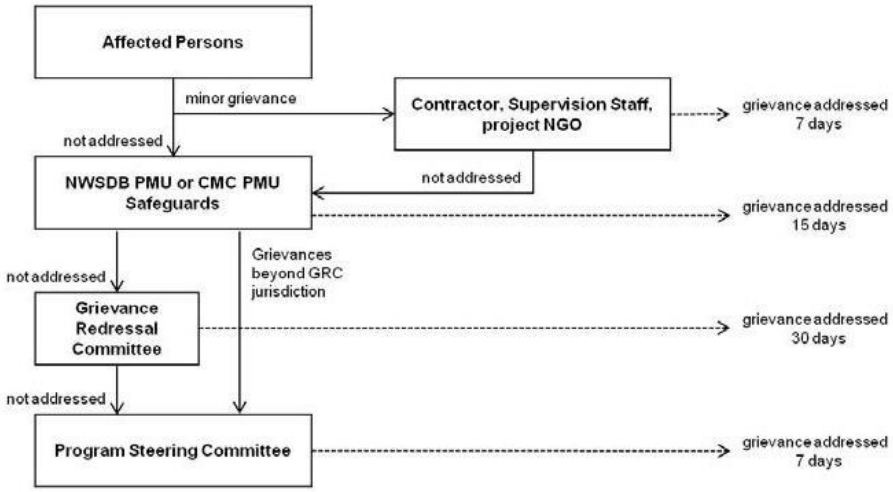
[27] The program steering committee (PRC) responsible for grievance redress will have the following as members: Ministry of Finance and Planning (MOFP), with the Secretary to Treasury (ST) as the chairperson, the Secretary of the MUD&WSD, the Secretary of MPALG&DG and senior officials from Department of External Resources and Department of National Planning (DNP), Ministry of Defense and Urban Development, NWSDB, and CMC as members. Representatives of concerned government ministries such as Ministry of Land and Land Development, Health, etc. may be invited to participate as and when required.

semiannual basis.

71. **Periodic review and documentation of lessons learned.** The respective PMU safeguard officers[22] will periodically review the functioning of the GRM and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances. Lessons learned will be shared with the CEA and Ministry of Land Development as required under the National Involuntary Resettlement Policy, 2001.

72. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the concerned PMU; cost estimates for grievance redress are included in resettlement cost estimates.

Figure 1: Grievance Redress Process



VI. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

73. **Program steering committee.** At the central level, a PSC will be established at the Ministry of Finance and Planning, with the Secretary to Treasury as the chairperson, the Secretary of MUD&WSD, the Secretary of MPALG&DG, and senior officials from the Department of External Resources and Department of National Planning, the Ministry of Defense and Urban Development, the NWSDB, and CMC as members. The PSC will be the apex decision-making body for the investment program. The PSC will meet quarterly, review progress, provide policy guidance, resolve interagency issues that impede program progress, and advice on necessary action, particularly with respect to scope and cost, and the reform agenda of the investment program, and facilitate interagency coordination. The PSC will be responsible for (i) providing sanctions and approvals under the investment program; (ii) making all important decisions on the investment program implementation; and (iii) ensuring timely investment program implementation.

A. Implementation Arrangements – Water Supply

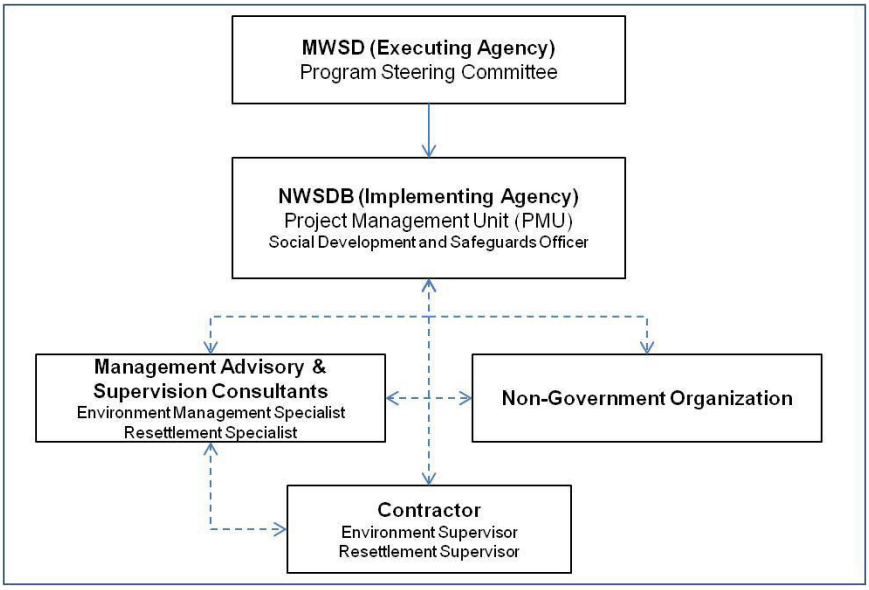
74. **Executing and implementing agencies.** For water supply investments, MUD&WSD will be the executing agency and NWSDB will be the implementing agency. The PMU in the RSC WC has been established and headed by a full-time project director. The PMU will be responsible for: (i) preparation and implementation of the investment program; (ii) management of loan

consultants; (iii) disbursement of funds and recover loan repayments; and (iv) conduct overall investment program monitoring and evaluation, including preparation of necessary investment program reports, with the help of loan consultants.

75. **NWSDB PMU.** The PMU will be responsible for implementing and monitoring safeguards compliance activities, public relations activities, gender mainstreaming activities, and community participation activities. The PMU will have a social development and safeguards officer, who will be responsible for safeguards functions. The responsibilities of the PMU social development and safeguards officer are to: (i) ensure that the EARF provisions are observed, such as ensuring that works are selected according to the environmental criteria for project selection; (ii) review and approve project IEEs and EMPs; (iii) confirm existing IEE and EMP are updated based on detailed designs; (iv) confirm whether the EMP is included in bidding documents and civil works contracts; (v) provide oversight on environmental management aspects of the project and ensure EMP is implemented by contractors; (vi) establish a system to monitor environmental safeguards of the project, including monitoring the indicators set out in the monitoring plan of the EMP; (vii) facilitate and confirm overall compliance with all government rules and regulations regarding site and environmental clearances as well as any other environmental requirements, as relevant; (viii) review, monitor, and evaluate the effectiveness with which the EMP is implemented, and recommend necessary corrective actions to be taken as necessary; (ix) consolidate monthly environmental monitoring reports from MASC and submit semiannual monitoring reports to ADB; (x) ensure timely disclosure of final IEE/EMP in locations and form accessible to the public; and (xi) address any grievances brought about through the GRM in a timely manner. The monitoring report will focus on the progress of implementation of the IEE and RP, issues encountered and measures adopted, follow-up actions required, if any, as well as status of compliance with relevant loan covenants.

76. **MASC.** MASC will be engaged to work closely with and advise the PMU, to build capacity on NRW reduction, and to be involved in project supervision including construction. The MASC will have an environment management specialist and a resettlement specialist. For environmental related work, the MASC environment management specialist will: (i) ensure design and location of works are selected according to the environmental criteria for project selection; (ii) prepare project IEEs and EMPs; (iii) conduct environmental compliance audit of existing facilities as per Item F, Appendix 6 of ADB SPS, 2009; (iv) update the IEE/EMP during detailed design stage; (v) include EMP in bidding documents and civil works contracts; (vi) ensure all requisite government approvals are in place to allow implementation, and that these are renewed in a timely fashion where required; (vii) oversee implementation of EMP during construction, including environmental monitoring of contractors; (viii) take corrective actions when necessary to ensure no environmental impacts; (ix) review monthly reports by contractors and submit monthly environmental monitoring reports to the PMU; and (x) address any grievances brought about through the GRM in a timely manner as per IEEs.

Figure 2: Safeguards Implementation Arrangement – Water Supply



77. **Contractor.** The contractor will have an environment supervisor to (i) coordinate with MASC on updating the IEE/EMP based on detailed designs, and (ii) ensure implementation of EMP during civil works.

78. **NGO.** The project NGO, which will be responsible for formation of water user groups in tenement gardens, will also help the PMU/MASC ensure poor and vulnerable affected persons in tenement gardens are identified and receive benefits of the project and any entitlements. The NGO will collect and analyze data as required to help the MASC/PMU monitor impacts on the poor and vulnerable. The NGO will (i) put forth grievances of affected persons/vulnerable groups in tenement gardens to the PMU/MASC and GRC; (ii) generate awareness among affected persons/vulnerable groups about opportunities for employment in project-related activities, rights, entitlements, and grievance redress process, and help them make informed choices; (iii) assist the PMU in providing assistance to affected persons in tenement gardens, if required/applicable; (iv) participate in public meetings and consultations as and when required; (v) document lessons learned each year; (vi) identify follow-up actions to ensure sustainability of water user groups formed; (vii) follow-up on WASH[28] program; (viii) follow-up on key messages of awareness campaign among tenement garden communities; and (ix) analyze and report on gender impacts of project interventions. The success of NGO inputs will largely depend on their liaison with affected persons and other concerned government agencies.

B. Implementation Arrangements – Wastewater

79. **Executing and implementing agencies.** For wastewater investments, MPALG&DG will be the executing agency and CMC will be the implementing agency. CMC will responsible for implementing most of the wastewater components, except for any components which may be located outside Colombo City. A project management unit (PMU) will be established directly under the municipal commissioner, led by a CMC officer at a senior management level, for the duration of the investment program, to manage and implement investments. NWSDB PMU will

[28] Water, sanitation, and hygiene program

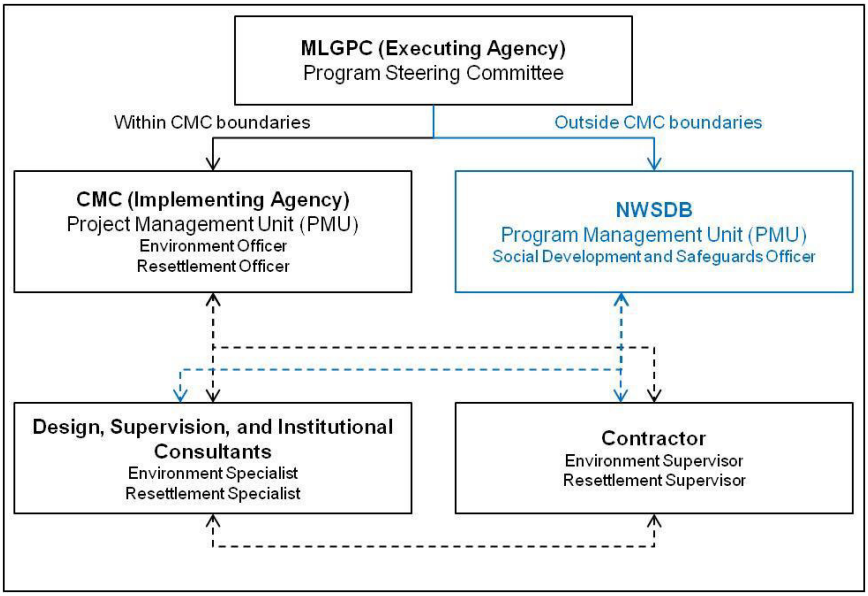
manage and implement investments falling in the NWSDB service area outside the CMC boundary.

80. **CMC PMU.** The PMU will be responsible for implementing and monitoring safeguards compliance activities, public relations activities, gender mainstreaming activities, and community participation activities in areas covered by CMC. The PMU will have an environment specialist, who will be responsible for safeguards functions. The responsibilities of the PMU environment specialist are to (i) ensure that the EARF provisions are observed, such as ensuring that works are selected according to the environmental criteria for project selection; (ii) review and approve project IEEs and EMPs; (iii) confirm existing IEE and EMP are updated based on detailed designs; (iv) confirm whether the EMP are included in bidding documents and civil works contracts; (v) provide oversight on environmental management aspects of the project and ensure EMP is implemented by contractors; (vi) establish a system to monitor environmental safeguards of the project, including monitoring the indicators set out in the monitoring plan of the EMP; (vii) facilitate and confirm overall compliance with all government rules and regulations regarding site and environmental clearances as well as any other environmental requirements, as relevant; (viii) review, monitor, and evaluate the effectiveness with which the EMP is implemented, and recommend necessary corrective actions to be taken as necessary; (ix) consolidate monthly environmental monitoring reports from DSIC and submit semiannual monitoring reports to ADB; (x) ensure timely disclosure of final IEE/EMP in locations and form accessible to the public; and (xi) address any grievances brought about through the GRM in a timely manner. The monitoring report will focus on the progress of implementation of the IEE and RP, issues encountered and measures adopted, follow-up actions required, if any, as well as status of compliance with relevant loan covenants.

81. For areas outside CMC boundary, NWSDB PMU will be responsible for implementing and monitoring safeguards compliance activities, public relations activities, gender mainstreaming activities, and community participation activities.

82. **Design, supervision, and institutional development consultants.** DSIDC will be engaged to work closely with and advise the CMC PMU and NWSDB PMU, to build capacity on wastewater management, and to be involved in project supervision, including construction. The DSIDC will have an environment specialist and a resettlement specialist. For environmental-related work, the DSIDC environment specialist will (i) ensure design and location of works are selected according to the environmental criteria for project selection; (ii) prepare project IEEs and EMPs; (iii) conduct environmental compliance audit of existing facilities as per Item F Appendix 6 of ADB SPS, 2009; (iv) update the IEE/EMP during detailed design stage; (v) include EMP in bidding documents and civil works contracts; (vi) ensure all requisite government approvals are in place to allow implementation, and that these are renewed in a timely fashion where required; (vii) oversee implementation of EMP during construction, including environmental monitoring of contractors; (viii) take corrective actions when necessary to ensure no environmental impacts; (ix) review monthly reports by contractors and submit monthly environmental monitoring reports to CMC PMU and NWSDB PMU; and (x) address any grievances brought about through the GRM in a timely manner as per IEEs.

Figure 3: Safeguards Implementation Arrangement – Wastewater



83. **Contractor.** The contractor will have an environment Supervisor to (i) coordinate with DSIC on updating the IEE/EMP based on detailed designs, and (ii) and ensure implementation of EMP during civil works.

C. Institutional Capacity Development Program

84. The MASC and DSIDC environmental management specialists will be responsible for training of NWSDB PMU, CMC PMU, and staff of NWSDB and CMC on environmental awareness and management in accordance with both ADB and government requirements. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project. The entire training will cover basic principles of environmental assessment and management, mitigation plans and projects, implementation techniques, monitoring methods and tools. Typical modules that will be present for the training session would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in water supply and wastewater projects; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The proposed training project along with the frequency of sessions is presented in Table 6.

Table 6: Training Program for Environmental Management (Per Project)

Description	Contents	Schedule	Participants
Pre-construction stage			
Orientation workshop	**Module 1 – Orientation** ADB Safeguards Policy Statement Sri Lankan Environmental Laws and Regulations **Module 2 – Environmental Assessment Process** ADB environmental process, identification of impacts and mitigation measures, formulation of	1 day	MUD&WSD, MPALG&DG, NWSDB, and CMC officials involved in the project implementation NWSDB PMU CMC PMU

Description	Contents	Schedule	Participants
	an environmental management plan (EMP), implementation, and monitoring requirements Review of environmental assessment report to comply with ADB requirements Incorporation of EMP into the project design and contracts		
Construction stage			
Orientation program/ workshop for contractors and supervisory staff	Roles and responsibilities of officials/contractors/consultants towards protection of environment Environmental issues during construction Implementation of EMP Monitoring of EMP implementation Reporting requirements	1 day	NWSDB PMU CMC PMU MASC DSIC Contractors
Experiences and best practices sharing	Experiences on EMP implementation – issues and challenges Best practices followed	1 day on a regular period to be determined by NWSDB PMU, CMC PMU, MASC, and DSIC	NWSDB PMU CMC PMU MASC DSIC Contractors Nongovernment organizations

D. Staffing Requirement and Budget

85. The costs for environmental safeguard activities, which are the responsibility of MASC and DSIC, are in the consultant packages. The cost of mitigation measures and surveys during construction stage will be incorporated into the contractor's costs, which will be binding on him for implementation. The surveys will be conducted by the contractors.

86. The operation phase mitigation measures are again of good operating practices, which will be the responsibility of implementing agencies (NWSDB and CMC). All monitoring during the operation and maintenance phase will be conducted by NWSDB and CMC, therefore, there are no additional costs.

87. The indicative costs of EARF implementation are shown in Table 7.

Table 7: Indicative Cost of EARF Implementation

Component	Description	Number	Cost Per Unit (USD)	Cost (USD)	Source of Funds
Legislation, permits, and agreements	Permit for excavation, permit from Coast Conservation Department, permit from Geological Survey and Mines Bureau, excavation permit from the Minister of Cultural and Religious Affairs, written consent from the Central Environment Authority, tree-cutting permits, permit for use of non-explosive/chemical blasting for rock breaking (excavation permit to be obtained from (i) Department of Archaeology for excavation works more than	Lump sum	$1,000 One for water supply One for wastewater	$2,000	These consents are to be obtained by contractor at his own expense.

Component	Description	Number	Cost Per Unit (USD)	Cost (USD)	Source of Funds
	500 m in length; (ii) police office; (iii) Road Development Authority (RDA) for excavation of roads belonging to RDA; and (iv) CMC for excavation of roads belonging to CMC)				
	Environmental assessment and environmental clearances as per National Environmental Act requirements	Lump sum One EIA/IEE study for the two WWTPs Environmental clearances for the WWTPs	$50,000	$50,000	Covered under DSIC contract
Public consultations and information disclosure	Information disclosure and consultations during preconstruction and construction phase, including public awareness campaign through media	As per requirement	Lump sum	$500,000	Covered under MASC and DSIC contracts, NGO and media packages
Capacity building	(i) Orientation workshop for MUD&WSD, MPALG&DG, NWSDB, and CMC officials involved in the investment program implementation on ADB Safeguards Policy Statement, Sri Lankan environmental laws and regulations, and environmental assessment process; (ii) induction course for the training of contractors, preparing them on EMP implementation and environmental monitoring requirements related to mitigation measures; and taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation; and (iii) lessons learned information sharing	Three modules with 1 day per module	$500 per module	$3,000	Covered under MASC and DSIC contracts
Baseline monitoring for noise	Once before start of construction works at specified corridor per work day	Two samples (daytime and nighttime)	$100 per sample	$200 for each work area per start of excavation	Covered under engineering design and cost – contractor
Construction	Ongoing at two locations near	Portable noise	Contractor's	Not	Covered

Component	Description	Number	Cost Per Unit (USD)	Cost (USD)	Source of Funds
monitoring for noise	pipe replacement corridors	meters	liability	applicable	under engineering design and cost – contractor
Surveys	Ongoing before start of construction work along pipe replacement corridors	Lump sum	Contractor's liability	$5,000	Covered under engineering design and cost – contractor
GRM implementation	Costs involved in resolving complaints (meetings, consultations, communication, and reporting/information dissemination)	Lump sum	Part of administration cost of PMUs	As per PMU budget	Covered under PMU cost
Any unanticipated impact due to project implementation	Mitigation of any unanticipated impact arising during construction phase and defect liability period	Lump sum	Contractor's liability	As per insurance requirement	Covered under engineering design and cost – contractor's insurance

ADB= Asian Development Bank, CMC= Colombo Municipal Council, GRM= grievance redress mechanism, MPALG&DG = Ministry of Public Administration, Local Government and Democratic Governance, MUD&WSD= Ministry of Urban Development, Water Supply and Drainage, NWSDB= National Water Supply and Drainage Board, PMU= project management unit, WWTP= wastewater treatment plant.

VII. MONITORING AND REPORTING

88. NWSDB PMU and CMC PMU will monitor and measure the progress of EMP implementation. The monitoring activities will correspond with the project's risks and impacts, and will be identified in the EIAs/IEEs for the projects. In addition to recording information on the work and deviation of work components from original scope, NWSDB PMU, CMC PMU, MASC, and DSIC will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome.

89. MASC and DSIC will submit monthly monitoring and implementation reports to NWSDB PMU and CMC PMU, who will take follow-up actions, if necessary. NWSDB PMU and CMC PMU will submit semiannual monitoring reports to ADB. The suggested monitoring report format is in Appendix 8. Project budgets will reflect the costs of monitoring and reporting requirements. For projects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis. Monitoring reports will be posted in a location accessible to the public.

90. For projects likely to have significant adverse environmental impacts, NWSDB and CMC will retain qualified and experienced external experts to verify its monitoring information. NWSDB and CMC will document monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. NWSDB and CMC, for each quarter, will study the compliance with the action plan developed in the previous quarter. Compliance with loan covenants will be screened by the MUD&WSD and MPALG&DG.

91. ADB will review project performance against the MUD&WSD and MPALG&DG's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued. ADB will carry out the following monitoring actions to supervise project implementation:

(i) conduct periodic site visits for projects with adverse environmental or social impacts;
(ii) conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
(iii) review periodic monitoring reports submitted by EAs to ensure that adverse impacts and risks are mitigated, as planned and as agreed with ADB;
(iv) work with EAs to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies t re-establish compliance as appropriate; and
(v) prepare a project completion report that assess whether the objective and desired outcomes of the safeguard plans have been achieved, taking account the baseline conditions and the results of the monitoring.

APPENDIX 1: INDICATIVE LIST OF PROJECTS UNDER THE INVESTMENT PROGRAM

The investment program includes 4 tranches, as follows:

A. Project 1: Water Supply Project

(i) rehabilitation and replacement of about 318 km of seriously degraded distribution network pipes, including spaghetti pipe replacement in tenement gardens comprising 40 km of 90-mm PVC pipes;
(ii) installation of new electromagnetic flow meters, valves, and special fittings for formation of district metered areas and for NRW monitoring and remote control system;
(iii) replacement and transfer of around 51,000 service connections with polyethylene pipes and fittings;
(iv) replacement of about 17,000 defective water meters;
(v) introduction of 5,000 water meters with automatic meter reader facility in a pilot area;
(vi) validation and updating of geographical information system (GIS) network for rehabilitated system;
(viii) establishment of fully equipped citywide active leakage control units/teams and reinforcement of the O&M units/teams to undertake NRW activities and major repairs; and
(ix) construction of dedicated NRW office for Colombo City with buildings, materials, equipment, and vehicles.

B. Project 2: South Colombo Water Supply Subproject

(i) Supply and laying of 242 Km PVC pipes for replacement and reinforcement of distribution network;
(ii) Descaling and relining or replacement of 15 Km CI pipes;
(iii) Replacement of 39 Km spaghetti lines;
(iv) Reinforcement of 18 Km DI pipes;
(v) Supply and fixing of 2,010 sluice valves;
(vi) Supply and fixing of 2,200 necessary Tee connections from the new network to existing branch system;
(vii) Supply and installation of 1,765 Fire Hydrants and Chambers;
(viii) Transfer of 45,000 Service Connections;
(ix) Replacement of 15,000 old, problematic water meters with reliable meters;
(x) Rehabilitation of 37 pump houses; and
(xi) Construction and rehabilitation of 2 buildings.

C. Project 3: Wastewater Project

(i) rehabilitation, replacement, repair and cleaning of sewer reticulation system of 15.61 km in South catchment area of Colombo to address sewer damages, blockages and siltation problems, under-capacity issues and realignment needs;
(ii) laying 29.40 km of sewer network and constructing three pump stations to cover currently unsewered Kirulapone area in the south catchment area of Colombo;
(iii) laying 6.22 km of sewer network and the construction of three pump stations to cover two other un-served areas in the south catchment area of Colombo; and
(iv) construction of a wastewater treatment plant.

APPENDIX 2: APPLICABLE SRI LANKA STANDARDS INSTITUTE STANDARDS

1. National Environmental (Noise Control) Regulations No.1 of 1996 - All activities shall comply with noise standards prescribed in Schedules I, II, III, and V.

- Maximum permissible noise levels in silent zones[29] must be less than or equal to 50 Leq T[30] during daytime and 45 Leq T during nighttime.
- Maximum permissible noise levels for construction activities must be less than or equal to 75 Leq T during daytime and 50 Leq T during nighttime.
- For noise sensitive areas (silent zones) in which background noise level exceeds or is marginal to the given level, there must be no increase of +3 dB(A) from the measured background level
- For mixed residential or commercial areas in which the background noise level exceed or is marginal to the given level, there must be no increase of +5 dB(A) from the measured background level during daytime and +3 dB(A) from the measured background level during nighttime.

SCHEDULE I
(Regulation 2)

Maximum Permissible Noise Levels at Boundaries in La_{eq} T

Area	La_{eq} T	
	Day Time	Night Time
Low Noise	**55**	**45**
Medium Noise	**63***	**50**
High Noise	**70**	**60**
Silent Zone	**50**	**45**

*Provided that the noise level should not exceed 60 dB (A) inside existing houses, during day time.

[29] National Environmental (Noise Control) regulations No. 1 1996 defines silent zone as an area covered by a distance of 100 m from the boundary of a courthouse, hospital, public library, school, zoo, sacred area, and areaa set apart for recreation or environmental purposes.
[30] Leq T means the equivalent continuous, A-weighted sound pressure determined over a time interval T (in decibels).

SCHEDULE II

(Regulation 3)

The following noise levels will be allowed where the background noise level exceed or is marginal to the given levels in Schedule I

(a)	For low noise areas in which the background noise level exceed or is marginal to the given level	Measured Background Noise Level +3dB (A)
(b)	For medium noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3dB (A)
©	For silent zone in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3 dB(A)
(d)	For high noise areas in which the background noise level exceeds or is marginal to the given level	
	(i)For day time	Measured Background Noise Level +5 dB (A)
	(ii)For night time	Measured Background Noise Level +3 dB (A)

The above maximum noise levels should be maintained inside the boundary of the land, in which the source noise is located.

Schedule III

Maximum permissible Noise Levels at Boundaries of the land in which the source of noise is located in La_{eq}, T, for construction activities.

La_{eq}, T

Day Time	Night Time
75	50

SCHEDULE V

(Regulation 7 (b))

The following noise levels will be allowed in places where the background noise levels exceed or is marginal to the given levels in Schedule I

(a)	For rural residential areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3dB (A)
(b)	For noise sensitive areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3dB (A)
(c)	For noise sensitive areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3 dB(A)
(d)	For mixed residential or commercial areas in which the background noise level exceed or is marginal to the given level	
	(i) For day time	Measured Background Noise Level +5 dB (A)
	(ii) For night time	Measured Background Noise Level +3 dB (A)
(e)	For industrial areas in which the background noise level exceeds or is marginal to the given level	
	(i) For day time	Measured Background Noise Level +5 dB (A)
	(ii) For night time	Measured Background Noise Level +3 dB (A)

2. Government Notification National Environmental Act, No. 47 OF 1980 - National Environmental (Protection and Quality) Regulations, No. 595/16 (1990) and No. 1534/18 (2008)

General Standards for Discharge of Effluents into Inland Surface Waters as per National Environmental (Protection and Quality) Regulations No. 595/16 (1990)

Determinant	Unit	Tolerance Limit
1 Total suspended solids	mg/l, max	50
2 Particle size of total suspended solids		Shall pass sieve of aperture size 850 micron
3 pH value	At ambient temperature	6.0–8.5
4 Biochemical oxygen demand-BOD_5 in 5 days at 20 ^oC	mg/l, max	30
5 Temperature of discharge		Shall no exceed 40 ^oC in any section of the stream within 15 m downstream from the effluent outlet
6 Oils and greases	mg/l, max	10.0
7 Phenolic compounds (as phenolic OH)	mg/l, max	1.0
8 Cyandes as (CN)	mg/l, max	0.2
9 Sulfides	mg/l, max	2.0
10 Fluorides	mg/l, max	2.0
11 Total residual chlorine	mg/l, max	1.0
12 Arsenic	mg/l, max	0.2
13 Cadmium, total	mg/l, max	0.1
14 Chromium, total	mg/l, max	0.1
15 Copper total	mg/l, max	3.0
16 Lead, total	mg/l, max	0.1
17 Mercury, total	mg/l, max	0.0005
18 Nickel, total	mg/l, max	3.0
19 Selenium, total,	mg/l, mg	0.05
20 Zinc, total	mg/l, max	5.0
21 Ammoniacal nitrogen	mg/l, max	50.0
22 Pesticides		Undetectable
23 Radio active material		
(a) Alpha emitters	micro curie/ml	10^{-7}
(b) Beta emitters	micro curie/ml	10^{-8}
24 Chemical oxygen demand (COD)	mg/l, max	250

Note 1: All efforts should be made to remove color and unpleasant odor as much as possible.

Note 2: These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by 1/8 of the actual dilution.

Note 3: The above-mentioned general standards cease to apply with regard to a particular industry when industry specific standards are notified for that industry.

Tolerance Limits for Domestic Waste Discharged Into Marine Coastal Areas as per National Environmental Act, No. 47 of 1980 Gazette Ordinary No. 1534/18 (2008)

LIST III

TOLERANCE LIMITS FOR INDUSTRIAL AND DOMESTIC WASTE DISCHARGED INTO MARINE COASTAL AREAS

No.	*Parameter*	*Unit Type of limit*	*Tolerance Limit Values*
1.	Total suspended solids	mg/l, max.	150
2.	Particle size of -		
	(*a*) Floatable solids	mm, max.	3
	(*b*) Settlabe solids	µm, max	850
3.	pH at ambient temperature	-	5.5 - 9.0
4.	Biochemical oxygen demand (BOD_5 in five days at 20 ^{0} C or BOD_3 in three days at 27 ^{0} C)	mg/l, max.	100
5.	Temperature	^{0}C, max	45^{0}C at the point of discharge
6.	Oils and greases	mg/l, max.	20

LIST III *(Contd.,)*

TOLERANCE LIMITS FOR INDUSTRIAL AND DOMESTIC WASTE DISCHARGED INTO MARINE COASTAL AREAS

No.	*Parameter*	*Unit Type of limit*	*Tolerance Limit Values*
7.	Phenolic compunds (as Phenolic OH)	mg/1, max.	5
8.	Chemical oxygen demand (COD)	mg/1, max.	250
9.	Total residual chlorine	mg/1, max.	1.0
10.	Ammoniacal Nitrogen (as N)	mg/1, max.	50
11.	Cyanide (as CN)	mg/1, max.	0.2
12.	Sulphides (as S)	mg/1, max.	5.0
13.	Fluorides (as F)	mg/1, max.	15
14.	Arsenic (as As)	mg/1, max.	0.2
15.	Cadmium (as Cd)	mg/1, max.	2.0
16.	Chromium, total (as Cr)	mg/1, max.	2.0
17.	Chromium, Hexavalent (as Cr^{6+})	mg/1, max.	1.0
18.	Copper (as Cu)	mg/1, max.	3.0
19.	Lead (as Pb)	mg/1, max.	1.0
20.	Mercury (as Hg)	mg/1, max.	0.01
21.	Nickel (as Ni)	mg/1, max.	5.0
22.	Selenium (as Se)	mg/1, max.	0.1
23.	Zinc (as Zn)	mg/1, max.	5.0
24.	Pesticides	mg/1, max.	0.005
25.	Organo-Phosphorus compounds	mg/1, max.	1.0
26.	Chlorinated hydrocarbons (as C1)	mg/1, max.	0.02
27.	Faecal coliform	MPN/100m1, max.	60
28.	Radio Active Material :		
	(c) Alpha emitters	micro curie/m1, max	10^{-8}
	(d) Beta emitters	micro curie/m1, max	10^{-7}

Note 1 : All efforts should be made to remove unplesant odour and colour as far as practicable.

Note 2 : These values are based on dilution of effluents by at least 8 volumes of clean receiving water. if the di is below 8 times, the permissible limits are muiltiplied by the 1/8 of the actual dilution.

Proposed Central Environment Authority Tolerance Limits for Sri Lanka Standards – Industrial and Domestic Waste Effluent Standards for Marine Coastal Areas[31]

	Parameter	Unit	Long Sea Outfall (a)	Short Sea Outfall (b)
01	Total suspended solids	mg/l	250	50
02	Color	Wavelength range		
	436 nanometer (nm) (yellow range)		N/A	7 m^{-1}
	525 nm (red range)		n/a	5 m^{-1}
	620 nm (blue range)		n/a	3 m^{-1}
03	Ammoniacal nitrogen	mg/l	150	50
04	Biological oxygen demand (BOD in 5 days at 20 ^{o}C or BOD in 3 days at 27 ^{o}C)	mg/l	400	30
05	Fecal coliforms	MPN/100 mL	1 x 10^{7}	2,000
06	Temperature	maximum	40 ^{o}C	40 ^{o}C
07	Chemical oxygen demand	mg/l	800	75
08	Total residual chlorine	mg/l	0.2	0.2
09	Oil and grease	mg/l	20	10
10	pH	range	5.5 to 9.0	5.5 to 9.0
11	Total arsenic (As)	mg/l	0.2	0.1
12	Total cadmium (Cd)	mg/l	0.1	0.05
13	Total chromium (Cr)	mg/l	0.05	0.01
	Hexavalent chromium (Cr VI+)	mg/l	0.05	0.01
14	Total copper (Cu)	mg/l	0.3	0.05
15	Total lead (Pb)	mg/l	0.5	0.1
16	Total mercury (Hg)	mg/l	0.01	0.002
17	Total nickel (Ni)	mg/l	1	0.2
18	Total selenium (Se)	mg/l	10	2
19	Total zinc	mg/l	2	1
20	Total cyanides (CN)	mg/l	0.01	0.01
21	Sulfides (as S)	mg/l	5	2
22	Sulfates (SO_4)	mg/l	1,000	250
23	Fluorides (F)	mg/l	5	5
24	Pesticides	mg/l	0.005	0.005
25	Organo-phosphorus compounds	mg/l	1.0	1.0
26	Chlorinated hydrocarbons (as chloride)	mg/l	0.02	0.02
27	Radioactive material			
	(a) alpha emitters	micro curie/ml (max)	10^{-8}	10^{-8}
	(b) beta emitters	micro curie/ml (max)	10^{-7}	10^{-7}
28	Silver (Ag)	mg/l	0.035	0.035
29	Phenolic compounds	Not measurable	Not measurable	Not measurable
30	Vanadium (V)	Not proposed	Not proposed	Not proposed
31	Polychlorinated biphenyls (PCB)	Not proposed	Not proposed	Not proposed
32	Polyaromatic hydrocarbons (PAHs)	Not proposed	Not proposed	Not proposed
33	Organotins (TBT)	Not proposed	Not proposed	Not proposed
34	Detergents (MBAS) and non-ionic detergents	mg/l	10	10
35	Toluene	Not proposed	Not proposed	Not proposed
36	Benzene	Not proposed	Not proposed	Not proposed
37	Ethyl benze	Not proposed	Not proposed	Not proposed

[31] As per KH Muthukuda Arachchi, CEA Deputy Director, General Environment Pollution Control, the proposed standards are in the final stage of review and finalization. CEA targets to have the standards approved within the year 2012.

	Parameter	Unit	Long Sea Outfall (a)	Short Sea Outfall (b)
38	Phenol	Not proposed	Not proposed	Not proposed

Notes: mg/l = milligrams per liter; long sea outfall = effluent discharge point is more than 1 km from shore; short sea outfall = effluent discharge point is 500 m–1 km from shore

Benchmark for Land Application of Sludge[32]

European Union Council Directive 86/278/ECC
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31986L0278:EN:NOT

1. The purpose of the directive is to regulate the use of sewage sludge in agriculture in such a way as to prevent harmful effects on soil, vegetation, animals, and man, thereby encouraging the correct use of such sewage sludge.

2. The directive lays down limit values for concentrations of heavy metals in the soil, in sludge, and for the maximum annual quantities of heavy metals which may be introduced into the soil. The member states must take the measures necessary to ensure that these limit values are not exceeded through the use of sludge.

3. The directive has been amended by: Directive 91/692/EEC of 23 December 1991 standardizing and rationalizing reports on the implementation of certain directives relating to the environment (CELEX No 31991L0692) further amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003 adapting to Council Decision 1999/468/EC (Celex N°31999D0468) the provisions relating to committees which assist the commission in the exercise of its implementing powers laid down in instruments subject to the procedure referred to in Article 251 of the EC Treaty.

Maximum Permissible Concentration of Potentially Toxic Elements in Sludge-Treated Soils

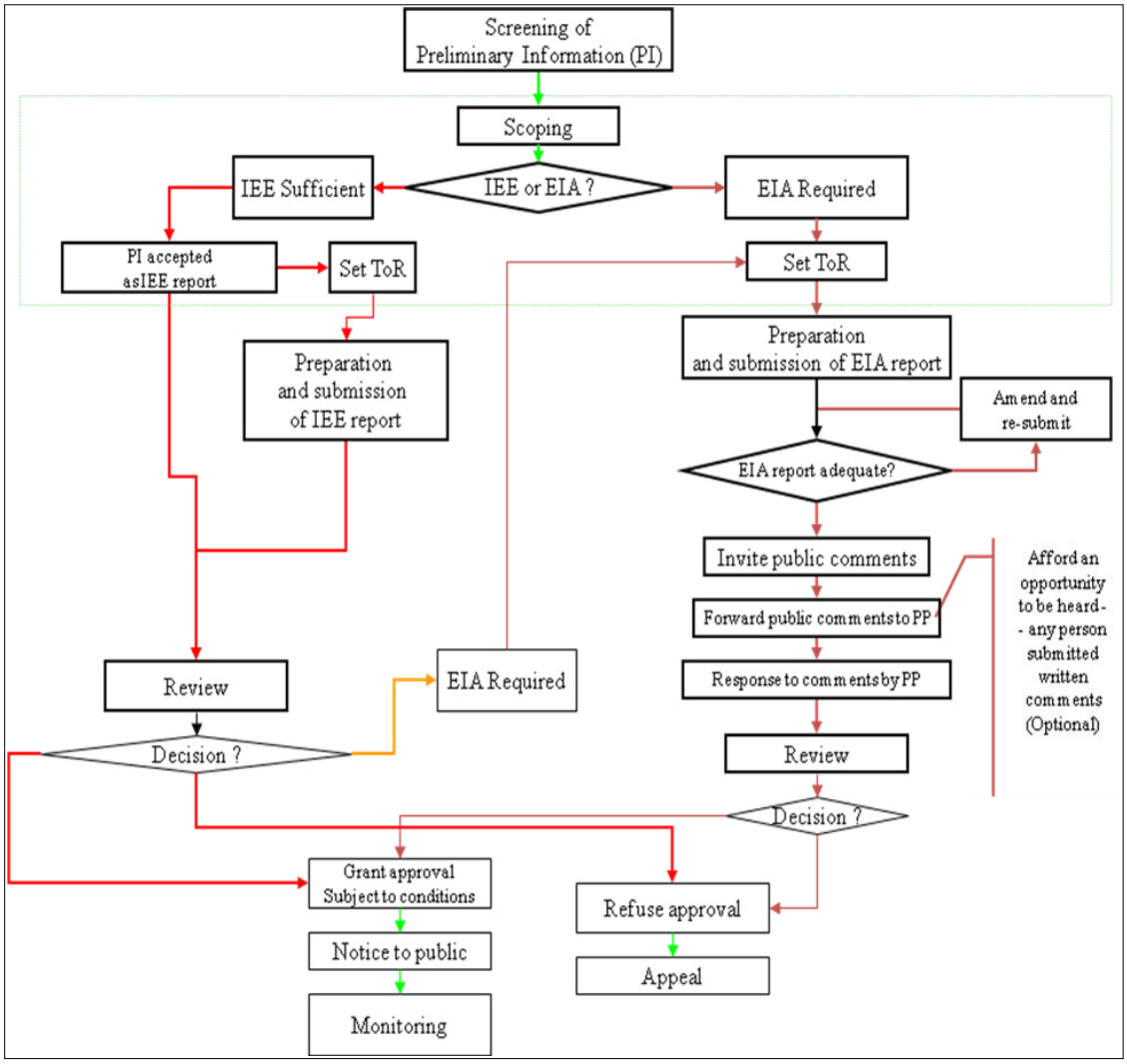
Parameter	Unit	Maximum Concentration
Cadmium (Cd)	mg/kg dry soil	1–3
Chromium (Cr)	mg/kg dry soil	100–150
Copper (Cu)	mg/kg dry soil	50–140
Mercury (Hg)	mg/kg dry soil	1.0–1.5
Nickel (Ni)	mg/kg dry soil	30–75
Lead (Pb)	mg/kg dry soil	50–300
Zinc (Zn)	mg/kg dry soil	150–300

Maximum Level of Heavy Metals In Sewage Sludge Used for Agricultural Purposes

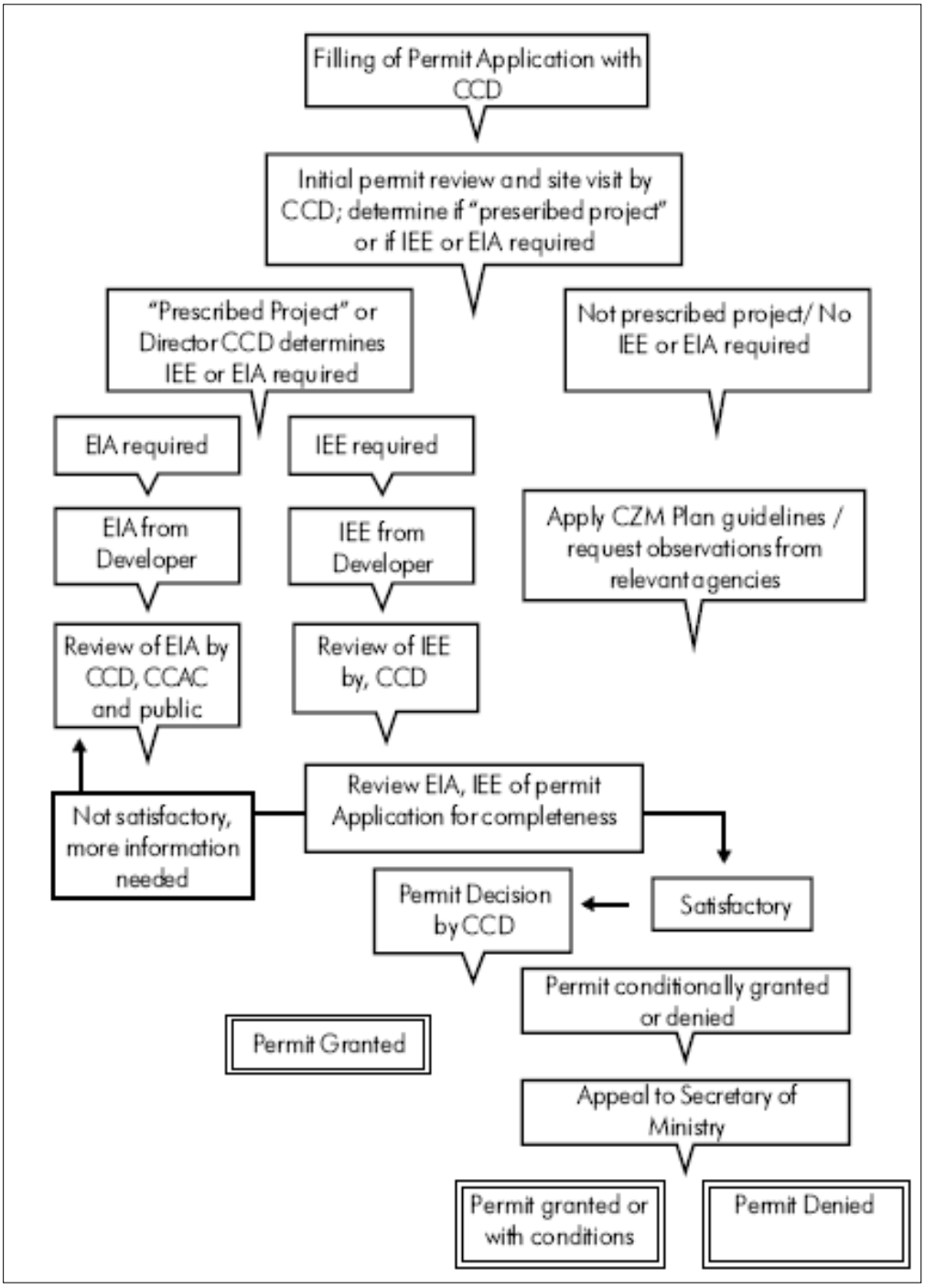
Parameter	Unit	Maximum Level
Cadmium (Cd)	mg/kg dry substance	20–40
Chromium (Cr)	mg/kg dry substance	---
Copper (Cu)	mg/kg dry substance	1,000–1,750
Mercury (Hg)	mg/kg dry substance	16–25
Nickel (Ni)	mg/kg dry substance	300–400
Lead (Pb)	mg/kg dry substance	750–1,200
Zinc (Zn)	mg/kg dry substance	2,500–4,000

[32] Sri Lanka CEA has not notified the Sri Lankan Standards for sludge disposal. As per KH Muthukuda Arachchi, CEA Deputy Director, General Environment Pollution Control, European Union Council Directive 86/278 ECC is being used for benchmarking for land application of sludge.

APPENDIX 3: PROCESS OF OBTAINING ENVIRONMENTAL CLEARANCE FROM CENTRAL ENVIRONMENT AUTHORITY



APPENDIX 4: PROCESS OF OBTAINING PERMIT FROM COAST CONSERVATION DEPARTMENT



APPENDIX 5: ADB RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST

A. Water Supply

Screening Questions	Yes	No	Remarks
A. Project siting Is the project area…			
• Densely populated?			
• Heavy with development activities?			
Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site			
• Protected area			
• Wetland			
• Mangrove			
• Estuarine			
• Buffer zone of protected area			
• Special area for protecting biodiversity			
• Bay			
B. Potential environmental impacts Will the project cause…			
Pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?			
Impairment of historical/cultural monuments/areas and loss/damage to these sites?			
Hazard of land subsidence caused by excessive groundwater pumping?			
Social conflicts arising from displacement of communities?			
Conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and groundwater?			
Unsatisfactory raw water supply (e.g., excessive pathogens or mineral constituents)?			
Delivery of unsafe water to distribution system?			
Inadequate protection of intake works or wells, leading to pollution of water supply?			
Overpumping of ground water, leading to salinization and ground subsidence?			
Excessive algal growth in storage reservoir?			
Increase in production of sewage beyond capabilities of community facilities?			
Inadequate disposal of sludge from water treatment plants?			
Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?			
Impairments associated with transmission lines and access roads?			
Health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine, and other hazardous chemicals?			
Health and safety hazards to workers from handling and management of chlorine used for disinfection, other contaminants, and biological and physical hazards during project construction and operation?			
Dislocation or involuntary resettlement of people?			
Disproportionate impacts on the poor, women and children, indigenous peoples, or other vulnerable groups?			
Noise and dust from construction activities?			
Increased road traffic due to interference of construction activities?			

Screening Questions	Yes	No	Remarks
Continuing soil erosion/silt runoff from construction operations?			
Delivery of unsafe water due to poor O&M treatment processes (especially mud accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems?			
Delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?			
Accidental leakage of chlorine gas?			
Excessive abstraction of water affecting downstream water users?			
Competing uses of water?			
Increased sewage flow due to increased water supply?			
Increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant?			
Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
Social conflicts if workers from other regions or countries are hired?			
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel, and other chemicals during operation and construction?			
Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation, and decommissioning?			
Climate Change and Disaster Risk Questions			
The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.			
• Is the project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami, or volcanic eruptions and climate changes (see Appendix I)?			
• Could changes in temperature, precipitation, or extreme events patterns over the project lifespan affect technical or financial sustainability (e.g., increased extreme rainfall increases flooding, damaging proposed infrastructure)?			
• Are there any demographic or socioeconomic aspects of the project area that are already vulnerable (e.g., high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?			
• Could the project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., by paving vulnerable groundwater recharge areas, or using water from a vulnerable source that is relied upon by many user groups, or encouraging settlement in earthquake zones)?			

B. Sewerage

Screening Questions	Yes	No	Remarks
A. Project siting Is the project area…			
• Densely populated?			
• Heavy with development activities?			
Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site			
• Protected area			
• Wetland			
• Mangrove			
• Estuarine			
• Buffer zone of protected area			
• Special area for protecting biodiversity			
• Bay			
B. Potential environmental impacts Will the project cause…			
• Impairment of historical/cultural monuments/areas and loss/damage to these sites?			
• Interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.?			
• Dislocation or involuntary resettlement of people?			
• Disproportionate impacts on the poor, women and children, indigenous peoples, or other vulnerable groups?			
• Impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?			
• Overflows and flooding of neighboring properties with raw sewage?			
• Environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?			
• Noise and vibration due to blasting and other civil works?			
• Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?			
• Discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?			
• Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?			
• Road blocking and temporary flooding due to land excavation during the rainy season?			
• Noise and dust from construction activities?			
• Traffic disturbances due to construction material transport and wastes?			
• Temporary silt runoff due to construction?			
• Hazards to public health due to overflow flooding, and groundwater pollution due to failure of			

Screening Questions	Yes	No	Remarks
sewerage system?			
• Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?			
• Contamination of surface and ground waters due to sludge disposal on land?			
• Health and safety hazards to workers from toxic gases and hazardous materials which may be contained in confined areas, sewage flow, and exposure to pathogens in untreated sewage and unstabilized sludge?			
• Large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?			
• Social conflicts between construction workers from other areas and community workers?			
• Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel, and other chemicals during construction and operation?			
• Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community, or where their failure could result in injury to the community throughout project construction, operation, and decommissioning?			
Climate Change and Disaster Risk Questions			
The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.			
• Is the project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami, or volcanic eruptions and climate changes (see Appendix I)?			
• Could changes in temperature, precipitation, or extreme events patterns over the project lifespan affect technical or financial sustainability (e.g., increased extreme rainfall increases flooding, damaging proposed infrastructure)?			
• Are there any demographic or socioeconomic aspects of the project area that are already vulnerable (e.g., high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?			
• Could the project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., by paving vulnerable groundwater recharge areas, or using water from a vulnerable source that is relied upon by many user groups, or encouraging settlement in earthquake zones)?			

APPENDIX 6: OUTLINE OF AN ADB EIA OR IEE REPORT

1. The generic table of contents of an ADB IEE or EIA report is provided below[33]. The difference between the IEE and ADB is the scope of the assessment. The order of dominance of the different sections may vary slightly depending on the assessment context.

A. Executive summary. This section describes concisely the critical facts, significant findings, and recommended actions.

B. Policy, legal, and administrative framework. This section discusses the national and local legal and institutional framework within which the environmental assessment is conducted. It also identifies project-relevant international environmental agreements to which the country is a party.

C. Description of the project. This section describes the proposed project; its major components; and its geographic, ecological, social, and temporal context, including any associated facility required by and for the project (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal). It normally includes drawings and maps showing the project's layout and components, the project site, and the project's area of influence.

D. Description of the environment (baseline data). This section describes relevant physical, biological, and socioeconomic conditions within the study area. It also looks at current and proposed development activities within the project's area of influence, including those not directly connected to the project. It indicates the accuracy, reliability, and sources of the data.

E. Anticipated environmental impacts and mitigation measures. This section (i) predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media), and physical cultural resources in the project's area of influence, in quantitative terms, to the extent possible; (ii) identifies mitigation measures and any residual negative impacts that cannot be mitigated; (iii) explores opportunities for enhancement; (iv) identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and (v) examines global, transboundary, and cumulative impacts as appropriate.

F. Analysis of alternatives. This section examines alternatives to the proposed project site, technology, design, and operation—including the no project alternative—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. It also states the basis for selecting the particular project design proposed, and justifies recommended emission levels and approaches to pollution prevention and abatement.

G. Information disclosure, consultation, and participation. This section (i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders; (ii) summarizes comments and concerns received from affected people and other stakeholders and

[33] Directly from Footnote 1, Annex 1 to Appendix 1.

how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, and the poor; and (iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination), and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

H. Grievance redress mechanism. This section describes the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance.

I. Environmental management plan. This section deals with the set of mitigation and management measures to be taken during project implementation to avoid, reduce, mitigate, or compensate for adverse environmental impacts (in that order of priority). It may include multiple management plans and actions. It includes the following key components (with the level of detail commensurate with the project's impacts and risks):

(i) Mitigation:

a. identifies and summarizes anticipated significant adverse environmental impacts and risks;

b. describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and

c. provides links to any other mitigation plans (for example, for involuntary resettlement, or emergency response) required for the project.

(ii) Monitoring:

a. describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits, and definition of thresholds that will signal the need for corrective actions; and

b. describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

(iii) Implementation arrangements:

a. specifies the implementation schedule showing phasing and coordination with overall project implementation;

b. describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance projects, training projects, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and

c. estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.

(iv) Performance indicators: describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

J. Conclusion and recommendation. This section provides the conclusions drawn from the assessment and provides recommendations.

APPENDIX 7: SAMPLE GRIEVANCE REGISTRATION FORM

(To be available in Sinhala, Tamil, and English)

The _____Project welcomes complaints, suggestions, queries and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.
Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date		**Place of Registration**			
Contact Information/Personal Details					
Name		**Gender**	* Male * Female	**Age**	
Home Address					
Place					
Phone no.					
E-mail					
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where, and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of Official Registering Grievance)	
Mode of Communication: Note/Letter E-mail Verbal/Telephonic	
Reviewed by: (Names/Positions of Officials Reviewing Grievance)	
Action Taken:	
Whether Action Taken Disclosed:	Yes No
Means of Disclosure:	

APPENDIX 8: ENVIRONMENTAL MONITORING REPORT TEMPLATE

This template must be included as an appendix in the EIA/IEE that will be prepared for the project. It can be adapted to the specific project as necessary.

1. INTRODUCTION

- Overall project description and objectives
- Description of sub-projects
- Environmental category of the sub-projects
- Details of site personnel and/or consultants responsible for environmental monitoring
- Overall project and sub-project progress and status

No.	Sub-Project Name	Status of Sub-Project				List of Works	Progress of Works
		Design	Pre-Construction	Construction	Operational Phase		
		☐	☐	☐	☐		
		☐	☐	☐	☐		
		☐	☐	☐	☐		

2. COMPLIANCE STATUS WITH NATIONAL/ STATE/ LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

No.	Sub-Project Name	Statutory Environmental Requirements	Status of Compliance	Action Required

3. COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

No. (List schedule and paragraph number of Loan Agreement)	Covenant	Status of Compliance	Action Required

4. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

- Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including Environmental Site Inspection Reports.
- There should be reporting on the following items which can be incorporated in the checklist of routine Environmental Site Inspection Report followed with a summary in the semi-annual report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection needs to note and record the following:
    - What are the dust suppression techniques followed for site and if any dust was noted to escape the site boundaries;
    - If muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads;

- adequacy of type of erosion and sediment control measures installed on site, condition of erosion and sediment control measures including if these were intact following heavy rain;
- Are their designated areas for concrete works, and refuelling;
- Are their spill kits on site and if there are site procedure for handling emergencies;
- Is there any chemical stored on site and what is the storage condition?
- Is there any dewatering activities if yes, where is the water being discharged;
- How are the stockpiles being managed;
- How is solid and liquid waste being handled on site;
- Review of the complaint management system;
- Checking if there are any activities being under taken out of working hours and how that is being managed.

Summary Monitoring Table

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
Design Phase						
Pre-Construction Phase						
Construction Phase						
Operational Phase						

Overall Compliance with CEMP/ EMP

No.	Sub-Project Name	EMP/ CEMP Part of Contract Documents (Y/N)	CEMP/ EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required

5. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

- Brief description on the approach and methodology used for environmental monitoring of each sub-project

6. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS(AMBIENT AIR, WATER QUALITY AND NOISE LEVELS)

- Brief discussion on the basis for monitoring
- Indicate type and location of environmental parameters to be monitored
- Indicate the method of monitoring and equipment to be used
- Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

As a minimum the results should be presented as per the tables below.

Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM10 µg/m3	SO2 µg/m3	NO2 µg/m3

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM10 µg/m3	SO2 µg/m3	NO2 µg/m3

Water Quality Results

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L

Site No.	Date of Sampling	Site Location	Parameters (Monitoring Results)					
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L

Noise Quality Results

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Government Standard)	
			Day Time	Night Time

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Monitoring Results)	
			Day Time	Night Time

7. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

- Summary of follow up time-bound actions to be taken within a set timeframe.

APPENDIXES

- Photos
- Summary of consultations
- Copies of environmental clearances and permits
- Sample of environmental site inspection report
- Other

SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name
Contract Number

NAME: _____ DATE: _____
TITLE: _____ DMA: _____
LOCATION: _____ GROUP: _____

WEATHER CONDITION:
_____

INITIAL SITE CONDITION: _____

CONCLUDING SITE CONDITION:

Satisfactory _____ Unsatisfactory _____ Incident _____Resolved _____ Unresolved _____

INCIDENT:
Nature of incident:
_____

Intervention Steps:
_____

Incident Issues

Resolution

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

Inspection

Emissions		Waste Minimization		
Air Quality		Reuse and Recycling		
Noise pollution		Dust and Litter Control		
Hazardous Substances		Trees and Vegetation		
Site Restored to Original Condition	Yes		No	

Signature
_____

Sign off

_____ _____

Name **Name**
Position **Position**