Draft Environmental Assessment and Review Framework

January 2014

India: Karnataka Integrated Urban Water Management Investment Program
- Urban Water Supply and Sanitation Component

Prepared by Karnataka Urban Infrastructure Development and Finance Corporation, Government of Karnataka for the Asian Development Bank. This is an updated version of the draft originally posted in July 2013 available on http://www.adb.org/projects/43253-024/documents.

CURRENCY EQUIVALENTS

(as of 23 January 2014)

Currency unit	–	Indian rupee (Re/Rs)
Re1.00	=	$ .016
$1.00	=	Rs 61.82

ABBREVIATIONS

ADB	−	Asian Development Bank
AME		Assistant Manager - Environment
CFE	−	Consent for Establishment
CFO	−	Consent for Operation
CPCB	−	Central Pollution Control Board
EA	−	Executing Agency
EAC	−	Expert Appraisal Committee
EARF	−	Environmental Assessment & Review Framework
EC	−	Environmental Clearances
EIA	−	Environmental Impact Assessment
EMP	−	Environmental Management Plan
FAL	−	Facultative Aerated Lagoon
GOI	−	Government of India
GOK	−	Government of Karnataka
IA	−	Implementing Agency
IEE	−	Initial Environmental Examination
IWRM	−	Integrated Water Resource Management
KISWRMIP	−	Karnataka Integrated & Sustainable Water Resource Management Investment Program
KSPCB	−	Karnataka State Pollution Control Board
KUIDFC	−	Karnataka Urban Infrastructure Development Finance Corporation
KUWSDB	−	Karnataka Urban Water Supply & Drainage Board
ME		Manager – Environment
MFF	−	Multitrance Financing Facility
MOEF	−	Ministry of Environmental and Forests
NGO	−	Non-Governmental Organization
PMU	−	Program Management Unit
SBR	−	Sequential Batch Reactor
SEIAA	−	State Environment Impact Assessment Authority
SPS	−	Safeguard Policy Statement
TOR	−	Terms of Reference
ULB	−	Urban Local Body
UWSS	−	Urban Water Supply & Sanitation

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I. INTRODUCTION

A. Background

1. The Karnataka Integrated Urban Water Management Investment Program (KIUWMIP) aims to improve water resource management in urban areas in a holistic and sustainable manner. Investment support will be provided to modernize and expand urban water supply and sanitation (UWSS), while strengthening relevant institutions to enhance efficiency, productivity, and sustainability in water use. The Investment Program focuses on priority investments and institutional strengthening in water supply and sanitation within an Integrated Water Resource Management (IWRM) context.

2. KIUWMIP will be implemented over an 8-year period beginning in 2014, and will be funded by a loan via the Multitranche Financing Facility (MFF) of Asian Development Bank (ADB). The Executing Agency is the Karnataka Urban Infrastructure Development Finance Corporation (KUIDFC) and implementing agencies for the Investment Program will be respective Urban Local Bodies (ULBs). Byadgi, Harihar and Davangere are the four towns chosen to benefit from the first tranche of the investment.

3. In accordance with ADB"s Safeguard Policy Statement (SPS, 2009), an MFF investment approach requires the preparation of an Environmental Assessment and Review Framework (EARF).

B. Purpose of the EARF

4. 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.

5. The mandatory requirements applicable to KIUWMIP require the proposed components to go through environmental assessment at an appropriate level. Hence, considering these issues, and particularly to provide the borrowing ULBs with definite environmental criteria to be met for implementation of KIUWMIP components and sub-components, this EARF has been prepared in accordance with ADB's Safeguard Policy Statement (2009) and Government of India and Government of Karnataka requirements.

6. Above all, this exercise ensures that the KIUWMIP, in its Investment Program cycle, will not deteriorate or interfere with the environmental sensitivity, but will improve the environmental quality of the Program area through development of infrastructure facilities. The details of components and subcomponents financed under the KIUWMIP are given below.

7. The Program will be implemented in select towns of the Tungabhadra sub-basin—a total of 34 ULBs. Byadgi, Harihar and Davengere are the towns chosen to benefit from the first tranche of the Program.

II. OVERVIEW OF THE TYPE OF SUBPROJECTS TO BE ASSESSED

8. The impact of the proposed investment program will be enhanced sustainable water security in selected river sub-basins in Karnataka. The expected outcome will be improved water resource management in urban areas in selected river sub-basins in Karnataka.

9. The investment program has three outputs:

(i) Output 1: Expanded efficient UWSS infrastructure. KIUWMIP will finance physical investments associated with (a) the rehabilitation and upgrading of inefficient water supply systems in subprojects that prioritize water efficiency (e.g., such as water loss minimization through non-revenue water (NRW) reduction programs), and water security (e.g., restoration of riverbank reservoirs); and (b) the expansion of sanitation, sewerage networks, sewage treatment capacity, and effluent reuse infrastructure for subprojects that promote environmental protection, and improvement of water bodies (e.g., preventing discharge of untreated sewage) and water productivity; and financial sustainability (e.g., effluent reuse with sale to industry). This output is also designed to have an important effect on public health, and incorporates elements that ensure that all segments of the population, including the poor, benefit from it. One such element is an output-based toilet program.[1]

(ii) Output 2: Improved water resource planning, monitoring, and service delivery. This output will finance the following non-physical investments: (a) the establishment and operationalization of the ULB Incentive Fund (UIF) intended to finance preliminary reform activities among KIUWMIP candidate ULBs;[2] (b) the development and ULB roll-out of IT-based water reform modules and drafting of a state policy to manage, meter, and progressively phase out stand posts; (c) support for managerial advances pertaining to promotion of PPPs and water associations in the form of special purpose vehicle; and (d) development and launch of improved communication and citizen participation strategies.

(iii) Output 3: KUIDFC's strengthened capacity. This output will finance non-physical investments associated with (a) project management, and (b) capacity development and restructuring of KUIDFC into an actual financial intermediary.

10. The subsectors to be included in the investment program are (i) potable water supply, and (ii) wastewater collection and safe disposal, within urban areas. Land drainage and solid waste management are excluded from the project. Rural areas will be included only to the extent that water can be made available to rural communities from transmission mains passing close to communities. Any supplies made available are of untreated water. Peri-urban areas will be included where they are within local ULB development plans.

[1] Summary of output-based toilet program (accessible from the list of linked documents).

[2] Sample activities may include water and energy audits, asset mapping and condition assessments, preparation of urban watershed plans, procurement of critical handheld meters, etc. Further details on the ULB incentive fund and the reform-oriented ULB selection process are accessible from the list of linked documents in Appendix 2.

11. **Subprojects**. Infrastructure subprojects proposed under the Investment Program are primarily related to urban water supply and sewerage. The main types of infrastructure and their principal components are shown in Table 1, and their potential environmental impacts are summarized in Appendix 1. This review is based on subprojects developed for the first tranche of investment, and is not intended to be a complete list. Impacts will always need to be examined by a process of environmental assessment (involving an EIA, IEE, or environmental review as appropriate), as the nature and significance of an impact can change with location and the specific details of the project.

Table 1: Subprojects and Components Proposed During Tranche 1

Subproject	Main Components	Infrastructure (New or Refurbished)
Water Supply	Source Augmentation	Surface water intake
		Pumps and pump house
		Raw water transmission
		Raw water storage
	Treatment and Storage	Water Treatment Plant
		Chlorination facility
		Overhead reservoirs
		Ground level reservoirs
	Water Transmission	Transmission main (clear water)
		Pumps and pump houses
	Water Distribution Network	Distribution mains
		Distribution network
	Miscellaneous Works	Bulk valves and flow meters
		Service connections
		Meters
Sewerage and Sanitation	Sewer Network (collection & conveyance)	Secondary sewers
		Tertiary sewers
		Service connections
		Trunk sewer
		Sewage lifting/pumping stations
	Sewage Treatment, Reuse & Disposal	Treatment facility FAL / Oxidation Pond / SBR
		Reuse (irrigation/industries/ponds/fish culture)
		Outfall sewer for treated effluent
		Household level and community toilets and service connections

12. **Implementation Schedule**. The Investment Program will be implemented over a period of 8 years and will comprise three tranches: (i) Tranche 1—4 years, from 2013 to 2016; (ii) Tranche 2—4 years, from 2015 to 2018, and (iii) Tranche 3—4 years, from 2017 to 2020.

III. COUNTRY'S ENVIRONMENTAL ASSESSMENT AND REVIEW PROCEDURES

A. Constitutional Provisions and Environmental Policy

13. The Constitution of India guarantees the protection and preservation of the environment. The Constitution declares it a fundamental duty of every citizen of India to protect and improve the natural environment, including forests, lakes, rivers, and wildlife, and to have compassion for living creatures. The Constitution's Directive Principles of State Policy guarantee the environment's protection—"the state shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country."

14. **National Environment Policy, 2006**. India's National Environmental Policy 2006 seeks to extend the coverage and fill in gaps, building on the earlier policies such as National Forest Policy 1988, National Conservation Strategy and Policy Statement on Environment and Development 1992, and Policy Statement on Abatement of Pollution1992. The objectives of the National Environment Policy 2006 are:

(i) Conservation of critical environmental resources
(ii) Intra-generational Equity: Livelihood Security for the Poor
(iii) Inter-generational Equity
(iv) Integration of Environmental Concerns in Economic and Social Development:
(v) Efficiency in Environmental Resource Use
(vi) Environmental Governance
(vii) Enhancement of Resources for Environmental Conservation

B. Environmental Assessment

15. The Government of India EIA Notification of 2006 (replacing the EIA Notification of 1994) sets out the requirement for environmental assessment in India. This states that environmental clearance is required for specified activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts.

16. Category A projects require environmental clearance from the national Ministry of Environment and Forests (MOEF). The proponent is required to provide preliminary details of the project in the form of a notification, after which an Expert Appraisal Committee (EAC) of the MOEF prepares comprehensive Terms of Reference (TOR) for the EIA study, which are finalized within 60 days. On completion of the study and review of the report by the EAC, MOEF considers the recommendation of the EAC and provides the environmental clearance, if appropriate.

17. Category B projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA). The State-level EAC categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study), and prepares TOR for B1 projects within 60 days. On completion of the study and review of the report by the EAC, the SEIAA issues the environmental clearance based on the EAC recommendation. The notification also provides that any project or activity classified as category B will be treated as category A if it is located in whole or in part within 10 km from the boundary of protected areas, notified areas, or interstate or international boundaries.

18. Considering the type, nature, and scale of subprojects to be implemented under the Investment Program, it is unlikely that any subprojects will fall under the ambit of the EIA Notification, 2006. None of the Tranche 1 subprojects require environmental clearance (EC). However, this will need to be reviewed on a case-to-case basis for all subprojects including amended Tranche 1 subprojects, if any, during the design stage.

C. Other Environmental Laws and Regulations

19. Besides EOI Notification, 2006, following are the acts, rules, policies, and regulations currently in force in India that deal with environmental issues that could apply to infrastructure development.

(i) The Water (Prevention and Control of Pollution) Act, 1974, amended 1988
(ii) The Water (Prevention and Control of Pollution) Rules, 1975
(iii) The Air (Prevention and Control of Pollution) Act 1981, amended 1987
(iv) The Air (Prevention and Control of Pollution) Rules, 1982
(v) The Environment (Protection) Act, 1986, amended 1991 and including the following Rules/Notification issued under this Act:
- The Environment (Protection) Rules, 1986, including amendments;
- The Municipal Solid Wastes (Management and Handling) Rules, 2000;
- The Hazardous Wastes (Management and Handling) Rules, 1989;
- The Bio-Medical Waste (Management and Handling) Rules, 1998;
- Noise Pollution (Regulation and Control) Rules, 2000;
- Eco-Sensitive Zone Notification: Restricting location of industries, mining and other activities in Doon Valley (UP);
- Environmental Impact Assessment Notification, 2006; and
- Environmental Standards of CPCB.

(vi) The Indian Wildlife (Protection) Act, 1972, amended 1993
(vii) The Wildlife (Protection) Rules, 1995
(viii) Wild Life (Protection) Amendment Act, 2002
(ix) The Indian Forest Act, 1927
(x) Forest (Conservation) Act, 1980, amended 1988
- Forest (Conservation) Rules, 1981, amended 1992 and 2003; and
- Guidelines for diversion of forest lands for non-forest purpose under the Forest (Conservation) Act, 1980.

(xi) Ancient Monuments and Archaeological Sites and Remains Act, 1958
- Ancient Monuments and Archaeological Sites and Remains Rules, 1959, and the Government of India Notification of 1992, under these Rules

20. However, because of the relatively minor negative impacts, most of the subprojects likely to be developed under the Investment Program may not fall within the scope of these legal instruments. The specific requirements to ensure compliance by these components and subprojects are shown in Table 2.

Table 2: Action Required to Ensure Subproject Compliance with National Environmental Laws

Component	Applicable Legislation	Compliance	Action Required
All components that require acquisition of	Forest (Conservation) Act, 1980; Wildlife (Protection) Act, 1972	Approval of Ministry of Environment and Forests (MoEF)	Identify non-forest land and formulate an afforestation program

Component	Applicable Legislation	Compliance	Action Required
forest land			
Sewage Treatment Plant (STP)	Water (Prevention and Control of Pollution) Act, 1974	Consent for establishment (CFE) and consent for operation (CFO) from KSPCB	Based on project review and site inspection, RSPCB provides CFE before construction, and stipulates the disposal standards to be met during operation. After completion of construction, CFO is issued confirming compliance with the CFE conditions, if any.
		Renewal of CFO during operation (STP only)	Based on the performance of the STP and its compliance with the disposal standards, CFO is renewed every year.
All subproject components situated within 300 m of protected monuments/sites	Ancient Monuments and Archaeological Sites and Remains Act, 1958 • The Government of India declared the area around protected monuments, up to 100 m, as prohibited area, and further 200 m, i.e. from 100 to 300 m, as regulated area. No construction work is allowed in the prohibited area.	Any construction work in the regulated area requires permission of Archaeological Survey of India (ASI).	Based on the detailed application submitted, ASI conducts joint site visits and project review, and provides/witholds permission.

IV. SPECIFIC PROCEDURES TO BE USED FOR SUBPROJECTS

A. Responsibilities and Authorities

21. The following committees, agencies, and entities are proposed:

22. **Steering Committee**. The established IWRMP Steering Committee whose members include Additional Chief Secretary (Committee Chair), MD of KUIDFC (Committee Secretary), Principal Secretary of the Urban Development Department, Principal Secretary of the Planning Department, Secretary for municipalities and urban development authorities of Urban

Development Department, secretary for expenditure of the finance department, and the director of the Directorate of Municipal Administration, will continue.

23. **Executing Agency**. The KUIDFC will continue as the nodal executing agency (EA) responsible for implementing NKUSIP. Investment Program implementation activities will be monitored by KUIDFC through a separate Program Management Unit (PMU), which will be set up within KUIDFC. The Managing Director of the KUIDFC will head the PMU, and will be assisted by an Executive Director at the regional office of KUIDFC at Dharwad to oversee the Investment Program progress.

24. A team of senior technical, administrative, and financial officials will assist the Executive Director in controlling and monitoring Investment Program implementation activities.

25. The Executive Director will be supported by two new divisional offices established at Davengere and Haveri. A consultant team (CT) will be appointed under the Divisional Programme Director, and will be involved in project planning, preparation of subproject and cost estimates, coordination, technical guidance and supervision, financial control, training, and overall subproject management.

26. All Investment Program decisions will be made by the Executive Director, who shall operate from the PMU, Dharwad; only interactions with the Government of Karnataka, Government of India, and ADB shall be conducted through the KUIDFC office at Bangalore.

27. As previously discussed, an IWRM project management unit is proposed to assist in the execution of the Program, including for the selection of Tranche 2 and subsequent towns.

28. **Implementing Agency**. Implementing Agencies (IA) in each of the Tranche 1 ULBs will oversee subproject component implementation at the subproject towns where the Investment Program ULB will implement subproject components.

29. A Project Implementation Unit (PIU) is to be established in each ULB, unless one or more of the ULBs decide to form a single PIU.

30. Other than the above institutional setup, a district-level program Steering Committee will be set up in each district to monitor implementation of subprojects and institutional reforms. The district-level program steering committee shall consist of the Deputy Commissioner of the district, the divisional Program Director from the concerned divisional office, Municipal Commissioners' / Chief Officers of Investment program ULBs, and the President / Chair of the investment program ULB. The district level programme Steering Committee will report to the PMU Executive Director, Dharwad.

31. **Consultancy Services Committee**. The KUIDFC will set up a consultancy services committee to evaluate the request for consultant services and consultancy contract negotiations. The recommendations of the committee will be submitted to the steering committee for approval.

32. **Tender Evaluation Committee**. The KUIDFC will set up a tender evaluation committee to evaluate tenders and prepare evaluation reports for submission to the steering committee for approval.

33. **IWRM Project Management Unit**. An IWRM Project Management unit will be established in the KUIDFC to assist with the implementation of Tranche 1 investments, the selection of Tranche 2 and subsequent investments. A small team within the IWRM Project Management Unit will be established to focus on environmental, social, and gender issues applicable to UWSS service provision. The unit will comprise full-time KUIDFC employees, contract employees, and, as required, short-term national and international consultants.

34. **Environmental Safeguards—implementation and compliance**. At the Executing Agency (i.e. KUIDFC), environmental issues will be coordinated centrally by an environmental specialist at manager level (designated as Manager-Environment), reporting to the General Manager (technical). Manager-– Environment (ME) will ensure that all subprojects comply with environmental safeguards. The ME will be supported by two environmental specialists, one part of the IWRM PMU stationed in KUIDFC Bangalore, and another stationed at the divisional office in Davengere. Environmental specialists will be of assistant manager rank (Assistant Manager-Environment or AME), and can be deputed from the government/semi-government agencies.

35. The IEE/EIA reports will be prepared by the consultant team, and will be reviewed by ME and AMEs as per ADB's Environmental Guidelines, and forwarded to ADB for review and approval. In case of IEE reports, ADB could delegate approval of IEE reports fully to the PMU after reviewing the first two reports. However, all EIA reports (of Category A subprojects) shall be sent to ADB for approval.

36. The responsibility fulfilling environmental requirements of the Government of India and the Government of Karnataka and conducting required environmental assessment as per ADB guidelines lies with the implementing agencies. The consultant team will assist the IAs in this regard.

37. The mitigation measures identified through IEE/EIA will be incorporated into the investment program cycle and subproject design. Mitigation measures, which are to be implemented by the contractor, shall form part of the contract documents. During the construction phase, the consultant team will monitor the implementation of the EMP and report to the PMU. The PMU will be responsible for compiling these results and sending semi-annual Environmental Monitoring Reports to ADB for review and disclosure.

B. Grievance Redress Mechanism

38. project specific grievance redress mechanism (GRM) will be established to receive, evaluate and facilitate concerns of, complaints and grievances of the DPs in relation to project's social and environmental performances. The main objective of the GRM will be to provide time bound action and transparent mechanism to resolve social and environment concerns.

39. A project GRM will cover the project's towns for all kinds of grievances and will be regarded as an accessible and trusted platform for receiving and facilitating project related complaints and grievances. The multi-tier GRM for the program will have realistic time schedules to address grievances and specific responsible persons identified to address grievances and whom the DPs have access to interact easily.

40. Awareness on grievance redress procedures will be created through Public Awareness Campaign with the help of print and electronic media and radio. The resettlement NGO will

ensure that vulnerable households are also made aware of the GRM and assured of their grievances to be redressed adequately and in a timely manner.

41. There will be multiple means of registering grievances and complaints by dropping grievance forms in complaint/ suggestion boxes at accessible locations, or through telephone hotlines, email, post or writing in a complaint registrar book in ULB's project office. There will be complaint registrar book and complaint boxes at construction site office to enable quick response of grievances/ complaints for urgent matters. The name, address and contact details of the persons with details of the complaint / grievance, location of problem area, date of receipt of complaint will be documented. The RPMU's Social development / Resettlement Officer will be responsible at the project level for timely resolution of the environmental and social safeguards issues and registration of grievances, and communication with the aggrieved persons. Annex 1 is the draft PID to be distributed to all affected communities and DPs which include the contact numbers of the respective ULB officer(s) responsible for the KISWRMIP.

C. Grievance Redress Process

42. There will be several tiers for grievance redress process. Simple grievances for immediate redress will first be resolved at site by Contractor.. If unaddressed for up to 7 days the complainants may go to PIU officer in ULB responsible for resettlement/social issues. Project engineer and the resettlement NGO will assist in resolving the issues. Name, designation and contact number of personnel responsible for grievance redress at ULB and RPMU, will be posted at Contractor's and PMDSC's site office in full visibility of public. NGO will be involved in community mobilization and awareness campaign among the communities. Grievances of immediate nature should be resolved at site/ within ULB/PIU level within 15 days of registration of grievances.

43. All grievances that cannot be resolved by ULB/PIU within 15 days will be forwarded to RPMU's Social safeguards/R&R Officer and PMDSC specialist who will review and resolve within 15 working days of grievance registration with the assistance of the Resettlement NGO and concerned PIU/ULB personnel, if required.

44. The grievances of critical nature and those cannot be resolved at RPMU level should be referred to Grievance Redress Committee (GRC)/Steering Committee (ST) set up at district level to be settled within 30 days. All documents related to grievances, follow up action taken to resolve along with explanatory note on nature, seriousness and time taken for grievance redress shall be prepared by RPMU Social safeguard / R&R Officer and circulated to GRC/SC members at least a week prior to scheduled meeting. The decision taken at the GRC/SC level will be communicated to the DPs by RPMU Social safeguards/R&R officer through ULB/PIU and resettlement NGO.

45. For any issues that remain unresolved by the GRC or SC or the decision taken at such meetings are not acceptable, the complainants /DPs can approach the Court of Law as per Govt. of Karnataka legal procedure.

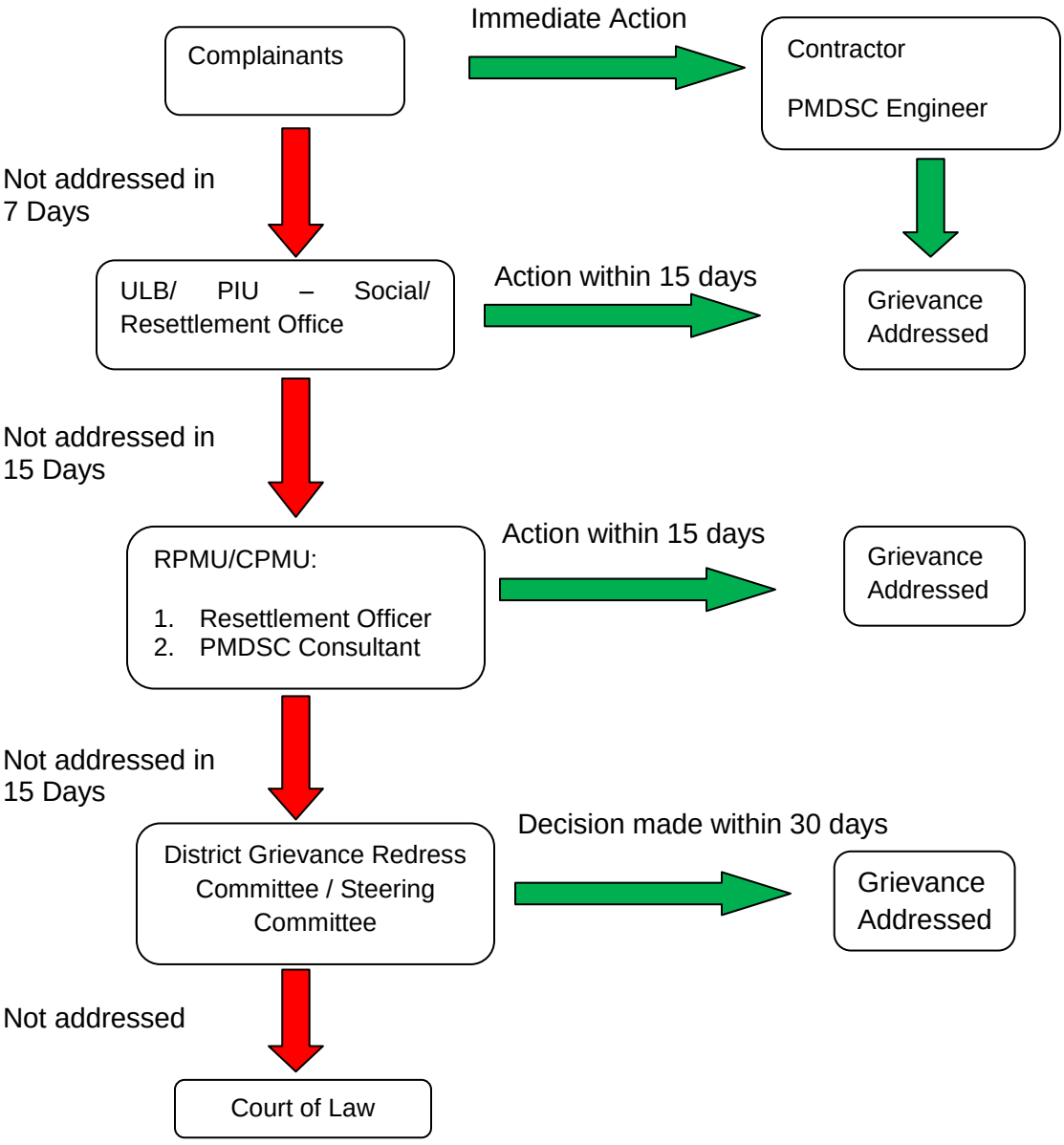
D. GRC / SC composition and selection of members

46. The GRC/ SC for the project will be headed by Dy. Commissioner (DC) of the district with members as followed: (1) ULB Commissioners of project towns,(2) Revenue Department (Registrar) official, (3) RPMU Social safeguard/ R&R Officer of KIUWMIP, (4) ULB officer who will convene the periodic meeting of GRC and will shoulder responsibility of keeping records of

grievances/ complaints in details with help from resettlement NGO. Other members, such as, NGO/CBO representatives, wards council representatives, DPs' representatives will be selected by the ULB Commissioner to represent in the GRC/SC meeting. NGO should also deploy one person in the team who will be responsible for coordinating with all GRC members and the DPs for grievance redress.

47. In the event when the established GRM is not in a position to resolve the issue, Affected Person also can use the ADB Accountability Mechanism (AM) through directly contact (in writing) to the Complain Receiving Officer (CRO) at ADB headquarters or to ADB Indian Resident Mission (INRM). The complaint can be submitted in any of the official languages of ADB's DMCs. The ADB Accountability Mechanism information will be included in the PID to be distributed to the affected communities, as part of the project GRM. A Grievance Redress Mechanism is shown in the Figure 1.

Figure 1: Grievance Redress Process



E. Environmental Guidelines for Subproject Selection

48. The avoidance of negative impacts (by sensitive site selection, amending features of the design, etc.) is a key facet of environmental assessment, as it both protects the environment and can save considerable time, effort, and cost downstream in a project by avoiding the need for difficult and costly environmental mitigation and compensation measures. It is important therefore that environmental impacts are taken into account throughout the development of projects and subprojects, beginning in the earliest stages, and that decisions are made on the basis of environmental criteria, as well as feasibility and cost.

49. The analysis of the potential impacts of the types of project likely to be considered within KIUWMIP UWSS component (Appendix 1) enables the formulation of certain criteria that, if taken into account in selecting and developing subprojects, should reduce their environmental impacts. These are presented in Table 3 below.

Table 3: Subproject Selection Guidelines

Subproject	Environmental Selection Criteria
All subprojects	• Comply with all requirements (as amended and in force) of relevant national law, including the EIA Notification, 2006, and other laws in specific sectors as indicated below • Avoid involuntary resettlement by using vacant government land where possible, and taking all possible measures in design and selection of site or alignment to avoid/minimize resettlement impacts • Avoid disturbance and alteration to any natural water courses during infrastructure development
Water supply	• Comply with all requirements of relevant national law, including the Water (Prevention and Control of Pollution) Act, 1974 • New water source development and augmentation of water abstraction from existing sources shall be as per KISWRMIP recommendations only; this project will allocate water to ULBs and recommend sources and quantities based on the water balance • Avoid water-use conflicts • Ensure appropriate source water quality; avoid unprotected sources; include necessary source protection measures in the project • Locate all new facilities (WTP, pumping stations, etc.) away from houses, shops, or any other premises used by people, thus establishing a buffer zone to reduce the effects of noise, dust, and the visual appearance of the site • Locate WTP at sites where there is no risk of flooding or other hazards that might impair functioning of the plant or present a risk of damage to the plant or its environs • Locate pipelines within the right of way (RoW) of other linear structures (roads, irrigation canals) as far as possible, to reduce the acquisition of new land

Subproject	Environmental Selection Criteria
	• 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 sewerage and drainage to deal with the increased discharge of domestic wastewater
Sewerage and sanitation	• Comply with all requirements of relevant national law, including the Water (Prevention and Control of Pollution) Act, 1974 • Plan for reuse of treated wastewater as per the recommendations of KISWRMIP; the subproject design shall include reuse components and budget in compliance with KISWRMIP recommendations • Locate sewage treatment plants (STP) 200-300 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 plant • Locate STP at sites where there is a suitable means of disposal for the treated wastewater effluent (e.g., into a natural water course) • Locate STP and sewage lifting stations at sites where there is no risk of flooding or other hazards that might impair functioning of the plant and present a risk of damage to the plant or its environs • Ensure that sewage is treated at all times to national wastewater discharge standards, and confirm this by regular monitoring of effluent from the STP • Ensure that no wastewater is discharged into a water course in which it could be a hazard to downstream users (e.g., a waterway that is used for as a source of water for domestic or municipal supply) • Include measures to ensure the safe disposal of sewage sludge without causing an environmental hazard, and if possible, to promote its safe and beneficial use as an agricultural fertilizer • Locate sewage pipelines within the right of way (RoW) of roads wherever feasible, to reduce the acquisition of new land • Avoid locating sewage pumping stations and wet wells within 100 m of any inhabited areas, and within 200 m of sensitive sites such as hospitals, schools, temples, etc., to minimize nuisance impacts from odor, rodents, etc.

F. Procedures for Environmental Assessment of Subprojects

50. Subprojects prepared for investment under KIUWMIP UWSS component must comply with national legislation and ADB policy. Relevant national laws are listed in Section 3 of this report, the specific requirements for compliance by subprojects are summarized in Table 2, and

Government of India and ADB environmental assessment procedures are described below. In practice, KUIDFC will liaise with the KSPCB, SEIAA, MoEF, and the ADB Regional Department (RD) to determine the specific requirements for environmental assessment of each subproject. If the environmental criteria shown in Table 3 are followed in the selection and development of subprojects, then most should have relatively minor environmental impacts, and the procedure for environmental assessment should then be straightforward and can be modelled on the approach adopted during Tranche 1. The principal steps in each process are described below.

1. ADB Safeguard Policy Statement, 2009

51. **Environmental Classification**. According to ADB Safeguard Policy Statement (2009), the environmental classification of subprojects is determined by the Environment and Social Safeguards Division (RSES) of ADB. The Rapid Environmental Assessment Checklist is in Appendix 2. There are three possible outcomes:

(i) **Category A.** A subproject is classified as category A if it could have significant adverse environmental impacts. Such subprojects require Environmental Impact Assessment (EIA).
(ii) **Category B**. A subproject is classified as category B if it could have some negative impacts, but these will be less significant than those of category A projects. These subprojects require an Initial Environmental Examination (IEE).
(iii) **Category C**. A subproject is classified as category C if it is not expected to have any environmental impacts. In this case, no EIA or IEE is required, although environmental implications are still reviewed.

52. The classification of a project is reviewed on completion of the studies and may be revised if appropriate by ADB's Chief Compliance Officer.

53. **Preparation of Initial Environmental Examinations (IEEs)**. An IEE describes the studies to identify the potential environmental impacts of a proposed development, and is prepared when impacts are unlikely to be highly significant and can be mitigated relatively easily. Under a Multi-tranche Financing Facility (MFF), a separate IEE is required for each category B subproject, so several IEEs are likely to be needed for each town (covering water supply and sewerage subprojects). The content and format of the IEE are described in the Annex to Appendix 1 of the ADB Safeguard Policy Statement (2009). Refer to Appendix 3 of this report for format of the IEE.

54. **Preparation of Environmental Impact Assessments (EIAs)**. Given the subproject selection guidelines prescribed (Table 2 above), it is most unlikely that subprojects prepared for funding under KISWRMIP-UWSS component are classified as category A, requiring an EIA. An EIA fulfils the same purpose as an IEE, but is generally a more detailed study and more comprehensive document because of the greater severity of the potential impacts. In the unlikely event of a subproject being classified as category A, an EIA would be required to comply with ADB Safeguard Policy Statement (2009), and the content and format of the EIA are described in the Annex to Appendix 1 of SPS, 2009. Refer to Appendix 3 to this report for format of the EIA.

55. **Environmental management plans (EMPs)**. 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. The EMP is normally prepared as part of the EIA or IEE, although it may be presented in a separate volume or document.. The preparation and content of an EMP are described in the ADB Safeguard Policy Statement (2009), and are more detailed when conducted for an EIA than for an IEE. EMPs for category A and B subprojects should outline specific mitigation measures, environmental monitoring requirements, and related institutional arrangements, including budget requirements.

56. **Public Consultation and Information Disclosure**. Public consultation is the process of exchanging information with those persons and organizations with a legitimate interest in a project, and/or who are likely to be affected by the project (stakeholders). It is a two-way process that informs and involves the community in developing a project, and informs the proponent about issues and concerns, which can then be addressed in project design. Information disclosure involves stakeholders in monitoring the development and implementation of a project, and fosters openness in decision-making by presenting documents and other project materials for public scrutiny.

57. Consultation and disclosure are mandatory under ADB Safeguards Policy Statement (2009), and best practice approaches should be followed. This involves meaningful consultation with stakeholders at an early stage of EA preparation, and throughout project implementation. A variety of approaches can be adopted. As a minimum, stakeholders should be consulted regarding the scope of the environmental study before work has commenced in earnest, and should then be informed about the likely impacts of the subproject and proposed mitigation once the IEE or EIA report is under preparation. The report should record the views of stakeholders and indicate how these have been taken into account in project development. There are a variety of approaches for such contacts, including public meetings, focus group discussions, workshops, public information campaigns, etc., and several methods should be used in order to reach all sectors of society, as well as institutional stakeholders, NGOs, etc.

58. Information is disclosed through public consultation, and more formally by making documents and other materials available in a form and at a location in which they can be easily accessed by stakeholders. This normally involves making draft reports available at public locations in the town, providing a mechanism for the receipt of comments, and making documents available more widely by posting them on the ADB and the EA's website. For category A projects, the full EIA must be made available to the public at least 120 days before ADB's Board of Directors considers the loan.

59. **Review of Environmental Assessment**. ADB will review draft final reports of:

(i) category A subprojects
(ii) amended/modified IEEs of Tranche 1 subprojects

60. Comments will be provided on format, content, and compliance with ADB procedures, and these will be addressed by the consultant in preparing the final reports. The final IEE or EIA documents are submitted to ADB by the Executing Agency for consideration by ADB's Board of Directors. Completed reports are made available worldwide by ADB through the ADB website.

2. Government of India/Government of Karnataka Environmental Clearance Procedures

61. The requirements of national environmental laws that apply to KISWRMIP subprojects are summarized in Table 2. This indicates that, in terms of compliance, subprojects may be of

three types: (i) subprojects that attract the EIA notification; (ii) subprojects that require clearance/no objection certificates or consent from competent government agencies; and (iii) subprojects that require no environmental related clearances/approvals, etc. The procedures for subprojects (i) and (ii) are as follows:

62. **Environmental Classification**. Under the Government of India EIA Notification (2006), the environmental classification of projects is determined by the MoEF, and there are two possible outcomes:

(i) Category A: A subproject is classified as category A if it is likely to have significant negative impacts, and is thus one of the types of project listed in this category in the EIA notification. Such projects require EIA, plus Environmental Clearance (EC) from MoEF.
(ii) Category B: A subproject is classified as category B if it is likely to have fewer negative impacts and is listed in this category in the EIA notification. These projects require EC from the State Environment Impact Assessment Authority (SEIAA), which classifies the project as B1 (requiring EIA) or B2 (no EIA), depending on the level of potential impacts. Projects classified as B2 require no further study.

63. **Preparation of Environmental Impact Assessments (EIAs)**. An EIA is mandatory for category A and B1 projects. Projects in category A are those with major negative impacts, so it is very unlikely that any subprojects developed under KISWRMIP would fall into this group. However, certain subprojects (sewage treatment plants) are included in category B, and these may be classified by SEIAA as B1. These would then require EIA, which should follow the content and format shown in Appendix 1 of the EIA notification; this includes social impact assessment studies and rehabilitation and resettlement action plans.

64. **Environmental Monitoring and Environmental Management Plans (EMP)**. The EIA notification requires that the EIA include a comprehensive program for monitoring the effectiveness of mitigation measures. This should specify measurement methodologies, frequency, locations, data analysis, reporting schedules, emergency procedures, and detailed budget and procurement schedules. An environmental management plan is also required, identifying mitigation measures and specifying administrative arrangements to ensure that mitigation measures are implemented and their effectiveness monitored after approval of the EIA. A budget for the EMP should also be provided.

65. **Public Consultation and Information Disclosure**. Public consultation and disclosure are required for A and B1 projects and consist of (i) a public hearing at or near the proposed site, and (ii) responses in writing from stakeholders. The public hearing is conducted by the appropriate Pollution Control Board, in this case the Karnataka State Pollution Control Board (KSPCB). Disclosure is also handled by KSCPB, which posts the summary EIA report on their website and invites responses from stakeholders. The draft EIA report is available on request until the public hearing.

66. **Review of Environmental Assessment Reports by Government Agencies**. After completion of the public consultation, the proponent addresses all material concerns expressed during consultation and disclosure by appropriate changes in the draft EIA and EMP, which are then submitted for approval. The report is reviewed by an expert appraisal committee (EAC), constituted by the MoEF for category A projects and SEIAA for B1 projects. The EAC provides its recommendation to the appropriate authority, which then decides, on the basis of the

recommendation, whether to issue or deny the environmental clearance (EC). An issued EC will normally include certain conditions, with which the proponent must comply.

67. **Post Environmental Clearance Monitoring**: Under the EIA notification, it is mandatory for the project proponent to submit half-yearly compliance reports in respect of the stipulated EC conditions.

68. **Other Mandatory Environmental Requirements**. Construction and operation of sewage treatment plants (STP) attract the Water (Prevention and Control of Pollution) Act, 1974, and/or the Air (Prevention and Control of Pollution) Act, 1981. If this is the case, consent will be required from KSPCB for construction/establishment (consent for establishment, CFE) as well as for operation (CFO).

69. After obtaining EC (if required by the EIA Notification), the project proponent (implementing agency) submits to KSPCB the necessary application forms, plus maps and other documents describing the site, the project, and the process. CFE/CFO is issued upon review of documents, supplemented by site visits. The board issues CFE before the start of construction and CFO on completion of construction, provided CFE conditions, if any, are satisfied. During the operation period, the treated effluent must conform to applicable environmental standards as per the consent order. The CFO is considered for renewal every year based on the operational performance of the facility.

V. CONFIRMATION THAT THE EARF CONFORMS TO ADB'S SAFEGUARD POLICY STATEMENT

70. ADB's Safeguard Policy Statement (SPS) 2009 sets out the policy objectives, scope, ad triggers, and principles for three key safeguard areas: (i) environmental safeguards, (ii) involuntary resettlement safeguards, and (iii) indigenous people safeguards. Policy principles and implementation processes for these are in Appendix 1, 2, and 3 of the ADB SPS 2009, while the ADB Environmental Assessment Guidelines (2003) and Handbook on Social Analysis (2007) provide detailed guidance on practical implementation.

71. The technical assistance through which KIUWMIP was prepared included detailed studies on involuntary resettlement, gender, and indigenous peoples, and a resettlement framework (RF) was prepared describing how these issues would be addressed in development and implementation of subprojects in the future. This is a companion volume to the EARF described in this document, as together the two documents should ensure that subprojects and the KISWRMIP UWSS component as a whole comply with ADB policies.

72. Table 4 below shows how the EARF complies with the environmental safeguard policies as described in SPS 2009, Appendix 1. This is based on a table provided in the executing agency guidelines, which summarize the environmental assessment requirements for project loans (because under MFF, the first tranche is considered a project). Table 4 lists the individual executing agency requirements, and indicates where in the EARF the procedure to be followed is described.

Table 4: Confirmation that the EARF Conforms to ADB Environmental Safeguard Policies

Project Category	Basic EIA Requirements	Approach Described in EARF Paragraph No.
A: Potential for significant adverse environmental	Preparation of EIA and EIA report	41,44

Project Category	Basic EIA Requirements	Approach Described in EARF Paragraph No.
impacts	Public consultation (at least twice)	46-48
	Preparation of EMP and budget	45
	EIA circulated to board	48
	EIA disclosed to public	48
	EIA available to public on request	48
B: Some adverse environmental impacts, but less significant than category A	Preparation of IEE and IEE report	41, 44
	Public consultation	46-48
	IEE disclosed to the public	48
	Preparation of EMP and budget	48
	IEE available to public on request	48
C: Unlikely to have adverse impacts	No IEE or EIA	41
	Environmental implications summarized in RRP	-

VI. STAFFING REQUIREMENTS AND BUDGET

73. The Executing Agency will implement this EARF and ensure that all Implementing Agencies comply with its provisions. The implementing Agency (through the consultant team) will be responsible for conducting the IEE studies for category B subprojects and EIA studies for category A subprojects based on ADB Safeguard Policy Statement (2009). The consultant team will also be responsible for incorporation of mitigation measures in design and construction, and baseline and construction-stage environmental quality monitoring. PMU will review and approve IEEs or EIAs, and will monitor the implementation of the environmental monitoring plan and environmental management plan where required. The CC will implement mitigation measures in construction. Implementation of mitigation and monitoring measures during the operation and maintenance (O&M) will be the responsibility of the respective IAs. Government regulatory agencies such as KSPCB will also monitor the environmental performance according to government regulations.

74. Costs required for operating this environmental assessment and review framework (EARF) should cover the following:

(i) conducting environmental assessment and preparation of IEE/EIA reports for new urban water supply and sewerage subprojects to be funded under the KISWRMIP;
(ii) implementation of environmental management plans; and
(iii) implementation of environmental monitoring plans.

75. For budgeting purposes, based on the sample subprojects, it is assumed that all subprojects to be proposed under the Investment Program will be category B, as per the ADB SPS 2009. These require preparation of IEE. These reports should follow the IEE reports prepared for sample subprojects by ADB Technical Assistance.

76. Each IEE prepared to date involves 3 weeks of effort by an experienced environmental specialist, conducting the following activities:

(i) site visit to assess environmental conditions and potential impacts of the scheme;
(ii) liaison with the local authority to obtain any environmental/social data that might be available (e.g., population figures, designated sites, etc);
(iii) consultation with the local community to inform them about the scheme and identify their views and concerns;
(iv) assessment of impacts and development of mitigation with affected communities with the use of ADB EA checklists; and
(v) desk study and report preparation.

77. Most of the construction work is straightforward; however, it may still take between 18 and 24 months. Environmental monitoring should be straightforward, and during construction, will involve periodic site observations and interviews with affected persons, local community, and construction workers. This will require a few days of effort per month per subproject by the environmental specialist. During the construction, it will also require periodic monitoring of ambient air and/or water quality. This will be conducted by the construction contractor, with help from a CPCB recognized laboratory, and the costs of which need to be included in the civil works contract.

78. The cost of these various inputs are shown in Table 5, which shows that the budget cost of implementing the environmental assessment and review procedures is $483,900. It is assumed that there will be a total of 15 towns under this investment program.

Table 5: Cost of Environmental Assessment and Review Procedures (US $)

Item	Quantity	Unit Cost (US$)	Total Cost	Remarks
1. Project Management Unit – KUIDFC, Bangalore				
Environmental Specialist (Manager-Environment)	-	-	-	Existing staff
Environmental Specialist (Assistant Manager)	8x12 PM	1,200	115,200	
2. Divisional Office, Davangere				
Environmental Specialist (Assistant Manager)	8x12 PM	1,200	115,200	Deputed from other agencies
Environmental Specialists (Consultant Team)	12 PM	6,000[3]	72,000	IEE preparation
Environmental Specialists (Consultant Team)	24 PM	6,000[4]	144,000	Implementation monitoring
3. Surveys and data collection				
Environmental quality monitoring	15	2,500	37,500	-

[3] Includes remuneration, per diem, and travel expenses
[4] Includes remuneration, per diem, and travel expenses

Item	Quantity	Unit Cost (US$)	Total Cost	Remarks
during construction and collection of data/maps, etc.	towns[5]			
TOTAL (15 towns – 15 subprojects)			483,900	

VII. MONITORING AND REPORTING

79. During the planning and preparation stage, the PMU will review and approve IEEs or EIAs and oversee disclosure and consultation. During construction, the PIU will monitor the implementation of the environmental monitoring plan and environmental management plan, and the PMU will oversee the compliance. Implementation of mitigation and monitoring measures during the operation and maintenance (O&M) of infrastructure will be the responsibility of the respective IAs, which are also the O&M agencies. Government regulatory agencies like the Karnataka State Pollution Control Board (KSPCB) will also monitor the environmental performance according to the government regulations. The O&M agencies will report the environmental performance of required facilities (particularly, STP) to the KSPCB as per the applicable acts/rules.

80. The IEEs/EIAs will be submitted to ADB for review and approval. Biannual Environmental Monitoring Reports (EMR) on the implementation of the EMPs, mitigation measures under the IEE/EIA, and environmental monitoring shall be carried out as a part of project implementation for review and disclosure in accordance with ADB's Public Communications Policy (2005). The EMR will include a section on grievance redress, which will present the details of complaints received and the action taken to redress them. Refer to Appendix 4 for format and content of the EMR.

81. In case any major non-compliance is discovered in the course of the review of ongoing subprojects, a corrective action plan will be prepared and submitted to ADB for approval. Prior to the preparation of each PFR, the applicability and relevance of EARF will be reviewed and updated to ensure relevance and consistency with applicable country legal frameworks and ADB's safeguards policies, as amended from time to time.

[5] Based on average investment in Tranche 1 and considering size of towns, it is assumed that the investment program will support 15 towns over 3 tranches.

APPENDIX 1: PRELIMINARY SCREENING OF SUBPROJECT IMPACTS

1. Water Supply – Construction

Element of Scheme →	**Supply Augmentation***		**New or Refurbished Mains**		**New Reservoirs in City**		**Water Treatment Plant**		**Network Repair/Expansion**	
↓Aspect of Environment	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale
PHYSICAL										
Atmosphere	NS	Construction of intake in surface water body, with local impacts; increase in pumping capacity— no impacts envisaged	NS	Local impacts mitigated by good practice (dust reduction, waste removal). No use of toxic materials.	NS	Local impacts mitigated by good practice	NS	Local impacts mitigated by good practice (dust reduction, waste removal). No use of toxic materials. Construct in dry season	NS	Small-scale localized impacts, mitigated by good practice — avoid trenching in rains, remove waste, cover dry material
Topography and soil	NS		NS		NS		NS		NS	
Surface water	Mitigate		NS		NS		NS		NS	
Groundwater	NS		NS		NS		NS		NS	
Geology/ seismology	NS		NS		NS		NS		NS	
ECOLOGY										
Fisheries	Mitigate	Intake construction can pollute water; sensitive areas to be confirmed, but any sensitive areas can be avoided if necessary.	NS	No ecologically sensitive areas in town or environs. To be confirmed, but any sensitive areas can be avoided if necessary.	NS	No ecologically sensitive areas	NS	No ecologically sensitive areas in town or environs, but any sensitive areas can be avoided if necessary	NS	Water supply networks are buried in roads so pipes can be repaired or laid without ecological impacts.
Aquatic biology	NS		NS		NS		NS		NS	
Wildlife	NS		NS		NS		NS		NS	
Forests	NS		NS		NS		NS		NS	
Endangered species	NS		NS		NS		NS		NS	
Protected areas	NS		NS		NS		NS		NS	
ECONOMIC DEVELOPMENT										
Industries	NS	Avoid	Mitigate	Locate in	NS	Avoid	NS	Avoid	Mitigate	Conduct

Element of Scheme →	**Supply Augmentation***		**New or Refurbished Mains**		**New Reservoirs in City**		**Water Treatment Plant**		**Network Repair/Expansion**	
↓Aspect of Environment	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale
Infrastructure	NS	impacts by locating intake, raw water tank, pump house etc. on unused government land. Reduce traffic disruption by careful planning of construction.	Mitigate	RoW of roads/canals if possible. In town: avoid sensitive locations; maintain access; compensate business for loss of income. Provide traffic diversions.	NS	impacts by locating reservoirs on unused government land. Plan work with police and local administra-tion to provide traffic diversions.	NS	impacts by locating WTP on un-used government land. Reduce traffic disruption by careful planning of construc-tion.	Mitigate	work quickly. Maintain access; compensate business for loss of income; plan work with local authority to provide effective traffic diversions.
Transport	Mitigate		Mitigate		Mitigate		NS		Mitigate	
Land use	Mitigate		NS		Mitigate		NS		Mitigate	
Power	NS		NS		NS		NS		Mitigate	
Agriculture, minerals, tourism	NS		Mitigate		NS		NS		Mitigate	
SOCIAL/ CULTURAL										
Population/ communities	NS	The facilities shall be mostly outside the towns; no major historic /archaeological areas; to be confirmed, but any sensitive areas can be avoided if necessary.	NS	Select route to avoid sensitive sites. Consult Archaeology Dept. to assess archaeologic al potential of route (change route if necessary). Develop protocol to identify and protect any	NS	Avoid sensitive sites (schools, etc). Determine archaeolo-gical potential of proposed sites and change if necessary. Apply protocol to protect chance finds.	NS	Avoid sensitive sites (schools, etc.). Determine archaeolo-gical potential of proposed sites and change if necessary. Apply protocol to protect chance finds.	NS	Conduct work quickly. Maintain access (facilities, houses). Assess archaeolo-gical potential of areas. Apply protocol to protect chance finds. Trenching to be observed by
Health facilities	NS		Mitigate		NS		NS		Mitigate	
Education facilities	NS		Mitigate		NS		NS		Mitigate	
Socioeconomics	NS		Mitigate		NS		NS		Mitigate	
Cultural heritage	NS		Mitigate		NS		NS		Mitigate	
Traditional land uses	NS		Mitigate		NS		NS		Mitigate	
Historical/ archaeological	NS		Mitigate		Mitigate		NS		Mitigate	

Element of Scheme →	Supply Augmentation*		New or Refurbished Mains		New Reservoirs in City		Water Treatment Plant		Network Repair/Expansion	
↓Aspect of Environment	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale
				chance finds.						archaeolo-gist.

* Assumes increased surface water abstraction via an existing or a new intake; however, no new structure like impounding reservoir etc. are expected as these would be considered and evaluated under the KISWRMIP–water resources component.
KEY: NS = No significant impacts expected; Mitigate = Negative impact can be easily mitigated (see Rationale); ISSUE = Sensitive issue, needs careful mitigation (see Rationale)

2. Sewerage – Construction

Element of Scheme →	New Treatment Plant STP		New/Refurbished Main Sewer		Pump Stations: New/Repair		Network Repair/Expansion	
↓ Aspect of Environment	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale
PHYSICAL								
Atmosphere	NS	Localized impacts at a site outside city; construct in dry season to avoid water collecting in excavated areas.	NS	Local impacts mitigated by good practice (dust reduction, waste removal). No use of toxic materials.	NS	No significant physical impacts from small-scale localized building work.	NS	Small-scale localized impacts, mitigated by good practice —avoid trenching in rains, remove waste, cover dry material.
Topography and soil	NS		NS		NS		NS	
Surface water	Mitigate		NS		NS		NS	
Groundwater	Mitigate		NS		NS		NS	
Geology/seismology	NS		NS		NS		NS	
ECOLOGY								
Fisheries	NS	Avoid ecological impacts by locating STP at a site where there is no	NS	Land around existing main was disturbed when constructed,	NS	Pump stations are located in the towns, where there is little ecological	NS	Sewer networks are buried in roads so pipes can be repaired or laid without ecological
Aquatic biology	NS		NS		NS		NS	
Wildlife	NS		NS		NS		NS	
Forests	NS		NS		NS		NS	
Endangered species	NS		NS		NS		NS	
Protected areas	NS		NS		NS		NS	

Element of Scheme →	**New Treatment Plant STP**		**New/Refurbished Main Sewer**		**Pump Stations: New/Repair**		**Network Repair/Expansion**	
↓ Aspect of Environment	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale
		ecological interest.		so it is unlikely to be ecologically sensitive. Ensure that route of new main avoids any areas designated for nature conservation.		interest.		impacts.
ECONOMIC DEVELOPMENT								
Industries	NS	STP will be located on land that is not used for any economic purpose (including farming if possible).	Mitigate	Locate main in RoW of roads if possible. In town: avoid sensitive locations; maintain access; compensate business for loss of income. Provide traffic diversions.	NS	No impacts at existing sites, which are small and self-contained. New sites should be on unused government land to avoid land-use conflicts.	Mitigate	Conduct work quickly. Maintain access; compensate business for loss of income; plan work with local authority to provide effective traffic diversions.
Infrastructure	NS		Mitigate		NS		Mitigate	
Transport	NS		Mitigate		NS		Mitigate	
Land use	NS		Mitigate		Mitigate		Mitigate	
Power	NS		NS		NS		Mitigate	
Agriculture, minerals, tourism	NS		Mitigate		NS		Mitigate	
SOCIAL/CULTURAL								

Element of Scheme →	**New Treatment Plant STP**		**New/Refurbished Main Sewer**		**Pump Stations: New/Repair**		**Network Repair/Expansion**	
↓ Aspect of Environment	Impact	Rationale	Impact	Rationale	Impact	Rationale	Impact	Rationale
Population/communities	NS	STP will be located outside the town; no major historic /archaeological areas; to be confirmed, but any sensitive areas can be avoided if necessary.	NS	Select route (in and outside the town) to avoid sensitive sites. Maintain access to affected locations. Assess archaeology potential of route and change route, if necessary, in sensitive areas.	NS	No impacts from refurbishment at existing sites. New sites should be on unused government land of low archaeological potential if possible. Apply protocol to protect any chance finds.	NS	Conduct work quickly. Maintain access (facilities, houses). Assess archaeological potential of areas. Apply protocol to protect chance finds in sensitive areas.
Health facilities	NS		Mitigate		NS		Mitigate	
Education facilities	NS		Mitigate		NS		Mitigate	
Socioeconomics	NS		Mitigate		NS		Mitigate	
Cultural heritage	NS		Mitigate		NS		Mitigate	
Traditional land uses	NS		Mitigate		NS		Mitigate	
Historical/archaeological	NS		Mitigate		NS		NS	

KEY: NS = No significant impacts expected; Mitigate = Negative impact can be easily mitigated (see Rationale); ISSUE = Sensitive issue, needs careful mitigation (see Rationale)

6. Operation of Water Supply and Sewerage Subprojects

Element of Scheme →	**Water Supply**		**Sewerage**							
↓ Aspect of Environment	Impact	Rationale	Impact	Rationale						
PHYSICAL										
Atmosphere	NS	Since the	NS	STP should						

Element of Scheme →	**Water Supply**		**Sewerage**							
↓ Aspect of Environment	Impact	Rationale	Impact	Rationale						
Topography and soil	NS	increased abstraction will be based on IWRM principles, no impacts. Sewerage system may need to be improved to carry increased wastewater.	NS	be located where treated effluent can be discharged to natural watercourse or for reuse; design will include safe sludge disposal or use in farming.						
Surface water	NS		Mitigate							
Groundwater	NS		Mitigate							
Geology/seismology	NS		NS							
ECOLOGY										
Fisheries	NS	As above; these will be assessed and mitigated as part of KISWRMIP– water resources component	NS	STP effluent will be treated to Indian discharge standards so should not affect ecology of receiving water body. Effluent will not be discharged into any						
Aquatic biology	NS		NS							
Wildlife	NS		NS							
Forests	NS		NS							
Endangered species	NS		NS							
Protected areas	NS		NS							

Element of Scheme →	**Water Supply**		**Sewerage**							
↓ Aspect of Environment	Impact	Rationale	Impact	Rationale						
				protected area.						
ECONOMIC DEVELOPMENT										
Industries	Benefit	Improved infrastructure may bring economic benefits to town as a whole from a healthier population (not quantifiable).	Benefit	Improved infrastructure may bring economic benefits to town as a whole from a healthier population. Agriculture should benefit from use of sludge as fertilizer.						
Infrastructure	Benefit		Benefit							
Transport	NS		NS							
Land use	NS		NS							
Power	NS		NS							
Agriculture, minerals, tourism	NS		Benefit							
SOCIAL/CULTURAL										
Population/communities	Benefit	Improved water supply will improve health and well-being of people and communities. People should also be better off,	Benefit	Improved sanitation will improve health and well-being of people and communities. People should also be better off,						
Health facilities	Benefit		Benefit							
Education facilities	NS		NS							
Socioeconomics	Benefit		Benefit							
Cultural heritage	NS		NS							
Traditional land uses	NS		NS							
Historical/archaeological	NS		NS							

Element of Scheme ➔	**Water Supply**		**Sewerage**							
↓ Aspect of Environment	Impact	Rationale	Impact	Rationale						
		spending less on healthcare.		spending less on healthcare.						

KEY: NS = No significant impacts expected; Mitigate = negative impact can be easily mitigated (see Rationale); ISSUE = Sensitive issue, needs careful mitigation (see Rationale)

APPENDIX 2: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

WATER SUPPLY

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:

Sector Division:

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			

Screening Questions	Yes	No	Remarks
• 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 ground water 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 ground waters?			
▪ 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?			
▪ over pumping of ground water, leading to salinization and ground subsidence?			
▪ excessive algal growth in storage reservoir?			

Screening Questions	Yes	No	Remarks
▪ 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?			
▪ continuing soil erosion/silt runoff from construction operations?			

Screening Questions	Yes	No	Remarks
▪ 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?			

Screening Questions	Yes	No	Remarks
▪ 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?			

RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST SEWAGE TREATMENT

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:

Sector Division:

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			

Screening Questions	Yes	No	Remarks
• 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?			

Screening Questions	Yes	No	Remarks
▪ 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 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 maybe 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?			

Screening Questions	Yes	No	Remarks
▪ 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.	**Yes**	**No**	**Remarks**
• 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., changes in rainfall patterns disrupt reliability of water supply; sea level rise creates salinity intrusion into proposed water supply source)?			
▪ Are there any demographic or socio-economic 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 using water from a vulnerable source that is relied upon by many user groups, or encouraging settlement in earthquake zones)?			

APPENDIX 3: CONTENT AND FORMAT OF ENVIRONMENTAL ASSESSMENT DOCUMENTS

This Initial Environmental Examination (IEE) template is prepared for infrastructure developments that can qualify as category 'B' project under Safeguard Policy Statement (SPS) 2009. While the general layout of the template will be similar for all kinds of development, scope of impact assessment and mitigation measures may vary.

In preparing an IEE report the essential steps that should be kept in mind are:

- Establish the objectives of the proposed activity
- Establish the needs
- Assess the options and select the preferred option (proposed activity)
- Define the activity
- Undertake the assessment
- Establish the link to environmental management measures

Accordingly, the following **Table of Content** (TOC) is provided for guidance. The content of each topic in the TOC is also described following the TOC structure.

Executive Summary

For an IEE, this section can be very brief (**should not be more than 3 pages**) and need not summarize each chapter of the report. Summary information on the following is recommended:

- Project proponent, need, components and location;
- Exactly what national legislation will apply and what approval/permits are required (if any) and how is it meeting ADB SPS 2009;
- A very brief outline of the status of current environment, what significant impact (excluding all **routine** ones) is anticipated and what measure has been proposed;
- Highlight any special measure that may have been proposed to enhance institutional capacity, offsetting biodiversity impacts etc.

1.1 Introduction

In this section the ***project history*** (if any) could be described which should then logically flow to the 'objective'. Later on, when considering the justification for carrying out the proposed activity it will need to be established if the 'objective' is achieved against the environmental impacts identified through the assessment process.

Say the ***reasons*** for preparing the IEE briefly – can cite national requirements (if any) and ADB SPS policy.

Regarding the '***need for the project***' – establish the 'fit' of the proposed activity with **strategic** issues as well as why is it needed **now**. Example: a narrow initial analysis might determine that a new bridge and approaches are required but broader consideration might result in a different definition of need, such as an improved river crossing. Similarly a sewage treatment plant is needed for a particular town but that plant will benefit the waterway which serves the whole region. Proposed activities cannot sit in isolation and it has implications on the broader land use, transport planning issues etc and their environmental impacts. It is therefore essential that links are established at the strategic level. The ***'need for 'now'*** can be established in respect with operational requirements e.g. safety, traffic efficiency, power requirements etc., and environmental and amenity improvement.

Key features of project, timeframes and proponent can be included in this section which should usually not exceed half a page.

2.0 Policy and Legislative Framework

- Identify zoning (where appropriate) and all approving authorities for the project and legislative (national) and policy (both ADB and national) requirements including requirements for IEE and EIA;

- Identify any international agreements, national and/or local environmental planning instruments that may apply to the project and **how the project design meet those requirements**;
- Advise on any **strategies being developed** by the government which may affect the proposal, yet may not be reflected in any formal planning documents;
- A matrix of any gap analysis between national/local and ADB requirements should be provided;
- **Status of any approval** (where appropriate) from relevant authority;
- Search result of **all national and local database** (including any archeological Society) to identify environmentally significant zones/species/heritage structures.

3.0 Analysis of Alternatives

Usually the proponent would have gone through a process of examining sites, design features, and technologies, in order to maximize the potential viability and profitability of a project, or in the case of provision of services, addressing needs in the most critical areas; there may not be a lot of alternatives (if any; for example, this is often the case with hydropower projects where the optimal location depends on topography and water storage potential).

Nevertheless, **reasonable alternatives** within the scope of viable project operations need to be presented and assessed from the point of view of possible environmental and social impacts (positive and negative). The IEE will need to refer to these alternatives that are usually described and assessed in the feasibility study report and emphasize the environmental perspective (where possible) for selecting or rejecting a particular option. This somehow comes as a coarse filter before the detailed project impact predictions and assessments are done for the preferred alternative.

4.0 Proposal Description

4.1 The Study Area

At the outset it is essential to provide **exact boundaries** (with good legible maps and colored indicating sensitive areas) of the area where impacts are presumed and have been studied. **A description of the overall study area in relation to the project site should be made.**

4.2 Description of Site and surroundings

Give a general description of the site and its surrounding locality in terms of its physical geography, vegetation cover, land use and built environment. The environmental sensitivity of the site (if any) and surroundings should be discussed. Relationship between the site and surroundings should be noted. This should include proximity to forest/native vegetation area, national park or other natural heritage reserve, watercourses, wetlands, estuaries or coastline, schools, hospitals, religious structures/place, heritage sites, residential areas, shopping centers or other significant built or natural features.

Adequate photographic coverage is essential and should illustrate the location of the proposed activity within the context of the area. Captions, identifying key items within each photograph should be indicated. A map indicating where the photographs were taken and the direction of their view should also be provided. References to relevant photos should be made throughout the IEE.

4.3 The Proposal (define the activity)

The correct 'packaging' of the activity – for example, is it a demolition of existing structure or is the more accurate and inclusive 'package' is a 'new' structure with associated facilities and can have impact on existing structure?

All relevant ***associated activities***, such as batching plant, site compound, stockpiles, geotechnical and surveying investigations, borrow and soil/waste disposal sites should be included in the description. If the sites are not likely to be determined until closer to construction, the activities can still be included and assessed by indicating the most likely sites for these activities, as well as the areas where they would not be established.

Each step in the ***construction methodology and activities*** (as per construction staging) will be elaborated including type of plant and equipments to be used, working hours and the approximate duration at each stage of the construction period.

Visual Aids:

- A good general locality map showing the location, form and physical dimensions of the project in relation to major environmental constraints;
- Photographs at various angles taken of the project sites and associated surroundings should be part of this section, any relevant diagrams and photomontages based on aerial photographs are a plus point.

5.1 Assessments of Environmental Impacts and Safeguards

5.2 Existing Environment

5.1.1 Landforms, Geology and Soils

This (landforms) can be undertaken by analyzing the area in terms of its slope and terrain through ground survey and interpretation of aerial photos or topographical maps. Landforms include such features as ridges, hills, gorges, rivers, alluvial plains etc. Give a brief geological setting if such a survey in the form of geotechnical investigation has been done. Erosion hazard is related to both landform and geology and also the types of soils occurring in the area and their susceptibility to erosion should also be noted.

5.1.2 Climatic Condition

Features that need consideration are:

- Rainfall (seasonal intensity and annual distribution)
- Winds (average velocity, duration and prevailing direction)
- Annual and daily temperature range, evaporation characteristics

5.1.3 Water Quality

Describe the existing natural and built drainage systems within and surrounding the boundaries of the proposed activity and illustrate with a photograph if appropriate. Provide baseline condition through referencing any monitoring data that would have been done by local authorities or if not available then taking samples in strategic locations which can represent the water quality of the area. Basis for choosing the representative samples should be provided. Parameters that need to be measured depend on the type of development proposed. However, **as a minimum, water should be tested for turbidity, total dissolved solids, pH, and**

dissolved oxygen. If an existing landfill site is under consideration for improvement then sampling of leachate from the site will be necessary.

5.1.4 Air Quality

Local and to a lesser extent regional air quality can be affected at the construction stage by dust, construction vehicle emissions while for operational stage by vehicle emissions and odors (in case of sewage treatment plant (STP) or solid/liquid waste management facility). While these factors need consideration, detailed investigation of baseline condition is usually required when a new road, STP or waste management facility is being built within populated urban areas. For any proposed development taking account of surroundings is fundamental, accordingly, if there are industries or any other pollution generating activities within the proximity then it goes without saying that an account of ambient air quality will be necessary. For all other cases qualitative rather than quantitative description will be sufficient. In an environment where it is anticipated that existing air pollution is high, parameters that need to be measured to assess baseline conditions, **as a minimum, are Total Suspended Particulates, Dust deposition (Opacity), and Sulfur Dioxide**.

Odors are normally invisible and can vary in accordance to weather conditions. Odors can be an issue only for STPs and waste management facilities. Assessment of any pre-existing odors prior to progressing with the proposed works initially will have to be based on subjective measurement and survey of neighborhood perception. If there are evidence of any major resentments among the surrounding population then as part of the baseline assessment there will be need for measurement of toxic substances like hydrogen sulfide or any other substances e.g. chlorine, acid gases etc, thought to be the reason for adverse odor emissions.

5.1.5 Acoustic Environment

In most circumstances noise intrusion becomes an issue only during the construction period rendering it to be a temporary nuisance. For example, road reconstructions that follow the existing road alignment and do not involve any design changes in traffic volume or mix is not anticipated to generate any adverse impact and could avoid elaborate assessment of existing ambient noise environment. Operational noise can become an issue in case of new roads, power plants, STPs or waste management facilities etc which demands that the existing background noise levels be established against which any future noise compliance can be measured.

Vibration assessment and prediction of new rail, metro or roads will be relevant where there are heritage structures in reasonable proximity.

5.1.6 Biodiversity

The most important criterion for establishing the significance of flora and fauna in an area is to identify the species that occur there and their habitat. A thorough search of information (**all known local and international database search**) and field surveys should be undertaken by a **competent qualified person**. The nature and scale of the proposed activity will no doubt determine the depth and detail required however, all flora and fauna assessments of the existing environment should include:

- A list of plant and animals occurring in the area (i.e. the construction site and within the study area). Marine species is to be included where relevant;
- A list of aquatic and terrestrial species and its communities occurring in the study area;

- A list of threatened, vulnerable and endangered species in the study area, if any;
- A map of the study area indicating the distribution;
- Information indicating if there is a corridor of vegetated area that links or joins to larger areas of natural habitat?

5.1.7 Physical and Cultural Heritage

Any building, sites or items of heritage significance listed by the local and/or national authority and/or internationally (UNESCO) and that occur within or adjacent to the proposed activity should be identified and indicated on a locality map. A statement on the heritage significance should be provided. Any matters of cultural heritage in addition to archeological relics should also be discussed if these are identified.

5.1.8 Socio-economic Considerations

Factors to consider and stock take are:

- Land use
- Type of community spread
- Socio-economic status
- Existing provisions for pedestrians and other forms of transport
- Other existing amenities for community welfare

Reference should be made to the resettlement plan (RP) and/or indigenous peoples plan (IPP) (where applicable) to highlight specific social impacts on individuals. There is **no need for repetition from RP or IPP** but simply give the number of people/households affected and for details on mitigation measures reader should be directed to specific sections within the RP/IPP.

5.2 Impacts and Mitigation Measures

5.2.1 Erosion Hazards

The erosion hazard rating of an area indicates its erosion potential following land disturbance, including vegetation clearing and excavation. Accordingly, soil erosion is inherent in all physical development activities. Impacts are associated with soil type, slope gradients and lengths, and weather conditions which would have been described and analyzed in section 5.1.1 and 5.1.2. Based on that analysis one should be able to determine any site specific erosion risks or hazards. A schematic of the site can be prepared superimposed on topography of the site indicating erosion risk areas.

5.2.1.1 Mitigation Measures

Few basic principles needs to be followed in designing mitigation measures and these are:

- Minimize the extent and duration of disturbance, particularly around drainage lines and watercourses. For example, mark out the limits of disturbance, stage works, and progressively carry out re-vegetation and stabilization;
- Sub-divide the whole site into separate catchment areas, including drainage path;
- Keep ‘clean’ and ‘dirty’ water separate. This can be done through intercepting ‘clean’ upslope, run-on water around or through the site. Do not allow dirty longitudinal site drainage to mix with clean cross drainage unless it has been treated first;
- Minimize the slope length and catchment areas on the works;
- Manage water at non-erosive velocities;

- Keep loose soil material and stockpiles out of drains, flow-lines and watercourses;
- Install, complete and stabilize cross-drainage structures early;
- Schedule the installation of structural control measures (both above and below the site) prior to commencing earthworks.

An indication should be made on type of control measures (sediment fence, sand bags, check dams, stacked rock, sediment ponds etc) that will be used for the project. Ideally a draft erosion and sediment control plan in schematic form can be produced during concept stage which then can be added as an appendix to the IEE.

5.2.2 Impacts on Water Quality

Major impacts on water quality from roads and other urban development works will be from sediment runoff and deposition which has been covered under section 5.2.1 above. In case of STPs, landfill sites, and solid waste management it needs to be established if the baseline conditions are being exceeded through comparing it with designed data on treated effluent quality.

Sometimes proposed activities are performed within the waterways itself under the following scenarios (within brackets activity and its impacts are indicated):

- Installing a side-track, haul road or similar access, which involves crossing a watercourse (reclamation)
- Installing a temporary culvert (dredging/reclamation/blocking fish passage)
- Installing a temporary bridge (dredging/reclamation)
- Blocking, diverting or altering a watercourse in any way (blocking fish passage)
- Removing mangroves, sea grasses or other aquatic vegetation (habitat for aquatic organisms)

5.2.2.1 Mitigation Measures

Some of the erosion and sediment control measures will overlap with water quality mitigation measures. Any additional measures will need to be developed specific to the type of proposed activity.

Dredging works may be required to construct the footings or foundations for the crossing or to clear sediment from channels. Reclamation works could include the construction and placement of pylons and abutments for bridges, creation of in-stream construction pads to access the works or the placement of material in a waterway to construct temporary or permanent waterway crossings. All these activities can cause local disturbance, sedimentation, fish passage blockage or impact on their habitat and it is important to set up appropriate mitigation measures prior to any disturbance of the area. Among some measures could be coffer dams, check dams, diversion channels etc. If the water system is non-perennial then construction of any bridges/culverts should be done during summer months only. Culvert designs should be carefully done to ensure no excessive internal flow velocity/turbulence, adequate internal flow depth, no excessive variation in water level across the culvert outlet, debris collection, all of which may pose fish passage blockage and/or impact on habitats.

5.2.3 Impacts on Air Quality

General construction impacts e.g. dust and fumes are usually the inherent impacts which

can be easily mitigated. **There is no need for monitoring of whole lot of chemical compounds e.g. sulfur dioxide, oxides of nitrogen, PM_{10} or $PM_{2.5}$ if there are no stationary combustion sources nearby**.

If through the baseline assessment it is established that odor issues are prevalent which can be exacerbated with the proposed activities then odor modeling should be done to predict the significance of impact.

5.2.3.1 Mitigation Measures

Standard mitigation measures e.g. regular inspection regime established to monitor visually any excessive dust emission; elaboration on dust suppression methods and sequence should be highlighted. In case an air quality dispersion (specifically odor) modeling was done specific control measures proposed to reduce the predicted impact will need to be elaborated.

5.2.4 Noise and Vibration Impacts

This type of impacts can become an issue if construction activities are performed out of business hours especially in densely populated urban areas. It is therefore essential to describe the construction hours, assess the sensitivity of any impacts through identifying sensitive locations and distances from noise sources.

5.2.4.1 Mitigation Measures

As applicable, some standard mitigation measures are suggested below:

- All construction and associated activities shall be restricted to the hours of 7:00 am to 6:00 pm (Monday to Friday) and 8:00am to 1:00 pm (Saturday), and at no time on Sundays and public holidays. Outside these hours, only work that has been permitted by relevant authority shall be undertaken and shall include:
  - any works that do not cause noise emissions to be audible at any nearby residential property;
  - the delivery of materials which is required outside these hours as requested by Police or other authorities for safety reasons;
  - emergency work to avoid the loss of lives, property and/or to prevent environmental harm;

- Local residents shall be informed of the timing and duration of approved work outside normal hours at least 48 hours prior to commencement of the work.
- Rock breaking or other activities that result in impulsive or tonal noise shall only be undertaken during the hours of 8:00 am to 12:00 pm Monday to Saturday and 2:00 pm to 5:00 pm Monday to Friday. Where these noisy activities are undertaken for a continuous three (3) hours, a minimum respite period of at least one (1) hour shall be scheduled before that activity recommences.
- The entry and departure of heavy vehicles to and from the site shall only occur between the hours of 7:00 am to 6:00 pm Monday to Friday, 8:00 am to 1:00 pm Saturdays and no time on Sundays/Public Holidays.
- Vibration from the construction zone and other work areas shall comply with (specify the applicable standards) for potential vibration impacts on structures, and (specify the applicable standards) for potential vibration disturbance to people.

Some additional best practice noise mitigation measures that can be applied during

construction period include:

- maintenance of machinery to manufacturer's specifications
- maximising the offset distance between noisy plant items and nearby noise sensitive receivers;
- avoiding the co-incidence of noisy plant working simultaneously close together and adjacent to sensitive receivers;
- minimising consecutive night time works in the same locality;
- orienting equipment away from sensitive areas;
- carrying out loading and unloading away from sensitive areas; and,
- selecting site access points and roads as far as possible away from sensitive receptors.

5.2.5 Impacts on Flora and Fauna

Following baseline study it becomes essential to establish the significance of any potential impacts. SPS 2009 and ADB's Environment Safeguards Sourcebook provides helpful guidance note on this aspect and should be followed for impact identification. Where there is possibility of impacting on critical habitats specialist services of a **local ecologist** should be sought.

5.2.5.1 Mitigation Measures

Measures will depend on country specific requirements especially in terms of any offset requirements. Some general measures that apply to all developments are suggested below (both pre-construction and construction stage measures):

- All vegetation cleared from the site could be weed infested and therefore shall not be used in the rehabilitation works but shall be disposed off at a licensed landfill facility;
- All soil and leaf litter stripped from the site could be weed infested and shall therefore be treated and stockpiled for later re-use;
- All reasonable measures shall be undertaken to ensure that no native fauna is harmed or placed at risk during the course of the clearing activities;
- Any animals injured during the clearing and felling operations shall be taken to the local veterinary surgery;
- The areas of vegetation on the site that is to be retained shall be protected using appropriate fencing, usually placed one meter from the maximum drip line limit of the retained tree;
- Mature trees that occur in close proximity to the construction zone shall be assessed on an individual basis to determine if it is possible to retain these within the project's design;
- To minimise the disturbance on native species, where possible, ancillary structures and work compounds shall be located in areas already cleared of native vegetation or sites that have been highly disturbed by past activities;
- If during the course of construction, suspected threatened species are identified that may be significantly affected and have not been considered in the impact assessment stage site management responsible for environment protection shall be immediately consulted regarding the appropriate action;
- Weed infested topsoil shall not be re-used in the rehabilitation works unless it is sterilised;
- Measures shall be implemented to control weed re-invasion during the works such as cleaning of tyres of plant and trucks coming to and going from the site and the use of clean, sterile topsoil in rehabilitation works.

5.2.6 Impacts on Physical Cultural Resources

If any such items are identified under section 5.1.7 then impacts would need to be assessed for the proposed activity if the heritage item were to be removed or indirectly impacted e.g. through noise and vibration. Please further be guided by SPS 2009 and ADB's Environment Safeguards Sourcebook for impact evaluation and mitigation measures.

5.2.7 Impact due to Waste Generation

Identify major waste streams and propose measures for their management. SPS 2009 provides guidance on wastes that is useful to follow. Besides general housekeeping measures, as part of the mitigation measure, describe what steps have been taken to ensure the cost effective use of recycled material in the proposed activity. Identify disposal methods, sites and treatments for remaining wastes.

5.2.8 Impacts on Occupational and Community Health and Safety

Please be guided by SPS 2009 and ADB's Environment Safeguards Sourcebook.

5.2.9 Greenhouse Gas Emissions (GHG)

Not all kind of development proposals will require this assessment. SPS 2009 specifies that projects generating or expected to generate significant amount of GHG (100,000 CO_2 equivalent per year) will need quantification of all direct and indirect source of emissions. Energy proposals are obvious candidates for such assessments (natural gas or coal based power plants). Although it is very difficult to take account of all GHG emissions, especially when in many cases there are not well defined carbon emission factors for our DMCs, there are benefits in highlighting positive steps taken to reduce GHG emissions. These steps could be use of renewable energy sources, production of biogas from landfill/STPs, optimization of use of natural resources and even any climate adaptive design that has been included as part of the project. An overall estimation of GHG offset by the proposed project is always handy and desirable.

5.2.10 Cumulative Impacts

The cumulative effect can be assessed by taking into account (i) the project site impacts, (ii) associated activities or facilities e.g. pipelines, transmission lines, borrow pits, construction camp, stockpile and/or dumping sites etc; (iii) known information of planned extension of the project; (iv) any on-going or proposed developments in the vicinity. This is mainly a desk top exercise and information on other developments can be sourced from environmental assessment reports done for those developments.

For mitigation measures one should refer back to the issues addressed during strategic stage when the need for the project was evaluated on a local and regional context and discuss how the proposed activity will by itself, or in conjunction with other activities in the geographical area, affect those issues. Some answers to the following will help to write this section:

- What contribution would the proposal make to the local environment (more from water, air perspective but could also be natural resource replenishment e.g. renewable energy projects)?
- Is there evidence of already ecologically stressed river/land system, both documented and undocumented?

- What would be the flow-on effects of the proposal on land use planning on a local or regional scale?
- Would the proposal attract other development which would adversely affect the environment and which would not otherwise have located or occurred in the area?

6.1 Information Disclosure, Consultation, and Participation

There are both informal and formal consultation processes. For example, pre-arranged gathering of various stakeholders mainly community groups organized by project proponent and publishing the draft IEE report on the government and ADB web page is a formal form of communication. Prior to web posting of draft IEE report there should be as a minimum two formal consultation sessions conducted which should be gauged at different stages of a project formation preferably, concept stage and before finalizing the detail design. There can also be informal consultations held between interested/affected individuals or particular agency, which can be unlimited, depending on the project needs. These informal meetings are often helpful to alleviate particular concerns, and ease coordination between utility agencies which does not need elaboration under this section.

Initial community participation will usually have occurred before the IEE preparation and the outcome will need to be reported in the IEE report. Reporting on community involvement should include types and numbers of meetings held with focus groups/consultative committee, contact with government agencies and interest groups like NGOs; what was discussed and summary of issues/concerns, and supporting remarks. Any outcomes of the stakeholder consultation should be assessed in light of the IPSA commitments. If it is assessed that consultation was not meaningful and the outcomes are inconclusive then the PPTA team should conduct its own consultation process. The initial public consultation meeting should include the following:

- Provision of information on the strategic background to and the identified need for the proposed activity and obtain feedback from the community;
- Identification of all issues and constraints to project development and various options under consideration – combining explanation with visual aids e.g. photomontage, schematics and drawings of concept design on the proposed project;
- Recording of feedback with photographic evidence on attendance of participants.

The second meeting should be done at a stage when concept design has been finalized, prior to draft IEE web disclosure. Many public comments on proposed activities are concerned with the reasons for selecting the preferred option. Because of this, it is essential to hold a stakeholder consultation session once a preferred option is selected. In this session the proponent (aided by PPTA team, where applicable) should be able to demonstrate that:

- All feasible options have been examined;
- That all relevant factors (environmental, social, economic), including feedback from initial consultation process, have been part of the decision making process; and
- How the decision on the preferred option was made.

7.1 Grievance Redress Mechanism (GRM)

The aim of a GRM process should be simplicity, transparency and responsive. Aggrieved party should not feel it as an arduous task that is impregnable and non-responsive. Please refer to template for ‘Guidance Note on Preparing a Resettlement Plan’ for criteria (9.1 – 9.7, GRM for RP) to set up a combined (environment and social) GRM. The basis for the IEE write up can

be derived as follows.

Concerns of strategic nature (need for the project, option selection etc) should usually be dealt during stakeholder consultation at concept design stage. On the other hand, concerns arising due to the project implementation activities, mainly during construction stage, will need to be resolved through GRM process. GRM should be pitched at a level that is conducive to environmental impact and potential risks of a particular project and usually will comprise site level management (PIU-comprising first tier), and project level management (PMO-comprising second tier). The GRM committee should include representatives from PIU, PMO and community representative. There should always be reference to the third tier – scope for availing country's legal system which can be availed at any time irrespective of lodging any concerns in the first and second tier of GRM.

Basically, all attempts will be made to solve issues at site level and for that to materialize there is a need for user friendly instructions for public and a robust project quality system. Accordingly, the project proponent (EA and IA) will need to assign designated staff to address all potential complaints for both construction and operation phase. Any complaints which concern any aspect of the project will be recorded and investigated by the responsible staff promptly. A Complaints Register will be maintained which will show the details and nature of the complaint, the complainant, the date and actions taken as a result of the investigation. It will also cross-reference any non-compliance report and/or corrective action report or other relevant documentation. The arrangement for complaints management will be reflected in the contractor's EMP to cover construction phase and the company's system documentation to cover operational phase. When construction starts, a sign will be erected at the site providing the public with updated project information and summarizing the GRM process. In addition, all complaints will be recorded in the incident report and forwarded to the PMO within a specified time (usually 3 days of the incident occurring). PMO, in turn, will forward the incident report to ADB within a week after becoming aware of it. Such project specific arrangement needs to be discussed and agreed with the EA and IA before proposing it in the IEE report.

8.0 Environmental Management

This section will mainly describe the **process** by which it is proposed to ensure that the safeguard measures detailed in the IEE would be **implemented**. The processes involved are:

- **Budgeting** – it may not be possible to indicate cost for each of the mitigation measure however, there should be an indication what % of total project cost has been allocated for environmental management; what are the capital and recurrent costs and source of funds.
- **Institutional Support and responsibilities** – this should include the structure of project management for the specific project with reference to environmental responsibilities on and off site.
- **Technical Procedures, Checklists, forms** – depending on the proposed activity there may be need for preparing technical procedures e.g. Operation of sediment pond and scrubbers, working in acid sulfate soil, operation of on-site toilets, emergency procedure, specific chemical handling procedure etc. There could be forms and checklists for inspection of sites, incident management etc.
- **Specific Management Plans** – e.g. environmental management plan, erosion and sediment control plan, vegetation management plan, waste management plan etc.
- **Management of any design changes and drafting of Contract Specifications** – will need to specify how design changes will be accommodated through referring to the project quality system. Also prescribe the arrangement to transfer environmental

safeguard requirements as contract specifications.

- **Monitoring and reporting** – some justification should be cited for choosing the environmental parameters that is to be monitored during the implementation of the project. National or international standards that applies and has to be maintained should also be cited (a sample table is suggested in Annex 2). Reporting structure and frequency will be specified.

A short description on each of the above aspect, specific to the project, will be appropriate and desirable. Section 8.0 should be prepared in a manner so that it will act principally as an **environmental operations manual** for the project manager. It would provide a basis for environmental management of the proposed works and be in a form that is useable as a day-to-day reference tool on the site.

A summary of impacts and mitigation measures corresponding to **project stage and activity** should be provided in this section (a sample table is suggested in Annex 1).

9.0 Conclusion and Recommendations

This section will highlight the outcomes of impact assessment. List the major outcomes and provide a summary of its justification. Justification will usually relate to whether the adverse environmental impacts are balanced or outweighed by the beneficial effects of the proposal. If the outcomes are dependent on some specific measures that is to be undertaken by the project authority e.g. capacity development training, institutional reforms etc that is to be funded possibly by a TA grant or hiring of external monitors then that should be mentioned by way of recommendation.

Summary of Environmental Management Process (Populate the table as per specific project impacts)

Activity	Environmental Aspect (part of the activity that could have an impact on the environment)	Environmental Impact	Mitigation Measures	Implementation Responsibility	Supervision Responsibility	Estimated Cost
1.1 Approval, Licenses and Permits						
Pre-Construction Stage						
Obtain all necessary approvals from relevant authorities	Project personnel and management are unaware of regulatory requirements	Non-compliance with relevant environmental legislation that can lead to potential harm to the environment.	All necessary approvals, permits and licenses required by environmental legislation will be obtained prior to construction commencing.	IA	EA	
During Construction Stage						
Maintain and monitor requirements under the approval/permit/ license	Project personnel and management lack environmental safeguard awareness	Non-compliance with relevant environmental legislation	All approvals, permits and licences shall be maintained and complied with during the construction period. Should there be any changes to the project which would require additional permit licenses, these shall be obtained.	IA	EA	

Operation Stage (where applicable)						
1.2 Access						
Pre-construction						
Planning to construct or provide access to project site	Ignoring surrounding land user groups	Harm to public amenities	Where possible, all works shall be programmed and undertaken in a manner least disruptive to local businesses and access ways shall not be blocked at any time. All landowners potentially impacted by construction works or associated activities shall be consulted regarding any practicable and cost-effective measures to minimise impacts which may be beneficially implemented prior to the commencement of construction or within such time frame as agreed	IA	EA	

			with the relevant landowner. Local residents shall be notified in advance of potential disruption to property accesses and traffic flow. The work site will be appropriately fenced to prevent unauthorized access.			
During Construction						
Use of access road to project sites	Not maintaining communication protocol with affected parties	Harm to public amenities	Access to properties affected by the proposal shall be maintained throughout the construction period. Should there be a need to close any access temporarily, then owners of the affected property shall be given notification of the extent, timing and duration at least 24 hours prior to it happening. Any	IA	EA	

			legal access way affected by the works shall be reinstated to an equivalent standard or adequate compensation shall be negotiated with the relevant landowner(s).			
1.3 Clearing Vegetation						
1.4 Site Compound & Facilities						
1.5 Earthworks						
1.6 etc (and so on so forth)						

Summary Environmental Monitoring Plan (Populate the table as per specific project requirements)

Mitigation measures	Phase	Parameters to be monitored	Location	Standards	Monitoring frequency	Cost
Baseline Surveys of water quality	Design	Turbidity,Total Dissolved Solids,pH and dissolved oxygen	Representative sample location (provide specifics)	(Quote country specific requirements)	Once only before construction	
etc						

APPENDIX 4: CONTENT AND FORMAT OF BIANNUAL ENVIRONMENTAL MONITORING REPORT

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**