Environmental Assessment and Review Framework

August 2014

IND: Rajasthan Urban Sector Development Program

Prepared by Rajasthan Urban Infrastructure Development Project, Government of Rajasthan for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of 28 August 2014)

Currency unit	–	Indian rupees (Re/Rs)
Re1.00	=	$0.016
$1.00	=	Rs60.3395

ABBREVIATIONS

ADB	–	Asian Development Bank
AC	–	Asbestos Cement
AE	–	Assistant Engineer
ASI	–	Archeological Survey of India
ASO	–	Assistant Safeguards Officer
CETP	-	Common Effluent Treatment Plant
CFE	–	Consent for Establishment
CFO	–	Consent for Operation
CGWA	–	Central Ground Water Authority
CPCB	–	Central Pollution Control Board
EA	–	Executing Agency
EARF	–	Environmental Assessment and Review Framework
EAC	–	Expert Appraisal Committee
EC	–	Environmental Clearance
EIA	–	Environmental Impact Assessment
SEIAA	–	State Environmental Impact Assessment Authority
EMP	–	Environmental Management Plan;
GOI	–	Government of India
GOR	–	Government of Rajasthan
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination;
PIU	–	Project Implementation Unit;
PMU	–	Project Management Unit
LSGD	–	Local Self Government Department
MOEF	–	Ministry of Environment and Forest
MSWM	–	Municipal Solid Waste Management
NEP	–	National Environment Policy
NHAI	–	National Highways Authority of India
NOC	–	No Objection Certificate
NP	–	National Park
NPV	–	Net Present Value
PAM	–	Project Administration Memorandum
PHED	–	Public Health Engineering Department
PO	–	Project Officer
PMDSC	–	Project Management, Design and Supervision Consultant
PPTA	–	Project Preparatory Technical Assistance
PWD	–	Public Works Department
PWPCTRF	–	Pali Water Pollution Control, Treatment & Research Foundation
REA	–	Rapid Environmental Assessment Checklist
RF	–	Resettlement Framework
RoW	–	Right of Way
RPCB	–	Rajasthan Pollution Control Board

RUIDP	–	Rajasthan Urban Infrastructure Development Project
SPS	–	Safeguard Policy Statement, 2009
STP	–	Sewage Treatment Plant
ULB	–	Urban Local Body
UNSECO	–	United Nations Educational, Scientific and Cultural Organization
WLS	–	Wildlife Sanctuary
WTP	–	Water Treatment Plant

NOTES

(i) In this report, "$" refers to US dollars.

CONTENTS

Tables

Figures

List of Appendixes

I. INTRODUCTION

A. Background

1. The proposed Rajasthan Urban Sector Development Program (RUSDP) will complement the past and ongoing efforts of Government of Rajasthan (GOR) to improve water supply and wastewater services to the residents of the state of Rajasthan. The program component of the RUSDP will support policy reforms and consolidate institutional development and governance improvement in the urban sector in the state, while the investment component of the RUSDP will invest in water distribution network improvements and sewerage systems in the six project cities[1] each having a population of more than 100,000, and identified considering the lack of basic services at present and willingness to undertake reforms and institutional restructuring. RUSDP will be implemented over a 5-year period beginning in 2015, and will be funded by ADB via a Sector Development Program (SDP) loan modality. Main outputs are as follows:

(i) **Output 1: Urban institutions strengthened.** This output will include (a) creation of a sustainable corporatized state-level institution for urban development; (b) corporatization of water supply and wastewater operations in the capital city of Jaipur; (c) long-term performance-based management contracts in at least six cities of the state; (d) delegation of water supply and sewerage functions, along with adequate resources and tariff-setting authority, to municipal bodies; and (e) rationalization of urban property tax for municipal bodies.

(ii) **Output 2: Urban governance improved.** This output will include (a) formulation and approval of a long-term urban development policy; (b) human resource development plan for urban governance, including establishment of a state-level training institute; (c) water sector reforms such as reduction of nonrevenue water (NRW), 24x7 water supply, individual household connections to residents in slum areas, benchmarking of urban services, development of geographic information system (GIS) and customer databases, and water and wastewater quality monitoring systems; and (d) rationalization of water and sewerage tariffs for operation and maintenance cost recovery, and improvement of collection efficiencies.

(iii) **Output 3: Water supply system rehabilitated and expanded in six project cities.** The investment component will help the six project cities with (a) distribution network improvement on district metering area (DMA) basis for NRW reduction; (b) provision of individual property connections to citizens, especially the poor and households headed by women; (c) provision of 24-hour water supply; and (d) efficiency improvement in water supply through, reduction of NRW, and reduction of energy losses in electromechanical machinery.

(iv) **Output 4: Wastewater system rehabilitated and expanded in six project cities.** The investment component will help the six project cities with (a) rehabilitation and expansion of the sewerage network, including property connections; (b) modernization and expansion of wastewater treatment plants; (c) energy generation through sludge digestion and gasification; and (d) septage management and decentralized wastewater treatment systems in suitable areas. This will also have an additional component in Pali Town targeting industrial effluent treatment and disposal.

(v) **Output 5: Capacity Building and Efficient program management.** This output will include support for (a) capacity building of urban institutions and municipal

[1] Pali, Tonk, Jhunjhunun, Bhilwara, Hanumangarh and Sri Ganganagar.

bodies; (b) program management; (c) gender equality and social inclusion action plan; and (d) community awareness and participation plan.

2. As presented above, the focus of the investment component of RUSDP will be on water supply and sewerage infrastructure, an additional component of industrial wastewater treatment in Pali Town. A series of subprojects will be implemented under the RUSDP, with each subproject providing improvements to water supply or sewerage or both in a project town. The main types of infrastructure and their principal components are shown in Table 1.

Table 1: Subprojects and Components Proposed Under RUSDP

Subproject	Main Components	Infrastructure (New or Refurbished)
Water Supply	Transmission and Distribution Network Improvement (DNI)	Transmission mains
		Distribution mains
		Bulk valves and flow meters
		Local network
		House connections
		Household meters
Sewerage and Sanitation	Sewer Network	Secondary piped network
		Tertiary piped network
		Household connections
	Sewage Transfer	Trunk sewer
	Sewage Treatment Facility	Sewage treatment plant
		Outfall for treated effluent
Industrial Effluent Treatment	Tertiary Treatment Facilities at the existing Common effluent treatment plant	Tertiary treatment plant
		Sludge management facilities
		Water reuse infrastructure (storage tanks and pipelines)

3. **Purpose of EARF.** This Environmental Assessment and Review Framework (EARF) applies to the tertiary industrial treatment facilities at the existing CETPs in Pali industrial area in Pali Town. The feasibility study, detailed designs, and safeguard documents will be prepared after ADB board approval. As per ADB's SPS, 2009, for components prepared after Board approval and have limited anticipated environment impacts, an EARF may be submitted in lieu of safeguard plans for such subprojects or components. The environment assessments documents are formulated and approved before any physical activities start.

4. **Implementation Arrangements**. The Local Self Government Department (LSGD) of Government of Rajasthan will be the Executing Agency (EA) and existing the RUIDP will be the Implementing Agency (IA). The LSGD will be responsible for overall strategic planning, guidance and management of the RUSDP, and for ensuring compliance with tranche release conditions and loan covenants. A policy support unit will be established in the LSGD to support the government for implementation of the tranche release policy actions under the program loan. The PMU in RUIDP will be responsible for planning, implementation, monitoring and supervision, and coordination of all activities under the RUSDP. The PMU will recruit two consulting firms – (i) project management, design and supervision consultant (PMDSC), and (ii) community awareness and participation consultant (CAPC) to provide support in implementation of RUSDP. Six Project Implementation Units (PIUs), one each of in six project towns, shall be set up directly to assist in implementation. PMU will support PIUs in implementation, management and monitoring of the project. PMU and PIUs will be assisted by PMDSC and CAPC. PIUs will appoint construction contractors to build infrastructure. Once the infrastructure is built and commissioned, the Urban Local Bodies will operate and maintain the infrastructure.

The tertiary treatment facility at the Common Effluent Treatment Plant (CETP) will be operated by the existing operator of the CETP – Pali Water Pollution Control Treatment and Research Foundation.

B. Overview of the Environmental Assessment and Review Framework

5. This EARF applies to the tertiary industrial treatment facilities at the existing CETPs in Pali industrial area in Pali Town. Unlike the water supply and sewerage components, the feasibility study, detailed designs, and safeguard documents for this component will be prepared after ADB board approval, as this component was proposed late during the main feasibility study. As per ADB's SPS, 2009, for components prepared after Board approval and have limited anticipated environment impacts, an EARF may be submitted in lieu of safeguard plans for such subprojects or components. The environment assessments documents are formulated and approved before any physical activities start.

6. The EARF aims to provide guidance on safeguard screening, assessment, institutional arrangements, and processes to be followed for components of the project, where design takes place after Board approval. The subproject selection will be in accordance with the environmental project selection criteria as outlined in this EARF. The borrower will agree with ADB on screening and categorization, environmental assessment, preparation and implementation, monitoring, and updating existing safeguard plans for the subprojects to facilitate compliance with the requirements specified in ADB SPS, 2009 and government Acts, Rules and Regulations.

7. The IEEs prepared as part of the project preparation study outlined mitigation measures for some minor potential negative environmental impacts, and monitoring plans for both construction and post-project maintenance phases, and it is expected that the EARF will support the integration of these measures and practices in the project design.[2]

8. This EARF (i) describes the project and its components, (ii) explains the general anticipated environmental impacts and mitigation measures for the subprojects which will be financed under the project after ADB Board approval, (iii) lessons learnt from previous ADB urban projects in Rajasthan on environmental safeguards (iv) specifies the requirements that will be followed in relation to screening and categorization, assessment, and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements, (v) assesses the capability of the executing and implementing agencies to implement national laws and ADB's requirements, and identifies needs for capacity building, (vi) specifies implementation procedures, institutional arrangements, and capacity development requirements, and (vii) specifies monitoring and reporting requirements.

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

10. For the subproject of "construction of tertiary treatment facility" in Pali town environmental analysis has not been conducted, as the project proposals are not yet firmed up

[2] ADB TA 8043-IND: Advanced Project Preparedness for Poverty Reduction – Rajasthan Urban Development Program, 2013

at this stage. The IEEs prepared for the water supply and sewerage components concluded that these subprojects will have only small-scale, localized impacts on the environment which are readily mitigated. The potential adverse environmental impacts are mainly related to the construction period, which can be minimized by the mitigating measures and environmentally sound engineering and construction practices. Therefore, the project has been classified into environmental category B. It is likely that future subprojects will seek to replicate the sample subprojects in other towns and are thus expected to be category B due to the low-impact nature of such works.

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Environmental Legislation

11. Implementation of RUSDP will be governed by environmental acts, rules, policies, and regulations of the Government of India. These regulations impose restrictions on the activities to minimize/mitigate likely impacts on the environment. Many of these are cross-sectoral and several of them are directly related to environmental issues. The most important of these is the "Environmental Impact Assessment (EIA) Notification, 2006".

12. In addition to the EIA Notification, 2006, there are a number of other acts, rules and regulations currently in force that could apply to RUSDP. Appendix 1 provides salient features and applicability of these legislations and Table 2 presents specific requirements for the project. Appendix 2 provides the environmental standards for air, surface water, groundwater, emissions, noise, vehicular exhaust and disposal to land/agricultural use of sludge and bio-solids.

Table 2: Applicable Government of India Environmental Legislations and Specific Requirements for the Project

No.	Legislation	Requirements for the Project
1.	National Environment Policy, 2006	-Project should adhere to the NEP principle of: enhancing and conservation of environmental resources and abatement of pollution
2.	EIA Notification, 2006	- Environmental clearances (EC) - Proposed tertiary treatment facility at CETP Pali will require EC
3.	Water (Prevention and Control of Pollution) Act, 1974 amended 1988 and its Rules, 1975	- Applicable for construction and operation of sewage treatment plant and CETP - Consent for establishment (CFE) and consent for operation (CFO) from Rajasthan Pollution Control Board (RPCB) - Compliance to conditions and disposal standards stipulated in the CFE and CFO
4.	Air (Prevention and Control of Pollution) Act, 1981, amended 1987 and its Rules, 1982	- Applicable for equipment and machineries potential to emit air pollution (including but not limited to diesel generators and vehicles) - CFE and CFO from RPCB - Compliance to conditions and emissions standards stipulated in the CFE and CFO.
5.	Environmental (Protection) Act, 1986 amended 1991 and the following rules/notifications:	
a.	Environment (Protection) Rules, 1986 including amendments	- CETPs/STPs should be designed and operated to meet disposal standards

No.	Legislation	Requirements for the Project
		- Inlet effluent at CETP should also meet the standards - compliance with emission and disposal standards during construction
b.	Municipal Solid Wastes (Management and Handling) Rules, 2000	Solid waste generated at proposed facilities shall be disposed in accordance with the MSWM Rules
c.	Noise Pollution (Regulation and Control) Rules, 2000	- Compliance with noise standards
d.	Environmental Standards of Central Pollution Control Board (CPCB)	- Compliance to environmental standards (discharge of effluents)
e.	Notification of Eco Sensitive Zones	- Restriction of activities (including construction, tree cutting, etc) in the notified zones - There are no eco sensitive zones in or near the six project towns
f	Wetland (Conservation and Management) Rules, 2010	- Applies to protected wetlands (Ramsar sites, wetlands in eco sensitive areas and UNESCO heritage sites & in high altitudes, and wetlands notified by Government of India) - Prohibits/ regulates activities within and near the wetlands - None of the six project towns has protected wetlands
g	Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2009	- Rules defines and classifies hazardous waste - Provides procedures for handling hazardous waste - Requires Pollution Control Board's consent for handling hazardous waste - Procedure for storage of Hazardous wastes - provides procedures for recycling, reprocessing or reuse, important and export of hazardous waste - Rules for development of treatment, storage, disposal facility (TSDF) for hazardous wastes; TSDF shall be developed following guidelines issued by CPCB
6.	Indian Wildlife (protection) Act, 1972 amended 1993 and Rules 1995 Wildlife (Protection) Amendment Act, 2002	- Applicable to subprojects located within core or buffer zone of Protected Areas (Wildlife Sanctuaries, National parks, biosphere reserves etc) - Permission from chief wildlife warden/ State Wildlife Board/ National Board of Wildlife -None of the project towns are located near protected areas
7.	Indian Forest Act, 1927	- Declaration of forest areas (reserved, protected and village forests), and regulation of activities within the forests - Applicable to subprojects located in the forests
8.	Forest (Conservation) Act, 1980 amendment 1988 and the following rules/notifications:	- Restricts use of forest lands for non-forest purposes - Applicable to subprojects located in forests; requires prior permission to take up the works
a.	Forest (Conservation) Rules, 1981 am- ended 1992 and 2003	- Applicable to subprojects located in forest lands; - Prior permission for use of forest land for project proposes from Ministry of Environment and Forest (MoEF)
b.	Guidelines for diversion of forest lands for non-forest purpose	- Approval of Ministry of Environment and Forest (MoEF) for any acquisition of forest land - Applicable to subprojects located in forests - Application for use of forest of land to be made to Forest Department, GOR - Project proponent to identify non-forest land which is to be transferred to Forest Department for taking up afforestation program - Net Present Value (NPV) of the forest land to be used, cost of afforestation, tree cutting, etc., as determined by

No.	Legislation	Requirements for the Project
		Forest Department, is to be paid to the Forest Department
8.	Ancient Monuments and Archaeological Sites and Remains Acts, 1958, its Rules,1959 and notification, 1992	- Applicable to subprojects located in proximity with the Protected Monuments/ Sites - No excavation/construction work is allowed within 300 m boundary of the protected monument - Requires prior permission of Archaeological Survey of India (ASI) for taking works within 500 m of boundary of the Protected Monuments
9.	Contract Labour (Regulation and Abolition) Act, 1970; The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979	- Applicable to all construction works in the project - RUIDFCO to obtain Certificate of Registration, Department of Labour, GOR as principle employer - Contractor to obtain license from designated labour officer - Contractor shall register with Labour Department, GOR if Inter-state migrant workmen are engaged - Adequate and appropriate amenities and facilities shall be provided to workers including housing, medical aid, traveling expenses from home and back, etc.,
10.	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996	- Applicable to any building or other construction work and employ 10 or more workers - Cess should be paid at rate not exceeding 2% of the cost of construction as may be notified - The employer is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. -The employer has to obtain a registration certificate from the Registering Officer
11.	The Child Labour (Prohibition and Regulation) Act, 1986	- No child labour shall be employed
12.	Minimum Wages Act, 1948	- Applicable to all construction works in the project - All construction workers should be paid not less than the prescribed minimum wage
13.	Workmen Compensation Act, 1923	- Compensation for workers in case of injury by accident
14.	Equal Remuneration Act, 1979	- Equal wages for work of equal nature to male and female workers
15.	The Rajasthan Monuments, Archaeological Sites and Antiquities Act, 1961 The Rajasthan Monuments, Archaeological Sites and Antiquities (amendment) Act 2007	- An Act to provide for the preservation, protection, upkeep, maintenance, acquisition and regulation of, and control over, ancient and historical monuments, archaeological sites and antiquities in Rajasthan - Under the Act, state government declares various monuments, sites etc as protected monument/sites, and called it as 'protected area'
a.	the Rajasthan Monuments, Archaeological Sites and Antiquities Rules 1968	- Any construction/excavation work in the 'protected area' requires priori permission of Department of Archeology, irrespective of land ownership of protected area -Application under the Rules, shall be submitted to Director, State Archeological Department, atleast 3 months prior to the work - Department provides conditional permission, including time for completion, procedures to be followed during the work and for chance finds etc.
16	Rajasthan State Environment Policy, 2010 including	- Follows the National Environment Policy, 2006 - Project implementation should adhere to the policy aims

No.	Legislation	Requirements for the Project
	And Rajasthan Environment Mission and Climate Change Agenda for Rajasthan (2010-14)	of: conservation & enhancement of environmental resources, integration of environmental concerns into projects/plans, and capacity building in environmental management - under water sector, major concerns, as the policy notes, are: huge water losses & wastage, declining water availability, pollution - Relevant recommendations for the project include: control of losses in water supply systems, integrated water resources management better resource use, control of raw water pollution, reuse and recycling of wastewater including sewage -avoid/minimize use of forest lands for project purposes With reference to Climate change adoption & mitigation following should be considered in the project: - diminishing flows in surface water bodies, and groundwater depletion, and revival traditional water bodies as water sources (lakes/tanks) - equal stress on demand side management in water - minimize energy use - design energy efficiency systems-
17	Rajasthan Mineral Concession Rules, 1960 (as Amended upto 2000) The Rajasthan Minor Mineral Concession Rules, 1986 (as Amended upto 2013)	- Construction material for the project shall be obtained only from quarries licensed by Department of Mines and Geology - Rules stipulate conduct of "Systematic, Scientific, and Environment Friendly Mining" , through preparation of Mining Plan, Environmental Management Plan, Consent of RPCB, and various environmental safeguards to be implemented by the licensee
18	Rajasthan Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Rules, 2009	- Applicable for all project construction activities - Rules stipulates hours of work, night work, welfare, payment of wages, registers and records, facilities to be provided, and safety & health - To be complied by the contractor during the construction, and registered with the Labour Department
19	Rajasthan Municipalities Act 2009 (as Amended in 2010)	- Prior permission for work along the public thoroughfares from the ULBs and traffic police - Prior permission from the road owner (PWD, NHAI, ULB, etc) for road cutting/ laying of pipes/sewers, etc.,

ASI = Archeological Survey of India' CFE = Consent for Establishment; CFO = Consent for Operation; CPCB = Central Pollution Control Board; EC = Environmental Clearance; EIA = Environmental Impact Assessment; GOI = Government of India; GOR = Government of Rajasthan; MOEF = Ministry of Environment and Forest; MSWM = Municipal Solid Waste Management NEP = National Environment Policy; NHAI = National Highways Authority of India; NPV = Net Present Value; PWD = Public Works Department; STP = Sewage Treatment Plant; RPCB = Rajasthan Pollution Control Board; RUIDFCO = Rajasthan Urban Infrastructure Development and Finance Corporation; ULB = Urban Local Body

13. Locating subproject facilities in forest lands will be avoided. However, in unavoidable cases like non-availability suitable non-forest lands, and water supply rising mains/trunks mains traversing forest lands, the forest land conversion will follow the "Guidelines for Diversion of Forest Lands for Non-Forest Purpose" under Forest (Conservation) Act, 1980[3]. The proposal

[3] (i) Forest land involving up to 5 hectares (ha) will cleared by MoEF Regional Office; and (ii) Forest land involving more than 5 ha and up to 40 ha will be cleared by the MoEF Regional Office after referring the case to Central MoEF

for conversion and compensatory afforestation should be submitted by project proponent (i.e. ULB) to Forest Department, Government of Rajasthan, which will then forward it to the MoEF for approval. The following guidelines will be adhered to in the process:

(i) An equivalent area of non-forest land will be made available for afforestation
(ii) As far as possible, the non-forest land for compensatory afforestation should be identified contiguous to or in the proximity of a reserved Forest or protected forest. If non-forest lands are not available in the same district other non-forest land may be identified elsewhere in the state.
(iii) Where non-forest lands are not available, compensatory afforestation may be carried out over degraded forest twice in extent to the area being diverted.

14. In Rajasthan State, there are two national parks (NP) and 25 wildlife sanctuaries (WLS). Except a wildlife sanctuary in Pali District, none of these protected areas are located in the project districts. In Pali too, the WLS (Todagarh Roali WLS), is located far away from the project town of Pali. Cutting of trees in non-forest land, irrespective of land ownership, also requires permission from local administration. Afforestation to the extent of two trees per each tree felled is mandatory.

B. Government of India Environmental Assessment Procedures

15. The EIA Notification, 2006, sets out the requirement for environmental assessment in India. This states that prior environmental clearance (EC) is mandatory for the development activities listed in its schedule, and 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.

(i) Category A projects require EC from MoEF. The proponent is required to provide preliminary details of the project in the prescribed form, after which an Expert Appraisal Committee (EAC) of the MoEF prepares comprehensive terms of reference (ToR) for the environmental impact assessment (EIA) study 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 EC if appropriate.

(ii) Category B projects require EC 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 EC 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 inter-state or international boundaries.

16. Common Effluent Treatment Plant (CETP) development (new or modification) will attract EIA Notification, and these are classified as Category B. However, CETP in Pali will also attract general condition[4] laid down in the Notification (Pali is a notified as critically polluted area by CPCB), and will be classified by MOEF as category A. Nevertheless, EA/PMU should liaise with

[4] General Condition (GC): Any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life (Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.

State Environmental Impact Assessment Authority (SEIAA) at Jaipur to confirm the category. Except CEPT, none of the water supply and sewerage infrastructure proposed under RUSDP attracts EIA Notification Schedule, and therefore EC is not required.

C. International Environmental Agreements

17. India is a party to the following international convention that may apply to this project, especially in selection and screening of subprojects under restricted/sensitive areas.

Table 3: International Agreements and Applicability to RUSDP

International Agreement	Description	Applicability to RUIDP and Specific Requirements
Ramsar Convention on Wetlands of International Importance, 1971.	The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. According to the Ramsar list of Wetlands of International Importance, there are 25 designated wetlands in India which are required to be protected.	- There are no Ramsar wetlands in or near the six project towns - There are two Ramsar Sites in Rajasthan: Keoladeo National Park Ghana (Bharatpur District) and Sambhar Lake (Nagaur District). -If in future any of the activities are undertaken in the proximity of Ramsar wetlands shall follow the guidelines of the convention (The Ramsar Convention Handbooks for the wise use of wetlands, 4th ed. (2010), (http://www.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0__)
Convention on the Transboundary Movements of Hazardous Wastes and Their Disposal, 1989	To protect human health and the environment against the adverse effects of hazardous wastes. This aims at (i) reduction of hazardous waste generation, promotion of environmentally sound management (ii) restriction of transboundary movements, and (iii) a regulatory system for transboundary movements.	- Sludge/rejects generated from tertiary treatment process likely to have heavy metals and may fall in hazardous waste category. - The sludge/rejects will disposed within the country, and therefore will not attract this convention

RUIDP = Rajasthan Urban Infrastructure Development Project

D. Institutional Capacity

18. LSGD, the Executing Agency, is responsible for overall strategic planning, guidance and management of the RUSDP, and for ensuring compliance with conditions and loan covenants responsible. Implementing Agency, RUIDP will be responsible for preparing environmental impact assessment (EIA) or initial environmental examination (IEE) reports, monitoring of safeguards issues, providing support and guidance to ULBs concerning performance criteria and development planning. RUIDP has successfully ensured environmental management and monitoring under ongoing locally and foreign funded infrastructure improvement projects.[5]

19. In the current institutional set up, environmental safeguard related functions are housed within the RUDIP organizational set-up, and are handled by the Project officer (Environment). There is no set-up at PIU level, and all the safeguard related activities are directly handled by PO (Environment). PO will be assisted by specialist consultants in all safeguard related

[5] ADB funded Rajasthan Urban Infrastructure Development Project (RUIDP) implemented during 2002-10 covered six major cities in the State – divisional headquarter cities of Jaipur (state capital), Jodhpur, Ajmer, Kota, Udaypur and Bikaner, and (ii) the ongoing ADB funded Rajasthan Urban Sector Development Investment Program (RUSDIP) being implemented in 15 towns (district headquarter towns with tourism potential)

activities - preparation of environmental documents, obtaining regulatory clearances, implementation and monitoring of Environmental Management Plans (EMPs), etc.

20. RUIDP PMU will set up Project Implementation Units (PIU) in each of the six project towns for implementation of RUSDP in respective towns. PIUs will be supported by consultants in all activities during the implementation, including the safeguard activities. RUIDP PMU will supervise the PIUs day-to-day work and will review and advise as required in all aspects of project implementation.

21. Subsequent to completion and commissioning, ULBs will be responsible for operation and maintenance of the improved infrastructure, either directly or through a private contracting agency. At present, the capacity to handle environmental safeguard related tasks at ULB level is negligible. The Rajasthan Municipalities Act, 2009 (as amended in 2010) lists functions related to environment protection and abatement of pollution as "Other Functions[6]" of the municipalities.

22. **Operation of CETP**. The CETP would be taken up under a design, construction, operation and maintenance (O&M) contract. The bidder responsibility also includes O&M of existing CETP (primary and secondary treatment units). The facility would be overseen by the Pali Water Pollution Control, Treatment and Research Foundation (PWPCTRF), which was set-up jointly by industries in Pali to construct and operate the Common Effluent Treatment Plant. PWPCTRF is presently operating the CETPs in Pali Industrial Area with primary and secondary treatment facilities. PWPCTRF was set up in 1994 by textile industries in Pali to treat the wastewater generated from the units at a common effluent treatment plant so that the treated effluent meets the disposal standards set by the CPCB/RPCB.[7] PWPCTRF is a trust registered under the provisions of Rajasthan Public Trust Act, 1959 and Rules and is managed by a committee that includes local elected public representatives (Member of Parliament, Member of Legislative Assembly and chairperson of Pali Nagar Parishad). The CETP is operated by technical staff headed by Chief Executive Officer, who is an Environmental Engineer. CEO is supported by operators and laboratory scientists.

23. The Rajasthan Pollution Control Board (RPCB) is the main state-level regulatory agency that is responsible environment protection and pollution control. RPCB through its 13 Regional Offices (RO) across the state regulates environmental protection related activities. Project towns of Ganganagar and Hanumangarh towns are under the jurisdiction of Bikaner RO, Jhunjunun is under Sikar RO, Tonk is under Kishangarh RO, while there are ROs in Pali and Bhilawara Towns. RPCB will monitor the CEPT operation and compliance with the standards.

24. RPCB monitors the treated effluent quality to check whether or not it meets the standards stipulated in its consent order. As per the procedure, (i) the STP/CETP operator should submit a laboratory report of the treated effluent once every quarter (yearly four times), (ii) during yearly renewal of Consent for Operation (CFO), laboratory report of treated effluent quality from a RPCB approved laboratory is mandatory; (iii) surveillance monitoring by RPCB

[6] "Other Functions" are not obligatory, but municipality can take up these after satisfactory performance of its "Core Functions" and subject to its managerial, technical, and financial capabilities

[7] Despite setting up of these facilities, water pollution levels in the town and downstream areas along the River Bandi have increased due to indiscriminate disposal of partially treated effluent from textile units. Groundwater is highly polluted, and is not fit for domestic or other use. The main reason is said to be the ineffectiveness of CETPs to treat the effluent to required standards. Existing CETPs have only primary and secondary treatment facilities. Due to high costs of tertiary treatment facility, the industries have requested assistance from Government of Rajasthan for development of tertiary facility which will improve the environmental condition of Pali.

staff, at least once a year, by visiting the STP/CETP and collecting the sample and testing at RPCB laboratory, and (iv) specific monitoring in case of public complaints.

25. During the implementation phase of RUSDP, PIUs are supported by specialist consultants for management and monitoring of environmental safeguards implementation. During the operation phase, CETP operation will be monitored by RPCB.

26. To comply with ADB SPS 2009, the implementing and executing agencies of the project need to have a sustained capacity to manage and monitor environmental safeguards. Therefore the executing and implementing agencies require capacity building measures for (i) a better understanding of the project-related environmental issues; and (ii) to strengthen their role in implementation of mitigation measures and subsequent monitoring. Trainings and awareness workshops are included in the project with the primary focus of enabling the RUIDP PMU, PIU and ULB staff to conduct impact assessments and carry out environmental monitoring and implement environmental management plans (EMPs). After participating in such activities, the participants will be able to make environmental assessments for subsequent subprojects, conduct monitoring of EMPs, understand government and ADB requirements for environmental assessment, management, and monitoring (short- and long-term), and incorporate environmental features into future project designs, specifications, and tender/contract documents and carry out necessary checks and balances during project implementation..

E. Lessons learnt from the Previous ADB Projects implemented in Rajasthan

27. Starting in the year 2000, RUIDP implemented two urban sector projects funded by ADB in Rajasthan covering 21 towns. While RUIDP I covered the six major cities including the state capital, RUIDP II covered 15 districts headquarter towns with tourism importance. Experiences and lessons learnt from these projects – focusing on environmental safeguards, is presented in the table below, with possible remedies which can be included in the RUSDP formulation.

Table 4: Lessons Learnt from RUIDP I & II

Field	Details	Remedial measures
Government approvals and clearances - delay	Obtaining approvals and clearances from Government regulatory agencies is time consuming and cumbersome, especially related to forest and environment. For some projects, where forest land acquisition was necessary, the implementation was either delayed or alternative non-forest sites were to be identified as forest department denied approval. For instance in Bundi town in RUIDP II, the Forest Department revoked the clearance issued for construction of a water reservoir in forest land, necessitating identification of alternative non-forest site that resulted in change in design and delay in implementation.	Cumbersome and time consuming process may be correct to deter project agencies to go for forest lands. Therefore: Do not locate project facilities in forests or lands with any encumbrances Create awareness in ULB officials to avoid forest lands In unavoidable, liaise with local forest office right from site identification.
Documentation of IEE studies: non-inclusion of Project	In a RUIDP II water supply subproject, a local NGO complained that IEE study did not consider presence of critically	As per the ADB SPS 2009, environmental assessment study should include all associated facilities

Field	Details	Remedial measures
Associated Facilities in the IEE study	endangered species in the project area. The RUIDP II subproject included works from WTP to consumer end, while the intake and raw water transmission works were part of a state funded project implemented by PHED to cover several towns. The intake is located in a River, which is a habitat for endangered species and declared as sanctuary. As the intake/source augmentation works are not in the scope, the issues related to intake were not considered in the IEE. PHED on its part obtained necessary clearances from Ministry of Environment and Forest, and incorporated various measures in the project. These are duly incorporated in the IEE, and resubmitted to ADB.	Associated facilities may be funded separately (by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project
Poor implementation of environmental safeguards during construction.	While there is significant improvement in documentation of environmental studies during RUIDP I & II, the implementation of EMP during construction has been poor. Even with the continuous efforts, implementation is poor. Workers are reluctant to use personal protection equipment siting inconvenience in work, and contractors show least interest in implementation of measures including public safety, road blocks, traffic management and dust control. The main reasons are lack of awareness and ignorance on workers part and lack of instruments to deal with non-compliances (penalties or incentives). Almost always the construction progressed slowly, and the main focus of PIU and PMU has been on timely completion and construction quality, at the cost of poor EMP implementation. Importantly most of the project staff and local administrators are of the belief that these are common temporary inconveniences during construction and have to be tolerated. Another main problem is of sub-contracting by the contractor to small firms with no experience in good and safe construction methods	Creation of awareness in workers on work place safety & public safety Awareness creation in staff, administrators, supervising staff and general public regarding EMP provisions and contractor's responsibilities Increasing contractor accountability to wards EMP implementation - Introducing penalties for non-compliance - Introducing incentives for good implementation of EMP

ADB = Asian Development Bank; EC = Environmental Clearance; EIA = Environmental Impact Assessment; EMP = Environmental Management Plan; IEE = Initial Environmental Examination; PHED = Public Health Engineering Department; PIU = Project Implementation Unit; PMU = Project Management Unit; RUIDP = Rajasthan Urban Infrastructure Development Project

III. ANTICIPATED ENVIRONMENTAL IMPACTS

28. In Pali industrial area, an IEE will be prepared during project implementation (after ADB board approval) for tertiary industrial effluent treatment facilities to further treat the effluent from the existing CETPs to facilitated water reuse, and to ultimately achieve zero liquid discharge (ZLD) for the Pali Industrial Area.

29. **Possible scope.** A feasibility study would be conducted to develop a Greenfield Zero Liquid Discharge Plant within the existing CETP land for tertiary treatment of industrial effluent with the intention of providing treated water for industrial grade water reuse. The scope may also include construction of the water distribution network servicing the industrial park to distribute the treated water. The contractor would likely be fully responsible for treatment, disposal and handling of sludge as per the prevailing laws. The bid document would likely include requirements for delivering quality of raw effluent provided by industrial association to operator, and treated water quality. The bid document would not suggest any process, but specify the requirement of treatment water quality, and inlet effluent quality that will be made available to the operator. The bidder would need to come up with own design process. Possible scope would include: (i) tertiary treatment plant, (ii) ultrafiltration, (iii) micron cartridge filter, (iv) reverse osmosis system, (v) thermal evaporation system (multiple effect evaporator system, and (vi) solid landfill for salt from evaporator.

30. **Impacts of tertiary effluent treatment facilities and reuse infrastructure**. This infrastructure is proposed to further treat the effluent generated from the existing CETPs with tertiary treatment facilities. This treatment will further improve the treated water quality and will facilitate reuse back in industrial units (for industrial purposes only) thus ultimately achieving the Zero Waste Discharge (ZWD) from the Pali industrial area. By nature, this component will have positive impacts on environment by avoiding the disposal of wastewater into environment and also by minimizing the raw water extraction for industrial purposes. The negative impacts during operation are mainly due to (i) disposal of sludge/solids/rejects generated from tertiary treatment facilities like reverse osmosis, ultrafiltration systems, and evaporators, (ii) system malfunction - due to change incoming quality of effluent or due to lack of proper operation and maintenance; and (iii) hazardous working conditions (exposure to chemical and toxic effects) that may pose risk to the workers. Negative impacts during the construction are typical of any civil construction activity, such as STP. However, the tertiary treatment facilities are to be constructed within the existing CETP facilities therefore the risk of hazardous working conditions needs to be evaluated. Anticipated impacts during design, construction, and operation for the tertiary effluent treatment facilities are identified in Appendix 3.

IV. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS

A. Environmental Guidelines for Subproject Selection

31. The following criteria will be used for excluding sites which might have significant negative environmental impacts:

(i) ecologically sensitive area such as national parks, wildlife sanctuaries, biosphere reserves, internationally recognized areas, etc.;
(ii) potential for disrupting the life and property of the indigenous or tribal population;
(iii) need for significant amount of land acquisition and resultant compensation; and
(iv) encroachment on historic and cultural features like international or central or state protected monuments and archeological/historical sites

32. Guidelines for project selection in Table 4 provide further guidance to avoid or minimize adverse impacts during the identification and finalization of subprojects.

Table 5: Environmental Criteria for Subproject Selection

Applicability	Environmental Selection Criteria	Remarks
Common Effluent Treatment Plant	i. Comply with all requirements of relevant national and local laws, rules, and guidelines. ii. The existing CEPTs should have valid CFE and CFO from the RPCB	- See Section II of this EARF - Authorization, CFE and CFO from RPCB - Environmental Clearance from MoEF
	iii. Adopt appropriate tertiary treatment process – selection and finalization should be preceded by effluent treatability studies	
	iv. The proposal is techno-economically feasible and the cost recovery formula adopted is ratified by all member units of CETP	- Technical appraisal of the proposal should be done by independent competent agencies like IITs or relevant CSIR institutions. Cost of such appraisal should be part of design cost.
	v. Evaluate the option of mixing sewage with industrial effluent if it is advantageous to the process. If yes, ensure appropriate arrangement to receive the sewage at the CETP inlet and a suitable agreement with the municipality including for cost sharing should be in place.	-
	vi. Subproject design and operation adheres to the notified inlet and outlet standards. Continuous flow meters are installed at the outlet of CEPT to monitoring effluent quality.	- See Appendix 2
	vii. Subproject should be limited to provision of tertiary treatment facilities for already operating CETPs with primary, and secondary and necessary hazardous sludge disposal facilities	-
	viii. Tertiary treatment facility should be located within the existing CETP compound	-
	ix. Locate facilities where there is no risk of flooding or other hazards that might impair operations and present a risk of damage to the facilities or its environs.	-
	x. Adequate linkage with Treatment, Storage & Disposal Facility (TSDF) for disposal of hazardous wastes generation from the proposed facility. Subproject shall include a scientific sludge management plan based on sludge characteristics (i.e. hazardous, non-hazardous)	- Utilize TSDF hazardous disposal facilities approved by RPCB. If necessary, provide improved disposal facilities to comply with Hazardous Waste (HW) Rules, 2009. - At present, solid waste/sludge from CETP is being sent to TSDF (Rajasthan Waste Management Project) at Udaipur[8] for disposal as per HW Rules, 2009
	xi. Hazardous sludge is transported to TSDF safely and securely following HW Rules, 2009. Should follow the CPCB guidelines for	- Consent from Rajasthan Pollution Control Board is mandatory for transport of hazardous waste

[8] TSDF is located at about 190 km from Pali

Applicability	Environmental Selection Criteria	Remarks
	Transportation of Hazardous Wastes, 2006 including transport, labeling and safety provisions xii. No manual handling of sludge allowed xiii. Workers should be provided with personal protection equipment, xiv. Workers should be trained in handling, loading, transport and unloading waste xv. Provide necessary safety belts and nets to avoid accidental falls xvi. Sludge should be handled carefully without spills either during handling or transport. Sludge should be transported in closed containers with appropriate labels xvii. Prepare Emergency Response Plan for sludge transportation	- Currently, TSDF operator collects the waste from CETP and transport to TSDF with consent from RPCB.
	i. Ensure that appropriate training is provided to the operating agency in operation and maintenance of the tertiary treatment plant and sludge disposal; this should be part of design-build contract.	-
	ii. Arrange for extended contract period to cover a minimum five year operation during which the output should meet	-
	iii. Notify all member industries about the design inlet quality of effluents to be received at CETP.	-
	iv. Project should not create nuisance to neighboring areas due to foul odor and influx of insects, rodents, etc.	-
	v. All risks and vulnerabilities related occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation are identified and addressed in the project design & implementation	-
	vi. Ensure that there is no impairment of downstream water quality due to inadequate treatment of industrial effluent	-
	vii. Ensure that there are no overflows and flooding of neighboring areas/ properties with raw effluent	-
	viii. Ensure that the project will not lead to environmental pollution due to inadequate sludge disposal	-
	ix. Ensure that the project should not lead to contamination of surface and groundwater due to disposal on land	-
	x. All health and safety hazards to workers from toxic gases, hazardous material, pathogens etc are identified, and appropriate mitigation measures are included in the project	-

B. Environmental Assessment Procedures for Projects

1. Screening and Categorization

33. As soon as sufficient information on a subproject is available, the Project Management, Design, and Supervision Consultant (PMDSC) environment safeguards specialist will conduct screening to determine the works' environmental category by completing ADB's rapid environmental assessment (REA) checklists[9] in Appendix 4 and submitting this for review to the PMU, which will determine required environmental assessment and environmental consents as per national and state requirements.

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

35. Simultaneously, RUIDP PMU should liaise with State Environmental Impact Assessment Authority (SEIAA) of Rajasthan regarding the Project Category as per the EIA Notification, 2006. CETPs projects (new or rehabilitation/improvements) are listed under Category B, however, applying general condition of project location, this subproject may be classified as Category A. For ADB purpose, this can still be classified as Category B due to less significant impacts.

2. Preparation of Environmental Assessment Report

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

37. For projects projected to have potentially significant adverse environmental impacts (categorized as A), an EIA will be prepared. For projects with some adverse environmental impacts, but which are expected to be less significant than those of category A projects, an IEE is required. Appendix 1 of ADB's SPS, 2009 provides the specific outlines and contents to be followed while preparing EIAs/IEEs. Appendix 5 provides the outline of an ADB environmental assessment report. Also, the sample IEEs prepared during project preparation provide a good sample which can be followed for preparation of environmental assessments in subsequent subprojects.

38. Category A projects require EC from the central Ministry of Environment and Forests (MoEF), while Category B project require EC for the state-level EIA Authority (SEIAA). Upon submission of application form with necessary project details (including Feasibility Report / DPR) along with the draft Terms of Reference (ToR) for the EIA Study, the Expert Appraisal Committee (EAC) of the MoEF or SEIAA, as the case may be, finalizes comprehensive ToR for the EIA study. The proponent should conduct EIA study with the help of an Accredited Consultant Agency.[10] MoEF published EIA guidance manuals for several sectors including for

[9] For CETP component, REA Checklist of Sewage Treatment should be used

[10] As per the Office Memorandum (OM) of MoEF dated December 2, 2009, EIA/EMP reports prepared only by such Consultancy agency accredited for respective EIA sectors by National Accreditation Board for Employment and Training (NABET) / Quality Council of India (QBI) shall be accepted for review and issuance of EC.

CETPs[11], which should be used in preparation of draft TOR and the conduct of EIA study. Content and format of EIA Report as per the EIA Notification, 2006 is provided in Appendix 5. On completion of the study and review of the report by the EAC/SEAC, MoEF/SEIAA considers the recommendation of the EAC/SEAC and provides the EC if appropriate.

39. Pollution prevention for conservation of resources, particularly technology for management of sewage, industrial effluent and sludge, occupational and community health and safety will be addressed in the EIA/IEEs. The EIA/IEE will also reflect meaningful consultation and disclosure process with a provision for grievance redress mechanism.

40. ADB requires that an EMP must be developed as part of the EIA/IEE. The EMP will outline specific mitigation measures, environmental monitoring requirements, and related institutional arrangements, including budget requirements for implementation. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the subproject is designed, constructed, and operated in compliance with applicable laws and regulations and meets the requirements specified in the EMP. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the subproject's impacts and risks. Key considerations include mitigation of potential adverse impacts to the level of "no significant harm to third parties," the "polluter pays" principle, the precautionary approach, and adaptive management. A template for environmental management process and monitoring plan is provided in Appendix 6 as a guide for preparing a robust EMP.

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

42. The EIA Notification, 2006, also requires that the EIA includes a comprehensive programme for monitoring the effectiveness of mitigation measures. An Environmental Management Plan is required, identifying mitigation measures and specifying administrative arrangements to ensure that mitigation measures are implemented and their effectiveness is monitored after approval of the EIA. A budget for the EMP should also be provided.

43. All EIAs/IEEs will be conducted and EMPs prepared prior to the award of construction contracts. The bid documents will include the requirement to incorporate necessary resources to implement the EMP. The EMP will form part of the contract document, and, if required, will need to be further updated during the construction phase of a subproject. According to EIA Notification, 2006, Environmental Clearance (EC), if required, must be obtained before any construction work or land preparation (except land acquisition) may commence.

3. Environmental Audit of Existing Facilities

44. For subprojects involving facilities and/or business activities that already exist or are under construction, the executing and implementing agencies will undertake an environment audit, including on-site assessment, to identify past or present concerns related to impacts on

[11] http://environmentclearance.nic.in/writereaddata/Form-1A/HomeLinks/TGM_CETP_010910_NK.pdf

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

C. Review of Environmental Assessment Reports

45. EIAs/IEEs will be reviewed i by PMU and will forward the EIAs/IEEs for ADB's review. ADB will review draft final reports of: (i) IEEs of any subprojects that have been updated due to changes in design; and (ii) EIAs or IEEs of any new subproject classified as Category A or B.

46. For subproject processing, the steps to be followed are shown in Table 5. It is the responsibility of the executing and implementing agencies to ensure subprojects are consistent with the legal framework, whether national or state/local. Compliance is required in all stages of the project including design, construction, and operation and maintenance.

Table 6: Environmental Procedures for Project Processing

Project Stage	ADB Procedure	Government of India
Subproject identification	REA checklist	Categorization according to schedule and general/specific conditions of EIA Notification, 2006. None of the subprojects to be financed under RUSDP are currently listed in the Schedule, and therefore EIA Notification 2006 will not applicable. EA and IAs should liaise with the SEIAA / MoEF regularly to confirm the legal status in case if any new amendments are notified
	Categorization (A/B/C): PMU to review the REA checklists and reconfirm the cateGORization	
Detailed design	Preparation of EIA/IEE Updating of sample IEEs based on detailed design	Submit Consent for Establishment (CFE) application along with Project Report to RPCB.
	For projects involving facilities and/or business activities that already exist or are under construction, the borrower/client will undertake an environment and/or social compliance audit, including on-site assessment, to identify past or present concerns related to impacts on the environment, and involuntary resettlement. Where non-compliance is identified, a corrective action plan agreed on by ADB and the borrower/client will be prepared.	Incorporate appropriate compliance conditions, modifications, suggestions into the project design, and finalize the Detailed Project Report

Project Stage	ADB Procedure	Government of India
	Public consultation will be carried out in a manner commensurate with the impacts of affected communities. The consultation process and its results are to be documented and reflected in the EIA/IEE.	
	Disclosure: For cateGORy A: Disclosure on ADB's website of a draft full EIA (including the draft EMP) at least 120 days prior to the ADB Board consideration, and/or EARF before project appraisal where applicable; the final EIA; updated EIAs and corrective action plans; and environmental monitoring reports. For cateGORy B: Disclosure on ADB's website of the final IEE; updated IEEs and corrective action plans; and environmental monitoring reports. In addition, for all cateGORies, environmental information will be in an accessible place and in a form or language understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.	
	Mitigation measures specified in EIA/IEE study incorporated in project design	
	Identify and incorporate environmental mitigation and monitoring measures (including the EMP) into bid/contract documents.	
Appraisal	EMP and other environmental covenants are incorporated into the facility framework agreement, loan/project agreement, and project administration memorandum (PAM)	
Approval	ADB to review and clear EIA/IEE prior to approval and issuance of tender documents during detailed design stage. Complete EIA/IEE disclosed to public	
Contract award	Obtain necessary environmental clearances, consents, and no-objection certificates (NOCs) prior to contract award. Implementation of EMP including monitoring plans based on EIA/IEE findings to be incorporated into civil works contracts.	Ensure that CFE is issued prior to award of contract
Implementation	Submission of semi-annual monitoring report to ADB including corrective action plan where non-compliance is identified.	Monitoring and reporting as per conditions stipulated in the CFE (during construction phase) and CFO (during commissioning and operation phases). CFO Renewal. For STP, CFOs must be renewed every 1 or 3 years.

ADB = Asian Development Bank; CFE = Consent for Establishment; CFO = Consent for Operation; EARF = Environmental Assessment and Review Framework; EMP = Environmental Management Plan; IEE = Initial Environmental Examination; PMU = Project Management Unit; MoEF = Ministry of Environment & Forest; NOC = No Objection Certificate; PAM = Project Administration Memorandum; SEIAA = State Environmental Impact Assessment Authority; STP = Sewage Treatment Plant; REA = Rapid Environmental Assessment Checklist; RPCB = Rajasthan Pollution Control Board

V. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation and Information Disclosure

47. Meaningful stakeholder consultation and participation is part of the project preparation and implementation strategy. A consultation and participation program will be implemented with the assistance of consultants. By addressing stakeholder needs, there is greater awareness of

the benefits and “ownership” of the project among stakeholders, which in turn contribute to sustainability. The consultation process during the project preparation has solicited inputs from a wide range of stakeholders, including government officials, NGOs, residents of the three towns, marginalized/vulnerable beneficiary groups, and project-affected persons (APs).

48. Consultation, participation, and disclosure will ensure that information is provided and feedback on proposed subproject design is sought early, right from the subproject preparation phase, so that the views/preferences of stakeholders including potential beneficiaries and affected people can be adequately considered, and continue at each stage of the subproject preparation, processing, and implementation.

49. APs will be consulted at various stages in the project cycle to ensure: (i) incorporation of their views/concerns on compensation/resettlement assistance and environmental impacts and mitigation measures; (ii) inclusion of vulnerable groups in project benefits; (iii) identification of help required by APs during rehabilitation, if any; and (iv) avoidance of potential conflicts for smooth project implementation. It will also provide adequate opportunities for consultation and participation to all stakeholders and inclusion of the poor, vulnerable, marginalized, and APs in the project process.

50. Relevant information about any major changes to project scope will be shared with beneficiaries, affected persons, vulnerable groups, and other stakeholders.

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

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

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

53. GoI EIA Notification, 2006, also requires public consultation for A and B1 projects and consists 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 respective Pollution Control Board, in this

case Rajasthan Pollution Control Board (RPCB) and meetings are chaired by the respective District Collector.

B. Information Disclosure

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

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

(ii) For category B projects:
   a. final IEE;
   b. a new or updated IEE and corrective action plan prepared during project implementation, if any; and
   c. environmental monitoring reports.

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

56. The EIA Notification, 2006, also requires disclosure of information for A and B1 projects. Together with public consultation, disclosure is also handled by RPCB, who lodge the Summary EIA report on their website and invite responses from stakeholders. The Draft EIA report should be available on request until the public hearing.

C. Grievance Redress Mechanism

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

58. **Common GRM**. A common GRM will be in place for social, environmental, or any other grievances related to the project; the resettlement plans (RPs) and IEEs will follow the GRM described below. The GRM will provide an accessible and trusted platform for receiving and facilitating resolution of affected persons' grievances related to the project. The multi-tier GRM for the project is outlined below, each tier having time-bound schedules and with responsible persons identified to address grievances and seek appropriate persons' advice at each stage, as required.

59. ULB-wide public awareness campaigns will ensure that awareness on grievance redress procedures is generated through the campaign. Project implementation unit's (PIU) Assistant Safeguards Officer (ASO) through Community Awareness and Participation Consultant (CAPC) will conduct ULB-wide awareness campaigns to ensure that poor and vulnerable households are made aware of grievance redress procedures and entitlements.

60. APs will have the flexibility of conveying grievances/suggestions by dropping grievance redress/suggestion forms in complaints/suggestion boxes that have already been installed by project ULBs or by e-mail, by post, or by writing in a complaints register in ULB offices. Appendix 9 has the sample grievance registration form. Careful documentation of the name of the complainant, date of receipt of the complaint, address/contact details of the person, location of the problem area, and how the problem was resolved will be undertaken. The PMU Project Officers (Environment & Social) will have the overall responsibility for timely grievance redressal respectively on environmental and social safeguards issues and for registration of grievances, related disclosure, and communication with the aggrieved party through the PIU ASO.

61. **Grievance redress process**. In case of grievances that are immediate and urgent in the perception of the complainant, the contractor, and supervision personnel from PIU the PMDSC on-site will provide the most easily accessible or first level of contact for quick resolution of grievances. Contact phone numbers and names of the concerned PIU Assistant Safeguards Officer, contractors, will be posted at all construction sites at visible locations.

(i) **1st level grievance**. The contractors, PIU supervision personnel, PIU Assistant Safeguards Officer and implementing NGO/CAPP NGO [12] can immediately resolve issues on-site in consultation with each other, and will be required to do so within 3 days of receipt of a complaint/grievance.

(ii) **2nd level grievance**. All grievances that cannot be redressed within 3 days at field/ward level will be brought to the notice of respective safeguard specialists (Environment/Social) of PMU. PMU SOs will resolve the grievance within 7 days of receipt of compliance/grievance in discussion with the PIU, CAPP NGO and the Contractor.

(iii) **3rd level grievance**. All the grievances that are not addressed by PMU within in 7 days of receipt will be brought to the notice of notice of the Grievance Redressal Committee (GRC). The City Level Committee (CLC), which will be established in every project town will act as GRC[13]. GRC will meet twice a month and determine the merit of each grievance brought to the committee. The PIU ASO will be responsible to see through the process of redressal of each grievance. The GRC will resolve the grievance within 15 days of receiving the complaint.

(iv) **4th level grievance**. Very major issues that are beyond the jurisdictional authority of the CLC or those that have the potential to cause social conflicts or environmental damage or those that remain unresolved at PMU/CLC level, will

[12] CAPP NGO will oversee the matters if there is no Resettlement Plan (RP) Implementing NGO

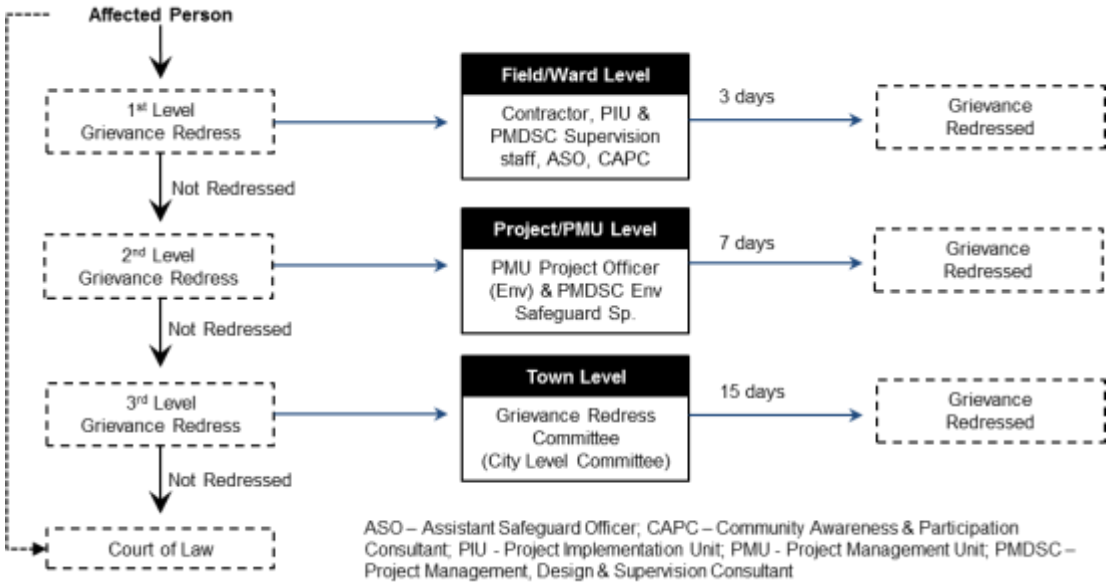
[13] City Level Committees (CLC) /Grievance redress committees (GRC) will be formed at town-level with members composed of: District Collector (DC) as Chairperson, and following as members: ULB Commissioner; Assistant Safeguards Officer PIU; representative from RPCB regional office; and one representative each from relevant government departments as appropriate (PWD / PHED / DAM etc). All town-level GRCs will have at least one woman member/chairperson. In addition, for project-related grievances, representatives of APs, community-based organizations (CBOs), and eminent citizens will be invited as observers in GRC meetings.

be referred to the Empowered Committee (EC)[14]. All decisions taken by the GRC and PSC will be communicated to the APs by the PIU ASO.

62. The project GRM notwithstanding, an aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM. Alternatively, if the grievance is related to land acquisition, resettlement & rehabilitation[15] , the APs can approach the Land Acquisition, Rehabilitation and Resettlement Authority (LARRA). As per the latest Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act, 2012, the state government will establish the LARRA to address grievances in implementation LARRA.

63. In the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB India 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.

Figure 1: Grievance Redress Process



64. **Record-keeping.** PIU of each town and PMU will both keep records of grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were affected and final outcome. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the RUIDFCO office, PMU office, ULB office, and on the web, as well as reported in monitoring reports submitted to ADB on a semi-annual basis.

[14] The Empowered Committee (EC) will be chaired by the Minister of Urban Development and Housing, and members will include Ministers, Directors and/or representatives of other relevant Government Ministries and Departments

[15] the Authority admits grievance only with reference to the LA and R&R issues under the new Act

65. Periodic review and documentation of lessons learned. The PMU Project Officer (Environment) will periodically review the functioning of the GRM in each town and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances.

66. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the concerned PIU at town level while costs related to escalated grievances will be met by the PMU. Cost estimates for grievance redress are included in resettlement cost estimates.

VI. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

67. The Local Self Government Department (LSGD) of Government of Rajasthan will be the Executing Agency (EA) and existing RUIDP will be the Implementing Agency (IA). The LSGD will be responsible for overall strategic planning, guidance and management of the RUSDP, and for ensuring compliance with tranche release conditions and loan covenants. A policy support unit will be established in the LSGD to support the government for implementation of the tranche release policy actions under the program loan. The RUIDP will be responsible for planning, implementation, monitoring and supervision, and coordination of all activities under the RUSDP. The RUIDP will recruit two consulting firms – (i) project management, design and supervision consultant (PMDSC), and (ii) community awareness and participation consultant (CAPC) to provide support in implementation of RUSDP. Six Project Implementation Units (PIUs), one each of in six project towns, shall be set up directly to assist in implementation. PMU will support PIUs in implementation, management and monitoring of the project. PMU and PIUs will be assisted by PMDSC and CAPC. PIUs will appoint construction contractors to build infrastructure. Once the infrastructure is built and commissioned, the Urban Local Bodies will operate and maintain the infrastructure.

68. The tertiary treatment facility at Pali Common Effluent Treatment Plant (CETP) will be operated by the existing operator of the CETP – Pali Water Pollution Control Treatment and Research Foundation.

69. At state-level an inter-ministerial Empowered Committee (EC) will be established to provide overall policy direction and City Level Committees (CLCs) will be established in each town to oversee the implementation at town level.

A. Safeguard Implementation Arrangement

70. **Project Management Unit.** The PMU will be staffed with two Project Officers (PO – Environment & PO – Social) and will receive support from environmental and social safeguard specialists on the PMDSC consultant team. PO (Environment) will have overall responsibility in implementation of environmental safeguards as per the EARF, including appropriate monitoring and reporting responsibilities. Key tasks and responsibilities of the PMU Project Officer (Environment) are as follows:

(i) confirm existing IEEs/EMPs are updated based on detailed designs, and that new IEEs/EMPs are prepared in accordance with the EARF and subproject selection criteria related to safeguards;
(ii) Liaise with SEIAA for categorization of the Pali CETP project, and appoint an accredited consultant agency to conduct EIA study and prepare EIA Report; ensure that a single EIA report is produced that meet both ADB and MoEF requirements

(iii) confirm whether IEEs/EMPs are included in bidding documents and civil works contracts;
(iv) oversee preparation of new IEEs where necessary;
(v) provide oversight on environmental management aspects of subprojects and ensure EMPs are implemented by PIU and contractors;
(vi) establish a system to monitor environmental safeguards of the project, including monitoring the indicators set out in the monitoring plan of the EMP;
(vii) facilitate and confirm overall compliance with all government rules and regulations regarding site and environmental clearances, as well as any other environmental requirements (e.g., location clearance certificates, environmental clearance certificates, etc.), as relevant;
(viii) supervise and provide guidance to the PIUs to properly carry out the environmental monitoring and assessments as per the EARF;
(ix) review, monitor, and evaluate the effectiveness with which the EMPs are implemented, and recommend necessary corrective actions to be taken as necessary;
(x) consolidate monthly environmental monitoring reports from PIUs and submit semi-annual monitoring reports to ADB;
(xi) ensure timely disclosure of final IEEs/EMPs in locations and form accessible to the public; and
(xii) address any grievances brought about through the grievance redress mechanism in a timely manner.

71. **Project Implementation Units**. PIUs will be established in each of the Project Towns. PMU Project Officer (Environment) will receive support from Environmental Safeguard Specialist of the PMDSC Team in implementation of environmental tasks at PIU level. At each PIU, an Assistant Engineer (AE) rank officer will be given additional responsibilities of safeguard tasks and will be designated as Assistant Safeguards officer. The ASO will assist PMU PO (Environment) in implementation of the following key tasks at PIU level.

(i) include IEEs/EMPs in bidding documents and civil works contracts;
(ii) oversee day-to-day implementation of EMPs by contractors, including compliance with all government rules and regulations;
(iii) take necessary action for obtaining rights of way;
(iv) oversee implementation of EMPs, including environmental monitoring by contractors;
(v) take corrective actions when necessary to ensure no environmental impacts;
(vi) submit monthly environmental monitoring reports to PMU,
(vii) conduct continuous public consultation and awareness;
(viii) address any grievances brought about through the grievance redress mechanism in a timely manner as per the IEEs; and
(ix) organize an induction course for the training of contractors, preparing them on EMP implementation, environmental monitoring requirements related to mitigation measures, and on taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation.

72. **Civil works contracts and contractors.** EMPs are to be included in bidding and contract documents and verified by the PIUs and PMU. The contractor will be required to designate an Environment, Health and Safety (EHS) supervisor to ensure implementation of

EMP during civil works. Contractors are to carry out all environmental mitigation and monitoring measures outlined in their contract.

73. The EA and IAs will ensure that bidding and contract documents include specific provisions requiring contractors to comply with: (i) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labor; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the project sites.

Figure 2: Safeguard Implementation Process

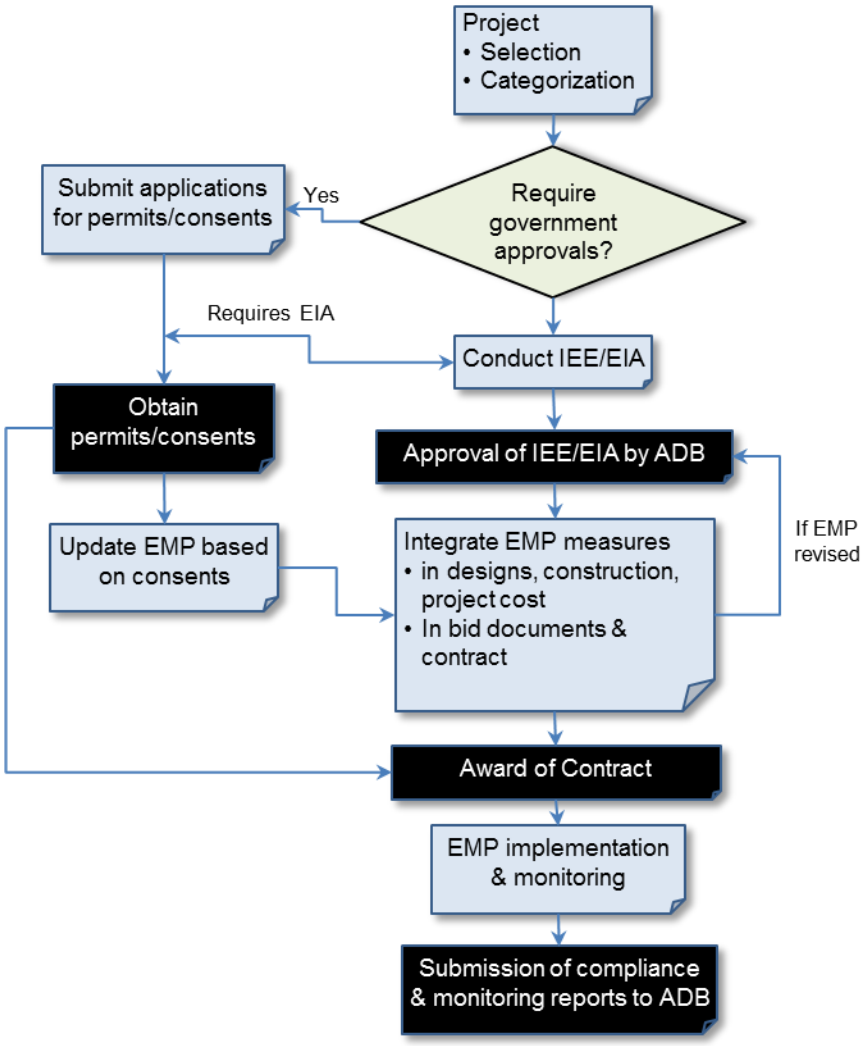
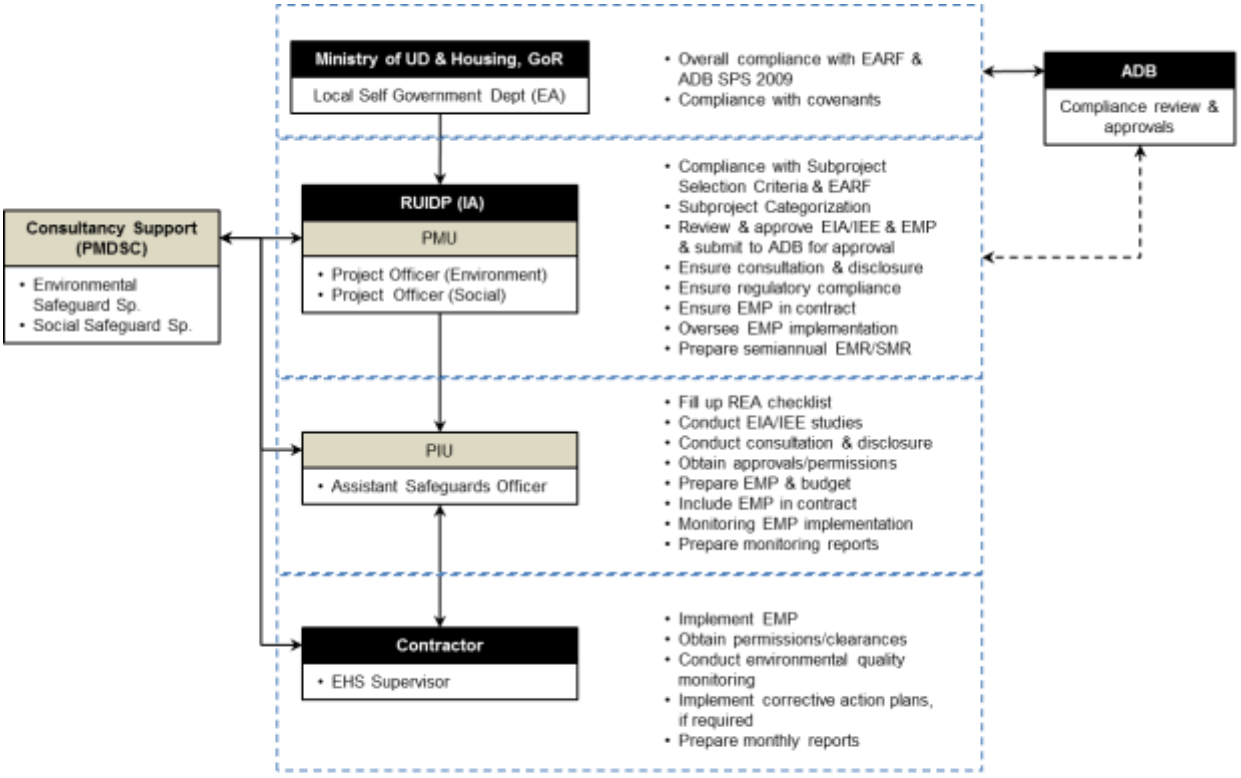


Figure 3: Safeguard Implementation Arrangements



ADB – Asian Development Bank; EARF – Environmental Assessment and Review Procedures; EHS – Environment, Health & Safety, EIA – Environmental Impact Assessment; EMP – Environmental Management Plan; GoR – Government of Rajasthan; IA – Implementing Agency; IEE – Initial Environmental Examination; PIU – Project Implementation Unit; PMU - Project Management Unit; PMDSC – Project Management, Design & Supervision Consultant; RUIDP – Rajasthan Urban Infrastructure Development Project; REA – Rapid Environmental Assessment; SPS – Safeguard Policy Statement, 2009.

B. Institutional Capacity and Development

74. The PMDSC environmental safeguard specialist will be responsible for training the PMU project officer (environment) and the PIUs Assistant Safeguard Officers on environmental awareness and management in accordance with both ADB and government requirements. Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in water supply and wastewater projects; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The proposed training project, along with the frequency of sessions, is presented in Table 6.

Table 7: Training Program for Environmental Management

Description	Contents	Schedule	Participants
Pre-construction stage			
Orientation workshop	Module 1 – Orientation - ADB Safeguard Policy Statement - Government of India Environmental Laws and Regulations	1 day (at Jaipur) (50 persons)	LSGD, RUIDFCO, ULB, PMU, and PIU officials involved in project implementation

Description	Contents	Schedule	Participants
	Module 2 – Environmental Assessment Process - ADB environmental process, identification of impacts and mitigation measures, formulation of an environmental management plan (EMP), implementation, and monitoring requirements - Review of environmental assessment report to comply with ADB requirements - Incorporation of EMP into the project design and contracts		
Construction stage			
Orientation program/ workshop for contractors and supervisory staff	- Roles and responsibilities of officials/contractors/consultants towards protection of environment - Environmental issues during construction - Implementation of EMP - Monitoring of EMP implementation - Reporting requirements	1 day (at project towns) (15 persons)	PMU PIUs Contractors
Experiences and best practices sharing	- Experiences on EMP implementation – issues and challenges - Best practices followed	1 day on a regular period to be determined by PMU, PIUs, and PMDSC (at Jaipur) (50 persons)	PMU PIUs Contractors

ADB = Asian Development Bank; EMP = Environmental Management Plan; PIU = Project Implementation Unit; PMU = Project Management Unit; PMDSC = Project Management, Design and Supervision Consultant; RUIDFCO = Rajasthan Urban Infrastructure Development and Finance Corporation

C. Staffing and Budget

75. Costs required for implementing the EARF will cover the following activities:

(i) conducting environmental assessments of new subprojects, preparing and submitting reports, and public consultation and disclosure;
(ii) application for government regulatory consents, approvals; and
(iii) implementation of EMP and long-term surveys.

76. For budgeting purposes, it is assumed that all new subprojects will be classified by ADB as category B (requiring IEE). Some subprojects may require a simpler environmental review, but this is discounted for budgeting purposes.

77. Each of the IEEs prepared to date involved approximately 33 days 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 ULBs and others to obtain any environmental/social data that might be available locally (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; and (v) desk study and report preparation.

78. The infrastructure involved in each scheme is generally straightforward, and will take between 1 and 2 years to build. Environmental monitoring during construction will also be

straightforward, and will involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by PMDSC environment safeguard specialist, assisted by the PMU project officer (environment). The PMDSC environment safeguard specialist will prepare EIAs, IEEs, or environmental reviews for new subprojects. The budget therefore includes the full cost of the environment specialist.

79. The cost of mitigation measures and surveys during construction will be incorporated into the contractor's costs, which will be binding on him for implementation. The surveys will be conducted by the contractors.

80. The operation phase mitigation measures are again of good operating practices, which will be the responsibility of the ULBs. The CEPT will be operated by Pali Water Pollution Control, Treatment & Research Foundation (PWPCTRF). The existing technical staff should be trained in new tertiary treatment plant operation and maintenance. Also, PWPCTRF should be strengthened with an Environmental Health and Safety (EHS) Expert reporting to the CEO. All monitoring during the operation and maintenance phase will be conducted by government regulatory agencies like RPCB as per their mandate therefore, there are no additional costs. The indicative costs of EARF implementation are shown in Table 7.

Table 8: Indicative Cost of EARF Implementation

Component	Description	Number	Cost Per Unit (US$)	Cost (US$)	Source of Funds
A. Consultants Costs					
PMDSC environmental safeguards specialist	Responsible for environmental safeguards of the project	24 person months (spread over entire project implementation period)	$3,500	$84,000	Remuneration and budget for travel covered in the PMDSC contract
B. Administrative Costs					
Legislation, permits, and agreements	Consent fee for STPs./CETPs, forest permission etc.	Lump sum	$15,000	$15,000	Included in the overall project cost The approvals/ permits that are to be obtained by contractor at his own expense are not included here
C. Environmental Monitoring Costs					
Baseline monitoring prior to construction	During detailed design stage to establish existing environmental conditions	Lump sum	$25,000	$25,000	Included in the PMDSC contract
	Before start of construction works	One sample each for noise, ambient air quality, receiving/adjacent body of water	$3,000 per subproject	$18,000	Contractor's cost
Monitoring during construction	Sampling sites near sensitive areas (schools, hospitals, places of	Noise, ambient air quality, and water quality -	Contractor's liability	Not applicable	Contractor's cost

Component	Description	Number	Cost Per Unit (US$)	Cost (US$)	Source of Funds
	worship, historical/cultural areas)	monitoring points and frequency will be finalized before construction			
D. Other Costs					
Public consultations and information disclosure	Information disclosure and consultations during pre-construction and construction phase, including public awareness campaign through media	As per requirement	Lump sum	$600,000	Covered under PMDSC
Capacity building	(i) Orientation workshop for officials involved in the project implementation on ADB Safeguard Policy Statement, Government of India environmental laws and regulations, and environmental assessment process; (ii) induction course for contractors, preparing them on EMP implementation and environmental monitoring requirements related to mitigation measures, and on taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation; and (iii) lessons learned information sharing	Module 1 – immediately upon engagement of the PMDSC environmental safeguard specialist Module 2 – prior to award of civil works contracts (twice a year for 4 years) Module 3 – prior to start of Phase 2 and upon completion of the project	Module 1 - $1,500 Module 2 - $900 Module 3 - $3,000	$5,400	Covered under PMDSC
GRM implementation	Costs involved in resolving complaints (meetings, consultations, communication, and reporting/information dissemination)	Lump sum	Part of administration cost of PMUs	$3,000 per year	PMU cost
Any unanticipated impact due to project implementation	Mitigation of any unanticipated impact arising during construction phase and defect liability period	Lump sum	Contractor's liability	As per insurance requirement	Contractor's insurance

PMU = Project Management Unit; PMDSC = Project Management, Design and Supervision Consultant

VII. MONITORING AND REPORTING

81. RUIDP will monitor and measure the progress of EMP implementation. The monitoring activities will correspond with the project's risks and impacts. In addition to recording information on the work and deviation of work components from original scope, PMU, PIUs, and PMDSC will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome.

82. PMDSC will submit monthly monitoring and implementation reports to PMU, who will take follow-up actions, if necessary. RUIDP will submit semi-annual monitoring reports to ADB. The suggested monitoring report format is in Appendix 6. A construction site checklist is attached at Appendix 8, which is to be filled by the PMDSC/PIU supervising staff, and attached to monthly reports. Subproject budgets will reflect the costs of monitoring and reporting requirements. For projects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis. Monitoring reports will be posted in a location accessible to the public.

83. Compliance with loan covenants will be screened by the Urban Governance Department of the Ministry of Urban Development and Housing, Government of Rajasthan.

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

(i) conduct periodic site visits for projects with adverse environmental or social impacts;
(ii) conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
(iii) review the periodic monitoring reports submitted by EAs to ensure that adverse impacts and risks are mitigated, as planned and agreed with ADB;
(iv) work with EAs to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to reestablish compliance as appropriate; and
(v) prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

APPENDIX 1: RELEVANT GOVERNMENT OF INDIA ENVIRONMENTAL LEGISLATIONS

	Legislation	Description	Regulator	Requirements for the Project
1.	National Environment Policy, 2006	• NEP is a comprehensive guiding document in India for all environmental conservation programs and legislations by Central, State and Local Government. The dominant theme of this policy is to promote betterment of livelihoods without compromising or degrading the environmental resources. The policy also advocates collaboration method of different stakeholders to harness potential resources and strengthen environmental management.	Not applicable	-Follow the following in design and implementation of infrastructure elements under the Project: - Enhancing and conservation of environmental resources and abatement of pollution
2.	EIA Notification, 2006	• The publication of the EIA notification put forth that the required construction of new projects, expansion or modernization of existing projects and activities listed in the Schedule to this notification entailing capacity addition with change in process and or technology shall be undertaken in any part of India only after the prior environmental clearance from the Central Government or by the State Level Environment Impact Assessment Authority, duly constituted by the Central Government. • The environmental clearance process for new projects will comprise of a maximum of four stages given in sequential order: Stage (1) Screening; Stage (2) Scoping; Stage (3) Public Consultation and Stage (4) Appraisal	Ministry of Environment & Forest, GoI	- Environmental clearances
3.	Water (Prevention and Control of Pollution) Act, 1974 amended 1988 and its Rules, 1975	• Water (Prevention and Control of Pollution) Act was established to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, by Central and State Boards and for conferring on and assigning to such Boards powers and functions relating thereto and for matters connected therewith.	Rajasthan Pollution Control Board (in the State of Rajasthan)	- Applicable for construction and operation of water treatment plant and sewage treatment plant - Consent for establishment (CFE) and consent for operation (CFO) from Rajasthan State Pollution Control Board (RSPCB) - Compliance to conditions and disposal standards stipulated in the CFE and CFO
4.	Air (Prevention and Control of Pollution) Act, 1981, amended 1987 and its Rules, 1982	• An agreement for the preservation of the natural resources which included air and water preservation was finalized at the United Nations Conference on the Human Environment held in Stockholm in June, 1972, in which India participated. Following this the Air (Prevention and Control of Pollution) Act was enacted to achieve prevention, control and abatement of air pollution activities by assigning regulatory powers to Central and State boards for all such functions. • Establishes ambient air quality standards	Rajasthan Pollution Control Board (in the State of Rajasthan)	- Applicable for equipment and machineries potential to emit air pollution - Consents to establish and operate facilities from Rajasthan State Pollution Control Board (RSPCB) - Compliance to conditions and emissions standards stipulated in the CFE and CFO

	Legislation	Description	Regulator	Requirements for the Project
				- comply with AAQ standards
5.	Environmental (Protection) Act, 1986 amended 1991 and the following rules/notifications:	• Following the United Nations Conference on the Human Environment held at Stockholm in June, 1972, an Act to provide for the protection and improvement of environment and for matters connected therewith was framed in India. This would cover the protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property. •	-	-
a.	Environment (Protection Rules, 1986 including amendments	• In exercise of the powers conferred by f the Environment (Protection) Act, 1906 (29 of 1986), the Central Government formulated rules, which include the following: • Standards for emissions or discharge of environmental pollutants • Prohibitions and restrictions on the location of industries and the carrying on processes and operations in different areas • Procedure for taking samples and submission of samples for analysis, and the form of environmental laboratory corresponding government analyst qualifications • Service of Notice and Manner of giving notice • Furnishing of information to authorities and agencies in certain cases • Prohibition and restriction on the handling of hazardous substances in different areas • Submission of environmental reports	Rajasthan Pollution Control Board (in the State of Rajasthan)	- STPs should be designed and operated to meet disposal standards - compliance with emission and disposal standards during construction
b.	Municipal Solid Wastes (Management and Handling) Rules, 2000	• The Municipal Solid Wastes (Management and Handling) Rules, 2000 apply to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes. • The State Board shall monitor the compliance of the standards regarding ground water, ambient air, leachate quality and the compost quality including incineration standards as specified. • The Central Pollution Control Board shall co-ordinate with the State Boards and the Committees with particular reference to implementation and review of standards and guidelines and compilation of monitoring data.	Rajasthan Pollution Control Board (in the State of Rajasthan)	Solid waste generated at proposed facilities shall be disposed in accordance with the MSWM Rules
c.	Noise Pollution (Regulation and Control) Rules, 2000	• The increasing noise level in public places from various sources have delirious effects on humans and thereby it is considered necessary to regulate and control noise generating sources to maintain ambient air quality standards through a set of rules. • The ambient air quality standards are achieved through enforcement of noise pollution control measures and restrictions on the use sound producing instruments. Further the consequences in the case of any violation in silence zone area, complaints to be made to authority in this regards and power to prohibit continuance of music sound or noise also falls under within these rules	Rajasthan Pollution Control Board (in the State of Rajasthan)	- Compliance with noise quality standards

	Legislation	Description	Regulator	Requirements for the Project
e.	Notification of Eco Sensitive Zones	• The Mount Abu region has significant ecological importance and there has been considerable environmental degradation with excessive soil erosion, water and air pollution caused by development activities. Thereby to conserve and protect the natural resources and living beings a notification under the Environmental Protection Act and Rules1986 declared Mount Abu and surrounding region enclosed within the boundary in the State of Rajasthan as the Mount Abu Eco-sensitive zone. •	Forest Department, GOR & Ministry of Environment & Forest, GoI	- Restriction of activities (including construction, tree cutting, etc) in the notified zones - There are no eco sensitive zones in or near the six project towns
f	Wetland (Conservation and Management) Rules, 2010	• Wetland (Conservation and Management) Rules, 2010 were framed for the protection of wetlands and restriction of certain activities within wetlands. • Subsequently in exercise of the powers conferred under the Environmental Protection Act 1986 a regulatory mechanism was set up. • Following this the Central government identified certain wetlands for conservation and management and provided financial and technical assistance to State governments and Union territories for various conservation activities. •	Central Wetlands Regulatory Authority	- Applies to protected wetlands (Ramsar sites, wetlands in eco sensitive areas and UNESCO heritage sites & in high altitudes, and wetlands notified by Government of India) - Prohibits/ regulates activities within and near the wetlands - None of the six project towns has protected wetlands
	Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2009	- Rules defines and classifies hazardous waste - Provides procedures for handling hazardous waste - Requires Pollution Control Board's consent for handling hazardous waste - Procedure for storage of Hazardous wastes - provides procedures for recycling, reprocessing or reuse, important and export of hazardous waste - Rules for development of treatment, storage, disposal facility (TSDF) for hazardous wastes; TSDF shall be developed following guidelines issued by CPCB	Ministry of Environment & Forest & Central Pollution Control Board	- Applies to disposal of sludge/rejects generated from the Common Effluent Treatment Plants - Requires authorization to handle hazardous wastes
6.	Indian Wildlife (protection) Act, 1972 amended 1993 and Rules 1995 Wildlife (Protection) Amendment Act, 2002	• An Act to provide for the comprehensive protection of Wild animals, birds and plants .This would cover matters concerning Appointment of forest authorities, hunting of wild animals, protection of specified plants, conservation of national parks and sanctuaries, trade commerce in relation to plants and animals and prevention of any offences.		- Applicable to subprojects located within core or buffer zone of Protected Areas (Wildlife Sanctuaries, National parks, biosphere reserves etc) - Permission from chief wildlife warden/ State Wildlife Board/ National Board of Wildlife
7.	Indian Forest Act, 1927	• The Indian Forest Act 1972 was enacted to consolidate the law relating to forests, the transit of forest-produce and the duty leviable on timber and other forest-produce. This would apply to reserved forests, village forests, and protected forests. In addition to control over forests this act also concerns lands not being the property of government. The Penalties and procedures with regard to all property, cattle trespasses and powers of Forest officers in relation to all such matters are discussed under the Act.	Ministry of Environment & Forest (at central level) Forest Department (at State-level)	- Declaration of forest areas (reserved, protected and village forests), and regulation of activities within the forests - Applicable to subprojects located in the forests

	Legislation	Description	Regulator	Requirements for the Project
8.	Forest (Conservation) Act, 1980 amendment 1988 and the following rules/notifications:	• Act provides for conservation of forests • Restricts the dereservation of forests or use of forest lands for non-forest purpose • Non-forest purpose means breaking up or clearing of any forest land	Ministry of Environment & Forest (at central level) Forest Department (at State-level)	- Applicable to subprojects located in forests; requires prior permission to take up the works
a.	Forest (Conservation) Rules, 1981 amended 1992 and 2003	• Rules for conversion / use of forest lands for non-forest purposes	Ministry of Environment & Forest (at central level) Forest Department (at State-level)	- Applicable to subprojects located in forest lands; - Prior permission for use of forest land for project proposes from Ministry of Environment and Forest (MoEF)
b.	Guidelines for diversion of forest lands for non-forest purpose	• Provided operational guidelines under the above rules for conversion / use of forest lands for non-forest purposes	Ministry of Environment & Forest (at central level) Forest Department (at State-level)	- Approval of Ministry of Environment and Forest (MoEF) for any acquisition of forest land - Applicable to subprojects located in forests - Application for use of forest of land to be made to Forest Department, - Project proponent to identify non-forest land which is to be transferred to Forest Department for taking up afforestation program - Net Present Value (NPV) of the forest land to be used, cost of afforestation, tree cutting, etc., as determined by Forest Department, is to be paid to the Forest Department -
9.	Ancient Monuments and Archaeological Sites and Remains Acts, 1958, its Rules,1959 and notification, 1992	• Act for better and effective preservation of the archaeological wealth of the country, on par with constitutional provisions • This Act provides for the preservation of ancient and historical monuments and archaeological sites and remains of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects.	Archaeological Survey of India (ASI)	- Applicable to subprojects located in proximity with the Protected Monuments/ Sites - No excavation/ construction work is allowed within 300 m boundary of the protected monument - Requires prior permission of ASI for taking works within 500 m of boundary of the

	Legislation	Description	Regulator	Requirements for the Project
				Protected Monuments
10.	Contract Labour (Regulation and Abolition) Act, 1970	• The Act provides for certain welfare measures to be provided by the Contractor to contract labor and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labor.	Chief Labour Commissioner, Government of Rajasthan	- Applicable to all construction works in the project - Contractor should obtain licensee - RUIDFCO to obtain Certificate of Registration, Department of Labour, Government of Rajasthan as principle employer - Contractor to obtain license from designated labour officer
	The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979	• The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The inter-state migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc	Chief Labour Commissioner, Government of Rajasthan	- Contractor shall register with Labour Department, GOR if Inter-state migrant workmen are engaged - Adequate and appropriate amenities and facilities shall be provided to workers - are required to be provided certain facilities - housing, medical aid, traveling expenses from home and back, etc
11.	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996	• All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under this Act. All such establishments are required to pay Cess at rate not exceeding 2% of the cost of construction as may be notified by the Government. The employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. The employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government	Chief Labour Commissioner, Government of Rajasthan	- Applicable to any building or other construction work and employ 10 or more workers - Cess should be paid at rate not exceeding 2% of the cost of construction as may be notified - The employer is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. -The employer to whom the Act applies has to obtain a registration certificate from the Registering Officer
12	The Child	• The Act prohibits employment of children below	As above	- No child labour shall

	Legislation	Description	Regulator	Requirements for the Project
.	Labour (Prohibition and Regulation) Act, 1986	14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labor is prohibited in Building and Construction Industry.		be employed
13.	Minimum Wages Act, 1948	• The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employment.	As above	- Applicable to all construction works in the project - All construction workers should be paid not less than the prescribed minimum wage
14.	Workmen Compensation Act, 1923	• The Act provides for compensation in case of injury by accident arising out of and during the course of employment.	As above	- Compensation for workers in case of injury by accident
15.	Equal Remuneration Act, 1979	• The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees in the matters of transfers, training and promotions etc. •	As above	- Equal wages for work of equal nature to male and female workers
16.	The Rajasthan Monuments, Archaeological Sites and Antiquities Act, 1961 The Rajasthan Monuments, Archaeological Sites and Antiquities (amendment) Act 2007	• State-level Act enacted inline with the Central Act (Ancient Monuments and Archaeological Sites & Remains Acts, 1958) • Empowers state government to declare monuments/sites/antiquities as “protected • Empowers for making rules to protection and conservation of protected monuments, areas, antiquities	Department of Archaeology and Museums, Government of Rajasthan	- An Act to provide for the preservation, protection, upkeep, maintenance, acquisition and regulation of, and control over, ancient and historical monuments, archaeological sites and antiquities in Rajasthan - Under the Act, state government declared various monuments, sites etc as protected monument/sites, and called it as ‘protected area’
a.	the Rajasthan Monuments, Archaeological Sites and Antiquities Rules 1968	• Rules for protection and conservation of protected monuments, areas, antiquities” • Rules provides for access, and construction and other operations in protected area-	Department of Archaeology and Museums, Government of Rajasthan	- Any construction/excavation work in the ‘protected area’ requires priori permission of Government of Rajasthan -Application under the Rules, shall be submitted to Director, State Archeological Department, atleast 3 months prior to the work - Department provides conditional permission, including time for completion, procedures to be followed during

	Legislation	Description	Regulator	Requirements for the Project
				the work and for chance finds etc.
17	Rajasthan State Environment Policy, 2010 including And Rajasthan Environment Mission and Climate Change Agenda for Rajasthan (2010-14)	• Follows the National Environment Policy, 2006 and core objectives and policies are: Conserve and enhance environmental resources; assure environmental sustainability of key economic sectors; and, improve environmental governance and capacity building • it recommends specific strategies and actions to address the key environmental issues: water resources, desertification and land degradation, forest and biodiversity, air quality, climate change: adoption and mitigation, mining, industry, tourism, energy, urban development, etc • establishment of Environment Mission under the chairpersonship of the Chief Minister and a Steering Committee under the chairpersonship of Chief Secretary, Government of Rajasthan • Tasks force set up for six key areas	-	- Project implementation should adhere to the policy aims of: conservation & enhancement of environmental resources, integration of environmental concerns into projects/plans, and capacity building in environmental management - under water sector, major concerns, as the policy notes, are: huge water losses & wastage, declining water availability, pollution - Relevant recommendations for the project include: control of losses, integrated water resources management, control of raw water pollution, reuse and recycling -avoid/minimize use of forest lands With reference to Climate change adoption & mitigation following should be considered in the project: - diminishing flows in surface water bodies, and groundwater depletion, and revival traditional water bodies as water sources (lakes/tanks) - equal stress on demand side management in water -minimize energy use - design energy efficiency systems-
18	Rajasthan Mineral Concession Rules, 1960 (as Amended upto 2000) The Rajasthan Minor Mineral	• development, regulation, and control of mining activities • Rules stipulate conduct of “Systematic, Scientific, and Environment Friendly Mining” , through various procedures	Department of Mines and Geology, GOR	- Construction material for the project shall be obtained only from quarries licensed by Department of Mines and Geology, GOR - preparation of Mining Plan, Environmental

	Legislation	Description	Regulator	Requirements for the Project
	Concession Rules, 1986 (as Amended up to 2013)			Management Plan, Consent of RPCB, and environmental safeguards to be implemented
19	Rajasthan Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Rules, 2009	• Rules established under the central Act (the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996) • Applicable to all the establishments who carry on any building or other construction work and employ 10 or more workers • All such establishments are required to pay Cess at rate 2% of the cost of construction • Provide for workers safety measures and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. • Employer to obtain a registration certificate from the state government's registering officer	Chief Labour Commissioner, Government of Rajasthan	- Applicable for all project construction activities - To be complied by the contractor during the construction, and registered with the Labour Department - Rules stipulates hours of work, night work, welfare, payment of wages, registers and records, facilities to be provided, and safety & health
20	Rules/bye-laws of respective jurisdictional agencies to work on public roads including excavation, traffic diversion and public inconvenience	• The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996	Respective department/ULBs	- Prior permission from the road owner (PWD, NHAI, ULB, etc) for cutting/ laying of pipes/sewers, etc - Prior permission for work along the public thoroughfares from the local authorities (local administration (ULB) and traffic police

ASI = Archeological Survey of India' CFE = Consent for Establishment; CFO = Consent for Operation; CPCB = Central Pollution Control Board; EC = Environmental Clearance; EIA = Environmental Impact Assessment; GOI = Government of India; GOR = Government of Rajasthan; MOEF = Ministry of Environment and Forest; MSWM = Municipal Solid Waste Management NEP = National Environment Policy; NHAI = National Highways Authority of India; NPV = Net Present Value; PWD = Public Works Department; STP = Sewage Treatment Plant; RPCB = Rajasthan Pollution Control Board; RUIDFCO = Rajasthan Urban Infrastructure Development and Finance Corporation; ULB = Urban Local Body

APPENDIX 2: ENVIRONMENTAL STANDARDS

General Standards for Discharge of Environmental Pollutants (Wastewater)

S. No.	Parameter	Inland surface water	Public sewers	Land for irrigation
	2		3	
	.	(a)	(b)	(c)
1	Suspended solids mg/l, max.	100	600	200
2	Particle size of suspended solids	shall pass 850 micron IS Sieve	-	-
3	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
4	Temperature	shall not exceed 5oC above the receiving water temperature		
5	Oil and grease, mg/l max,	10	20	10
6	Total residual chlorine, mg/l max	1.0	-	-
7	Ammonical nitrogen (as N),mg/l, max.	50	50	-
8	Total kjeldahl nitrogen (as N);mg/l, max. mg/l, max.	100	-	-
9	Free ammonia (as NH3), mg/l,max.	5.0	-	-
10	Biochemical oxygen demand (3 days at 27oC), mg/l, max.	30	350	100
11	Chemical oxygen demand, mg/l, max.	250	-	-
12	Arsenic(as As).	0.2	0.2	0.2
13	Mercury (As Hg), mg/l, max.	0.01	0.01	-
14	Lead (as Pb) mg/l, max	0.1	1.0	-
15	Cadmium (as Cd) mg/l, max	2.0	1.0	-
16	Hexavalent chromium (as Cr + 6),mg/l, max.	0.1	2.0	-
17	Total chromium (as Cr) mg/l, max.	2.0	2.0	-
18	Copper (as Cu)mg/l, max.	3.0	3.0	-
19	Zinc (as Zn) mg/l, max.	5.0	15	-
20	Selenium (as Se)	0.05	0.05	-
21	Nickel (as Ni) mg/l, max.	3.0	3.0	-
22	Cyanide (as CN) mg/l, max.	0.2	2.0	0.2
23	Fluoride (as F) mg/l, max.	2.0	15	-
24	Dissolved phos- phates (as P),mg/l, max.	5.0	-	-
25	Sulphide (as S) mg/l, max.	2.0	-	-
26	Phenolic compounds (as C6H50H)mg/l, max.	1.0	5.0	-
27	Radioactive materials: (a) Alpha emitters micro curie mg/l, max. (b)Beta emittersmicro curie mg/l	10^{-7} 10^{-6}	10^{-7} 10^{-6}	10^{-8} 10^{-7}
28	Bio-assay test	90% suivival of fish after 96 hours in 100% effluent	90% suivival of fish after 96 hours in 100% effluen	90% suivival of fish after 96 hours in 100% effluen
29	Manganese	2 mg/l	2 mg/l	-
30	Iron (as Fe)	3mg/l	3mg/l	-
31	Vanadium (as V)	0.2mg/l	0.2mg/l	-
32	Nitrate Nitrogen	10 mg/l	-	-

Environmental Standards for Common Effluent Treatment Plants (CETP)
(as per the Environment (Protection) Rules, 1986 and as amended till date)

A. Inlet Effluent Quality for CETP

Parameter	Concentration in mg/l
pH	5.5 – 9.0
Temperature °C	45
Oil & Grease	20
Phenolic Compounds (as C_6H_5OH)	5.0
Ammonical Nitrogen (as N)	50
Cynide (as CN)	2.0
Chromium hexavalent (as Cr+6)	2.0
Chromium (total)(as Cr)	2.0
Copper (as Cu)	3.0
Lead (as Pb)	1.0
Nickel (as Ni)	3.0
Zinc (as Zn)	15
Arsenic (as As)	0.2
Mercury (as Hg)	0.01
Cadmium (as Cd)	1.0
Selenium (as Se)	0.05
Fluoride (as F)	15
Boron (as B)	2.0
Radioactive Materials	
Alpha emitters, Hc/ml	10-7
Beta emitters, He/ml	10-8

Note: 1. These Standards apply to the small scale industries, i.e. total discharge upto 25 KL/Day. 2. For each CETP and its constituent units, the State Board will prescribe standards as per the local needs and conditions; these can be more stringent than those prescribed above. However, in case of clusters of units, the State Board with the concurrence of CPCB in writing, may prescribe suitable limits.

B. Treated Effluent Quality of CETP

Parameter	**Into inland surface waters**	**On land for Irrigation**	**Into Marine Coastal areas**
	(a)	(b)	(c)
pH	5.5 - 9.0	5.5 – 9.0	5.5 – 9.0
BOD1[3days at 27°C]	30	100	100
Oil & Grease	10	10	20
Temperature	Shall not exceed 40°C in any section of the stream within 15 metres downstream from the effluent outlet	-	45°C at the point of discharge.
Suspended Solids	100	200	a) For process waste water – 100 b) For cooling water effluents 10 percent above total suspended

			matter of effluent cooling water
Dissolved Solids (inorganic)	2100	2100	-
Total residual chlorine	1.0	-	1.0
Ammonical nitrogen(as N)	50	-	50
Kjeldahl nitrogen (as N)	100	-	100
Chemical Oxygen Demand	250	-	250
Arsenic (as As)	0.2	0.2	0.2
Mercury (as Hg)	0.01	-	0.01
Lead (as Pb)	0.1	-	1.0
Cadmium (as Cd)	1.0	-	2.0
Total Chromium (asCr)	2.0	-	2.0
Copper (as Cu)	3.0	-	3.0
Zinc (as Zn)	5.0	-	15
Selenium (as Se)	0.05	-	0.05
Nickel (as Ni)	3.0	-	5.0
Boron (as B)	2.0	2.0	-
Percent Sodium	-	60	-
Cynide (as CN)	0.2	0.2	0.2
Chloride (as Cl)	1000	600	-
Fluoride (as F)	2.0	-	15
Sulphate (as SO_4)	1000	1000	-
Sulphide (as S)	2.8	-	5.0
Pesticides	Absent	Absent	Absent
Phenolic compounds (as C_6H_5OH)	1.0	-	5.0

Concentration in mg/l except pH & Temperature

Note: All efforts should be made to remove colour and unpleasant odour as far as possible.

1 Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27oC) wherever BOD 5 days 20oC occurred.

National Ambient Air Quality Standards

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual*	50	20	- Improved West and Gaeke
		24 hours**	80	80	-Ultraviolet fluorescence
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual*	40	30	- Modified Jacob & Hochheiser (Na-Arsenite)
		24 hours**	80	80	- Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM_{10} $\mu g/m^3$	Annual*	60	60	- Gravimetric - TOEM
		24 hours**	100	100	- Beta attenuation
4	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	- Gravimetric - TOEM
		24 hours**	60	60	- Beta attenuation
5	Ozone (O_3) $\mu g/m^3$	8 hours**	100	100	- UV photometric - Chemilminescence
		1 hour**	180	180	- Chemical Method
6	Lead (Pb) $\mu g/m^3$	Annual*	0.50	0.50	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours**	02	02	- Non Dispersive Infra Red (NDIR) spectroscopy
		1 hour**	04	04	
8	Ammonia (NH_3) $\mu g/m^3$	Annual*	100	100	-Chemiluminescence
		24 hours**	400	400	-Indophenol blue method
9	Benzene (C_6H_6) $\mu g/m^3$	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m^3	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m^3	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m^3	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

Ambient Noise Standards

Area Code	Category of Area / Zone	Limits in dB(A) Leq*	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note:- 1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specified period.

Surface Water Quality Classification Criteria

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20°C 2mg/l or les
Outdoor bathing (Organised)	B	Total Coliforms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH betwwn 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l

Source: Central Pollution Control Board
MPN = Most Probable Number

Vehicle Exhaust Emission Norms

1. Passenger Cars

Norms	CO(g/km)	HC+ NOx(g/km)
1991Norms	14.3-27.1	2.0(Only HC)
1996 Norms	8.68-12.40	3.00-4.36
1998Norms	4.34-6.20	1.50-2.18
India stage 2000 norms	2.72	0.97
Bharat stage-II	2.2	0.5
Bharat Stage-III	2.3	0.35(combined)
Bharat Stage-IV	1.0	0.18(combined)

2. Heavy Diesel Vehicles

Norms	CO(g/kmhr)	HC (g/kmhr)	NOx (g/kmhr)	PM(g/kmhr)
1991Norms	14	3.5	18	-
1996 Norms	11.2	2.4	14.4	-
India stage 2000 norms	4.5	1.1	8.0	0.36
Bharat stage-II	4.0	1.1	7.0	0.15
Bharat Stage-III	2.1	1.6	5.0	0.10
Bharat Stage-IV	1.5	0.96	3.5	0.02

Source: Central Pollution Control Board

CO = Carbon Monixide; g/kmhr = grams per kilometer-hour; HC = Hydrocarbons; NOx = oxides of nitrogen; PM = Particulates Matter

APPENDIX 3: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact Field	Anticipated Impact on the Environment	Mitigation Measures
Design phase		
Environmental clearances	Environmental clearance (EC) is required for the CETP component in Pali Other projects require other approvals/consents (Section II of the EARF) in order to implement the project. If not pursued on time, this can delay the project. Necessary consent/permits have to be obtained and must follow the guidelines issued by the concerned authorities.	- Conduct EIA study as per the ToR approved by MoEF - EIA study should be conducted by an NABET accredited EIA consultant - EC should be in place prior to award of bid
Construction phase		
Air quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction, resulting in dust and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons	- Employ dust suppression measures - Ensure that all vehicles and equipment used in construction are in good condition and have valid Pollution under control (PUC) certificates
Surface water quality	Mobilization of settled silt materials, runoff from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality.	- Rain in Pali is very limited, so impact is negligible. - However, at CETP, work area should be confined and no run off should be from CETP areas should allowed to enter into open drains
Noise levels	Increase in noise level due to earth-moving and excavation equipment and the transportation of equipment, materials, and people. Operation of heavy equipment and machines in the nighttime can cause nuisance to the surrounding environment/ people.	- Minimize/avoid use of heavy noisy equipment - do not conduct noisy work in the night - Notify local people about the noisy work and timings in advance
Ecological resources	Felling of the trees affects terrestrial ecological balance.	- No trees should be cut for the project
Sources of materials	Extraction of materials can disrupt natural land contours and vegetation, resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and waterlogging, and water pollution.	- Obtain construction material only from quarries approved by Geology and Mines Department of GOR
Existing infrastructure, facilities, and utilities	Telephone lines, electric poles and wires, and water pipes (old) existing within right-of-way (RoW) require shifting without disruption to services. Health risk due to closure of existing water supply, such as community tanks, water stations, and privately-owned small water pipes	-CETP work is confined to a site within the industrial area, so impacts are negligible - Laying of water pipes (for supply of treated wastewater for reuse by industries), may disrupt the services. Liaise with utility agencies and municipality to avoid disruption - Make alternative arrangements in case of temporary unavoidable disruption
Construction work camps, stockpile areas, storage areas, and disposal areas	Locations may cause encroachment/impact either directly or indirectly on adjacent environments. It may also include impacts on the people who might lose their homes or livelihoods due to the project activities. Temporary air and noise pollution from machine operation, and water pollution from storage and use of fuels, oils, solvents, and lubricants. This may cause conflict with residents and problem of waste disposal and disruptions to residents.	- Prioritize areas within or nearest possible vacant space in the project location; - For excess spoil disposal, ensure (a) site shall be selected preferably from barren, infertile lands. Debris disposal site shall be minimum 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies. - Proper waste management program (solid and liquid) that will be implemented at the workers' camps to avoid contributing further to the waste problems of the project sites.

Impact Field	Anticipated Impact on the Environment	Mitigation Measures
Construction waste	Excavation works, cleaning of drainages, and trenching will produce additional amounts of waste soil. Accumulation of debris waste materials and stockpiling can cause environmental visual pollution.	-Ensure appropriate disposal of waste and debris from construction area - Dispose only at sites approved by PIU
Social and cultural resources	Sites of social/cultural importance (schools, hospitals, religious places, tourism sites) may be disturbed by noise, dust, vibration, and impeded access. Ground disturbance can uncover and damage archaeological and historical remains.	- Consult department of archeology and museums prior to start of work - Develop a protocol for construction contractors for chance finds.
Landscape and aesthetics	Solid wastes as well as excess construction materials create unacceptable aesthetic conditions.	- waste and debris should be disposed only at identified sites
Traffic	Traffic flow will be disrupted if routes for delivery of construction materials and temporary blockages during construction activities are not planned and coordinated.	- Prepare traffic management plan, and plan activities in consultation with the local traffic police
Accessibility	Traffic problems and conflicts in RoW. Roads, people, and businesses may be disturbed by repeated trenching.	- provide alterative roads for road users in case of road closures - provide prior information
Income	Impede the access of residents and customers to nearby shops. Shops may lose business temporarily.	- access should be not closed completely - in case of complete closure, provide assistance as per the Resettlement Plan
Occupational health and safety	Occupational hazards can arise during construction (e.g., trenching, falling objects, etc.). These can also arise from hazardous working condition at the under operation CETPs. Risk of exposing to carcinogenic dust due to presence of Asbestos Cement (AC) pipes in existing water supply, if distributed during excavation	- Assess the condition of site during the detailed design - Contractor should employ an Environment, Health and Safety (EHS) Expert at the site regularly - Awareness and training program should be conducted to workers and staff - provide necessary personal protection equipment including gloves, masks, boots, and oxygen cylinders for use in case of emergency - provide first aid facility, and doctor-on-call, and tie with local hospital is necessary - prepare an emergency response plan for construction phase - display prominently at the site about the emergency procedures - PWPCRF should also employ an EHS Expert for operation phase
Community health and safety	Community hazards can arise during construction (e.g., open trenches, air quality, noise, falling objects, etc) and also especially due to any emissions from CETP sites. Trenching on concrete roads using pneumatic drills will cause noise and air pollution. Traffic accidents and vehicle collision with pedestrians during material and waste transportation Risk of exposing to carcinogenic dust due to presence of AC pipes	- Ensure necessary measure to minimize air emissions from CETP and other construction sites - Prepare an emergency response plan - Create awareness and provide prior information about the work - do not work with AC pipes; existing AC pipes should be left untouched in the ground
Post-construction phase		
Clean-up operations, restoration and rehabilitation	Impacts on social or sensitive receptors when post-construction requirements are not undertaken, e.g. proper closure of camp, disposal of solid waste, and restoration of land after project construction.	- Ensure that all construction sites are cleaned up and restored to original or better position - Ensure that all accumulated wastes/debris are disposed appropriately

Impact Field	Anticipated Impact on the Environment	Mitigation Measures
Operation and maintenance phase		
Consent for operation RPCB for Common Effluent Treatment Plant	CETPs are classified as "Red CateGORy" by RPCB; requires consent for operation (CFO) to start operation; CFO is to be renewed every 1 or 3 years with a fee payable approximately 1/3rd of fee for CFE	-Obtain CFO before start of operation - Ensure that all CFE conditions are met in design and construction
General maintenance	Maintenance activities may cause disturbance to sensitive receptors, dust, and increase in noise level.	- Employ dust suppression and noise minimization measures - provide prior public information
Economic development	Impediments to residents and businesses during routine maintenance	- access should be not closed completely - in case of complete closure, provide assistance as per the Resettlement Plan
Health and safety	Exposure of worker and surrounding community to hazardous conditions at CETPs,, exposure to dangerous chemicals Danger of operations and maintenance-related injuries Safety of workers and general public must be ensured. Poor waste management practices and unhygienic conditions at the improved facilities can breed diseases. Standing water due to inadequate storm water drainage systems and inadequate waste management practices pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies, and rats.	- PWPCRF should also employ an EHS Expert for operation phase continuously - Regular awareness and training programs should be conducted to workers and staff - provide necessary personal protection equipment including gloves, masks, boots, and oxygen cylinders for use in case of emergency - provide first aid facility, and doctor-on-call, and tie with local hospital is necessary - prepare an Emergency Response Plan for CETP operation - include ERP design in the scope of work of CETP designer/contractor including preparation of manual for operation of tertiary treatment plant and training to the workers and staff - Disclose ERP to local residents and workers - display prominently at the site about the emergency procedures - Create awareness among the local public about the health and safety risks, and procedures to be followed during emergency situations - conduct mock drills - Hazardous waste/sludge from CETP should be transported safely to the TSDF following all provisions under HW Rules, 2009 - Necessary training and personal protection equipment shall be provided to staff handling and transporting waste - Sludge should not be handled manually - follow the CPCB Guidelines for Transportation of Hazardous Waste, 2006
Solid waste	Solid waste residuals which may be generated during operations and maintenance activities. Sludge will be generated from sewage treatment plants and common effluent treatment plants. CETPs sludge may contain hazardous elements, and therefore needs to be disposed safely. Biosolids will be generated from septage treatment plants.	-Sludge and solid waste generated from CETP should be handled, stored and disposed safely as per the HW Rules, 2009 - Use existing hazardous waste Treatment, Storage, Disposal Facility (TSDF) approved by RPCB for disposal of hazardous waste from CETP

Impact Field	Anticipated Impact on the Environment	Mitigation Measures
		- Non-hazardous waste should be disposed of safely at the municipal landfill
Hazardous chemicals	CETP operation involves the use of chemicals for various processes	-Emergency response plan (ERP) suggested above shall include provisions for handling hazardous chemicals - Provide necessary training to the staff - Provide necessary PPEs

AC = Asbestos Cement; CETP = Common Effluent Treatment Plant; CFO = Consent for Establishment; CFE = Consent for Operation; ROW = Right of Way; RPCB = Rajasthan Pollution Control Board

APPENDIX 4: RAPID ENVIRONMENTAL ASSESSMENT CHECKLISTS

Wastewater Treatment

SCREENING QUESTIONS	Yes	No	REMARKS
B. Project Siting Is the project area…			
▪ Densely populated?			
▪ Heavy with development activities?			
▪ Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site			
• Protected Area			
• Wetland			
• Mangrove			
• Estuarine			
• Buffer zone of protected area			
• Special area for protecting biodiversity			
• Bay			
A. 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			
▪ 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?			
▪ 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?			
▪ social conflicts between construction workers from other areas and community workers?			
▪ 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 sewage flow and exposure to pathogens in sewage and sludge?			
▪ large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?			
▪ social conflicts between construction workers from other areas and community workers?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
▪ community safety risks due to both accidental and natural hazards,			

SCREENING QUESTIONS	Yes	No	REMARKS
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 4A below)			
▪ 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 4A

Environment	Natural Hazards and Climate Change	Remarks
Arid/Semi-arid and desert environments	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10-30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other geophysical hazards may also occur in these environments.	
Humid and sub-humid plains, foothills and hill country	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10-30% projected decrease in water availability in next 40 years; projected increase in droughts, heatwaves and floods; increased erosion of loess-mantled landscapes by wind and water; increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.	
River valleys/deltas and estuaries and other low-lying coastal areas	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.	
Small islands	Small islands generally have land areas of less than 10,000km2 in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge,	

Environment	Natural Hazards and Climate Change	Remarks
	tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.	
Mountain ecosystems	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.	
Volcanic environments	Recently active volcanoes (erupted in last 10,000 years – see www.volcano.si.edu). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.	

Appendix 5: OUTLINE OF AN ADB ENVIRONMENTAL ASSESSMENT REPORT

An environmental assessment report is required for all environment cateGORy A and B projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. A typical EIA report contains the following major elements, and an IEE may have a narrower scope depending on the nature of the project. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown.

A. Executive Summary

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

B. Policy, Legal, and Administrative Framework

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

C. Description of the Project

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

D. Description of the Environment (Baseline Data)

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

E. Anticipated Environmental Impacts and Mitigation Measures

This section predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media [Appendix 2, para. 6]), and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; identifies mitigation measures and any residual negative impacts that cannot be mitigated; explores opportunities for enhancement; identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and examines global, transboundary, and cumulative impacts as appropriate.

F. Analysis of Alternatives

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

G. Information Disclosure, Consultation, and Participation

This section:

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

H. Grievance Redress Mechanism

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

I. Environmental Management Plan

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

(i) Mitigation:

- identifies and summarizes anticipated significant adverse environmental impacts and risks;
- describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and
- provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

(ii) Monitoring:

- describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and
- describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

(iii) Implementation arrangements:

- specifies the implementation schedule showing phasing and coordination with overall project implementation;
- describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and
- estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.

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

J. Conclusion and Recommendation

This section provides the conclusions drawn from the assessment and provides recommendations**.**

Appendix 6: GENERIC STRUCTURE OF EIA DOCUMENT, EIA NOTIFICATION 2006

S.No	EIA Report Structure & Contents
1	**Introduction**
.	• Purpose of the report • Identification of project & project proponent • Brief description of nature, size, location of the project and its importance to the country, region • Scope of the study – details of regulatory scoping carried out (As per Terms of Reference)
2	**Project Description**
.	• Condensed description of those aspects of the project (based on project feasibility study), likely to cause environmental effects. Details should be provided to give clear picture of the following: • Type of project • Need for the project • Location (maps showing general location, specific location, project boundary & project site layout) • Size or magnitude of operation (incl. Associated activities required by or for the project • Proposed schedule for approval and implementation • Technology and process description • Project description. Including drawings showing project layout, components of project etc. Schematic representations of the feasibility drawings which give information important for EIA purpose • Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions, or other EIA requirements (as required by the scope) • Assessment of New & untested technology for the risk of technological failure
3	**Description of the Environment**
.	• Study area, period, components & methodology • Establishment of baseline for valued environmental components, as identified in the scope • Base maps of all environmental components
4	**Anticipated Environmental Impacts & Mitigation Measures**
.	• Details of Investigated Environmental impacts due to project location, possible accidents, project design, project construction, regular operations, final decommissioning or rehabilitation of a completed project • Measures for minimizing and / or offsetting adverse impacts identified • Irreversible and Irretrievable commitments of environmental components • Assessment of significance of impacts (Criteria for determining significance, Assigning significance) • Mitigation measures
5	**Analysis of Alternatives (Technology & Site)**
.	• In case, the scoping exercise results in need for alternatives: • Description of each alternative • Summary of adverse impacts of each alternative • Mitigation measures proposed for each alternative and • Selection of alternative
6	**Environmental Monitoring Program**
.	• Technical aspects of monitoring the effectiveness of mitigation measures (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget & procurement schedules)
7	**Additional Studies**
.	• Public Consultation • Risk assessment • Social Impact Assessment. R&R Action Plans
8	**Project Benefits**
.	• Improvements in the physical infrastructure • Improvements in the social infrastructure • Employment potential –skilled; semi-skilled and unskilled • Other tangible benefits
9	**Environmental Cost Benefit Analysis**
.	If recommended at the Scoping stage
10	**EMP**
.	• Description of the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored, after approval of the EIA

11	**Summary & Conclusion** **(This will constitute the summary of the EIA Report)**
	• Overall justification for implementation of the project • Explanation of how, adverse effects have been mitigated
12	**Disclosure of Consultants engaged**
.	• The names of the Consultants engaged with their brief resume and nature of Consultancy rendered

APPENDIX 7: SAMPLE SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT TEMPLATE

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

I. Introduction

- Overall project description and objectives
- Description of subprojects
- Environmental cateGORy of the subprojects
- Details of site personnel and/or consultants responsible for environmental monitoring
- Overall project and subproject progress and status

No.	Subproject Name	Status of Subproject				List of Works	Progress of Works
		Design	Pre-construction	Construction	Operational Phase		
		☐	☐	☐	☐		
		☐	☐	☐	☐		
		☐	☐	☐	☐		

II. Compliance status with national/state/local statutory environmental requirements

No.	Subproject Name	Statutory Environmental Requirements	Status of Compliance	Action Required

III. Compliance status with environmental loan covenants

No. (List Schedule and Paragraph Number of Loan Agreement)	Covenant	Status of Compliance	Action Required

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

a. Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including environmental site inspection reports.

b. There should be reporting on the following items which can be incorporated in the checklist of routine environmental site inspection reports, followed with a summary in the semi-annual report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection need 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 there designated areas for concrete works and refueling;
- are there 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;
- are there any dewatering activities, if yes, where is the water being discharged;
- how are the stockpiles being managed;
- how are solid and liquid waste being handled on-site;
- review of the complaint management system; and
- checking if there are any activities being undertaken outside 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 EMP

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

V. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

Brief description on the approach and methodology used for environmental monitoring of each subproject

VI. 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)		
			PM_{10} µg/m^3	**SO_2 µg/m^3**	**NO_2 µg/m^3**

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM_{10} µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3

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)	
			Daytime	Nighttime

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Monitoring Results)	
			Daytime	Nighttime

VII. 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**

APPENDIX 8: CONSTRUCTION SITE CHECKLIST FOR EMP MONITORING

Project Name: RUSDP **Name of the Package:** **Contractor:**	**Yes (√) No (x)**
Monitoring Details: _____	
EHS supervisor appointed by contractor and available on site	
Construction site management plan (spoils, safety, material, schedule, equipment etc.,) prepared	
Traffic management plan prepared	
Dust is under control	
Excavated soil properly placed within minimum space	
Construction area is confined; no traffic/pedestrian entry observed	
Surplus soil/debris/waste is disposed without delay	
Construction material (sand/gravel/aggregate) brought to site as & when required only	
Tarpaulins used to cover sand & other loose material when transported by vehicles	
After unloading , wheels & undercarriage of vehicles cleaned prior to leaving the site	
No AC pipes disturbed/removed during excavation	
No chance finds encountered during excavation	
Work is planned in consultation with traffic police	
Work is not being conducted during heavy traffic	
Work at a stretch is completed within a day (excavation, pipe laying & backfilling)	
Pipe trenches are not kept open unduly	
Road is not completely closed; work is conducted on edge; at least one line is kept open	
Road is closed; alternative route provided & public is informed, information board provided	
Pedestrian access to houses is not blocked due to pipe laying	
Spaces left in between trenches for access	
Wooden planks/metal sheets provided across trench for pedestrian	
No public/unauthorized entry observed in work site	
Children safety measures (barricades, security) in place at work sites in residential areas	
Prior public information provided about the work, schedule and disturbances	
Caution/warning board provided on site	
Guards with red flag provided during work at busy roads	
Workers using appropriate PPE (boots, masks, gloves, helmets, ear muffs etc)	
Working conditions at CETP are assessed by EHS expert and ensure that there is no risk	
Workers conducting or near heavy noise work is provided with ear muffs	
Contractor is following standard & safe construction practices	
Deep excavation is conducted with land slip/protection measures	
First aid facilities are available on site and workers informed	
Drinking water provided at the site	
Toilet facility provided at the site	
Separate toilet facility is provided for women workers	
Workers camps are maintained cleanly	
Adequate toilet & bath facilities provided	
Contractor employed local workers as far as possible	
Workers camp set up with the permission of PIU	
Adequate housing provided	
Sufficient water provided for drinking/washing/bath	
No noisy work is conducted in the nights	
Local people informed of noisy work	
No blasting activity conducted	
Pneumatic drills or other equipment creating vibration is not used near old/risky buildings	

APPENDIX 9: SAMPLE GRIEVANCE REGISTRATION FORM

(To be available in Hindi and English)

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

Date	**Place of registration**	**Project Town** **Project:**			
Contact information/personal details					
Name		**Gender**	* Male * Female	**Age**	
Home address					
Place					
Phone no.					
E-mail					
Complaint/suggestion/comment/question Please provide the details (who, what, where, and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of official registering grievance)	
Mode of communication: Note/letter E-mail Verbal/telephonic	
Reviewed by: (Names/positions of officials reviewing grievance)	
Action taken:	
Whether action taken disclosed:	Yes No
Means of disclosure:	