

Updated Environmental Assessment and Review Framework

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IND: Kolkata Environmental Improvement Investment Program – Tranche 3

Prepared by the Kolkata Municipal Corporation, Government of West Bengal for Asian Development Bank. This is the updated version of the draft originally posted on May 2012 available on <http://www.adb.org/sites/default/files/project-document/73258/42266-013-ind-earf.pdf>.

CURRENCY EQUIVALENTS

(as of 20 July 2018)

Currency Unit	=	Indian rupee (₹)
₹1.00	=	\$0.014 014
\$1.00	=	₹68.9494

ABBREVIATIONS

ADB	– Asian Development Bank
CITES	– Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	– Convention on Migratory Species of Wild Animals
CPCB	– Central Pollution Control Board
CTE	– consent to establish
CTO	– consent to operate
DSC	– design and supervision consultant
EAC	– environmental appraisal committee
EARF	– environmental assessment and review framework
EIA	– environmental impact assessment
EKW	– East Kolkata Wetlands
EMP	– environmental management plan
GOWB	– Government of West Bengal
GRM	– grievance redress mechanism
GRC	– grievance redress committee
IEE	– initial environmental examination
IUCN	– International Union for the Conservation of Nature
KEIP	– Kolkata Environment Improvement Project
KEIIP	– Kolkata Environmental Improvement Investment Program
KMC	– Kolkata Municipal Corporation
MFF	– multitranches financing facility
MOEFCC	– Ministry of Environment, Forest and Climate Change
NEERI	– National Environmental Engineering and Research Institute
NIOSH	– National Institute of Occupational Safety and Health
O&M	– operation and maintenance
PMC	– program management consultant
PMU	– program management unit
REA	– rapid environmental assessment
ROW	– right-of-way
SAR	– subprojects appraisal reports
S&D	– sewerage and drainage
SEAC	– State Environment Assessment Committee
SEIAA	– State Environmental Impact Assessment Authority
SMU	– safeguard monitoring units
STP	– sewage treatment plant
SPS	– Safeguards Policy Statement
TOR	– terms of reference
WBPCB	– West Bengal Pollution Control Board
WTP	– water treatment plant

WEIGHTS AND MEASURES

dB(A)	– decibel
km	– kilometer

km ²	–	square kilometer
kW	–	kilowatt
m	–	meter
mg/l	–	milligram per liter
microcurie/ml	–	microcurie per milliliter
MLD	–	million liters per day
NTU	–	nephelometric turbidity unit
ng/m ³	–	nanogram per cubic meter
ppmv	–	parts per million by volume
µg/m ³	–	microgram per cubic meter

NOTE

In this report, "\$" refers to United States dollar.

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I. INTRODUCTION

A. Overview

1. The city of Kolkata is the seventh largest metropolis in India and had 4.5 million residents in 2011. It is the largest city in the state of West Bengal and has been the biggest contributor to West Bengal's gross state domestic product. The continuous improvement in the city's urban environment is necessary to increase labor productivity through better health status of the urban population, especially when it has been experiencing lower population growth. There have been, however, geographical disparities in access and quality of the water supply and sewerage services, because the Kolkata Municipal Corporation (KMC), an urban local body with a mandate to provide these services under the KMC Act of 1980, has an aging water supply system, and has inadequate sewer coverage in the city's peripheral areas.¹ The Asian Development Bank (ADB) loans have assisted KMC in the expansion of the sewerage coverage through the Kolkata Environmental Improvement Project (KEIP) since 2000.² The Kolkata Environmental Improvement Investment Program (KEIIP) will help KMC not only to continue sewer network expansion on a larger scale, but also gradually improve efficiency in water supply operations, which will enable KMC to generate operating surplus for capital investment in water supply and sewerage.³

2. On 26 September 2013, ADB approved the provision of loans under a multitranche financing facility (MFF) for KEIIP for an aggregate amount not exceeding \$400 million. The impact of KEIIP will be in the nature of access to water supply and sanitation in the service areas of KMC improved. The outcome will be sanitation service quality, operational sustainability and climate resilience in selected areas of KMC improved. Thus, KEIIP has two outputs: (i) sewerage and drainage (S&D) network extension to peripheral areas continued; and (ii) operational capacity for urban services strengthened.

3. KMC is KEIIP's executing agency. A program management unit (PMU) created under KMC is implementing KEIIP.

4. The first loan under the MFF, Tranche 1 or Loan 3053-IND, amounting to \$100 million, was approved by ADB on 22 October 2013, signed on 3 March 2014 and made effective on 30 May 2014. Project 1, supported by Tranche 1, included subprojects for improvement of infrastructure, operations and sustainability in sewerage, drainage and water supply in KMC. While Project 2, supported by the Tranche 2, included physical and non-physical investments in water supply and sanitation improvement in KMC. Project 2 is aligned with improved access to water supply and sanitation in KMC as defined by KEIIP. Tranche 2 loan 3413-IND was signed on 21 November 2016 and physical work has already started.

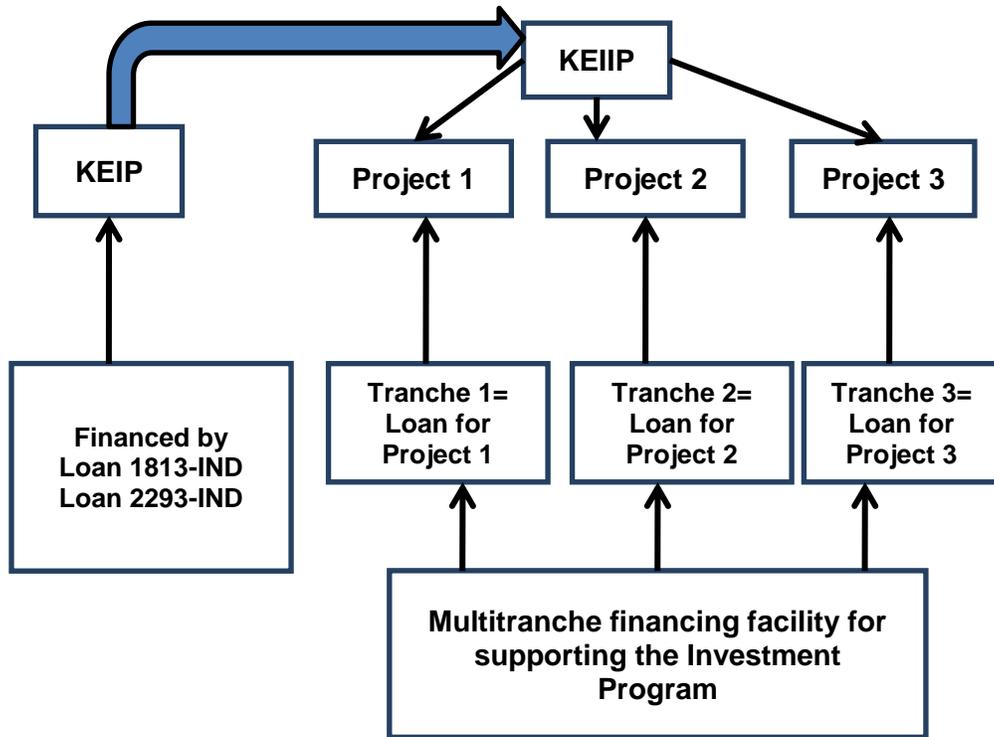
¹ The 1899 Calcutta Municipal Act defined the administrative domain of the municipal authority as covering 25 wards and 48.5 km². Many boundary changes followed, the latest one in January 1984, when Boroughs XI, XII, XIII, XIV, and XV were annexed to KMC. These boroughs are popularly known as the "added areas." Recently the KMC has been further expanded by including Joka area in the southern part of the city creating 3 additional wards under a new Borough XVI.

² ADB. 2000. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to India for the Calcutta Environmental Improvement Project*. Manila (Loan 1813-IND, \$250 million, approved on 15 November 2000). The project completion date is 30 June 2012; ADB. 2006. *Report and Recommendation of the President to the Board of Directors: Proposed Supplementary Loan to India for the Kolkata Environmental Improvement Project*. Manila (Loan 2293-IND: \$80 million, approved on 20 November 2006). The project completion date is 30 June 2012.

³ ADB provided project preparatory technical assistance. ADB. 2009. *Technical Assistance to India for Preparing for Kolkata Environmental Improvement Project II*. Manila.

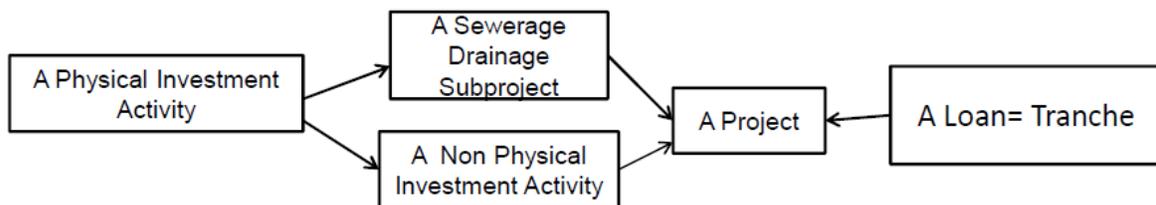
5. The government has submitted the periodic financing request (PFR) for Tranche 3 of KEIP, amounting to \$100 million, and a TA grant from Urban Climate Change Resilience Trust Fund in the amount of \$2 million to strengthen Kolkata’s climate resilience through resilient design and due diligence of sanitation improvement infrastructure and improved public safety. The proposed Project 3, supported by the proposed Tranche 3 of the MFF and attached TA, will continue increase in coverage areas of S&D, climate resilience, and operational sustainability of KMC’s S&D.

Figure 1: Relationship between the KEIP and the KEIIP



6. KEIIP Project 3 will include S&D including dry weather flow (DWF) and storm water flow (SWF) pumping stations and sewage treatment plants (STPs).

Figure 2: Structure of a Project, Subprojects, and KEIIP Activities



7. The identified work programs Project 3 under Tranche 3 are listed in Appendix 1 and a detailed description and outputs are given in the following paragraphs.

8. The impact of Project 3 under KEIIP will be improved access to sanitation in KMC’s service

areas.⁴ The outcomes will be better service quality, increased operational sustainability, and adequate built-in climate resilience in S&D in the service areas of KMC.

9. The outputs of Project 3 will be as follows:⁵

- (i) **Output 1: Sewerage and drainage network extension to peripheral areas continued.** Project 3 will continue expanding S&D services in selected peripheral areas of KMC to an additional 3,000 households and provide sewage treatment for around 100,000 households covered under KEIIP. It will construct (a) around 43 km of additional sewer- drain pipes; (b) four pumping stations and around 13 km of pumping mains; and (c) three STPs with around 115 million liters a day combined capacity..
- (ii) **Output 2: Operational capacity for urban services strengthened.**⁶ Project 3 will support KMC in enhancing its operational capacity and climate change resilience of urban services. It will provide planning, preparatory and transaction advisory services for a comprehensive sanitation improvement in Kolkata, improve inclusiveness of public places, and provide training and capacity building of KMC staff in resilient urban services operations.

10. All subprojects and their components are to comply with relevant safeguard requirements in each loan agreement for the Government of India, the state government of West Bengal, and the ADB Safeguards Policy Statement (SPS), 2009 as applicable.

11. The provision for the use of frameworks is required for implementation of the investment program under the MFF to guide safeguard assessments in all tranches, as well as in non-sensitive components of each project under the investment program where detailed design takes place. For this purpose, this environmental assessment and review framework (EARF) has been prepared.

12. Already sample IEE reports for the below packages have been prepared following EARF and cleared by ADB:

- (i) Improvement of S&D Network and construction of a Pumping Station in Alipore Body Guard Line premises in ward 74 and laying of sewer line along DH Road by Micro-tunnelling method and Cut & Cover method (SD27/2017-18);
- (ii) Construction of WBSETCL STP (45 MLD) (SD28/2017-18); and
- (iii) Construction of STP at Bank Plot (40 MLD) (SD29/2017-18).

13. Same EARF will be followed for preparation of rest of the IEEs under Tranche 3 (List attached as Appendix 1).

B. Purpose of the Environmental Assessment and Review Framework

14. The EARF is a guiding document during implementation. The EARF (i) describes the proposed subprojects; (ii) explains the general anticipated environmental impacts of the subprojects to be financed under the proposed loan; (iii) specifies the requirements that will be

⁴ Defined by the Investment Program. ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranches Financing Facility for India: Kolkata Environmental Improvement Investment Program*. Manila. <http://adb.org/sites/default/files/projdocs/2013/42266-013-ind-rrp.pdf>.

⁵ All subprojects proposed will follow the subproject selection criteria in Schedule 4 of the FFA for the MFF.

⁶ Output 2 is also supported by the piggy-backed technical assistance (TA), and will be delivered through the loan consultants being recruited under Project 2, the TA consultants, and the project's incremental administration budget.

followed in relation to subproject screening and categorization, assessment, and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements and, where applicable, safeguard criteria that are to be used in selecting subprojects and/or components; (iv) assesses the adequacy of the client's capacity to implement national laws and ADB's requirements and identify needs for capacity building; (v) specifies implementation procedures, including the budget, institutional arrangements, and capacity development requirements; (vi) specifies monitoring and reporting requirements; and (vii) describes the responsibilities of the client and of ADB in relation to the preparation, implementation, and progress review of safeguard documents of subprojects. The subproject selection shall be in accordance with the environmental subproject selection criteria as outlined in this EARF.

15. This EARF is prepared based on (i) ADB's SPS, 2009; and (ii) National and State of West Bengal environmental acts, rules, regulations, and standards. All environmental assessment is required to follow the procedures outlined in this EARF. Any component included in the project shall comply with Government of India environmental requirements and ADB's SPS, 2009. All environmental documents will be endorsed and approved by KMC and cleared by ADB.

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

C. Project Components

17. The project is categorized as category B in accordance with ADB's SPS, 2009. During project preparation, initial environmental examinations (IEEs) were prepared for S&D subprojects. IEEs concluded that the subprojects will only have 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. Mitigation measures and monitoring plans were proposed in the environmental management plan (EMP), which forms part of the IEE.

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Environmental Legislations (National and State Laws)

18. The implementation of the subprojects under the investment program will be governed by the national and State of West Bengal environmental acts, rules, regulations, and standards. These regulations impose restrictions on activities to minimize or mitigate likely impacts on the environment. It is the responsibility of the project executing and implementing agencies to ensure subprojects are consistent with the legal framework, whether national, state, or municipal/local. Compliance is required in all stages of the subprojects' implementation, including design, construction, and operation and maintenance.

19. The following legislations are applicable to the subprojects under the Investment Program, salient features of which are given in Appendixes 2–12:

- (i) Environmental (Protection) Act of 1986, its rules and amendments;
- (ii) Environmental Impact Assessment (EIA) Notification of 2006 and 2009;
- (iii) Water (Prevention and Control of Pollution) Act of 1974, its rules and amendments;
- (iv) Air (Prevention and Control of Pollution) Act of 1981, its rules and amendments;

- (v) Central Pollution Control Board (CPCB) Environmental Standards;
- (vi) The Ancient Monument and Archaeological Sites and Remains (Amendment and Validation) Act 2010;
- (vii) Wetlands (Conservation and Management) Rules of 2010 and 2017;
- (viii) Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016;
- (ix) Noise Pollution (Regulation and Control) Rules of 2000 as amended up to 2011;
- (x) National Institute of Occupational Safety and Health Criteria for a recommended standard: occupational noise exposure, NIOSH Publication No. 98-126;
- (xi) Indian Standard Drinking Water–Specification, IS 10500, 2012: Bureau of Indian Standards as per revised second revision 2004 and draft revision of 2009;
- (xii) West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006;
- (xiii) East Kolkata Wetlands (Conservation and Management) Act, 2006;
- (xiv) Forest (Conservation) Act, 1980 and Forest Conservation Rules, 2003 as amended;
- (xv) The Child Labour (Prohibition and Regulation) Amendment Act, 2016;
- (xvi) Direction No. EN/3170/T-IV-7 /001/2009 dated 10 December 2009 of Department of Environment, Government of West Bengal;
- (xvii) The West Bengal Inland Fisheries Act, 1984; and
- (xviii) West Bengal Land Reform Rules 1965.

20. The summary of environmental regulations and mandatory requirements for all subprojects under the investment program is shown in Table 1.

Table 1: Applicable Environmental Regulations

	Law/Act	Description	Requirement
1..	Environmental (Protection) Act of 1986, its rules and amendments	This is an umbrella act under which several applicable rules have been framed.	
2..	Environmental impact assessment (EIA) Notification, 2006 and 2009	The EIA Notification of 2006 and 2009 (replacing the EIA Notification of 1994) set out the requirement for environmental assessment in India. This states that environmental clearance is required for certain defined activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts. Category A projects require environmental clearance from the National Ministry of Environment, Forest and Climate change (MOEFCC). Category B projects require environmental	The proposed components of sewerage and drainage (S&D) subprojects are not listed in the EIA Notification's "Schedule of Projects Requiring Prior Environmental Clearance," and thus environmental clearance is not required for any of the subprojects listed under the environmental assessment review framework (EARF).

	Law/Act	Description	Requirement
		clearance from the State Environmental Impact Assessment Authority (SEIAA).	
3..	Water (Prevention and Control of Pollution) Act of 1974, its rules and amendments	Control of water pollution is achieved through administering conditions imposed in consent issued under provision of the Water (Prevention and Control of Pollution) Act of 1974. These conditions regulate the quality and quantity of effluent, the location of discharge, and the frequency of monitoring of effluents. Any component of the investment program having the potential to generate sewage or trade effluent will come under the purview of this act, its rules and amendments. Such projects have to obtain consent to establish (CTE) under Section 25 of the act from WBPCB before starting implementation, and consent to operate (CTO) before commissioning. The Water Act also requires the occupier of such subprojects to take measures for abating the possible pollution of receiving water bodies.	All subprojects involving sewerage treatment plants (STPs) will require CTE and CTO from WBPCB. ^a All relevant forms, prescribed fees, and procedures to obtain the CTE and CTO can be found in the WBPCB website (www.wbpcb.gov.in).
4..	Air (Prevention and Control of Pollution) Act of 1981, its rules and amendments	The subprojects having potential to emit air pollutants into the atmosphere have to obtain CTE under Section 21 of the Air (Prevention and Control of Pollution) Act of 1981 from WBPCB before starting implementation, and CTO before commissioning the project. The occupier of the project/facility has the responsibility to adopt necessary air pollution control measures for abating air pollution.	For the subproject, the following will require CTE and CTO from WBPCB: (i) diesel generators, and (ii) hot mix plants, wet mix plants, stone crushers, etc. if installed for construction. All relevant forms, prescribed fees, and procedures to obtain the CTE and CTO can be found in the WBPCB website (www.wbpcb.gov.in) (Appendix 2).
5..	Central Pollution Control Board (CPCB) Environmental Standards	Emissions and discharges from the facilities to be created or refurbished or augmented shall comply with the notified standards notified.	Appendix 3 provides applicable standards for ambient air, air emission, effluents, receiving water bodies, and drinking water at the consumer end.

	Law/Act	Description	Requirement
6..	The Ancient Monument and Archaeological Sites and Remains (Amendment and Validation) Act 2010	The Rules designate areas within a radius of 100 m and 200 m from the “protected property/ monument/ area” as “prohibited area” and “regulated area” respectively. Henceforth, no permission for construction of any public projects or any other nature shall be granted in the prohibited areas of the protected monument and protected area In respect of regulated area, the Competent Authority may grant permission for construction, reconstruction, repair and renovation on the basis of recommendation of the National Monument Authority duly taking note of heritage bye-laws, which shall be prepared in respect of each protected monument and protected area	There are no protected properties in the subproject area. However, in case of chance finds, the contractors will be required to follow a protocol as defined in the environmental management plan (EMP).
7..	Wetlands (Conservation and Management) Rules, 2010 and 2017	The rules specify activities which are harmful and prohibited in the wetlands such as industrialization, construction, dumping of untreated waste and effluents, and reclamation. The central government may permit any of the prohibited activities on the recommendation of the Central Wetlands Regulatory Authority.	The subproject is not within the East Kolkata Wetlands, thus no permission from the central government is required.
8..	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	According to the Rules, hazardous wastes are wastes having constituents specified in Schedule II of the Rules if their concentration is equal to or more than the limit indicated in the said schedule (Appendix 5).	If during excavation works, the excavated material is analyzed to be hazardous, they are to be stored and disposed of only in such facilities as may be authorized by the WBPCB for the purpose
9..	Noise Pollution (Regulation and Control) Rules of 2000 as amended up to 2011	Rule 3 of the act specifies ambient air quality standards with respect to noise for different areas/zones.	Appendix 3 provides applicable noise standard. Contractors are required to ensure all noise-producing activities during civil works conform to applicable standards
10..	National Institute of Occupational Safety and Health Criteria for a	NIOSH has laid down criteria for a recommended standard: occupational noise exposure.	Appendix 5 provides applicable NIOSH Occupational noise standards.

	Law/Act	Description	Requirement
	Recommended Standard: Occupational Noise Exposure, NIOSH Publication No. 98-126	The standard is a combination of noise exposure levels and duration that no worker exposure shall equal or exceed.	
11..	Indian Standard Drinking Water – Specification, IS 10500, 2012: Bureau of Indian Standards as per revised second revision 2004 and draft revision of 2009	Parameters for desirable and permissible concentrations have been indicated.	Supplied water to consumer is required to maintain the standard.
12..	West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006	The act states that those who want to fell trees will have to obtain permission from the Forest Directorate, Government of West Bengal. Violators (meaning whoever fells or causes to be felled any tree, or cuts, uproots, or otherwise disposes of any fallen tree or contravenes the permission granted) shall be punished with imprisonment up to 1 year or with a fine of Rs.5,000 or both. Also, until plantation of requisite number of trees is undertaken, the violators will be fined ₹50 for each day of default. In case the development agency or entrepreneur fails to implement the plantation plan, the defaulter might have to face imprisonment of up to 2 years or a fine of up to ₹10,000 or with both.	Permission from the Divisional Forest Officer (Utilization Division), Forest Directorate, Government of West Bengal will be required if trees, particularly those looked upon as sacred groves, identified as belonging to an endangered species, or given the status of heritage will be cut/felled. KMC will have to submit a “Tree Plantation Plan” while they seek approval for a residential/commercial/ industrial project.
13..	East Kolkata Wetlands (Conservation and Management) Act, 2006	On August 2002, 12,500 hectare (ha) (of the East Kolkata Wetland area was included in the Ramsar List, making it a wetland of international importance. The Ramsar Convention is playing a vital role by providing certain basic guidelines to draw up suitable plans for the maintenance and sustenance of the wetlands. Among these, the three most important guiding principles are: (i) maintenance of the special characteristics of the ecosystem; (ii) wise use of its	The subproject is not within the East Kolkata Wetlands and no prohibited activities are included in the subprojects; no other activities requiring permission from the central government are planned at present.

	Law/Act	Description	Requirement
		resources with an eye towards sustainability; and (iii) economic development for the wetland community. The East Kolkata Wetlands Management Authority (EKWMA) has the power to enforce land use control in the substantially water body-oriented areas and other areas in the East Kolkata Wetlands.	
14..	Forest (Conservation) Act, 1980 and Forest Conservation Rules, 2003 as amended	As per Rule 6, every user agency that wants to use any forest land for non-forest purposes shall seek approval of the central government (Appendix 7).	No notified forest land within the subproject areas
15..	The Child Labour (Prohibition and Regulation) Amendment Act, 2016	No child below 14 years of age will be employed or permitted to work in any of the occupations set forth in the Act's Part A of the Schedule or in any workshop wherein any of the processes set forth in Part B of the Schedule. Child can helps his family or family enterprise, which is other than any hazardous occupations or processes set forth in the Schedule, after his school hours or during vacations	No children between the age of 14 to 18 years will be engaged in hazardous working conditions.
16..	Direction No. EN/3170/T-IV-7 /001/2009 dated: 10 December 2009 of Department of Environment, Government of West Bengal	All municipalities, local authorities and all other concerned government departments within the State of West Bengal are to implement norms to be followed by the developers, contractors, or any other infrastructure developers.	The norms include details of preventive measures and practices to be discarded. These measures are aimed towards promoting good construction site management, leading to mitigation of anticipated adverse environmental impacts during general construction activities.
17..	The West Bengal Inland Fisheries Act, 1984	Rule 17A. Bar to conversion of water area, etc. for other use. — (1) No person shall— (a) put any water area, including embankment, measuring 5 cottahs or 0.0335 hectare (ha) or more, which is capable of being used as fishery, or any naturally or artificially depressed land holding measuring 5 cottahs or 0.035 ha or more, which retains water for a minimum	Conversion of water body for other uses has to be obtained in prescribed form (Form 1A and 1B) under West Bengal Land reform Rules 1965 Prior approval of Department Fisheries will be obtained by Land Department as part of conversion of water body for other uses

	Law/Act	Description	Requirement
		period of 6 months in a year, to such use, other than fishery, as may result in abolition of fishery except with the prior approval of the state government in the Department of Fisheries.	

^a WBPCB has a common CTO form (Form L) for local authorities, covering all aspects of municipal constructional and operation activities. CTE is to be applied online under Orange category (Infrastructure Project).

B. International Environmental Agreements

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

22. **International Union for Conservation of Nature.** The IUCN Red List of threatened species (also known as the IUCN red list or red data list), founded in 1963, is a comprehensive inventory of the global conservation status of plant and animal species. A series of regional red lists are produced by countries or organizations, which assess the risk of extinction to species within a political management unit. The IUCN red list is set upon precise criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. The aim is to convey the urgency of conservation issues to the public and policy makers, as well as to help the international community reduce species extinction.

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

24. **Convention on International Trade in Endangered Species of Wild Fauna and Flora.** This is an international agreement between governments that aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES was first formed in the 1960s. Annually, the international wildlife trade is estimated to be worth billions of dollars and to include hundreds of millions of plant and animal specimens. The trade is diverse, ranging from live animals and plants to a vast array of wildlife products derived from them, including food products, exotic leather goods, wooden musical instruments, timber, tourist curios, and medicines. Levels of exploitation of some animal and plant species are high, and their trade, together with other factors such as habitat loss, is capable of heavily depleting their populations and even bringing some species close to extinction.

25. **Ramsar Convention on Wetlands of International Importance, 1971.** The Convention on Wetlands of International Importance is an inter governmental 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 must be protected. The East Kolkata Wetlands (EKW) were designated a "wetland of international importance" under the Ramsar Convention on 19 August 2002. Activities undertaken in the proximity of EKW shall follow the guidelines of the convention, provisions of the Wetlands (Conservation and Management) Rules, 2010 and East Kolkata Wetlands (Conservation and Management) Act, 2006.

26. The proposed sub projects under Tranche 3 are not linked with any international rules and regulations as mentioned above.

27. During the design, construction, and operation of the project the borrower/client will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's *Environmental, Health and Safety Guidelines*.⁷ These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures, the borrower/client will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in this document.

C. Summary

28. A summary of applicable standards per government, state and ADB SPS requirements applicable to the investment program is presented in the Table 2.

Table 2: Action Required Ensuring Subproject Compliance with National and State Environmental Laws and Regulations

Component Applicable	Legislation	Compliance	Action Required	Authorizing Body
1. All subprojects	Environmental impact assessment (EIA) Notification of 2006 and 2009 (replacing the EIA Notification of 1994)	Environmental clearance is required for certain defined activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence.	To check if the subprojects are included in the list of prescribed activity/activities, and if yes, to determine the category (A or B) based on the prescribed criteria	For category A project, from National Ministry of Environment, Forest and Climate (MOEFCC), Government of India; for category B project, from state-level expert appraisal committee
	West Bengal Trees (Protection and	If tree cutting is required, application is to be made and	Submission of Application in Form I (B) (http://www.westbengalforest.gov.in)	Divisional forest officer (Utilisation Division),

⁷ International Finance Corporation World Bank Group. [Environmental, Health and Safety Guidelines](#).

Component Applicable	Legislation	Compliance	Action Required	Authorizing Body
	Conservation in Non-Forest Areas) Rules, 2007	permission obtained before felling of trees from divisional forest officer (Utilisation Division), Forest Division, Government of West Bengal, Kolkata		Forest Division, Government of West Bengal, Kolkata
	Central Pollution Control Board (CPCB) Environmental Standards	Environmental standards related to air emission, effluent, and noise	Adherence to the prescribed standards is made through consent to operate (CTO) and consent to establish (CTE).	West Bengal Pollution Control Board
	The Ancient Monument and Archaeological Sites and Remains (Amendment and Validation) Act 2010	To report chance findings of archaeological material at work sites	To inform the State Archaeological Directorate/Archaeological Survey of India and take actions as per their directives	State Archaeological Directorate/ Archaeological Survey of India
	Wetlands (Conservation and Management) Rules, 2010 and 2017 and East Kolkata Wetlands (Conservation and Management) Act, 2006	Subproject areas should not be located in notified wetland areas. No prohibited activities should be carried out without authorization. Regulated activities to be done only with authorization	To design avoiding prohibited or regulated activities. If this is not possible take appropriate authorization before construction.	Central Wetland Authority of MOEFCC, Government of India for prohibited activities Government of West Bengal for regulated activities
	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	Excess excavated material from construction sites to be tested for selected parameters from the prescribed lists	If the concentration of analyzed parameters exceeds the prescribed limits, the wastes are to be disposed of in consultation with regulatory authority at approved sites.	West Bengal Pollution Control Board
	Noise Pollution (Regulation	Noise level should not exceed the	If exceeded, necessary mitigation measures should be adopted.	There is no exemption to this rule.

Component Applicable	Legislation	Compliance	Action Required	Authorizing Body
	and Control) Rules of 2000 as amended up to 2011	prescribed increased limit over the ambient noise level at the periphery of the construction sites.		
	National Institute of Occupational Safety and Health Criteria for a Recommended Standard: Occupational Noise Exposure, NIOSH Publication No. 98-126	No worker exposure shall equal or exceed the prescribed combination of noise exposure levels and duration in the zone of noise-producing areas of construction and operation.	To regulate duty hours of workmen for compliance	There is no exemption or authorization of exemption.
2. Sewerage treatment plant ^a	Water (Prevention and Control of Pollution) Act of 1974, its rules, and amendments	CTE and CTO from WBPCB	Application in Form L of West Bengal Pollution Control Board (WBPCB) gives the subproject details. Based on project review and site inspection WBPCB, provides CTE before construction, and stipulates the disposal standards to be met during operation. After completion of construction, CTO is issued confirming compliance with the CTE conditions, if any. Renewal of CTO during operation of sewage treatment plant (STP) is based on the performance of the STP and compliance with the disposal standards. CTO is renewed every year.	
	CPCB Environmental Standards	To comply with the effluent quality authorized under CTO/CTE	To monitor and report treated effluent quality each month for continued operation	West Bengal Pollution Control Board
3. Diesel generators ^a	Air (Prevention and Control of Pollution) Act 1981	CTE and CTO from WBPCB	Application in Form L of WBPCB gives details of capacity, fuel type, stack details, and noise pollution control measures in place, including details of acoustic enclosure/ exhaust muffler if required. CTO renewal every year is based on performance.	West Bengal Pollution Control Board
	Rule 3 of the	Noise level	If exceeded, necessary mitigation	There is no

Component Applicable	Legislation	Compliance	Action Required	Authorizing Body
	act specifies ambient air quality standards with respect to noise for different areas/zones.	should not exceed the prescribed increased limit over the ambient noise level at the periphery of the construction sites.	measures should be adopted.	exemption to this rule.

^a Per ADB SPS requirements, PMO and RPMOs shall apply pollution prevention and control technologies and practices consistent with international good practice. When the Government of India regulations differ from these levels and measures, PMO shall achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific subproject circumstances, PMO will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

D. Assessment of Institutional Capacity

29. KMC is responsible for the preparation of each subproject environmental assessment report and monitoring of safeguards issues. KMC have successfully ensured the environmental management and monitoring under ongoing KEIIP Tranche 1 and Tranche 2. Environment Specialist in the PMU is presently acting as environmental coordinators. Basic environmental monitoring and reporting are carried out in the KEIIP through the design and supervision consultants (DSCs). Environmental safeguard obligations are now satisfactorily met with the above arrangement, and the institutional capacity is adequate.

30. The executing and implementing agencies of the investment program, however, will require further capacity building measures (i) for a better understanding of the project-related environmental issues; and (ii) to strengthen their role in implementation of mitigation measures and subsequent monitoring. Training programs are included in the investment program. The primary focus of the training is to enable staff to conduct impact assessments, carry out environmental monitoring, and implement the EMP. After participating in such training, the participants shall be able to make environmental assessments for subsequent subprojects, conduct monitoring of environmental plans, understand government and ADB requirements for environmental assessment, management, and monitoring (short and long term), incorporate environmental features into future subproject designs, specifications, and tender/contract documents, and carry out necessary checks and balances during project implementation.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

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

32. As the subprojects will be of small scale and often involve improvement or rehabilitation of the existing system and facilities, it is anticipated that impacts will be temporary and of short duration. In such cases, mitigation measures i.e. control of air, dust pollution, checking of water

and noise pollution, and protection of biological environment, can address adverse impacts. Other measures such as preparation and implementation of traffic management plans during pipe-laying shall also be done in coordination with the consultant teams, local police, contractors, and the public. Safety measures, both occupational and covering health and hygienic conditions, including careful handling of public utilities along with social aspects, will be considered, and impacts and mitigation measures will be elaborated in the EMPs.

33. Anticipated environmental impacts for the assessed subproject are provided in the IEE report. For subsequent subprojects to be funded by the investment program, anticipated impacts during design, construction, and operation are identified in Table 3.

Table 3: Anticipated Environmental Impacts Due to Project Implementation

Impact Field	Anticipated Impact on the Environment
Design Phase	
Environmental clearances	Environmental clearances, consents, and permits are required (Table 2) in order to implement the project. A land allotment letter, if required, is of prime interest. If not pursued on a timely basis, this can delay the project. Necessary environmental clearances and permits have to be obtained and follow the guidelines issued by the authorities.
Utilities	Telephone lines, electric poles and wires, and water pipes (old) existing within right-of-way require shifting without disruption of services.
Water supply	Health risk due to temporary closure of existing water supply
Social and cultural resources	Ground disturbance can uncover and damage archaeological and historical remains. Access to sites of cultural/religious importance may be affected during civil construction (especially during pipe-laying works).
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Locations may cause encroachment/impact either directly or indirectly on adjacent environments. It may also include the impacts on the people who might lose their homes or livelihoods due to the subproject activities.
Traffic	Traffic flow will be disrupted if routes for delivery of construction materials and temporary blockages during construction activities are not planned and coordinated.
Land for sewage and treatment plant (STP)	Conversion of present land use to proposed land use, if not pursued on a timely basis, can delay the project.
Construction Phase	
Sources of materials	Extraction of materials can disrupt natural land contours and vegetation, resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.
Air quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction result in dust and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons. Sensitive receptors (e.g. hospitals, schools, churches) may be affected temporarily by increased traffic and related impacts during the construction phase (from the proposed detour). Fugitive dust can also impact on roadside air quality during construction. Exhaust fumes from construction machinery, and potential smoke from cooking fires Burning of waste and cleared vegetation Odors from use of toilet "facilities" other than provided facilities
Geology and soil	Strong water flows into open excavations below the water table will occur, causing micro-tunnel collapse. Layers of mixed fill cover natural ground surface in many places.

Impact Field	Anticipated Impact on the Environment
	Contamination from spillage of petroleum products, spent engine oil, and oil leaks from construction vehicle maintenance taking place on site
Drainage and hydrology	The proposed development is situated within an existing built-up area where the water supply infrastructures already exist. Due to the nature and locality of the subproject, there is unlikely to be any significant impacts on water resources within the immediate area.
Surface water quality	Mobilization of settled silt materials, run-off from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality.
Noise and vibration	Sensitive receptors (hospitals, schools, churches) may be affected temporarily by increased traffic and related impacts. Use of heavy vehicles and equipment may generate high levels of noise. Vibrations resulting from blasting, bulk earthworks, micro-tunneling, and compaction may create significant disturbances to nearby people and businesses. Disturbance from afterhours work
Biodiversity, fauna and flora	The proposed development is situated within an existing built-up area. No areas of ecological diversity occur within the subproject location. Due to the nature and locality of the subproject, there is unlikely to be any significant impacts on biodiversity within the area. The pipe-laying may affect existing roadside trees.
Ecological resources	Felling of the trees affects terrestrial ecological balance and terrestrial and aquatic fauna/wildlife.
Existing infrastructure and facilities	There is likely to be temporary disruption of infrastructure and services during the pipe-laying work There are a number of existing infrastructure and services (roads, telecommunication lines, power lines and various pipelines) within the vicinity of the subproject.
Aesthetics, landscape character, and sense of place	The presence of heavy duty vehicles and equipment, temporary structures at construction camps, and stockpiles may result in impacts on aesthetics and landscape character.
Accessibility	Due to the location and nature of the subproject, there will be interference with access. Existing public transport facilities and operations will be affected by the road closure and detours. Shops and establishments are located along the pipe line alignment and will therefore need to be relocated during construction. This may impact on livelihoods. There will be disruptions to health services, education services, local businesses, transport services, and pedestrian movements due to traffic and construction related noise, visual, and air pollution.
Traffic	Increased volume of construction vehicles on the roads may lead to increased wear and tear of roads in the vicinity of the subproject site. Road safety concerns due to slow moving construction vehicles Traffic flow within the vicinity will be affected. The temporary road closure will result in a decrease in overall network performance in terms of queuing delay and travel times/speeds. The road closure will impact on public transport operations and routing. On-street parking and loading bays will be affected by the proposed road closure. Pedestrian movements will be affected by the road closure.
Socio-economic– income	Impede the access of residents and customers to nearby shops. Shops may lose business temporarily.

Impact Field	Anticipated Impact on the Environment
Occupational health and safety	<p>There is danger of construction-related injuries.</p> <p>Open fires in construction camp can result in accidents.</p> <p>Safety of workers and general public must be ensured.</p> <p>Poor waste management practices and unhygienic conditions at temporary ablution facilities can breed diseases.</p> <p>Standing water due to inadequate storm water drainage systems and inadequate waste management practices pose a health hazard, providing breeding grounds for disease vectors such as mosquitoes, flies, and snails.</p> <p>The use of hazardous chemicals in the micro-tunneling and restoration of roads can pose potential environmental, health, and safety risks.</p> <p>Road safety may be affected during construction, especially when traffic is detoured.</p>
Workers' conduct	Construction workers on site disrupting adjacent land uses by creating noise, generating litter, and possible loitering
Employment generation	<p>The subproject will provide employment opportunities for local people during construction.</p> <p>Expectations regarding new employment will be high, especially among the unemployed individuals in the area.</p> <p>Labor gathering at the site for work can be a safety and security issue, and must be avoided.</p> <p>The training of unskilled or previously unemployed persons will add to the skills base of the area.</p>
Community health and safety	Community hazards can arise during construction (e.g., open trenches, air quality, noise, falling objects, etc.). Trenching on concrete roads using pneumatic drills will cause noise and air pollution. Traffic accidents and vehicle collision with pedestrians may happen during material and waste transportation.
Construction waste	Trenching will produce additional amounts of waste soil. Also, accumulation of debris waste materials and stockpiling can cause environmental visual pollution.
Work camps	Temporary air and noise pollution comes from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants. This may cause conflict with residents and problem of waste disposal and disruptions to residents.
Social and cultural resources	The proposed development will not require demolition of Archaeological Survey of India or state-protected monuments and buildings; however, there is risk of archaeological chance finds. Sites of social/cultural importance (schools, hospitals, religious place, tourism sites) may be disturbed by noise, dust, vibration, and impeded access.
Clean-up operations, restoration and rehabilitation	Impacts on social or sensitive receptors when post-construction requirements are not undertaken, e.g. proper closure of camp, disposal of solid waste, and restoration of land after subproject construction
Operation and Maintenance Phase	
General maintenance	Maintenance activities may cause disturbance to sensitive receptors, dust, and increase in noise level.
Air quality	Sensitive receptors (e.g. hospitals, schools, churches) may be affected temporarily by increased traffic and related impacts during maintenance of pipeline
Biodiversity, fauna and flora	The proposed development is situated within an existing built-up area where the infrastructures already exist. No areas of ecological diversity are within the subproject location. Due to the nature and locality of the subproject, there is unlikely to be any significant impacts on biodiversity within the area during maintenance work.

Impact Field	Anticipated Impact on the Environment
	The use of fertilizers and herbicides in the maintenance of newly planted trees, landscape and vegetation may, however, affect the environment.
Land uses	Due to the location and nature of the subproject, there will be interference with access during maintenance works. Existing public transport facilities and operations will be affected by the road closure and detours. There will be disruptions to health services, education services, local businesses, transport services, and pedestrian movements due to traffic and maintenance-related noise, visual, and air pollution.
Health and safety	There is 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, providing breeding grounds for disease vectors such as mosquitoes, flies, and snails. The use of hazardous chemicals in the STPs can pose potential environmental, health, and safety risks.
Noise and vibrations	Sensitive receptors (hospitals, schools, churches) may be affected temporarily by increased traffic and related impacts. Disturbance from afterhours work
Workers' conduct	Maintenance workers on site disrupting adjacent land uses by creating noise, generating litter, and possible loitering
Solid waste	Solid waste residuals which may be generated by the STPs include process residuals, used filtration membranes, spent media, and miscellaneous wastes. Process residuals primarily consist of settled suspended solids from source water and chemicals added in the treatment process.
Wastewater	Wastewater from the STPs include treated effluent These waste streams may contain suspended solids and organics from the raw water, dissolved solids, high or low pH, heavy metals, etc.
Hazardous chemicals	Treatment involves the use of chemicals for treatment
Economic development	Impediments to residents and businesses during routine maintenance

IV. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS

A. Environmental Criteria for Subproject Selection

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

- (i) the locations, descriptions, and scope of future subprojects are unknown; and
- (ii) pipes are crossing or adjacent to sensitive areas.

35. Subprojects that would directly affect the core and buffer zones of national reserves, protected areas, wetlands, and highly valued cultural property shall be strictly avoided, the subproject components causing potential impacts relocated, or suitable alternatives found.

36. Improvements in the domestic water supply give rise to greater quantities of wastewater.

With the current emphasis on environmental health and water pollution issues, there is an increasing awareness of the need to dispose of these wastewaters safely and beneficially. KMC shall require end users to connect to the sewerage system.

37. For completeness, additional criteria⁸ that prohibit inclusion of activities as follows:
- (i) production or activities involving harmful or exploitative forms of forced labour⁹ or child labour;¹⁰
 - (ii) production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements or subject to international phase-out or bans, such as (a) pharmaceuticals¹¹, pesticides, and herbicides¹²; (b) ozone-depleting substances¹³; (c) polychlorinated biphenyls¹⁴ and other hazardous chemicals;¹⁵ (d) wildlife or wildlife products regulated under the CITES; and (e) transboundary trade in waste or waste products;¹⁶
 - (iii) production of or trade in weapons and munitions, including paramilitary materials;
 - (iv) production of or trade in alcoholic beverages, excluding beer and wine;¹⁷
 - (v) production of or trade in tobacco;
 - (vi) gambling, casinos, and equivalent enterprises;
 - (vii) production of or trade in radioactive materials,¹⁸ including nuclear reactors and components thereof;
 - (viii) production of, trade in, or use of unbonded asbestos fibers;¹⁹
 - (ix) commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and
 - (x) marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

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

Table 4: Environmental Criteria for Subproject Selection

⁸ Adapted from ADB SPS, 2009 Appendix 5.

⁹ Forced labor means all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty.

¹⁰ Child labor means the employment of children whose age is below the host country's statutory minimum age of employment or employment of children in contravention of International Labor Organization Convention No. 138 "Minimum Age Convention" (www.ilo.org).

¹¹ A list of pharmaceutical products subject to phase-outs or bans is available at <http://www.who.int>.

¹² A list of pesticides and herbicides subject to phase-outs or bans is available at <http://www.pic.int>.

¹³ A list of the chemical compounds that react with and deplete stratospheric ozone resulting in the widely publicized ozone holes is listed in the Montreal Protocol, together with target reduction and phase-out dates. Information is available at <http://www.unep.org/ozone/montreal.shtml>.

¹⁴ A group of highly toxic chemicals, polychlorinated biphenyls, are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.

¹⁵ A list of hazardous chemicals is available at <http://www.pic.int>.

¹⁶ As defined by the Basel Convention; see <http://www.basel.int>.

¹⁷ This does not apply to project sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a project sponsor's primary operations.

¹⁸ This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any equipment for which ADB considers the radioactive source to be trivial and adequately shielded.

¹⁹ This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.

	Components	Environmental Selection Guidelines	Remarks
1.	Overall selection guideline (applicable to all components)	Comply with all requirements of relevant national, state, and local laws, rules, and guidelines.	See Section II of this environmental assessment and review framework
		Site selection process shall avoid land acquisition and involuntary resettlement where possible, including impacts on vulnerable persons and indigenous peoples.	See resettlement framework and indigenous peoples planning framework.
		Site selection shall avoid where possible locations in protected areas, including notified reserved forests or biodiversity conservation hotspots (wetlands, national reserves, forest reserves, and sanctuaries).	Approval from concerned authority if unavoidable
		Subproject location shall not result in destruction/disturbance to historical and cultural places/values.	
		The subproject shall avoid where possible, and minimize to extent feasible, facilities in locations with social conflicts.	
		The subproject shall avoid where possible tree cutting, and if any trees have to be removed, shall plant two new trees for every one that is lost.	Approval from Forest Department
		The subproject shall retain mature roadside trees which are important/valuable or historically significant. If any trees have to be removed, the subproject shall plant two new trees for every one that is lost.	
		Avoid involuntary resettlement by prioritizing rehabilitation over new construction, using vacant government land where possible, and taking all possible measures in design and selection of site or alignment to avoid resettlement impacts.	
		Designs must be consistent with ADB SPS, 2009 and follow the resettlement framework prepared for the project and agreed on by the government and ADB.	See resettlement framework
		The subproject shall reflect inputs from public consultation and disclosure for site selection.	
2.	Sewerage and drainage	Comply with all requirements of relevant national and state law, including the Water (Prevention and Control of Pollution) Act 1974	
		Locate sewage and treatment plant (STP) preferably 250 m from any inhabited areas, in locations where no urban expansion is expected in the next 20 years, so that people are not affected by odor or other nuisance from the plant	Distance restriction may be reviewed depending on the technology adopted for the treatment of waste water, site plant availability, and buffer zone planning
		Locate STP at sites where there is a suitable means of disposal for the treated wastewater effluent (e.g. into a natural water course or SWF canal).	
		Locate STP at sites where there is no risk of flooding or other hazards that might impair functioning of the plant and present a risk of	Flood statistics data of the investment program area needs to be reviewed.

	Components	Environmental Selection Guidelines	Remarks
		damage to the plant or its environs.	
		Subproject will be implemented only with consent of State Pollution Control Board.	
		Consult relevant records of national and/or local archaeological agencies regarding the archaeological potential of proposed sites of STP, pumping stations, and main sewers, to ensure that these are located in areas where there is a low risk of chance finds.	
		Locate sewage pipelines within the right-of-way of roads to eliminate acquisition of new land.	
		Avoid locating sewage pumping stations and wet wells within 50 m of any inhabited areas, and within 100 m of sensitive sites such as hospitals, schools, temples, etc. to minimize nuisance impacts from odor, rodents, etc.	Distance restriction may be reviewed depending on the technology adopted, suitable land availability, and buffer zone planning
		Include measures to ensure the safe disposal of sewage sludge without causing an environmental hazard, and if possible to promote its safe and beneficial use as an agricultural fertilizer.	

B. Environmental Assessment Procedures for Subprojects

1. Screening and Classification/Categorization

39. As soon as sufficient information on a subproject is available, DSC will conduct screening to determine the work's environmental category by completing ADB's rapid environmental assessment (REA) checklist in Appendix 13 and submitting this to the PMU for review.

40. 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, subprojects will be screened, and the level of environmental assessment required (EIA/IEE) will be determined. It is anticipated that most eligible subprojects will fall into either category B or C, as subprojects will be of small scale and often involve improvement or rehabilitation of the existing system/facilities. While category C subprojects will not require an environmental assessment, environmental implications will be reviewed.

2. Preparation of Environmental Assessment Report

41. Environmental assessment documents prepared under the investment program shall, 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.

42. For subprojects projected to have potentially significant adverse environmental impacts (categorized as A), an EIA will be prepared. For subprojects 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 14 provides the outline of an ADB EIA or IEE report. Also, the IEEs prepared during project preparation provide good samples which can be followed for preparation of environmental assessments in subsequent tranches.

43. For preparing the EIA and IEE, relevant primary data will be generated and secondary data collected for subproject-influenced sites. An assessment of project impacts and risks on biodiversity and natural resources will also be undertaken. Issues regarding natural and critical habitats will be covered in the EIA/IEE report. In case of subprojects located within buffer zones of protected areas or adjacent to/within the EKW, a review of management plans and consultation with concerned management staff of the protected area, local communities, and key stakeholders will be undertaken and reflected in EIA/IEE report. Pollution prevention for conservation of resources, particularly technology for management of process wastes, will be addressed in the EIA/IEE report. Occupational and community health safety will be properly addressed in the EMP section of the EIA/IEE report. In case subprojects are likely to have adverse impacts on physical cultural resources, appropriate mitigation measures will to be planned and reflected in the EIA/IEE. EIA/IEE will also reflect a meaningful consultation and disclosure process with provision of a grievance redress mechanism.

44. ADB requires that an EMP must be developed as part of the EIAs/IEEs. EMPs describe the environmental management measures that will be carried out to mitigate negative impacts or enhance the environment during implementation of a project, and the environmental monitoring to be conducted to ensure that mitigation is provided and is effective in reducing impacts, or to determine the long-term impacts of a project. EMPs shall outline specific mitigation measures, environmental monitoring requirements, and related institutional arrangements, including budget requirements for implementation. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the project is designed, constructed, and operated in compliance with applicable laws and regulations, and meets the requirements specified in this document. The level of detail and complexity of the environmental planning documents and the priority of the identified measures and actions will be commensurate with the project's impacts and risks. Key considerations include mitigation of potential adverse impacts to the level of "no significant harm to third parties," the polluter pays principle, the precautionary approach, and adaptive management. A generic matrix for the EMP is in Appendix 15.

45. 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.

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

V. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation and Information Disclosure

47. The public participation process includes (i) identifying interested and affected people (stakeholders); (ii) informing and providing the stakeholders with sufficient background and technical information regarding the proposed development; (iii) creating opportunities and mechanisms whereby they can participate and raise their viewpoints (issues, comments, and

concerns) with regard to the proposed development; (iv) giving the stakeholders feedback on process findings and recommendations; and (v) ensuring compliance to process requirements with regards to the environmental and related legislation.

48. The primary stakeholders are: (i) local residents, shopkeepers, and businesspeople who live and work alongside the roads where pipeline will be laid and facilities will be provided; and (ii) custodians and users of socially and culturally important buildings in affected areas.

49. The secondary stakeholders are: (i) KMC as the executing agency; (ii) KEIIP officials as implementation agency; (iii) WBPCB, government department (like Environment Department, Government of West Bengal, Forest Directorate, Government of West Bengal, Ministry of Environment & Forests, and Government of India) and relevant government agencies (like CPCB, NEERI), including state and local authorities responsible for land acquisition; (iv) nongovernment organizations, university professors, and community-based organizations (CBOs) working in the affected communities; (v) other community representatives (prominent citizens, religious leaders, elders, women's groups); (vi) beneficiary community in general; and (vii) ADB, the government, and the Ministry of Finance.

50. The public consultation and disclosure program will remain a continuous process throughout the subproject implementation. The following methodologies will be used for carrying out public consultation:

- (i) Local communities, individuals affected, traders, and local shopkeepers who are directly affected will be given priority while conducting public consultation;
- (ii) Walk-through informal group consultations will be held along the proposed distribution, transmission mains stretch;
- (iii) The local communities will be informed through public consultation, with briefing on project interventions, including its benefits; and
- (iv) The environmental concerns and suggestions made by the participants will be listed, and discussions and suggestions incorporated accordingly in the EMP.

51. Focus group discussions will be organized with affected persons and other stakeholders to hear their views and concerns, so that these can be addressed in subproject design wherever necessary. Regular updates on the environmental component of the subproject will be kept available at the PMU office of KMC.

52. KMC will conduct information dissemination sessions at major intersections and solicit the help of local community leaders and prominent citizens to encourage the participation of the people in discussing various environmental issues.

53. The PMU, with the assistance of DSC, will conduct information dissemination sessions in the subproject areas. During EMP implementation, PMU and DSC will organize public meetings and will apprise the communities about the progress of the implementation of EMP in the subproject works of the investment program.

54. Public meetings with affected communities (if any) will be held to discuss and plan work programs and allow issues to be raised and addressed once construction has started. There will be smaller-scale meetings to discuss and plan construction work with local communities to reduce disturbance and other impacts, and provide a mechanism through which stakeholders can participate in subproject monitoring and evaluation. Local communities will be continuously consulted regarding location of construction camps, access and hauling routes, and other likely disturbances during construction. The road closure, together with the proposed detours, will be

communicated via advertising, pamphlets, radio broadcasts, road signages, etc.

55. Public information campaigns via newspaper, radio, and TV are proposed to explain the details of each subproject to a wider population. Public disclosure meetings will be organized at key project stages to inform the public of progress and future plans.

B. Information Disclosure

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

57. KMC will send written endorsement to ADB for disclosing these documents on ADB's website. KMC 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.

58. For the benefit of the community, all EIAs/IEEs will be translated in the local language and made available at the offices of KMC, PMU, and DSC. Hard copies of the EIA/IEEs will be accessible to citizens as a means to disclose the document and at the same time creating wider public awareness. An electronic version of the EIA/IEEs will be placed in the official website of the KMC/PMU/state government and the official website of ADB after approval of the IEE by government and ADB. The PMU will issue notifications on its website 1 month ahead of implementation works for each subproject.

C. Grievance Redress Mechanism

59. **Common Grievance Redress Mechanism.** A common grievance redress mechanism (GRM) has been established for social, environmental or any other subproject related grievances.

60. **Grievance Redress Process.** PMU will maintain a Complaint Cell at KEIIP office located in 206 A J C Bose Road Kolkata 700017 headed by a designated Grievance Officer (currently the Administrative Officer) under Project Director. The Complaint Cell will also serve as Public Information Centers, where, apart from grievance registration, information on the project, subprojects, social and environmental safeguards, etc. can be provided.

61. At every Borough of KMC under which works are in progress, a Public Relations and Grievance Redressal Unit is to be established for information disclosure on request from public and for receipt of complaints.

62. At Contractors' site offices, complaint and suggestion books will be available for lodging any complaint. The concerned Executive Engineers of KEIIP will monitor these books and if possible take necessary actions for redressal of minor complaints with intimation to the complainant.

63. The Grievance Registration/Suggestion Form will be available at the Complaints Cell and in Borough Offices and will also be downloadable from the KEIIP/KMC websites. Grievances/suggestions of affected persons can be dropped in suggestion boxes or conveyed through phone or mail. Affected Persons will also be able to register grievances - social, environmental or other, personally at the Complaint Cell and at Borough offices of KMC. The Grievance Officer and designated official at the Boroughs will be able to correctly interpret/record verbal grievances of non-literate persons and those received over telephone.

64. All complaints (unresolved at local site/Borough level) relating to KEIIP will be sent to the Project Director, KEIIP including those received in the KMC/KEIIP website for redressal. The Grievance Officer will resolve simple unresolved issues and in case of complicated issues, consult/seek the assistance of the Environment/Social Specialist of the DSC/PMU. Grievances not redressed through this process within one month of registration will be brought to the notice of the Project Director, KEIIP. Action taken in respect of all complains will be communicated to the complainant by letter, over phone or e-mail or WhatsApp as the case may be.

65. Periodic community meetings with affected communities to understand their concerns and help them through the process of grievance redress (including translation from local dialect/language, recording and registering grievances of non-literate affected persons and explaining the process of grievance redress) will be conducted if required. The above grievance redress process will be discussed with the stakeholders at the proposed disclosure workshop.

66. **Grievance Redressal Committee.** A PMU-level grievance redressal committee (GRC) has already been constituted by the Project Director to address grievances. Grievances not resolved at borough level are referred to PMU level. However, grievances that cannot be resolved at PMU level will be referred to an apex GRC.²⁰ Still unresolved issues will be referred to an appropriate court of law. The complainant may resort to the court of law at any stage and it may run in parallel with GRM in resolving the issues.

67. The time limit for grievance redressal will be (i) Site level – 7 days, (ii) Borough level – 7 days, (iii) GRC – PMU level – 15 days, and (iv) Apex GRC- 15 days.

68. **Accountability Mechanism.** Project-affected people can also submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-financed projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. The Accountability Mechanism comprises two separate, but related, phases, namely: (i) a consultation phase, led by ADB's special project facilitator who reports directly to the ADB President, to assist project-affected people in finding solutions to their problems; and (ii) a compliance review phase, led by a three-member panel that reports to the Board of Directors.

²⁰ The apex GRC will have the following members: KMC Commissioner as Chairperson, KEIIP Project Director, Director General (P), KEIIP, Environment/Social Safeguard Officer, Administrative Officer as the convener, representatives of affected persons, community-based organizations (CBOs), and eminent citizens. The GRC must have at least two women members.

The Compliance Review Panel investigates alleged violations of ADB's operational policies and procedures, as defined by the Board of Directors, including safeguard policies, that have resulted or are likely to result in direct adverse and material harm to project affected people and recommends how to ensure project compliance with those policies and procedures.

69. **Consultation Arrangements.** This will include group meetings and discussions with affected persons, to be announced in advance and conducted at the time of day agreed on with affected persons and conducted to address general/common grievances; and if required with the Environment/Social Specialist of PMU/DSC for one-to-one consultations. Non-literate affected persons/ vulnerable affected persons will be assisted to understand the grievance redress process, to register complaints and with follow-up actions at different stages in the process.

70. **Record-keeping.** Records will be kept by PMU/Borough Office/Contractors' site office of all grievances received including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were in effect, and final outcome.

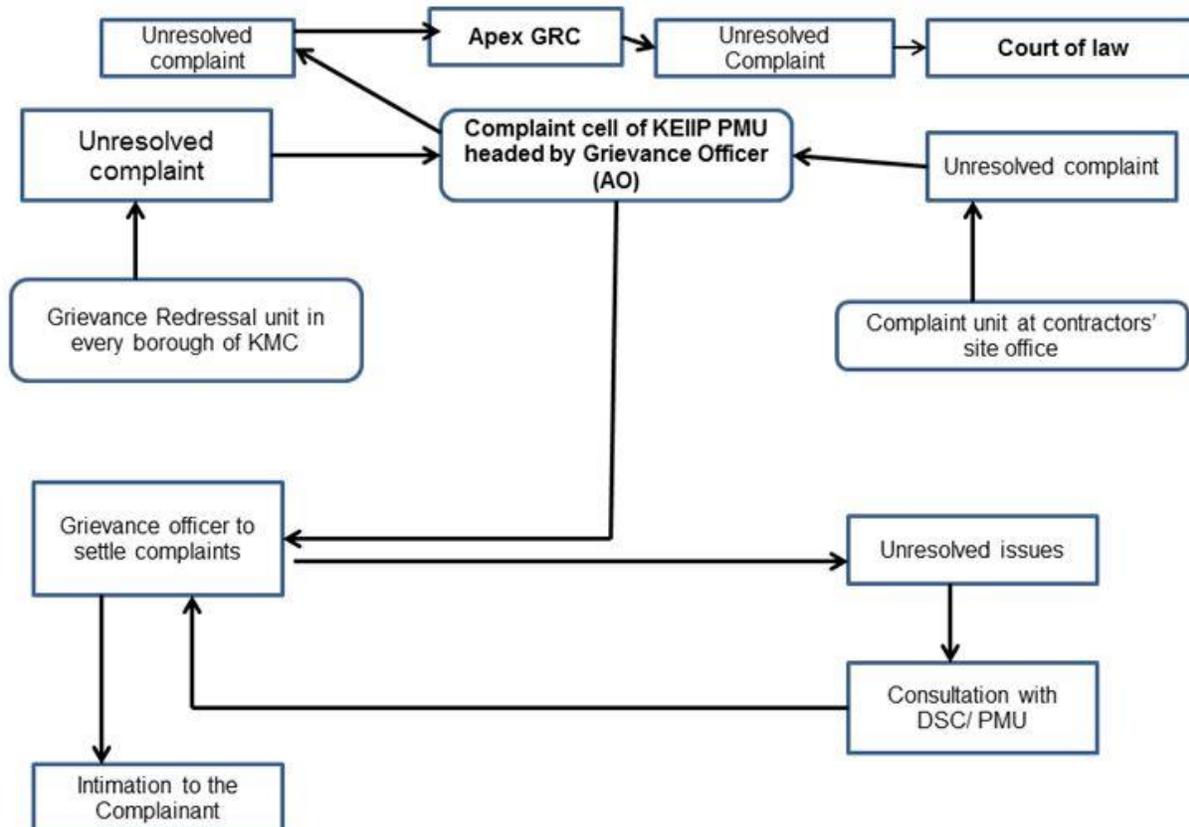
71. **Information Dissemination Methods of the Grievance Redress Mechanism.** Grievances received and responses provided will be documented and reported back to the affected persons. Appendix 16 shows the sample grievance registration forms. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the offices of the different Boroughs of KMC and web. The phone number where grievances are to be recorded will be prominently displayed at the construction sites.

72. **Periodic Review and Documentation of Lessons Learned.** PMU will periodically review the functioning of the GRM and effectiveness of the mechanism, especially on the Project's ability to prevent and address grievances.

73. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting / information dissemination) will be borne by PMU.

74. Figure 3 shows GRM flow chart.

Figure 3: Grievance Redressal Process

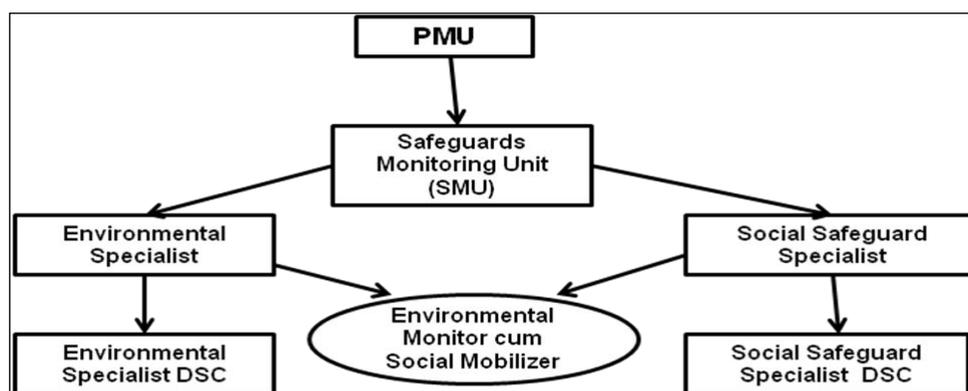


DSC = design and supervision consultant, GRC = grievance redress committee, KEIP = Kolkata Environmental Improvement Investment Program, PMU = program management unit.

VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

75. The existing institutional arrangement for implementation of the KEIP, which has been functioning satisfactorily, will continue (Figure 4). The investment program will be implemented and monitored by the PMU. The Environmental Specialist in SMU will be PMU's environmental specialists. The responsibilities of the environmental specialists will ensure that (i) environmental safeguard issues are addressed, (ii) EMP is implemented, (iii) physical and non-physical activities under the subproject are monitored, and (iv) monitoring reports are prepared on time and submitted to ADB.

76. PMU will be supported by the design and supervision consultants (DSC). An environment specialist will be engaged to ensure that (i) EMP is implemented, (ii) surveys and measurements are undertaken, (iii) inspections and observations throughout the construction period are recorded to ensure that safeguards and mitigation measures are provided as intended, and (iv) statutory clearances and permits from government agencies and other entities are obtained prior to start of civil works.

Figure 4: Institutional Arrangement – Safeguards

DSC = design and supervision consultant, PMU = program management unit.

77. Table 5 gives the institutional roles and responsibilities in all phases of the investment program.

Table 5: Institutional Roles and Responsibilities: Environmental Safeguards

Phase	Program Management Unit/Safeguards Monitoring Unit	Design and Supervision Consultant	ADB
Appraisal stage of all subprojects under the investment program	PMU to review the REA checklists and draft EIA/IEE PMU to disclose the approved EIA/IEE on its website PMU to ensure disclosure of information throughout the duration of the subproject	DSC to conduct REA for each subproject using checklists and to prepare EIA/IEE	ADB to review the REA checklists and reconfirm the categorization. ADB will review and approve EIA reports (category A) and IEE reports (category B) subprojects. ADB will disclose the submitted EIA/IEE report on its website.
Detailed design phase of all subprojects under the investment program	PMU with the assistance of DSC to incorporate the EMP, environmental mitigation and monitoring measures into contract documents	DSC to revise the IEE and EMP in accordance with detailed design changes if warranted DSC to ensure incorporation of EMP in bid documents and contracts DSC to prepare inventory of utilities to be affected by the subproject.	ADB will review and approve updated EIA reports (category A) and IEE reports (category B) subprojects. ADB will disclose updated EIA/IEE report on its website.
Pre-construction phase of all subprojects under the investment program	DSC to conduct public consultation and disclosure during IEE process and comments to be reflected in the IEE report PMU to monitor the	DSC to ensure statutory clearances and permits from government agencies and other entities are obtained prior to start of civil	

Phase	Program Management Unit/Safeguards Monitoring Unit	Design and Supervision Consultant	ADB
	<p>disclosure and public consultation</p> <p>PMU and DSC to approve contractor's proposed locations for construction work camps, storage areas, hauling roads, lay-down areas, and disposal areas for solid and hazardous wastes</p>	<p>works</p> <p>DSC to consult affected people and ensure resettlement plan is implemented prior to start of civil works</p> <p>DSC to ensure disclosure of information prior to start of civil works and throughout the duration of the construction period</p> <p>DSC to approve contractor's site-specific environmental plan (such as traffic management plan, waste management plan, locations for camp sites, storage areas, lay-down areas, and other sites/plans specified in the EMP)</p> <p>DSC to conduct base line environmental conditions and inventory of affected trees</p>	
<p>Construction phase of all subprojects under the investment program</p>	<p>SMU of PMU assist monitoring during implementation of the project.</p> <p>SMU of PMU will review 6-monthly monitoring and EMP implementation report, including the status of project compliance, with statutory clearances and with relevant loan covenants, and submit the 6-monthly report to ADB and seek permission to disclose the same in the investment program website</p>	<p>DSC to monitor the implementation of mitigation measures by contractor</p> <p>DSC to prepare monthly progress reports, including a section on implementation of the mitigation measures (application of EMP and monitoring plan)</p> <p>DSC (as per EMP) will conduct environmental quality monitoring during construction stage (ambient air and noise and water quality)</p> <p>DSC to prepare the 6-monthly monitoring report on environment by focusing on the progress in implementation of the EMP, issues encountered, measures adopted, and follow-up</p>	<p>ADB to review the 6 monthly monitoring report, provide necessary advice if needed to the PMU and approve the same</p> <p>ADB to disclose environmental monitoring reports on its website</p>

Phase	Program Management Unit/Safeguards Monitoring Unit	Design and Supervision Consultant	ADB
		actions required, if any	
Pre-operation phase (commissioning and defect liability period)	PMU to review monitoring report of DSC on post-construction activities by the contractors as specified in the EMP	DSC to apply for the CTOs prior to commissioning DSC to monitor and approve post-construction activities by the contractors as specified in the EMP	
Operation phase of all subprojects under the investment program	KMC to conduct monitoring, as specified in the environmental monitoring plan WBPCB to monitor the compliance of the standards regarding drinking water quality, groundwater, ambient air, and effluent quality from treatment plant, as applicable		

ADB = Asian Development Bank, CTE = consent to establish, CTO = consent to operate, DSC = design and supervision consultant, EIA = environmental impact assessment, EMP = environmental management plan, IEE = initial environmental examination, KMC = Kolkata Municipal Corporation, PMU = program management unit, REA = rapid environmental assessment, SMU = Safeguard Monitoring Unit, WBPCB = West Bengal State Pollution Control Board.

78. The safeguards monitoring units will:

- (i) prepare the REA checklist, to draft the EIA/IEE and to disclose the approved EIA/IEE in the website;
- (ii) ensure that environmental clearance, Consent to Establishment and Consent to Operate and other certificates, as required, are obtained in time from appropriate authorities and to ensure compliances with conditions imposed;
- (iii) ensure incorporation of the EMP, environmental mitigation and monitoring measures into the contract documents;
- (iv) monitor disclosure and public consultation arranged by DSC during IEE process and to ensure that comments are reflected in the IEE report;
- (v) ensure disclosure of information throughout the duration of the subproject through suitable visual means and publications;
- (vi) provide necessary input for grievance redress;
- (vii) approve contractor's proposed locations for construction work camps, storage areas, hauling roads, lay-down areas, and disposal areas for solid and hazardous wastes on recommendations of DSC;
- (viii) guide the Contractor for drawing up of Site Environmental Management Plan and to approve the same;
- (ix) induct the Contractor for taking up the construction following environmental and social safeguards;
- (x) facilitate scheduled monitoring during implementation of the project;
- (xi) carry out regular onsite monitoring and guide the Contractor to adopt the required site management standard;
- (xii) ensure the required health and safety measures at work sites;
- (xiii) obtain in time and to review the monthly monitoring report of the Contractors;

- (xiv) prepare 6-monthly monitoring and EMP implementation report, including the status of project compliance, statutory clearances and relevant loan covenants, and submit the approved 6-monthly report to ADB and seek permission to disclose the same in the investment program website; and
 - (xv) prepare monitoring report on post-construction activities by the contractors as specified in the EMP.
79. The contractor will be required to:
- (i) prepare site-specific environmental management plan based on the EMP;
 - (ii) comply with all applicable legislation, and be conversant with the requirements of the EMP;
 - (iii) Carry out monitoring work- base line and during construction data generation from working sites;
 - (iv) brief his staff, employees, and laborers about the requirements of the EMP;
 - (v) ensure any sub-contractors/suppliers who are utilized within the context of the contract comply with the environmental requirements of the EMP. The contractor will be held responsible for non-compliance on their behalf;
 - (vi) supply method statements for all activities requiring special attention as specified and/or requested by the DSC environment specialist for the duration of the contract;
 - (vii) provide environmental awareness training to staff, employees, and laborers;
 - (viii) bear the costs of any damages/compensation resulting from non-adherence to the EMP or written site instructions;
 - (ix) conduct all activities in a manner that minimizes disturbance to directly affected residents and the public in general, as well as foreseeable impacts on the environment; and
 - (x) ensure that the PMU environmental Specialist are informed in a timely manner of any foreseeable activities that will require input from the DSC environment specialist.
80. Costs requirement for ensuring environmental safeguards cover the following activities:
- (i) conducting IEE or EIA studies, including limited field and laboratory monitoring, preparing and submitting reports, and public consultation and disclosure;
 - (ii) application for consent to establish and operate where required (currently STP and WTP);
 - (iii) implementation of environmental management plans (EMP), including long-term surveys, monitoring, data generation, etc.;
 - (iv) redressal of grievances/complaints; and
 - (v) capacity building.
81. For budgeting purposes, it is assumed that subprojects of future tranches (on the basis of the environmental subproject selection guidelines) which involve the provision of new or refurbished infrastructure will be classified as category B (requiring IEE).
82. Generally, an IEE relies on the collection of existing data in order to describe environmental conditions in the subproject area, and it is not expected that new surveys would be conducted unless there are critical gaps in data. The work thus involves the collection and analysis of data on the existing environment and the proposed project, assessment and mitigation of impacts, preparation of the environmental management plan (EMP) and budget, public consultation, and preparation of the IEE report. An average IEE for this type of subproject requires 1.5 months of effort by one expert and one support staff (specializing in the natural environment

and social issues). Other expenses are the cost of public consultation meetings and the cost of document disclosure.

83. Tentative cost estimates for implementation of identified monitoring and reporting plans are summarized in Table 6. Internal monitoring costs during construction, not involving engagement of specialized monitoring agencies for actual field-cum-laboratory sampling and analysis, will be borne by DSC and contractors as part of their contracts and by KMC during the operational phase. Costs for implementing all mitigation measures during the construction phase will be included in the tender and contract document of contractors and will be borne by the contractors.

Table 6: Staffing and Cost of Environmental Assessment and Review Framework Implementation

Item	Quantity	Unit Cost (₹)	Total Cost (₹)	Subtotal (₹)
1. KEIP - program management unit				
Environmental Specialist of SMU	Included in the PMU budget – to be extended for Tranche 3			
2. Design and supervision consultant (DSC)				
Environment specialist	Included in project cost of consultant for Tranche 3			
3. Other expenses				
Consent to establish by PMU if any		1,50,000		
Consent to operate by PMU if any		1,50,000		
Monitoring expenses during implementation	As per requirement- Tranche 3 by construction contractor – air, noise, water	For 48 months	Approx. 60,00,000.00	60,00,00.00
Public consultations	Tranche 3	50,000.00 yearly	Approx. 2,00,000.00	2,00,000.00
4. Grievance redress mechanism	Tranches 1, 2, and 3	Part of management cost		
5. Capacity building	Tranches 1, 2, and 3	Part of management cost		
TOTAL				62,000,00.00

KEIIPKEIIP = Kolkata Environmental Improvement Investment Program, ₹ = Indian rupee, PMU = = program management unit, SMU = safeguard monitoring unit.

VII. MONITORING AND REPORTING

84. Monitoring and reporting of the investment program will follow a structured approach as used in the KEIIP that has been found to be adequate. Prior to commencement of any construction work, the contractors will submit a compliance report to the DSC, ensuring that all identified pre-construction environmental impact mitigation measures as detailed in the subproject IEEs have been undertaken. DSC will review the report, and thereafter PMU will allow commencement of construction works.

85. The DSC will organize an induction course for the training of contractors, preparing them for EMP implementation, including environmental monitoring requirements related to identified mitigation measures and taking immediate action to remedy unexpected adverse impacts or

ineffective mitigation measures found in the course of implementation.

86. During the construction phase, results from internal monitoring by the contractors will be reflected in their weekly EMP implementation reports to the site level construction supervisors of the DSC. These weekly reports will be retained in the DSC office for reference. The environmental specialist of the DSC will carry out periodic site visits and report to the team leader, DSC on the adequacy of mitigation and safety measures at work site levels. The team leader, DSC will form flying squads to conduct occasional unannounced site inspections for feedback to the environmental specialist of the DSC.

87. A monthly report will be prepared by the DSC Construction Manager summarizing compliance with monitoring requirements, details on any noncompliance, remedial actions taken, and additional environmental mitigation measures if necessary. The format of the monthly report is given in Appendix 17.

88. Measurements on environmental monitoring employing external agencies will be organized by the contractor as per advice of DSC. Based on monthly reports and measurements, the DSC will draft a 6-monthly EMP implementation report. Such reports will include (i) construction activities over the last 6 months, (ii) reporting on EMP implementation, (iii) environmental conditions, (iv) measurement or sampling undertaken and monitoring results (based on the monitoring plan), (v) findings on the compliance status, (vi) summary of any non-compliance and remedial actions taken, and (vii) recommendations for improvement and revision of the mitigation measures and/ or the EMP, if any. The environmental Specialist of the PMU will review the draft EMP implementation report which, upon approval by the project director, will be submitted to ADB. Once concurrence from the ADB is received, the 6-monthly EMP implementation report will be uploaded in the investment program website. Based on review of environmental monitoring results, future modifications in the EMP could be undertaken with the concurrence of ADB. These will be generally undertaken, if required, upon review of the 6-monthly EMP progress reports submitted by the PMU to ADB following agreed procedures and mechanisms.

89. For subprojects likely to have anticipated adverse environmental impacts during operation, monitoring may continue at the minimum on an annual basis during the operation phase.

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

91. ADB will review project performance against the KMC's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the investment program's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. The investment program budget will reflect the costs of monitoring and reporting requirements.

92. ADB's monitoring and supervision activities are carried out on an on-going basis until a Project Completion Report (PCR) is issued. ADB issues a PCR within 1-2 years after the project is physically completed and in operation.

VIII. REVIEW OF ENVIRONMENTAL ASSESSMENT REPORTS

93. On completion, EIAs/IEEs will be reviewed initially by PMU. In case an environmental clearance is required, the EIAs/IEEs are to be forwarded to the Ministry of Environment, Forest and Climate Change (MOEFCC)/State Environmental Impact Assessment Authority for approval.

94. KMC will forward the EIAs/IEEs to ADB for review.

95. For subproject processing, the steps to be followed are shown in Table 7. Implementation of the subproject will be governed by the national and State of West Bengal environmental acts, rules, regulations, and standards. These regulations impose restrictions on activities to minimize and mitigate likely impacts on the environment. It is the responsibility of the project executing and implementing agencies to ensure subprojects are consistent with the legal framework, whether national, state, or municipal/local. Compliance is required in all stages of the subproject including design, construction, and operation and maintenance. Stricter requirement applies in case the result of ADB's classification is different from that of the government's EIA Notification, 2006.

Table 7: Environmental Procedures for Subproject Processing

Project Stage	ADB Procedure	Government of India Procedure
Subproject identification	<p>Rapid environmental assessment (REA) checklist</p> <p>Categorization (A/B/C): Program management unit (PMU) to review the REA checklists and reconfirm the categorization.</p> <p>Meets subproject selection criteria</p> <p>Stricter requirement applies in case the result of ADB's classification is different from that of the government's EIA Notification, 2006.</p>	<p>Categorization (A or B) according to schedule and general/specific conditions in the government's environmental impact assessment (EIA) Notification, 2006.</p> <p>Application for prior environmental clearance is required after the identification of the prospective site, or before commencing any construction or land preparation. Category A requires environmental clearance from Ministry of Environment, Forest and Climate Change (MOEFCC). Category B requires environmental clearance from State Environmental Impact Assessment Authority (SEIAA). In the absence of SEIAA or SEAC, category B will be treated as category A and will be cleared from MOEFCC.</p> <p>Screening (for category B) subject to SEAC Categorized as B1 (requires full EIA) or B2 (does not require full EIA)</p>
Detailed design	EIA/Initial environmental examination (IEE)	Scoping and terms of reference (TOR) for EIA (A or B1) with scrutiny by EAC. TOR (or rejection of environmental clearance) finalized by EAC or SEAC within 60 days. Approved TOR posted on MOEFCC or concerned SEIAA website. Preparation of

Project Stage	ADB Procedure	Government of India Procedure
	<p>For subprojects 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, involuntary resettlement, and indigenous peoples. 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 borrower/client will be prepared. The plan will define necessary remedial actions, the budget for such actions, and the time frame for resolution of non-compliance. The audit report (including corrective action plan, if any) will be made available to the public in accordance with the information disclosure requirements of the Safeguard Requirements 1–3. For environment category A projects involving facilities and/or business activities that already exist or are under construction, the borrower/client will submit the audit report to ADB to disclose on ADB's website at least 120 days prior to ADB Board approval. If a project involves an upgrade or expansion of existing facilities that has potential impacts on the environment, involuntary resettlement, and/or indigenous peoples, the requirements for environmental and social impact assessments and planning specified in Safeguard Requirements 1-3 will apply in addition to compliance audit.</p> <p>Public consultation to be carried out in a manner commensurate with the impacts of affected communities. The consultation process and its results are to be documented and reflected in the environmental assessment report.</p>	<p>draft EIA as per TOR.</p> <p>Public consultation for category A and B1 projects and consists of two components: (i) public hearing conducted by West Bengal Pollution Control Board (WBPCB) within 45 days of a request from the applicant, and (ii) obtaining written responses. Draft EIA publicized widely before hearing. Notice</p>

Project Stage	ADB Procedure	Government of India Procedure
	<p>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 environmental assessment and review framework (EARF) before project appraisal where applicable; the final EIA; updated EIAs and corrective action plans; and environmental monitoring reports.</p> <p>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 must 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.</p> <p>Mitigation measures specified in IEE/EIA study incorporated in project design.</p> <p>Identify and incorporate environmental mitigation and monitoring measures (including the environmental management plan or EMP) into bid/contract documents.</p>	<p>of public hearing within 7 days of date, 30 days for public responses. Incorporate concerns expressed into the draft EIA and EMP.</p>
Appraisal	EMP and other environmental covenants are incorporated into the facility framework agreement, loan/project agreement, FAM. and	Appraisal of application completed by EAC or SEAC within 60 days of receipt of final EIA report
Approval	Kolkata Municipal Corporation (KMC) to design and implement all subproject facilities in accordance with the EARF and environmental assessments agreed upon, and in compliance with the government's environmental laws and regulations and ADB SPS. ADB to review and clear EIA/IEE prior to approval and issuance of tender documents during detailed design stage Complete EIA/IEE disclosed to public	Environmental clearance decision within 60 days of the receipt of recommendations of the EAC or SEAC, or within 120 days of the receipt of the final EIA. Where EIA is not required, within 120 days of the receipt of complete application and requisite documents
Contract award	Obtain necessary environmental clearances, consents, and NOCs prior to contract award. Implementation of EMP including monitoring plans based on EIA/IEE findings to be incorporated	Necessary environmental clearance obtained prior to commencing any construction or land preparation. NOCs, CTE and CTO from WBPCB, and

Project Stage	ADB Procedure	Government of India Procedure
	into bidding documents and civil award contracts	forest clearances (if any) from Divisional Forest Officer
Implementation	Periodic monitoring reports Periodic (6-monthly) monitoring report from PMU Submission of annual monitoring report to ADB	Project to submit half-yearly compliance monitoring reports by 31 July and 31 January All compliance reports are public documents and displayed on website of concerned regulatory authority.

ADB = Asian Development Bank, CTE = consent to establish, CTOO = consent to operate, EAC = environmental appraisal committee, EARF = environmental assessment and review framework, EIA = environmental impact assessment, EMP = environmental management plan, FAM = facility administration manual, IEE = initial environmental assessment, KMC = Kolkata Municipal Corporation, NOC = no objection certificate, PMU = program management unit, REA = rapid environmental assessment, SPS = Safeguard Policy Statement, SEAC = State Environmental Assessment Committee, SEIAA = State Environmental Impact Assessment Authority, TOR = terms of reference, WBPCB = West Bengal Pollution Control Board.

LIST OF IDENTIFIED SUBPROJECTS UNDER TRANCHE 3

Package Number	General Description
SD27/2017-18	Improvement of S&D Network and construction of a Pumping Station in Alipore Body Guard Line premises in ward 74 and laying of sewer line along Diamond Harbour Road by Microtunnelling method and Cut and Cover method.
SD28/2017-18	Construction of West Bengal State Electricity Transmission Company Limited STP (45 MLD)
SD29/2017-18	Construction of STP at Bank Plot (40 MLD)
SD30/2017-18	Construction of Rajpur - Sonarpur STP (25 MLD)
SD31/2017-18	Development of S&D Network in Churial Extension Pumping Station catchment and Diamond Park Catchment and Construction of Churial Extension pumping station (annexed) in borough XVI (Part of Ward 124, 143 and 144)
SD32/2017-18	Improvement of S&D system in Mukundapur Area (Part of Ward 109) including construction of pumping station and improvement of drainage system in Rajdanga Area (Part of ward 107)
SD34/2017-18	Construction of pumping stations at (1) LalababuNikashi/Bagjola canal (2) Sakuntala Park, Behalaat Node C premises

MLD = million liters per day, STP = sewage treatment plant, S&D = sewerage and drainage.

CONSENT TO ESTABLISH AND CONSENT TO OPERATE

Complete form can be downloaded from <http://www.wbpcb.gov.in/html/download.shtml> and the application is to be filed online.

INDIAN ENVIRONMENTAL STANDARDS

I. Air Emission

A. Notification by Ministry of Environment and Forests, Government of India Environment (Protection) Seventh Amendment Rules, 2009

Table A3.1: Ambient Air Quality Standards

Pollutant	Time Weighted Average	Industrial, Residential, Rural and Other Areas	Sensitive Area (Notified by Central Government)	Method of Measurement
Sulfur dioxide (SO ₂), µg/m ³	Annual* 24 hours**	50 80	20 80	Improved West & Gaeke method Ultraviolet fluorescence
Nitrogen oxide (NO ₂), µg/m ³	Annual* 24 hours**	40 80	30 80	Jacobs & Hochheiser modified (NaOH – NaAsO ₂) method <input type="checkbox"/> Gas chemiluminescence
Particulate matter (PM ₁₀) (Size <10 µm) µg/m ³	Annual* 24 hours**	60 100	60 100	Gravimetric TOEM <input type="checkbox"/> Beta Attenuation
Particulate matter (PM _{2.5}) (Size <2.5 µm) µg/m ³	Annual* 24 hours**	40 60	40 60	<input type="checkbox"/> Gravimetric <input type="checkbox"/> TOEM <input type="checkbox"/> Beta Attenuation
Ozone (O ₃) µg/m ³	8 hours** 1 hour**	100 180	100 180	<input type="checkbox"/> UV photometric <input type="checkbox"/> Chemiluminescence <input type="checkbox"/> Chemical method
Lead (Pb) µg/m ³	Annual* 24 hours**	0.5 1.0	0.5 1.0	<input type="checkbox"/> Atomic Absorption Spectrophotometry (AAS) method after sampling using EPM 2000 or equivalent filter paper
Carbon monoxide (CO), mg/m ³	8 hours** 1 hour**	2.0 4.0	2.0 4.0	<input type="checkbox"/> Nondispersive infrared spectroscopy
Ammonia (NH ₃),	Annual* 24 hours**	100 400	100 400	<input type="checkbox"/> Chemiluminescence <input type="checkbox"/> Indophenol blue method
Benzene (C ₆ H ₆) µg/m ³	Annual*	5	5	Gas chromatography continuous analyzer Adsorption and desorption followed by Gas Chromatography (GC) analysis
Benzo(o)pyrene (BaP) particulate phase only ng/m ³	Annual*	1	1	Solvent extraction followed by GC/ High pressure Liquid Chromatography (HPLC) analysis
Arsenic (As), ng/m ³	Annual*	6	6	<input type="checkbox"/> AAS/ICP method after sampling using EPM 2000 or equivalent filter paper
Nickel (Ni) ng/m ³	Annual*	20	20	<input type="checkbox"/> AAS/ICP method after sampling using EPM 2000 or equivalent filter paper

* Indicates Annual Arithmetic Mean of Minimum 104 measurement in a year measured twice a week, 24-hourly at

uniform intervals.

** 24 hourly/8 hourly/hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed, but not on 2 consecutive days.

Source: Central Pollution Control Board, New Delhi, Notification dated 18 November 2009.

B. Emission standards for diesel generator sets

1. Central Pollution Control Board emission regulations, Part IV, COINDS/26/1986-87. Para 95. Emission limits for new diesel engines (up to 800 W) for gen set application. The emission limits for new diesel engines up to 800 KW, for gen set applications shall be as follows:

Table A3.2 Emission limits for new diesel engines

Capacity of Diesel Engine	Date of Implementation	Emission Limits (g/kw-h)				Smoke Limit (light absorption coefficient, m-1) (at full load)	Test Cycle	
		NO _x	HC	CO	PM		Torque %	Weighting factors
Up to 19 kW	1.7.2005	9.2	1.3	3.5	0.3	0.7	100 75	0.05 0.25
> 19 kW up to 176 kW	1.1.2004	9.2	1.3	5.0	0.5	0.7	50	0.30
	1.7.2004	9.2	1.3	3.5	0.3	0.7	25	0.30
> 176 kW up to 800 kW	1.11.2004	9.2	1.3	3.5	0.3	0.7	10	0.10

CO = carbonic monoxide, g/kW-h = gram per kilowatt-hour, HC = hydrocarbon, kW = kilowatt, NO_x = oxide of nitrogen, PM = particulate matter, % = percent.

II. Effluent

A. Schedule VI of Environment (Protection) Rules, 1986

Table A3.3: General Standards for Discharge of Environmental Pollutants: Effluents

Sl no	Parameter	Standards			
		Inland Surface Water	Public Sewers	Land of Irrigation	Marine/Coastal Areas
		(a)	(b)	(c)	(d)
1.	Color and odor	Remove as far as practicable			
2.	Suspended solids, mg/l max.	100	600	200	(a) For process waste water 100 (b) For cooling water effluent 10% above total suspended matter of influent
3.	Particle size of suspended solids	Shall pass 850 micron IS sieve			(a) Floatable solids, max. 3mm (b) Settable solids (max 850 micron)
4.	pH value	5.5-9.0	5.5-9.0	5.5-9.0	5.5-9.0
5.	Temperature	Shall not exceed 50°C			Shall not exceed 50°C above the

SI no	Parameter	Standards			
		above the receiving water temperature			receiving water temperature
6.	Oil and grease, mg/l max	10	20	10	20
7.	Total residual chlorine, mg/l max	1.0			1.0
8.	Ammoniacal nitrogen (as N.) mg/l max	50	50		50
9.	Total Kjeldahl nitrogen (as NH ₃) mg/l. max	100			100
10.	Free ammonia (as NH ₃), mg/lmax	5.0			5.0
11.	Biochemical oxygen demand (3 days at 27°C), mg/l max	30	350	100	100
12.	Chemical oxygen demand, mg/l max	250			250
13.	Arsenic (as As) mg/lmax	0.2	0.2	0.2	0.2
14.	Mercury (as Hg), mg/l max	0.1	0.1	0.1	0.1
15.	Lead (as Pb) mg/l max	0.1	1.0		2.0
16.	Cadmium (as Cd) mg/l max	2.0	1.0		2.0
17.	Hexavalent chromium (as Cr +6) mg/l, max	0.1	2.0		1.0
18.	Total chromium (as Cr) mg/l max	2.0	2.0		2.0
19.	Copper (as Cu) mg/l max	3.0	3.0		3.0
20.	Zinc (as Zn) mg/l max	5.0	15		15
21.	Selenium (as Se) mg/l max	0.05	0.05		0.05
22.	Nickel (as Ni) mg/l max	3.0	3.0		5.0
23.	Cyanide (as CN) mg/l max	0.2	2.0	0.2	0.2
24.	Fluoride (as F) mg/l max	2.0	15		15
25.	Dissolved phosphates (as P) mg/lmax	5.0			
26.	Sulfide (as S) mg/l max	2.0			5.0
27.	Phenolic compounds (as C ₆ H ₅ OH) mg/l max	1.0	5.0		5.0
28.	Radioactive materials: (a)Alfa emitters microcurie/ml max (b)Beta emitters microcurie/ml max	10 ⁻⁷ 10 ⁻⁶	10 ⁻⁷ 10 ⁻⁶	10 ⁻⁸ 10 ⁻⁷	10 ⁻⁷ 10 ⁻⁶
29.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
30.	Manganese (as Mn)	2 mg/l	2 mg/l		2 mg/l
31.	Iron (as Fe)	3 mg/l	3 mg/l		3 mg/l
32.	Vanadium (as V)	0.2 mg/l	0.2 mg/l		0.2 mg/l

Sl no	Parameter	Standards			
33.	Nitrate nitrogen	10 mg/l			20 mg/l

Note: These standards shall be applicable for industries, operations, or processes other than those industries, operations, or processes for which standards have been specified in schedule of the Environment Protection Rules, 1989.

B. Drinking water standard at consumer end is under revision, and the draft version is given in the following table:

**Table A3.4: Indian Standards for Drinking Water - Specification
(Bureau of Indian Standard 10500: 2012)**

Sl. No	Substance or Characteristic	Requirement (Acceptable Limit)	Undesirable Effect Outside the Acceptable Limit	Permissible Limit in the Absence of Alternate Source	Method of Test (Ref to IS)	Remarks
1. Organoleptic and physical parameters						
i)	Color, Hazen units, max	5	Above 5, consumer acceptance decreases	15	3025 (Part 5)	
ii).	Odor	Agreeable	-	Agreeable	3025 (Part 5)	a) Test cold when heated b) Test at several dilutions
iii)	Taste	Agreeable	-	Agreeable	3025 (Part 7 and 8)	Test to be conducted only after safety has been established
iv)	Turbidity, NTU, max	1	Above 5, consumer acceptance decreases	5	3025 (Part 10)	-
v)	Dissolved solids, mg/l max	500	Beyond this palatability decreases and may cause gastrointestinal irritation	2000	3025 (Part 16)	-
vi)	pH Value	6.5–8.5	Beyond this range, the water will affect the mucous membrane and/or water supply system	No relaxation	3025 (Part 11)	-
vii)	Total hardness (as CaCO ₃), mg/l max	200	Encrustation in water supply structure and adverse effects on domestic use	600	3025 (Part 21)	
Note 1: It is recommended that the acceptable limit be implemented. Values in excess of those mentioned under "Acceptable" render the water not acceptable, but still may be tolerated in the absence of an alternative source, but only up to the permissible limits in the absence of alternate source in col (5), above which the sources will have to be rejected.						
General parameters concerning substances undesirable in excessive amounts						
i)	Iron (as Fe) mg/l max	0.3	Beyond this limit, taste/appearance are	No relaxation	3025 (Part 53)	Total concentration

Sl. No	Substance or Characteristic	Requirement (Acceptable Limit)	Undesirable Effect Outside the Acceptable Limit	Permissible Limit in the Absence of Alternate Source	Method of Test (Ref to IS)	Remarks
			affected, has adverse effect on domestic uses and water supply structures, and promotes iron bacteria			n of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
ii)	Aluminum (as Al), mg/l max	0.1	Beyond this limit taste/appearance are affected, has adverse effect on domestic uses and water supply structures	0.3	IS 3025 (Part 59)	-
iii)	Copper (as Cu), mg/l max	0.05	Astringent taste, discoloration and corrosion of pipes, fittings and utensils will be caused beyond this	1.5	IS 3025 (Part 42)	-
iv)	Manganese (as Mn), mg/l max	0.1	Beyond this limit, taste/appearance are affected, has adverse effect on domestic uses and water supply structures	0.3	IS 3025 (Part 59)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
v)	Zinc (as Zn), mg/l max	5	Beyond this limit it can cause astringent taste and an opalescence in water	15	IS 3025 (Part 49)	-
vi)	Magnesium (as Mg), mg/l max	30	Encrustation in water supply structure and adverse effects on domestic use	No relaxation	IS 3025 (Part 46)	-
vii)	Barium (as Ba), mg/l max	0.7	May lead to cardiovascular problem	No relaxation	Annex F of IS 13428*/ S 15302	-
viii)	Calcium (as Ca) mg/l max	75	Encrustation in water supply structure and adverse effects on domestic use	200	3025 (Part 40)	-
ix)	Silver (as Ag), mg/l max	0.1	-	No relaxation	Annex J of IS 13428	-
x)	Selenium (as Se), mg/l max	0.01	Beyond this the water becomes toxic	No relaxation	3025 (Part 56) or IS 15303*	-
xi)	Molybdenum (as Mo), mg/l max	0.07	Beyond this, it may cause osteoporosis/bone	No relaxation	3025 (Part 2; 2002)/ ISO 11885:	-

Sl. No	Substance or Characteristic	Requirement (Acceptable Limit)	Undesirable Effect Outside the Acceptable Limit	Permissible Limit in the Absence of Alternate Source	Method of Test (Ref to IS)	Remarks
			disorders		1996	
xii)	Boron (as B), mg/l max	0.5	-	1.0	3025 (Part 57)	-
xiii)	Nitrate (as NO ₃) mg/l max	45	Beyond this, methemoglobinemia takes place/may be indicative of pollution	No relaxation	3025 (Part 34)	
xiv)	Sulfate (as SO ₄) mg/l max	200	Beyond this, causes gastrointestinal irritation when magnesium or sodium is present	400	3025 (Part 24)	May be extended to 400, provided that Mg does not exceed 30
xv)	Sulfide (as H ₂ S), mg/l max	Below detectable limit	Beyond this it may cause objectionable taste and odor	No relaxation	3025 (Part 29)	-
xvi)	Fluoride (as F) mg/l max	1.0	Fluoride may be kept as low as possible. High fluoride may cause fluorosis	1.5	3025 (Part 60)	-
xvii)	Chlorides (as Cl) mg/l max	250	Beyond this, taste corrosion and palatability are affected	1000	3025 (Part 32)	-
xviii)	Ammonia (as total ammonia - N), mg/l max	0.5	Toxicological effect about 200 mg per kg of body weight	No relaxation	3025 (Part 34)	-
xix)	Chloramines (as Cl ₂), mg/l max	0.2	Eyes, nose irritation, anemia, stomach discomfort	No relaxation	3025 (Part 26) or American Public Health Association (APHA) 4500-CIG	-
xx)	Residual, free chlorine, mg/l min	0.2	-	-	3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be

Sl. No	Substance or Characteristic	Requirement (Acceptable Limit)	Undesirable Effect Outside the Acceptable Limit	Permissible Limit in the Absence of Alternate Source	Method of Test (Ref to IS)	Remarks
						minimum 0.5 mg/l.
xxi)	Total alkalinity in calcium carbonate, mg/lmax	200	Beyond this limit, taste becomes unpleasant	600	3025 (Part 23)	-
xxii)	Phenolic compounds (as C ₆ H ₅ OH) mg/l,max	0.001	Beyond this may cause objectionable taste and odor	0.002	3025 (Part 43)	-
xxiii)	Mineral oil mg/l max	Below detectable limit	Beyond this limit, undesirable taste and odor after chlorination takes place	No relaxation	3025 (Part 39) Infrared partition method	-
xxiv)	Anionic detergents (as Methylene blue active substances) mg/lmax	0.2	Beyond this limit it can cause a light froth in water	1.0	Annex K to IS 13428-	-
<p>Note 2: in case of dispute, the method by “*” shall be referee method. Note 3: It is recommended that the acceptable limit be implemented. Values in excess of those mentioned under “Acceptable” render the water not acceptable, but still may be tolerated in the absence of an alternative source, but only up to permissible limits in the absence of alternate source in col (5), above which the sources will have to be rejected.</p>						
Parameters concerning toxic substances						
i)	Total chromium (as Cr ₆₊), mg/l max	0.05	May be carcinogenic above this limit	No relaxation	3025 (part 52)	-
ii)	Total arsenic (as As) mg/l max	0.01	Beyond this, the water becomes toxic	0.05	3025 (part 37)	
iii)	Mercury (as Hg) mg/l max	0.001	Beyond this the water becomes toxic	No relaxation	3025 (part 48)/Mercury analyzer	-
iv)	Cadmium (as Cd) mg/litmax	0.003	Beyond this, the water becomes toxic	No relaxation	3025 (part 41)	
v)	Lead (as Pb) mg/l max	0.01	Beyond this, the water becomes toxic	No relaxation	3025 (part 47)	
vi)	Nickel (as Ni), mg/l max	0.02	Beyond this, the water becomes toxic	No relaxation	3025 (part 54)	
vii)	Cyanide (CN), mg/l max	0.05	Beyond this, the water becomes toxic	No relaxation	3025 (part 27)	
viii)	Polynucleararomatic hydrocarbons (as PAH), mg/l max	0.0001	May be carcinogenic	No relaxation	APHA 6440	-
ix)	Polychlorinated biphenyls, mg/lmax	0.0005	May be carcinogenic	No relaxation	American Society for Testing and Material 5175/APH A 6630	-

Sl. No	Substance or Characteristic	Requirement (Acceptable Limit)	Undesirable Effect Outside the Acceptable Limit	Permissible Limit in the Absence of Alternate Source	Method of Test (Ref to IS)	Remarks
Bacteriological quality of drinking water						
Organisms		Guidelines				
<i>E. coli</i> or thermotolerant coliform bacteria		Must not be detectable in any 100 ml sample				
Total coliform bacteria		Must not be detectable in any 100 ml sample				

C. Effluent wastewater characteristics required as per latest standard [MoEFCC, GSR 1265(E), Environment (Protection) Amendment Rules, 2017]

Sr. No	Parameters	Units	Values
1	pH	-	6.5 to 9.0
2	Biochemical Oxygen Demand (BOD ₅)	mg/l	≤ 20
3	Total Suspended Solids (TSS)	mg/l	≤ 50
4	Faecal Coliform	MPN/100 ml	1000

III. Noise

A. Noise Pollution (Regulation and Control) Rules, 2002 as amended up to 2010

2. Rule 3. Ambient air quality standards with respect to noise for different areas/zones (1) The ambient air quality standards with respect to noise for different areas/zones shall be such as specified below. (2) The state government shall categorize the areas into industrial, commercial, residential, or silence areas/zones for the purpose of implementation of noise standards for different areas. (5) An area comprising not less than 100 m around hospitals, educational institutions, and courts may be declared as silence area/zone for the purpose of these rules.

Area Code	Category of Area	Limit in dB(A) Leq	
		Daytime	Nighttime
A.	Industrial area	75	70
B.	Commercial area	65	55
C.	Residential area	55	45
D.	Silence zone	50	40

Notes:

- Daytime is reckoned in between 6 a.m. and 10 p.m.
- Nighttime is reckoned in between 10 p.m. and 6 a.m.
- Silence zone is an area comprising not less than 100 m around hospitals, educational institutions, courts, religious places, or any other area declared as such by the competent authority.
- Mixed categories of areas may be declared as one of the four aforementioned 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 is an energy mean of the noise level over a specified period.

3. Rule 5. Restrictions on the use of loudspeakers/public address systems and sound-producing instruments.

4. Rule 5A. Restrictions on the use of sound-emitting construction equipment
5. (3) Sound emitting-construction equipment shall not be used or operated during nighttime in residential areas and silence zones.
6. (C) Noise limit for generator sets run with diesel
7. *Noise limit for generator sets run with diesel notified by Environment (Protection) second Amendment Rules vide GSR 371(E), dated 17 May 2002 at serial no.94 and its amendments vide GSR No 520(E) dated 1 July 2003; GSR 448(E), dated 12 July 2004; GSR 315(E) dated 16 May 2005; GSR 464(E) dated 7 August 2006; GSR 566(E) dated 29 August 2007 and GSR 752(E) dated 24 October 2008; G.S.R. 215 (E), dated 15 March, 2011 under the Environment (Protection) Act, 1986) is as follows:*
 - (i) Para 50. Noise limit for diesel generator sets (up to 1000 KVA) manufactured on or after 1 January 2005; and
 - (ii) The maximum permissible sound pressure level for new diesel generator (DG) sets with rated capacity up to 1000 KVA, manufactured on or after 1 January 2005, shall be 75 dB(A) at 1 m from the enclosure surface. The diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage itself.

OCCUPATIONAL NOISE EXPOSURE

**National Institute of Occupational Safety and Health
Criteria for a Recommended Standard: Occupational Noise Exposure
NIOSH Publication no. 98-126**

Table A44.1: Combination of Noise Exposure Levels and Duration that No Worker Exposure Shall Equal or Exceed

Exposure Level (dBA)	Duration		
	Hours	Minutes	Seconds
80	25	24	-
81	20	10	-
82	16	-	-
83	12	42	-
84	10	5	-
85	8	-	-
86	6	21	-
87	5	2	-
88	4	-	-
89	3	10	-
90	2	31	-
91	2	-	-
92	1	35	-
93	1	16	-
94	1	-	-
95	-	47	37
96	-	37	48
97	-	30	-
98	-	23	49
99	-	18	59
100	-	15	-
103	-	7	30
105	-	4	43
110	-	1	29

APPLICABLE ENVIRONMENTAL STANDARDS PER ADB SAFEGUARD POLICY STATEMENT

Following requirements of ADB SPS, PMO and RPMOs shall apply pollution prevention and control technologies and practices consistent with international good practice. When the Government of India regulations differ from these levels and measures, PMO shall achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific subproject circumstances, PMO will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

Applicable Ambient Air Quality Standards for India Projects

Parameter	Location ^a	Applicable Standards Per ADB SPS ^e ($\mu\text{g}/\text{m}^3$)
PM ₁₀	Industrial Residential, Rural and Other Areas	20 (Annual) ^c 50 (24-hr) ^c
	Sensitive Area	20 (Annual) ^c 50 (24-hr) ^c
PM ₂₅	Industrial Residential, Rural and Other Areas	10 (Annual) ^c 25 (24-hr) ^c
	Sensitive Area	10 (Annual) ^c 25 (24-hr) ^c
SO ₂	Industrial Residential, Rural and Other Areas	50 (Annual) ^b 20 (24-hr) ^c 500 (10-min) ^c
	Sensitive Area	20 (Annual) ^b 20 (24-hr) ^c 500 (10-min) ^c
NO ₂	Industrial Residential, Rural and Other Areas	40 (Annual) ^b 80 (24-hr) ^b 200 (1-hr) ^c
	Sensitive Area	30 (Annual) ^b 80 (24-hr) ^b 200 (1-hr) ^c
CO	Industrial Residential, Rural and Other Areas	2,000 (8-hr) ^b 4,000 (1-hr) ^b 100,000 (15-min) ^d
	Sensitive Area	2,000 (8-hr) ^b 4,000 (1-hr) ^b 100,000 (15-min) ^d
Ozone (O ₃)	Industrial Residential, Rural and Other Areas	100 (8-hr) ^b 180 (1-hr) ^b
	Sensitive Area	100 (8-hr) ^b 180 (1-hr) ^b
Lead (Pb)	Industrial, Residential, Rural and Other Areas	0.5 (Annual) ^b 1.0 (24-hr) ^b
	Sensitive Area	0.5 (Annual) ^b 1.0 (24-hr) ^b
Ammonia (NH ₃)	Industrial Residential, Rural and Other Areas	100 (Annual) ^b 400 (24-hr) ^b
	Sensitive Area	100 (Annual) ^b 400 (24-hr) ^b
Benzene (C ₆ H ₆)	Industrial Residential, Rural and Other Areas	5 (Annual) ^b

	Sensitive Area	5 (Annual) ^b
Benzo(o)pyrene (BaP) particulate phase only	Industrial Residential, Rural and Other Areas	0.001 (Annual) ^b
	Sensitive Area	0.001 (Annual) ^b
Arsenic (As)	Industrial Residential, Rural and Other Areas	0.006 (Annual) ^b
	Sensitive Area	0.006 (Annual) ^b
Nickel (Ni)	Industrial Residential, Rural and Other Areas	0.02 (Annual) ^b
	Sensitive Area	0.02 (Annual) ^b

^a Sensitive area refers to such areas notified by the India Central Government.

^b Notification by Ministry of Environment and Forests, Government of India Environment (Protection) Seventh Amendment Rules, 2009

^c WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. *Global update 2005*. WHO. 2006

^d Air Quality Guidelines for Europe Second Edition. WHO 2000.

^e Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

Applicable Ambient Noise Level Standards per ADB SPS

Receptor/ Source	Applicable Standards Per ADB SPS ^c (dBA)	
	Day time	Night time
Industrial area	70 ^b	70 ^b
Commercial area	65 ^a	55 ^a
Residential Area	55 ^a	45 ^a
Silent Zone	50 ^a	40 ^a

^a Noise Pollution (Regulation and Control) Rules, 2002 as amended up to 2010.

^b Guidelines for Community Noise. WHO. 1999

^c Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

Applicable Drinking Water Quality Standards for India Projects

Group	National Standards for Drinking Water ^a			WHO Guidelines for Drinking-Water Quality, 4 th Edition, 2011 ^b	Applicable Standards Per ADB SPS ^{a, c, d}
	Parameter	Unit	Max. Concentration Limits ^d		
Physical	Turbidity	NTU	1 (5)	-	1 (5)
	pH		6.5 – 8.5	none	6.5 – 8.5
	Color	Hazen units	5 (15)	none	5 (15)
	Taste and Odor		Agreeable	-	Agreeable
	TDS	mg/l	500 (2,000)	-	500 (2,000)
	Iron	mg/l	0.3	-	0.3
	Manganese	mg/l	0.1 (0.3)	-	0.1 (0.3)
	Arsenic	mg/l	0.01 (0.05)	0.01	0.01
	Cadmium	mg/l	0.003	0.003	0.003
	Chromium	mg/l	0.05	0.05	0.05
Cyanide	mg/l	0.05	0.05	0.05	

	Fluoride	mg/l	1 (1.5)	1.5	1 (1.5)
	Lead	mg/l	0.01	0.01	0.01
	Ammonia	mg/l	0.5	none established	0.5
Chemical	Chloride	mg/l	250 (1,000)	none established	250 (1,000)
	Sulphate	mg/l	200 (400)	none	200 (400)
	Nitrate	mg/l	45	50	45
	Copper	mg/l	0.05 (1.5)	2	0.05 (1.5)
	Total Hardness	mg/l	200 (600)	-	200 (600)
	Calcium	mg/l	75 (200)	-	75 (200)
	Zinc	mg/l	5 (15)	none established	5 (15)
	Mercury	mg/l	0.001	0.006	0.001
	Aluminum	mg/l	0.1 (0.3)	none established	0.1 (0.3)
	Residual Chlorine	mg/l	0.2	5	0.2
Micro Germs	E-coli	MPN/100ml	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample
	Total Coliform	MPN/100ml			

^a Bureau of India Standard 10200: 2012.

^b Health-based guideline values.

^c Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

^d Figures in parenthesis are maximum limits allowed in the absence of alternate source.

**HAZARDOUS WASTES (MANAGEMENT HANDLING AND TRANSBOUNDARY MOVEMENT)
RULES, 2016 DATED 4 APRIL 2016**

1. These rules shall apply to the management of hazardous and other wastes as specified in the Schedules to these rules but shall not apply to - (a) waste-water and exhaust gases as covered under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and the rules made thereunder and as amended from time to time; (b) wastes arising out of the operation from ships beyond five km of the relevant baseline as covered under the provisions of the Merchant Shipping Act, 195 radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and the rules made thereunder and as amended from time to time; (d) bio-medical wastes covered under the Bio-Medical Wastes (Management and Handling) Rules, 1998 made under the Act and as amended from time to time; and (e) wastes covered under the Municipal Solid Wastes (Management and Handling) Rules, 2000 made under the Act and as amended from time to time. 8 (44 of 1958) and the rules made thereunder and as amended from time to time.

2. **Responsibilities of State Government for environmentally sound management of hazardous and other wastes.** – (1) Department of Industry in the State or any other government agency authorizedz in this regard by the State Government, to ensure earmarking or allocation of industrial space or shed for recycling, pre-processing and other utilizationz of hazardous or other waste in the existing and upcoming industrial park, estate and industrial clusters; (2) Department of Labour in the State or any other government agency authorizedz in this regard by the State Government shall,- (a) ensure recognition and registration of workers involved in recycling, preprocessing and other utilizationz activities; (b) assist formation of groups of such workers to facilitate setting up such facilities; (c) undertake industrial skill development activities for the workers involved in recycling, pre-processing and other utilizationz; (d) undertake annual monitoring and to ensure safety and health of workers involved in recycling, pre-processing and other utilizationz. (3) Every State Government may prepare integrated plan for effective implementation of these provisions and to submit annual report to the Ministry of Environment, Forest and Climate Change, in the Central Government.

FOREST (CONSERVATION) ACT, 1980 AND FOREST CONSERVATION RULES, 2003 AS AMENDED

1. As per Rule 6 of the Forest (Conservation) Rules, 2003, every user agency who wants to use any forest land for non-forest purposes shall make its proposal in the appropriate form appended to these rules, i.e., form A for proposals seeking first time approval under the act and form B for proposals seeking renewal of leases where approval of the central government under the act had already been obtained earlier. The proposal shall be submitted to the concerned nodal officer authorized in this behalf by the state government, along with requisite information and documents complete in all respects, well in advance of taking up any non-forest activity on the forest land.

WETLANDS (CONSERVATION AND MANAGEMENT) RULES, 2017**MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE****NOTIFICATION**

New Delhi, the 26th September, 2017

G.S.R. 1203(E).—Whereas the wetlands, vital parts of the hydrological cycle, are highly productive ecosystems which support rich biodiversity and provide a wide range of ecosystem services such as water storage, water purification, flood mitigation, erosion control, aquifer recharge, microclimate regulation, aesthetic enhancement of landscapes while simultaneously supporting many significant recreational, social and cultural activities, being part of our rich cultural heritage;

And whereas many wetlands are threatened by reclamation and degradation through drainage and landfill, pollution (discharge of domestic and industrial effluents, disposal of solid wastes), hydrological alteration (water withdrawal and changes in inflow and outflow), over-exploitation of their natural resources resulting in loss of biodiversity and disruption in ecosystem services provided by wetlands;

And whereas clause (g) of article 51A of the Constitution stipulates that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures;

And whereas the Environment (Protection) Act, 1986 is a comprehensive legislation to provide protection and improvement of the environment, including *inter-alia*, wetlands, and for matters connected therewith;

And whereas the National Environment Policy, 2006 recognises the ecosystem services provided by wetlands and emphasizes the need to set up a regulatory mechanism for all wetlands so as to maintain their ecological character, and ultimately support their integrated management;

And whereas India is a signatory to the Ramsar Convention on Wetlands and is committed to conservation and wise use of all wetlands within its territory;

And whereas the Central Government has published the Wetlands (Conservation and Management) Rules, 2010, vide number G.S.R. 951(E), dated the 4th December, 2010;

And whereas conservation and wise use of wetlands can provide substantial direct and indirect economic benefits to state and national economy, and thereby the Central Government stands committed to mainstreaming full range of wetland biodiversity and ecosystem services in development planning and decision making for various sectors;

And whereas the State Governments and Union Territory Administrations need to take into account wetland ecosystem services and biodiversity values likewise within their developmental programming and economic well-being, also taking into cognizance that land and water, two major ecological constituents of wetland ecosystems, are enlisted as State subjects as per the Constitution;

And whereas the Central Government considered it necessary to supersede the Wetlands (Conservation and Management) Rules, 2010 for effective conservation and management of wetlands in the country;

And whereas the Central Government had, in exercise of the powers conferred by section 25, read with sub-section (1) and clause (v) of sub-section (2) and sub-section (3) of section 3 of the Environment (Protection) Act, 1986, published the draft Wetlands (Conservation and Management) Rules, 2016, vide number G.S.R. 385 (E) dated 31st March, 2016 for information of the public likely to be affected thereby; and notice was given that the said draft rules would be taken into consideration by the Central Government after expiry of a period of sixty days from the date on which copies of the Gazette notification is made available to the public;

And whereas the Central Government has received the suggestions and objections from the State Governments, Union Territories and its organisations, individuals and civil society organisations on the draft Wetlands (Conservation and Management) Rules, 2016;

And whereas the suggestions and objections received in response to the above mentioned draft rules have been duly considered by the Central Government in consultation with State Governments and Union Territory Administrations.

Now, therefore, in exercise of the powers conferred by section 25, read with sub-section (1) and clause (v) of sub-section (2) and sub-section (3) of section 3 and section 23 of the Environment (Protection) Act, 1986 and in supersession of the Wetlands (Conservation and Management) Rules, 2010, except as respects things done or omitted to be done before such supersession, the Central Government hereby makes the following rules for conservation and management of wetlands, namely:—

1. Short title and commencement.—

- (1) These rules may be called the Wetlands (Conservation and Management) Rules, 2017.
- (2) These shall come into force from the date of their publication in the Official Gazette.

2. Definitions.—

- (1) In these rules, unless the context otherwise requires,-
 - (a) "Act" means the Environment (Protection) Act, 1986;
 - (b) "Authority" means the State Wetlands Authority or Union Territory Wetlands Authority, as the case may be;

- (c) "Committee" means the National Wetlands Committee referred to in rule 6;
 - (d) "ecological character" means the sum of ecosystem components, processes and services that characterise the wetlands;
 - (e) "integrated management plan" means a document which describes strategies and actions for achieving wise use of the wetland and the plan shall include objectives of site management; management actions required to achieve the objectives; factors that affect, or may affect, the various site features; monitoring requirements for detecting changes in ecological character and for measuring the effectiveness of management; and resources for management implementation;
 - (f) "Ramsar Convention" means the Convention on Wetlands signed at Ramsar, Iran in 1971;
 - (g) "wetland" means an area of marsh, fen, peatland or water; whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters, but does not include river channels, paddy fields, human-made water bodies/tanks specifically constructed for drinking water purposes and structures specifically constructed for aquaculture, salt production, recreation and irrigation purposes;
 - (h) "wetlands complexes" means two or more ecologically and hydrologically contiguous wetlands and may include their connecting channels/ducts;
 - (i) "wise use of wetlands" means maintenance of their ecological character, achieved through implementation of ecosystem approach within the context of sustainable development;
 - (j) "zone of influence" means that part of the catchment area of the wetland or wetland complex, developmental activities in which induce adverse changes in ecosystem structure, and ecosystem services.
- (2) The words and expressions used in these rules and not defined, but defined in the Act, shall have the meanings assigned to them in the Act.
- 3. Applicability of rules.**—These rules shall apply to the following wetlands or wetlands complexes, namely:—
- (a) wetlands categorised as 'wetlands of international importance' under the Ramsar Convention;
 - (b) wetlands as notified by the Central Government, State Government and Union Territory Administration:
- Provided that these rules shall not apply to the wetlands falling in areas covered under the Indian Forest Act, 1927, the Wild Life (Protection) Act, 1972, the Forest (Conservation) Act, 1980, the State Forest Acts, and the Coastal Regulation Zone Notification, 2011 as amended from time to time.
- 4. Restrictions of activities in wetlands.**—(1) The wetlands shall be conserved and managed in accordance with the principle of 'wise use' as determined by the Wetlands Authority.
- (2) The following activities shall be prohibited within the wetlands, namely,-
- (i) conversion for non-wetland uses including encroachment of any kind;
 - (ii) setting up of any industry and expansion of existing industries;
 - (iii) manufacture or handling or storage or disposal of construction and demolition waste covered under the Construction and Demolition Waste Management Rules, 2016; hazardous substances covered under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 or the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms Genetically engineered organisms or cells, 1989 or the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008; electronic waste covered under the E-Waste (Management) Rules, 2016;
 - (iv) solid waste dumping;
 - (v) discharge of untreated wastes and effluents from industries, cities, towns, villages and other human settlements;
 - (vi) any construction of a permanent nature except for boat jetties within fifty metres from the mean high flood level observed in the past ten years calculated from the date of commencement of these rules; and,
 - (vii) poaching.

Provided that the Central Government may consider proposals from the State Government or Union Territory Administration for omitting any of the activities on the recommendation of the Authority.

5. **Wetlands Authorities.**—(1) The Central Government hereby constitutes the State Wetlands Authority in each State with the following members, namely:—
- (i) Minister In-charge of the Department of Environment/Forests of the State Government or Minister In-charge of the Department handling wetlands - Chairperson;
 - (ii) Chief Secretary of the State or Additional Chief Secretary equivalent - Vice Chairperson;
 - (iii) Secretary in-charge of the Department of Environment - Member *ex-officio*;
 - (iv) Secretary in-charge of the Department of Forests - Member *ex-officio*;
 - (v) Secretary in-charge of the Department of Urban Development - Member *ex-officio*;
 - (vi) Secretary in-charge of the Department of Rural Development - Member *ex-officio*;
 - (vii) Secretary in-charge of the Department of Water Resources - Member *ex-officio*;
 - (viii) Secretary in-charge of the Department of Fisheries - Member *ex-officio*;
 - (ix) Secretary in-charge of the Department of Irrigation and Flood Control - Member *ex-officio*;
 - (x) Secretary in-charge of the Department of Tourism - Member *ex-officio*;
 - (xi) Secretary in-charge of the Department of Revenue - Member *ex-officio*;
 - (xii) Director, State Remote Sensing Centre - Member *ex-officio*;
 - (xiii) Chief Wildlife Warden - Member *ex-officio*;
 - (xiv) Member Secretary, State Biodiversity Board - Member *ex-officio*;
 - (xv) Member Secretary, State Pollution Control Board - Member *ex-officio*;
 - (xvi) Additional Principal Chief Conservator of Forests of the Regional Office of Ministry of Environment, Forest and Climate Change - Member *ex-officio*;
 - (xvii) One expert each in the fields of wetland ecology, hydrology, fisheries, landscape planning and socio-economics to be nominated by the State Government; and
 - (xviii) Additional Secretary/Joint Secretary/Director in the Department of Environment/Forests or Department handling wetlands - Member Secretary.
- (2) The Central Government hereby constitutes the Union Territory Wetlands Authority for each Union Territory with the following members, namely:—
- (i) Administrator or Chief Secretary of the Union Territory - Chairperson;
 - (ii) Secretary in-charge of the Department of Environment - Vice Chairperson;
 - (iii) Secretary in-charge of the Department of Forests - Member *ex-officio*;
 - (iv) Secretary in-charge of the Department of Urban Development - Member *ex-officio*;
 - (v) Secretary in-charge of the Department of Rural Development - Member *ex-officio*;
 - (vi) Secretary in-charge of the Department of Water Resources - Member *ex-officio*;
 - (vii) Secretary in-charge of the Department of Fisheries - Member *ex-officio*;
 - (viii) Secretary in-charge of the Department of Irrigation and Flood Control - Member *ex-officio*;
 - (ix) Secretary in-charge of the Department of Tourism - Member *ex-officio*;
 - (x) Secretary in-charge of the Departments of Revenue - Member *ex-officio*;
 - (xi) Director, Remote Sensing Centre - Member *ex-officio*;
 - (xii) Member Secretary, Union Territory Pollution Control Committee - Member *ex-officio*;

- (xiii) Member Secretary, Biodiversity Board of the UT - Member *ex-officio*;
 - (xiv) Chief Wildlife Warden - Member *ex-officio*;
 - (xv) Additional Principal Chief Conservator of Forests of the Regional Office of Ministry of Environment, Forest and Climate Change- Member *ex-officio*;
 - (xvi) One expert each in the fields of wetland ecology, hydrology, fisheries, landscape planning and socio-economics to be nominated by the Union Territory Administration; and
 - (xvii) Additional Secretary/Joint Secretary/Director in the Department of Environment/Forests or Department handling wetlands - Member Secretary.
- (3) The State Wetlands Authority or Union Territory Wetlands Authority may co-opt other members, not exceeding three in number, if required.
- (4) The State Wetlands Authority or Union Territory Wetlands Authority shall exercise the following powers and perform the following functions, namely:-
- (a) prepare a list of all wetlands of the State or Union Territory within three months from the date of publication of these rules;
 - (b) prepare a list of wetlands to be notified, within six months from the date of publication of these rules; taking into cognizance any existing list of wetlands prepared/notified under other relevant State Acts;
 - (c) recommend identified wetlands, based on their Brief Documents, for regulation under these rules;
 - (d) prepare a comprehensive digital inventory of all wetlands within a period of one year from the date of publication of these rules and upload the same on a dedicated web portal to be developed by the Central Government for the said purpose; the inventory to be updated every ten years;
 - (e) develop a comprehensive list of activities to be regulated and permitted within the notified wetlands and their zone of influence;
 - (f) recommend additions, if any, to the list of prohibited activities for specific wetlands;
 - (g) define strategies for conservation and wise use of wetlands within their jurisdiction; wise use being a principle for managing these ecosystems which incorporates sustainable uses (such as capture fisheries at subsistence level or harvest of aquatic plants) as being compatible with conservation, if ecosystem functions (such as water storage, groundwater recharge, flood buffering) and values (such as recreation and cultural) are maintained or enhanced;
 - (h) review integrated management plan for each of the notified wetlands (including trans-boundary wetlands in coordination with Central Government), and within these plans consider continuation and support to traditional uses of wetlands which are harmonized with ecological character;
 - (i) in cases wherein lands within boundary of notified wetlands or wetlands complex have private tenancy rights, recommend mechanisms for maintenance of ecological character through promotional activities;
 - (j) identify mechanisms for convergence of implementation of the management plan with the existing State/Union Territory level development plans and programmes;
 - (k) ensure enforcement of these rules and other relevant Acts, rules and regulations and on half-yearly basis (June and December of each calendar year) inform the concerned State Government or Union Territory Administration or Central Government on the status of such notified wetlands through a reporting mechanism;
 - (l) coordinate implementation of integrated management plans based on wise use principle through various line departments and other concerned agencies;
 - (m) function as nodal authority for all wetland specific authorities within the State or Union Territory Administration;
 - (n) issue necessary directions for conservation and sustainable management of wetlands to the respective implementing agencies;

- (o) undertake measures for enhancing awareness within stakeholders and local communities on values and functions of wetlands; and
 - (p) Advise on any other matter *suo-motu*, or as referred by the State Government/Union Territory Administration.
 - (5) The concerned Department of the State Government or Union Territory shall provide all necessary support and act as nodal Department and Secretariat to the Authority.
 - (6) The Authority shall, within ninety days of publication of these rules, shall constitute,—
 - (a) a technical committee to review brief documents, management plans and advise on any technical matter referred by the Wetland Authority; and
 - (b) a grievance committee consisting of four members to provide a mechanism for hearing and forwarding the grievances raised by public to the Authority;
 - (7) The Committees referred to in sub-rule (6) shall meet at least once in every quarter to perform their functions.
 - (8) The Authority shall meet at least thrice in a year.
 - (9) The term of non-official members of the Authority nominated by State Government or Union Territory Administration, shall be for a period not exceeding three years.
6. **Constitution of National Wetlands Committee.**—(1) The Central Government, hereby constitutes the National Wetlands Committee with the following members, namely:—
- (i) Secretary, Ministry of Environment, Forest and Climate Change, Government of India - Chairperson;
 - (ii) Special Secretary or Additional Secretary dealing with wetlands, Ministry of Environment, Forest and Climate Change, Government of India-Vice Chairperson;
 - (iii) Additional Director General, Wildlife, Ministry of Environment, Forest and Climate Change, Government of India - Member *ex-officio*;
 - (iv) Adviser or Joint Secretary dealing with wetlands, Ministry of Environment, Forest and Climate Change - Member *ex-officio*;
 - (v) Joint Secretary, Ministry of Tourism, Government of India- Member *ex-officio*;
 - (vi) Joint Secretary , Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India- Member *ex-officio*;
 - (vii) Joint Secretary, Ministry of Agriculture and Farmers Welfare, Government of India- Member *ex-officio*;
 - (viii) Joint Secretary, Ministry of Social Justice and Empowerment, Government of India- Member *ex-officio*;
 - (ix) Joint Secretary, Ministry of Urban Development, Government of India- Member *ex-officio*;
 - (x) Joint Secretary, Ministry of Rural Development, Government of India- Member *ex-officio*;
 - (xi) The Chairman, Central Pollution Control Board - Member *ex-officio*;
 - (xii) Director, Zoological Survey of India or Scientist F- Member *ex-officio*;
 - (xiii) Director, Botanical Survey of India or Scientist F- Member *ex-officio*;
 - (xiv) Director, Space Application Centre, Ahmedabad or Scientist F- Member *ex-officio*;
 - (xv) Member, Central Water Commission - Member *ex-officio*;
 - (xvi) Adviser, Niti Aayog - Member *ex-officio*;
 - (xvii) Three representatives of State Government or Union Territory Administration on a rotational basis for a tenure of two years each;
 - (xviii) One expert each in the fields of wetland ecology, hydrology, fisheries, landscape planning & socio-economics; and

- (xix) Director/Additional Director/Joint Director dealing with wetlands, Ministry of Environment, Forest and Climate Change - Member Secretary.
 - (2) The National Wetlands Committee may co-opt other members, not exceeding three in number, if required.
 - (3) The National Wetlands Committee shall perform the following functions, namely:-
 - (a) advise the Central Government on appropriate policies and action programmes for conservation and wise use of wetlands;
 - (b) evolve norms and guidelines for integrated management of wetlands based on wise use principle;
 - (c) monitor implementation of these rules by the Authority;
 - (d) advise the Central Government on proposals received from State Governments or Union Territory Administrations for omission of the prohibited activities as referred in sub-rule (2) of rule 4;
 - (e) recommend designation of wetlands of international importance under Ramsar Convention;
 - (f) recommend trans-boundary wetlands for notification;
 - (g) review progress of integrated management of Ramsar sites and transboundary wetlands;
 - (h) advise on collaboration with international agencies on issues related to wetlands; and
 - (i) advise on any other matter *suo-moto*, or as referred by the Central Government.
 - (4) The tenure of non-official members of the Committee shall not exceed three years.
 - (5) The Committee shall meet at least once in every six months.
7. **Delegation of powers and functions to the State Governments and Union Territory Administrations.—**
- (1) The concerned Department of the State Government or Union Territory Administration shall, within a period of one year from the date of publication of these rules, prepare a Brief Document for each of the wetland identified for notification, providing:—
 - (a) demarcation of wetland boundary supported by accurate digital maps with coordinates and validated by ground truthing;
 - (b) demarcation of its zone of influence and land use and land cover thereof indicated in a digital map;
 - (c) ecological character description;
 - (d) account of pre-existing rights and privileges;
 - (e) list of site-specific activities to be permitted within the wetland and its zone of influence;
 - (f) list of site specific activities to be regulated within the wetland and its zone of influence; and
 - (g) modalities for enforcement of regulation;
 - (2) Based on the Brief Document, the Authority shall make recommendations to the State Government or Union Territory Administration for notifying the wetlands.
 - (3) The State Government or Union Territory Administration shall, after considering the objections, if any, from the concerned and affected persons, notify the wetlands in the Official Gazette, within a period not exceeding 240 days from the date of recommendation by the Authority.
 - (4) (a) In case of trans-boundary wetlands, the Central Government shall coordinate with concerned State Governments and Union Territory Administrations to prepare the Brief Document containing information as listed in sub-rule (1).
 - (b) Based on the Brief Document, the National Wetlands Committee shall make recommendations to the Central Government for notification of the wetland.
 - (c) The Central Government shall, after considering the objections, if any, from the concerned and affected persons, notify the wetlands in the Official Gazette, within a period not exceeding 240 days from the date of recommendation by the Committee.

- (5) (a) The Central Government shall create a dedicated web portal for information relating to wetlands.
- (b) The Central Government, State Government and Union Territory Administration shall upload all relevant information and documents pertaining to wetlands in their jurisdiction.

[F. No. J-22012/78/2003-CS (W) Pt. V]

Dr. A. DURAISAMY, Scientist 'G'

**ANCIENT MONUMENTS AND ARCHAEOLOGICAL SITES AND REMAINS
(AMENDMENT AND VALIDATION) ACT, 2010**

1. The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, hereinafter referred to as the Amendment Act, has been enacted to amend the Ancient Monuments and Archaeological Sites and Remains Act, 1958 and to make provision for validation of certain actions taken by the central government under the said act. The act came into force (except sections 3,5,7, and 8–11) on 23 January 2010.
2. The limits of the prohibited area and regulated area around the monuments, archaeological sites, and remains declared by the central government as protected have been specified in the principal act as 100 m and 200 m, respectively. The limits so fixed may be further extended on the basis of gradation and classification of the monuments, archaeological sites, and remains to be done by the National Monument Authority, which is to be constituted by the central government by virtue of the amendment in the principal act.
3. Henceforth, no permission for construction of any public projects or any other nature shall be granted in the prohibited areas of the protected monument and protected area. However, permission for repair and renovation could be granted by the competent authority, to be specified by the central government, on the recommendation of the National Monument Authority, subject to the condition that the building or structure is pre-1992, or permission for construction or reconstruction of such building or structure had been granted by the Archaeological Survey of India.
4. With respect to regulated area, the Competent Authority may grant permission for construction, reconstruction, repair, and renovation on the basis of recommendation of the National Monument Authority duly taking note of heritage bylaws, which shall be prepared with respect to each protected monument and protected area.

WEST BENGAL TREES (PROTECTION AND CONSERVATION IN NON-FOREST AREAS) RULES, 2007 UNDER WEST BENGAL TREES (PROTECTION AND CONSERVATION IN NON-FOREST AREAS) ACT, 2006

Permission to fell trees. 4. (1) Permission for felling or otherwise disposing of any tree shall be granted for the following purposes:

- a) if it causes serious inconvenience to the local residents, or poses threat to human life or a building or property, or disrupts public services (transportation system);
- b) if it attains natural death due to any disease, or natural calamities like storm or lightning;
- c) if a tree was raised with the purpose of social forestry or farm forestry and has since attained maturity for harvesting;
- d) if the tree is sought to be removed for facilitating reforestation of the land for the purpose of social forestry or farm forestry;
- e) if the owner intends to carry out the felling of trees to meet expenses for family obligations, such as medical treatment, marriage, education, or to meet requirement of timber for construction or repair of his own house;
- f) if it becomes absolutely necessary to fell the trees for the disposing of land or settling of the land dispute; and
- g) if in a tea garden, proviso to sub-section (3) of section 6 shall be complied with.

2 (a) A person other than a developer, seeking permission for felling or otherwise disposing of any tree, shall submit an application to the competent authority in form I (A), provided, however, that a developer shall submit application to the competent authority in the form I (B).

Procedure for obtaining permission to fell tree. 5. (1) For the purpose of obtaining permission to fell or otherwise dispose of any tree, the applicant shall pay the following fee to the competent authority at the time of submitting application:

Developer: ₹1,000.00

A person other than a developer: ₹25.00 (in rural areas) and ₹100.00 (other than rural areas)

Obligation to plant trees 6. (1) Every person who, after obtaining permission by the competent authority, fells any tree, shall undertake plantation of two trees in place of every tree felled, in the same plot of land, and will tend to such plantation for trees.

Compulsory plantation of trees. 7. A developer shall undertake plantation of trees over at least 20% of the total area in the same plot or plots of land as subject to such development, in accordance with a plantation plan approved by the competent authority, and provided that the total number of trees to be planted shall be at least five times the number of trees to be felled. The species to be planted, spacing, planting pattern, and time schedule for plantation and maintenance shall be specified in the plan.

Competent authority

Divisional Forest Officer – Kolkata Municipal Corporation area

Form I-(A) and Form I-(B) can be downloaded from (<http://www.westbengalforest.gov.in>)

**DIRECTION NO. EN/3170/T-IV-7 /001/2009 DATED 10 DECEMBER 2009 OF DEPARTMENT
OF ENVIRONMENT, GOVERNMENT OF WEST BENGAL**

All municipalities, local authorities, and all other concerned government departments within the State of West Bengal are to implement the following norms to be followed by the developers, contractors, or any other infrastructure developers.

Preventive measures:

- a) wrap construction area/buildings with geo-textile fabric, install dust barriers, or other actions, as appropriate for the location;
- b) apply water and maintain soils in a visible damp or crusted condition for temporary stabilization;
- c) apply water prior to leveling or any other earth-moving activity to keep the soil moist throughout the process;
- d) limit vehicle speeds to 15 mph on the work site;
- e) clean wheels and undercarriage of haul trucks prior to leaving construction site;
- f) apply and maintain dust suppressant on haul routes;
- g) apply a cover or screen to stockpiles, stabilize stockpiles upon completion of activity with water, and maintain a dust palliative for all outer surfaces of the stockpiles;
- h) stabilize surface soils where loaders, support equipment, and vehicles will operate by using water, and maintain surface soils in a stabilized condition where loaders, support equipment, and vehicles will operate;
- i) stabilize adjacent disturbed soils, following paving with immediate landscaping activity or installation of vegetative or rock cover;
- j) maintain dust control during working hours and clean track-out from paved surfaces at the end of the work shift/day; track-out must now extend 50 feet or more and must be cleaned daily, at the minimum;
- k) stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slope;
- l) dispose of debris in consultation with the local authorities following proper environmental management practice; and
- m) during construction work, including cutting of marble, ensure that ambient noise level should not exceed more than 65 dB(A).

Practices to be discarded:

- a) Don't dispose of debris indiscriminately.
- b) Don't allow the vehicles to run at high speed within the work site.
- c) Don't cut materials without proper dust control/noise control facility.
- d) Don't keep materials without effective cover.
- e) Don't allow access in the work area except to workers to limit soil disturbance and prevent access by fencing, ditches, vegetation, berms, or other suitable barrier.
- f) Don't leave the soil, sand, and cement stack uncovered.
- g) Don't keep materials or debris on the roads or pavements.
- h) Burning of old tires in hot mix plant as a fuel during construction and repair of the roads for melting coal tar should be prohibited.

THE WEST BENGAL INLAND FISHERIES ACT, 1984

Chapter IIIA Bar to conversion of water area etc. for other use

Rule 17A. Bar to conversion of water area, etc. for other use. — (1) No person shall—

(a) put any water area, including embankment, measuring 5 cottahs or 0.0335 haor more, which is capable of being used as fishery, or any naturally or artificially depressed land holding measuring 5 cottahs or 0.035 haor more, which retains water for a minimum period of 6 months in a year, to such use, other than fishery, as may result in abolition of fishery, or

(b) fill up any water area, including embankment or naturally or artificially depressed land holding as aforesaid, with a view to converting it into solid land for the purpose of construction of any building thereon or for any other purpose, or

(c) divide any water area, including embankment or naturally or artificially depressed land holding as aforesaid, into parts so as to make any such part measure less than 5 cottahs or 0.0335 haor for any purpose other than pisciculture, or transfer any part of any such water area, including embankment or naturally or artificially depressed land holding as so divided, to any other person.

(9) No water area including embankment or naturally or artificially depressed land holding, referred to in clause (a) of sub-section (1), shall be

(a) put to any use other than for fishery, or

(b) filled up with a view to converting it into solid land, for the purpose of implementation of any development scheme by any department of the central government or the state government or any public undertaking under the administrative control of the central government or the state government or any statutory body or local authority or any organization in the public sector or any organization or individual in the private sector, except with the prior approval of the state government in the Department of Fisheries.

FORM 1A

Application for change of character, conversion or alteration in the mode of use of land
(See sub-rule (1) of rule 5A)

FROM :

.....

.....

[state Name & Address of the applicant(s)]

TO : The District Land & Land Reforms Officer /
The Sub-divisional Land & Land Reforms Officer
The Block Land & Land Reforms Officer.

Sub. Application for permission for change of character, conversion or alteration in the mode of use of land.

Sir,

I / We have the honour to apply for permission for change of character, conversion or alteration in the mode of use of the land / land having water body for the purpose of

2. The particulars of the land / land having water body with respect to which such permission is required is furnished below:-

- (1) Name of the District :
- (2) Name of the Block :
- (3) Name of the police station :
- (4) Name of the *mouza* :
- (5) Jurisdiction List No. :
- (6) *Khatian* No. (R.S & L.R) :
- (7) Plot No. (R.S & L.R) :
- (8) Area of the Plot (R.S & L.R) :
[If part plot, specify the area and portion]
- (9) Existing classification of the Plot :

3. The following documents, in duplicate, are enclosed with this application:-

- (1) Copy of mutation certificate or copy of current record-of-rights.
- (2) Copy of current rent receipt
- (3) Sketch map showing the plot in question with side measurement and its surroundings including approach road (may not be to the scale)
- (4) Affidavit for creation of compensatory water body
(Applicable in cases where the application relates to change or conversion of the land having water body of any description or size)
- (5) Copy of no objection certificate of the West Bengal Pollution Control Board
(Applicable only in such cases wherever such certificate is required)

(6) Copy of Detailed Project Report (DPR) duly vetted by the Competent Authority
(Applicable only in cases where the application relates to change, conversion or alteration of land for industrial, commercial or housing complex)

(4) I / We also declare and undertake –

1. That the land, in question shall be used strictly for the purpose for which such permission shall be granted;
2. That there is no *bargadar*, in the land, in question;
3. That no work shall be done on the land, in question that may lead to conversion of the same unless permission as sought for is granted;
4. That necessary approval or permission or licence shall be obtained from the appropriate authority as required for execution of the work on the land, in question as soon as permission for conversion as sought for is granted;

(5) I / We further declare –

1. That the land, in question is under peaceful possession of myself / ourselves and it is free from all encumbrances;
2. That the land, in question is not involved in any proceeding for vesting under the provisions of any law;
3. That the land, in question is not involved in any court case which prohibits such conversion, change or alteration in the mode of use of the land.

(6) I / We also declare and undertake that in case it is proved at any point of time that the documents furnished and statements made hereinabove are not true and correct, I / We am / are liable for any legal action which will be taken by the competent authority in this regard including cancellation of order granting change of character, conversion or alteration in the mode of use of land as sought for.

Encl. As stated above

Yours faithfully,

Place :

(Full signature of the applicants(s)

Date :

with seal, if any.)

FORM 1B

AFFIDAVIT

[See sub-rule (2) or rule 5A]

I / We do hereby solemnly affirm and declare as follows:-

- (1) That I / We undertake to create compensatory water body of equal or larger size of the water body which is sought to be changed, converted or altered.
- (2) That I / We undertake to create such compensatory water body on the land details of which are furnished below:-
 - (a) Name of the District :
 - (b) Name of the police station :
 - (c) Name of the *mouza* :
 - (d) Jurisdiction List No. :
 - (e) *Khatian* No. (R.S & L.R) :
 - (f) Plot No. (R.S & L.R) :
 - (g) Area of the Plot (R.S & L.R) :
[If part plot, specify the area and portion]
 - (h) Existing Classification of the plot :
- (3) That I / we undertake to create such compensatory water body on the land, in question within a period of 90 days from the date of issue of the order granting change, conversion or alteration of the water body as sought for.
- (4) That I / we undertake to maintain the water body as so created in proper and appropriate manner.
- (5) That I / we undertake to submit before the District Land and Land Reforms Officer the documents showing creation of compensatory water body within a period of 15 days after expiry of the stipulated period of 90 days for creation of such compensatory water body.
- (6) That I / we undertake that in case of failure to create such compensatory water body within the stipulated period of 90 days I / we shall not raise any objection for cancellation of the order granting change, conversion or alteration of the water body for which permission is sought for.
- (7) That I / we also undertake to restore the said water body at my / our own cost if already changed, converted or altered within a period of 90 days from the date of issue of direction by the District Land and Land Reforms Officer for such restoration.
- (8) That I / we further undertake to pay restoration cost as and when the same may be asked for to pay by the District Land and Land Reforms Officer.

Date: (Full signature of the applicant(s) with seal, if any)

Identified by me.

(Advocate)

ADB RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST FOR SEWERAGE AND SANITATION

Screening Questions	Yes	No	Remarks
A. Project siting			
Is the project area...			
▪ Densely populated?	✓		Project sites are located in urban areas
▪ Heavy with development activities?	✓		No negative impacts are envisaged as infrastructure will be established on government land and pipes will be constructed on ROW. Minimal road disruption is likely. Measures like best activity scheduling, traffic management, etc. will be employed to minimize the impact to acceptable levels.
Adjacent to or within any environmentally sensitive areas?			
▪ Cultural heritage site		✓	
▪ Protected area		✓	
▪ Wetland		✓	
▪ Mangrove		✓	
▪ Estuarine		✓	
▪ Buffer zone of protected area		✓	
▪ Special area for protecting biodiversity		✓	
▪ Bay		✓	
B. Potential Environmental Impacts			
Will the Project cause...			
▪ impairment of historical/cultural monuments/areas and loss/damage to these sites?		✓	Not anticipated.
▪ interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.?	✓		Anticipated during construction activities. However, impacts are temporary and short in duration. The EMP ensures measures are included to mitigate the impacts.
▪ dislocation or involuntary resettlement of people?		✓	No displacement of communities is required in Project 3.
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	Not applicable.
▪ impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?		✓	Collected sewage will be treated at the STPs proposed in Project 3
▪ overflows and flooding of neighboring properties with raw sewage?		✓	Project 3 will improve current situation of discharging sewage to open drains
▪ environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?		✓	STP designs include sludge management. Industrial waste discharges to the sewers will not be allowed and prevented in the proposed sewer network system.
▪ noise and vibration due to blasting and other civil works?	✓		Increased noise is anticipated during construction activities. However, impacts are temporary and short in duration. The EMP ensures measures are included to mitigate the impacts.
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological	✓		The EMP ensures occupational health and safety measures are included. Chemicals will

Screening Questions	Yes	No	Remarks
hazards during project construction and operation?			not be used during construction and operation activities.
▪ discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?		✓	Not anticipated. The subproject sites are predominantly residential areas. Thus discharge of hazardous materials into sewers are unlikely. Measures have been included in the design to prevent discharge of industrial and hazardous materials into the sewer network system
▪ inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities?		✓	Buffer zones are included in the design of the STPs and pumping stations.
▪ road blocking and temporary flooding due to land excavation during the rainy season?		✓	Not anticipated. Construction activities will be conducted during non-monsoon season.
▪ noise and dust from construction activities?	✓		Anticipated during construction activities. However, impacts are temporary and short in duration. The EMP ensures measures are included to mitigate the impacts.
▪ traffic disturbances due to construction material transport and wastes?	✓		Anticipated during construction activities. However, impacts are temporary and short in duration. The EMP ensures measures are included to mitigate the impacts. Construction contractors will be required to coordinate with the local traffic police and they will prepare Traffic Management Plan
▪ temporary silt runoff due to construction?	✓		Run-off during construction will be more. However, impacts are temporary and short in duration. The EMP ensures measures are included to mitigate the impacts. Construction contractors will be prohibited from stockpiling loose materials along drain channels and will be required to immediately dispose any waste materials.
▪ hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?		✓	Not anticipated. Design life of the subproject is 30 years. Project 3 includes support to KMC in enhancing its operational capacity to ensure system will not fail.
▪ deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?		✓	Not anticipated. STP designs include sludge management and EMPs ensure mitigation measures and monitoring are implemented. The STP includes an Operation and Maintenance (O&M) Manual to ensure effluent complies with government standards.
▪ contamination of surface and ground waters due to sludge disposal on land?		✓	Not anticipated. STP designs include sludge management and EMPs ensure mitigation measures and monitoring are implemented.
▪ health and safety hazards to workers from toxic gases and hazardous materials which maybe contained in confined areas, sewage flow and exposure to pathogens in untreated sewage and unstabilized sludge?		✓	Not anticipated. Confined spaces are not applicable to the sewer network. Capacity of the STPs are designed to ensure sewerage will not overflow and sufficiently treated. Sludge, which is proposed to be reused as soil conditioner and/or fertilizer, will be treated and stabilized.

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> ▪ large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)? 		✓	Priority in employment will be given to local residents. Construction contractors will be required to provide workers camp with water supply and sanitation. Mangalore ULB will provide manpower to operate the improved system.
<ul style="list-style-type: none"> ▪ social conflicts between construction workers from other areas and community workers? 		✓	Priority in employment will be given to local residents.
<ul style="list-style-type: none"> ▪ 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? 		✓	Not applicable. Construction will not involve use of explosives and chemicals. Trenching will be done manually.
<ul style="list-style-type: none"> ▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? 		✓	Operational area will be clearly demarcated and access will be controlled. Only worker and project concerned members will be allowed to visit the operational sites.

A Checklist for Preliminary Climate Risk Screening

Screening Questions	Score	Remarks ^a
<p>Location and Design of project</p> <p>Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?</p>	1	<p>The project area is vulnerable to high risks of flooding. Flooding can easily overwhelm sewage / drainage systems, including sewage treatment plant. Projected sea level rise is expected to exacerbate flooding, storm surge, as well as the risks of saltwater intrusion.</p> <p>A technical assistance on Strengthening Climate Resilience of Kolkata City through Improved Planning, Flood and Disaster Risk Management, through the UCCRTF, aims to support the executing agency in further strengthening its climate resilience through: (i) implementation of early flood warning system and (ii) capacity development in climate resilient planning and disaster management. The TA will provide some physical investment (e.g., software and hardware for the early warning systems, as well as non-physical investments such as hydraulic modeling, installation of systems, and capacity development, etc.</p>
<p>Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?</p>	1	<p>The increased frequency of heavy rainfall leads to severe flooding and waterlogging in the city. Impacts include increased flooding, increased siltation and blockage of drainage.</p> <p>Increased cyclone intensity will lead to possible high storm surges resulting to infrastructure damage, e.g. clogging of drainage systems. Inundation of low-lying treatment facilities and outfall may require relocations and cause discharge to back flow, respectively.</p> <p>Proposed investments will not pass through major cross</p>

Screening Questions		Score	Remarks ^a
			<p>drainages and river. Pipes are designed to handle peak flow demands.</p> <p>Examples of measures adopted while designing the sewerage and drainage network, associated facilities such as pumping stations, and water supply system, include hydraulic modelling and sizing of systems using increased precipitation scenarios, prioritizing areas with higher risks of increased inundation, constructing all pipes below ground, avoiding flood plains for siting of any pumping stations or associated structures, among others.</p>
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	No significant effect
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	No significant
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	1	<p>Blockage of drainage/sewage systems likely to become more frequent in the future due to increased flooding.</p> <p>Regular maintenance activities are incorporated in the EMP</p>

^a If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Result of Initial Screening (Low, Medium, High): Medium Risk

Other Comments: Project team, with support from SARD Front Office Climate Unit, used the Climate Risk Screening Report to confirm the climate risk rating, which was “medium”.

Prepared

by:

CONTENT AND FORMAT OF ENVIRONMENTAL ASSESSMENT DOCUMENTS

(Annex to Appendix 1 of ADB Safeguard Policy Statement, 2009)

1. **Executive summary** - This section describes concisely the critical facts, significant findings, and recommended actions.
2. **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.
3. **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.
4. **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.
5. **Anticipated environmental impacts and mitigation measures** - This section (i) predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media—Annex 2 of ADB Safeguard Policy, para. 6), and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; (ii) identifies mitigation measures and any residual negative impacts that cannot be mitigated; (iii) explores opportunities for enhancement; (iv) identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and (v) examines global, transboundary, and cumulative impacts as appropriate.
6. **Analysis of alternatives** - This section examines (i) alternatives to the proposed project site, technology, design, and operation—including the no-project alternative—in terms of their potential environmental impacts; (ii) the feasibility of mitigating these impacts; (iii) their capital and recurrent costs; (iv) their suitability under local conditions; and (v) 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.
7. **Information disclosure, consultation, and participation** - This section:
 - (i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;
 - (ii) summarizes comments and concerns received from affected people and other stakeholders, and 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

- (iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

8. **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.

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

- (i) **Mitigation** (a) identifies and summarizes anticipated significant adverse environmental impacts and risks; (b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and (c) provides links to any other mitigation plans (for example, for involuntary resettlement, indigenous peoples, or emergency response) required for the project.
- (ii) **Monitoring** (a) describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits, and definition of thresholds that will signal the need for corrective actions; and (b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.
- (iii) **Implementation arrangements** (a) specifies the implementation schedule showing phasing and coordination with overall project implementation; (b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and (c) estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.
- (iv) **Performance indicators** describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

10. **Conclusion and recommendation** - This section provides the conclusions drawn from the assessment and provides recommendations.

GENERIC ENVIRONMENTAL MANAGEMENT PLAN MATRIXES

Sewerage and Drainage

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
Site establishment and preliminary activities				
1.	Legislation, permits, and agreements	<p>In all instances, KMC, service providers, contractors, and consultants must remain in compliance with relevant local and national legislation.</p> <p>DSC will obtain statutory clearances and permits from government agencies and other entities.</p> <p>Contractor to submit proof of compliance to Air Act (in relation to hot mixing, stone crushers, diesel generators)</p> <p>A copy of the EMP must be kept on-site during the construction period.</p>	<p>PMU and DSC</p> <p>PMU</p> <p>DSC environment specialist</p> <p>PMU environment specialist and DSC environment specialist</p>	<p>Prior to moving onto site and during construction</p> <p>Prior to start of civil works</p> <p>Prior to moving onto site and during construction</p> <p>At all times</p>
2.	Access to site	<p>Access to site will be via existing roads. The contractor will need to ascertain the existing condition of the roads and repair them, and ensure that damage shall not occur due to construction.</p> <p>The Local Traffic Department shall be involved in the planning stages of the road closure and detour and be available on-site in the monitoring of traffic in the early stages of the operations during road closure.</p> <p>The Local Traffic Department must be informed at least a week in advance if the traffic in the area will be affected.</p> <p>The location of all affected services and servitudes must be identified and confirmed.</p> <p>All roads for construction access must be planned and approved ahead of construction activities. They shall not be created on an adhoc basis.</p> <p>No trees, shrubs, or groundcover may be removed or vegetation stripped without prior permission.</p> <p>Contractors shall construct formal drainage on all temporary haulage roads in the form of side drains and</p>	<p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>PMU environment specialist and DSC environment specialist</p> <p>PMU environment specialist and DSC environment specialist</p> <p>DSC environment specialist</p>	<p>Prior to moving onto site and during construction</p> <p>Prior to moving onto site</p> <p>Prior to moving onto site</p> <p>Prior to moving onto site and during construction</p> <p>Before and during construction</p> <p>Prior to moving onto site</p>

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		miter drains to prevent erosion and point source discharge of runoff.		
3.	Setting up of construction camp ^a	<p>Choice of site for the contractor's camp requires the DSC environment specialist's permission, and must take into account location of local residents, businesses, and existing land uses, including flood zones and slip/ unstable zones. A site plan must be submitted to the DSC environment specialist for approval.</p> <p>The construction camp may not be situated on a floodplain or on slopes greater than 1:3.</p> <p>If the contractor chooses to locate the campsite on private land, he must get prior permission from both the DSC environment specialist and the landowner.</p> <p>In most cases, on-site accommodation will not be required. The construction camp can thus be comprised of:</p> <ul style="list-style-type: none"> • site office • toilet facilities • designated first aid area • eating areas • staff lockers and showers (where water and waterborne sewers are available) • storage areas • batching plant (if required) • refueling areas (if required) • maintenance areas (if required) • crushers (if required) <p>Cut and fill must be avoided where possible during the set-up of the construction camp.</p> <p>The contractor shall make adequate provision for temporary toilets for the use of their employees during the construction phase. Such facilities, which shall comply with local authority regulations, shall be maintained in a clean and hygienic condition. Their use shall be strictly enforced.</p>	<p>DSC environment specialist and PMU environment specialist</p> <p>PMU environment specialist and DSC environment specialist</p> <p>PMU environment specialist and DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p>	<p>During surveys and preliminary investigations and prior to moving onto the site</p> <p>During surveys and preliminary investigations and prior to moving onto the site</p> <p>During site establishment and ongoing; weekly inspections</p> <p>During set-up</p> <p>During site set-up</p> <p>During site establishment and ongoing; weekly inspections</p>

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		<p>Under no circumstances may open areas or the surrounding bush be used as a toilet facility.</p> <p>Bins and/or skips shall be provided at convenient intervals for disposal of waste within the construction camp.</p> <p>Bins shall have liner bags for efficient control and safe disposal of waste</p> <p>Recycling and the provision of separate waste receptacles for different types of waste shall be encouraged.</p>	<p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p>	<p>Ongoing</p> <p>During site set-up and ongoing</p> <p>Ongoing</p> <p>During site set-up and ongoing</p>
4.	Establishing equipment lay-down and storage area ^b	<p>Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to adjacent land uses, general on-site topography, and water erosion potential of the soil. Impervious surfaces must be provided where necessary.</p> <p>Storage areas shall be secure so as to minimize the risk of crime. They shall also be safe from access by children, animals, etc.</p> <p>It is very important that the proximity of residents, businesses, schools, etc. is taken into account when deciding on storage areas for hazardous substances or materials. Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area.</p> <p>Equipment lay-down and storage areas must be designated, demarcated, and fenced if necessary.</p> <p>Fire prevention facilities must be present at all storage facilities.</p>	<p>PMU environment specialist and DSC environment specialist</p> <p>DSC environment specialist</p> <p>PMU environment specialist and DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p>	<p>During site set-up</p>

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		<p>Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals, and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage areas. These pollution prevention measures for storage shall include a bund wall high enough to contain at least 110% of any stored volume. The contractor shall submit a method statement for approval.</p> <p>These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources.</p> <p>Fuel tanks must meet relevant specifications and be elevated so that leaks may be easily detected.</p> <p>Material safety data sheets (MSDSs) shall be readily available on-site for all chemicals and hazardous substances to be used. Where possible, the MSDSs shall additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.</p> <p>Staff dealing with these materials/substances must be aware of their potential impacts and follow the appropriate safety measures. The contractor must ensure that the staff is made aware of the health risks associated with any hazardous substances used, have been provided with the appropriate protective clothing/equipment in case of spillages or accidents, and have received the necessary training.</p> <p>Contractors shall submit a method statement and plans for the storage of hazardous materials and emergency procedures.</p>	<p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist</p> <p>DSC environment specialist and contractor</p> <p>DSC environment specialist and contractor</p> <p>DSC environment specialist</p>	<p>During site set-up and ongoing</p> <p>During site set-up and ongoing</p> <p>During site set-up and monitored</p> <p>Ongoing</p> <p>Ongoing</p> <p>Prior to establishment of storage area</p>

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
5.	Materials management – sourcing ^c	Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners, etc.), and submit these to the DSC environment specialist for approval prior to commencement of any work.	PMU environment specialist and DSC environment specialist	Upon award of contract
		Where possible, a signed document from the supplier of natural materials shall be obtained confirming that they have been obtained in a sustainable manner and in compliance with relevant legislation.	PMU environment specialist and DSC environment specialist	Upon receipt of natural materials
		Where materials are borrowed (mined), proof must be provided of authorization to utilize these materials from the landowner/material rights owner and the Department of Minerals.	DSC environment specialist	Upon receipt of borrowed (mined) materials
6.	Education of site staff on general and environmental conduct ^d	Ensure that all site personnel have a basic level of environmental awareness training.	PMU environment specialist, DSC environment specialist, and contractor	During staff induction and ongoing
		Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitized to any potential hazards associated with their task.	DSC environment specialist and contractor	During staff induction, followed by ongoing monitoring
		No operator shall be permitted to operate critical items of mechanical equipment without having been trained by the contractor and certified competent by DSC.	DSC environment specialist and contractor	During staff induction, followed by ongoing monitoring
		All employees must undergo safety training and wear the necessary protective clothing	DSC environment specialist and contractor	During staff induction, followed by ongoing monitoring
		A general regard for the social and ecological wellbeing of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules: <ul style="list-style-type: none"> • no alcohol/drugs on-site; • prevent excessive noise; • construction staff are to make use of the facilities provided for them, as opposed to adhoc alternatives (e.g. fires for cooking, the use of 	DSC environment specialist and contractor	During staff induction, followed by ongoing monitoring

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		<p>surrounding bush as a toilet facility are forbidden);</p> <ul style="list-style-type: none"> • no fires to be permitted on-site; • trespassing on private/commercial properties adjoining the site is forbidden; • other than pre-approved security staff, no workers shall be permitted to live on the construction site; and • no worker may be forced to do work that is potentially dangerous or for which he/she is not trained. 		
6.	Social impacts ^e	Open liaison channels shall be established between the site owner, the developer, operator, the contractors, and interested and affected people such that any queries, complaints, or suggestions can be dealt with quickly and by the appropriate persons.	PMU environment specialist and DSC environment specialist	Prior to moving onto site and ongoing
		A communications strategy is of vital importance to accommodating traffic during road closure. The road closure, together with the proposed detour, needs to be communicated via advertising, pamphlets, radio broadcasts, road signage, etc.	PMU environment specialist	Prior to moving onto site and ongoing
		Advance road signage must indicate the road detour and alternative routes. Provide sign boards for pedestrians to inform them of nature and duration of construction works and contact numbers for concerns/complaints.	PMU environment specialist	Prior to moving onto site and ongoing
		Storage facilities, elevated tanks, and other temporary structures on-site shall be located, such that they have as little visual impact on local residents as possible.	DSC environment specialist and PMU environment specialist	During surveys and preliminary investigations and site set-up
		In areas where the visual environment is particularly important or privacy concerns for surrounding buildings exist, the site may require screening. This could be in the form of shade cloth, temporary walls, or other suitable materials prior to the beginning of construction.	DSC environment specialist and PMU environment specialist	During surveys and preliminary investigations and site set-up

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		Special attention shall be given to the screening of highly reflective materials on-site.	PMU environment specialist	During site set-up
7.	Noise impacts	Construction vehicles are to be fitted with standard silencers prior to the beginning of construction.		
		Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers, etc.) will be used as per operating instructions and maintained properly during site operations.		
8.	Dust/air pollution ^f	Vehicles travelling along the access roads must adhere to speed limits to avoid creating excessive dust.	PMU environment specialist	Ongoing
		Camp construction/haulage road construction areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust.	PMU environment specialist	Ongoing; more frequently during dry and windy conditions
		The contractor must make alternative arrangements (other than fires) for cooking and/or heating requirements. LPG gas cookers may be used, provided that all safety regulations are followed.	DSC environment specialist	Ongoing
9.	Soil erosion	The time that stripped areas are left open to exposure shall be minimized wherever possible. Care shall be taken to ensure that lead times are not excessive.	DSC environment specialist and PMU environment specialist	Throughout the duration of the subproject
		Wind screening and stormwater control shall be undertaken to prevent soil loss from the site.	DSC environment specialist and PMU environment specialist	During site set-up
		Procedures that are in place to conserve topsoil during the construction phase of the subproject are to be applied to the set-up phase, i.e., topsoil is to be conserved while providing access to the site and setting up the camp.	DSC environment specialist and PMU environment specialist	Ongoing monitoring, during site set-up
10.	Stormwater ^g	To prevent stormwater damage, the increase in storm water runoff resulting from construction activities must be estimated, and the drainage system assessed accordingly. A drainage plan must be submitted to the DSC environment specialist for approval and must include the location and	DSC environment specialist	During surveys and preliminary investigations

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		design criteria of any temporary stream crossings (siting and return period, etc.).		
		During site establishment, storm water culverts and drains are to be located and covered with metal grids to prevent blockages if deemed necessary by the DSC environment specialist (e.g. due to demolition work).	DSC environment specialist	During site setup
		Temporary cut-off drains and berms may be required to capture storm water and promote infiltration.	PMU environment specialist	During site set-up
11.	Water quality ^h	Storage areas that contain hazardous substances must be bunded with an approved impermeable liner.	DSC environment specialist	During site set-up
		Spills in bunded areas must be cleaned up, removed, and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity.	DSC environment specialist and PMU environment specialist	During site set-up
		A designated bunded area is to be set aside for vehicle washing and maintenance. Materials caught in this bunded area must be disposed of at a suitable waste site or as directed by the DSC environment specialist	DSC environment specialist and PMU environment specialist	During site set-up
		Provision shall be made during set-up for all polluted runoff to be treated to the DSC environment specialist's approval before being discharged into the stormwater system. (This will be required for the duration of the project.)	DSC environment specialist and PMU environment specialist	During site set-up and to be monitored weekly
12.	Conservation of the natural environment ⁱ	No vegetation may be cleared without prior permission from the DSC environment specialist	DSC environment specialist and PMU environment specialist	During site set-up and ongoing
		Trees that are not to be cleared shall be marked beforehand with danger tape. The PMU environment specialist must be given a chance to mark vegetation that is to be conserved before the contractor begins clearing the site.	DSC environment specialist and PMU environment specialist	During site set-up
		Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas.	PMU environment specialist	Ongoing in campsite, haulage areas

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		(Particular attention must be paid to imported material.)		
13.	Set-up of waste management procedure	The excavation and use of rubbish pits on-site is forbidden.	PMU environment specialist	Ongoing
		Burning of waste is forbidden.	PMU environment specialist	Ongoing
14.	Cultural environment	Prior to the commencement of construction, all staff need to know what possible archaeological or historical objects of value may look like, and to notify the DSC environment specialist/contractor should such an item be uncovered.	PMU environment specialist	During site set-up and ongoing
15.	Security and safety	Lighting on-site is to be set up to provide maximum security and to enable easier policing of the site, without creating a visual nuisance to local residents or businesses.	DSC environment specialist	During site set-up
		Material stockpiles or stacks, such as, pipes, must be stable and well secured to avoid collapse and possible injury to site workers/local residents.	PMU environment specialist	Ongoing
		Flammable materials shall be stored as far as possible from adjacent residents/businesses.	PMU environment specialist	Ongoing
		All interested and affected persons shall be notified in advance of any known potential risks associated with the construction site and the activities on it. Examples are: <ul style="list-style-type: none"> stringing of power lines excavation for the micro-tunnel equipment earthworks/earthmoving machinery beside houses, infrastructure, or sensitive receptors risk to residences/sensitive receptors along haulage roads/ access routes 	PMU environment specialist and DSC environment	24 hours prior to activity in question
Management of construction and workforce activities				
1.	Access to site	Contractor shall ensure that all side and miter drains and scour check walls on access and haul roads are functioning properly and are well maintained.	DSC environment specialist	Weekly and after heavy rains
		Contractor shall ensure that access roads are maintained in good condition by attending to potholes, corrugations, and stormwater damage as soon as these develop.	DSC environment specialist	Weekly inspection

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		If necessary, contractor will employ a staff member to clean surface roads adjacent to construction sites where materials have been spilled.	DSC environment specialist	When necessary
		Contractor to avoid unnecessary compaction of soils by heavy vehicles	DSC environment specialist	Ongoing monitoring
		Contractor to restrict construction vehicles to demarcated access, haulage routes, and turning areas	DSC environment specialist	Ongoing monitoring
2.	Maintenance of construction camp	Contractor to monitor and manage drainage of the campsite to avoid standing water and soil erosion	DSC environment specialist	Ongoing monitoring
		Contractor to ensure runoff from the campsite must not discharge into neighbors' properties	DSC environment specialist	Ongoing monitoring
		Contractor to maintain toilets in a clean state, and these shall be moved to ensure that they adequately service the work areas.	DSC environment specialist	Weekly inspection
		Contractor to ensure that open areas or the surrounding bush are not being used as a toilet facility.	DSC environment specialist	Weekly inspection
		Contractor to ensure all litter is collected from the work and camp areas daily	DSC environment specialist	Ongoing monitoring
		Contractor to empty bins and/or skips regularly, dispose of wastes at the pre-approved sites, and keep all disposal waybills for review.	DSC environment specialist	Weekly inspection
		Contractor to ensure eating areas are regularly serviced and cleaned to the highest possible standards of hygiene and cleanliness	DSC environment specialist	Ongoing monitoring
		Contractor to ensure that his camp and working areas are kept clean and tidy at all times	DSC environment specialist	Weekly monitoring
3.	Staff conduct	Contractor will monitor performance of construction workers and ensure points relayed during their induction have been properly understood and are being followed. If necessary, the DSC environment specialist and/or a translator shall be called to the site to further explain aspects of environmental or social behavior that are unclear.	DSC environment specialist	Ongoing monitoring
		Contractor to ensure rules that are explained in the worker conduct section must be followed at all times.	DSC environment specialist	Ongoing monitoring

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
4.	Dust and air pollution ^k	Contractor to ensure vehicles travelling to and from the construction site adhere to speed limits so as to avoid producing excessive dust.	DSC environment specialist	Ongoing monitoring
		A speed limit of 30kph must be adhered to on all dirt roads.	DSC environment specialist	Ongoing monitoring
		Contractor to dampen access and other cleared surfaces whenever possible and especially in dry and windy conditions to avoid excessive dust	DSC environment specialist	Ongoing monitoring
		Contractor to utilize screening using wooden supports and shade cloth where dust is unavoidable in residential, commercial, and sensitive receptors areas.	DSC environment specialist	As directed by the DSC environment specialist
		Contractor to keep vehicles and machinery in good working order and meet manufacturers specifications for safety, fuel consumption, etc.	DSC environment specialist	Ongoing monitoring
		Contractor to check and repair equipment as soon as possible if excessive emissions are observed.	DSC environment specialist	As directed by the DSC environment specialist
		No fires are allowed on-site except for the burning of firebreaks.	DSC environment specialist	Ongoing monitoring
5.	Soil erosion	Once an area has been cleared of vegetation, the top layer of soil (nominally 150 mm) shall be removed and contractor will stockpile this in the designated area.	DSC environment specialist	Ongoing monitoring
		Contractor to commence topsoiling and revegetation immediately after completion of an activity, and at an agreed distance behind any particular work front	DSC environment specialist	As each activity is completed
		Contractor to ensure stormwater control and wind screening to prevent soil loss from the site	DSC environment specialist	Ongoing monitoring
		Contractor to dispose of unusable soils and spoils in pre-approved disposal sites	DSC environment specialist	Ongoing monitoring
		Contractor to protect all embankments, unless otherwise directed by the DSC environment specialist, by a cut-off drain to prevent water from cascading down the face of the embankment and causing erosion	DSC environment specialist	Immediately after the creation of the embankment/stripping of vegetation
6.	Stormwater	Contractor shall not in any way modify nor damage the banks or	PMU environment specialist and	Ongoing monitoring

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		bed of streams, rivers, wetlands, other open water bodies and drainage lines adjacent to or within the designated area, unless required as part of the construction project specification. Where such disturbance is unavoidable, modification of water bodies shall be kept to a minimum in terms of (i) removal of riparian vegetation, and (ii) opening up of the stream channel.	DSC environment specialist	
		Contractor to dispose of earth, stones, and rubble and prevent obstruction of natural water pathway, i.e., these materials must not be placed in stormwater channels, drainage lines, or rivers	DSC environment specialist	Monitoring throughout the duration of the subproject
		Contractor to check periodically sites' drainage system to ensure that the water flow is unobstructed	DSC environment specialist	Monthly inspection
		Contractor will control unchanneled flows. Where large areas of soil are left exposed, rows of straw/hay or bundles of cut vegetation shall be dug into the soil in contours to slow surface wash and capture eroded soil.	DSC environment specialist	As surfaces become exposed
		Contractor will slow down flows where surface runoff is concentrated (e.g. along exposed roadways/tracks by contouring with hay bales or bundled vegetation generated during site clearance operation). If the area must be used for construction vehicles, berms may be used instead. The berms must be at least 30 cm high and well compacted. The berms shall channel concentrated flow into detention ponds or areas protected with hay bales for flow reduction and sediment capture.	DSC environment specialist	Ongoing monitoring
7.	Water quality ¹	Contractor will ensure mixing/decanting of all chemicals and hazardous substances takes place either on a tray or on an impermeable surface, and waste from these will be disposed of at pre-approved disposal sites.	DSC environment specialist	Regular monitoring (refer to the environmental monitoring program)
		Contractor to ensure every effort is made that any chemicals or hazardous substances do not	DSC environment specialist	Regular monitoring (refer to the

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		contaminate the soil, Hooghly River, or groundwater on site		environmental monitoring program)
		Contractor to ensure runoff from vehicle or plant washing does not enter Hooghly River or the groundwater, and ensure wash water passes through an oil-grease trap prior to discharge	DSC environment specialist	Regular monitoring (refer to the environmental monitoring program)
		Contractor to prohibit site staff from using any stream, river, other open water body, or natural water source adjacent to or within the designated site for bathing, washing of clothing, or any construction or related activities. Municipal water (or another source approved by the DSC environment specialist) shall instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting, etc.	DSC environment specialist	Regular monitoring (refer to the environmental monitoring program)
		Contractor shall refer to emergency contact numbers of WBPCB in order to deal with spillages and contamination of aquatic environments.	PMU environment specialist and DSC environment specialist	As necessary
8.	Conservation of natural environment	Contractor is to check that vegetation clearing and tree-felling have prior permission as the work front progresses.	DSC environment specialist	Ongoing monitoring
		Contractor to ensure only trees that have been marked beforehand are to be removed	DSC environment specialist	Ongoing monitoring
		Contractor to prohibit site staff from gathering firewood, fruits, plants, crops or any other natural material on-site or in areas adjacent to the sites	DSC environment specialist	Ongoing monitoring
		Contractor to prohibit site staff from hunting birds and animals on-site or in areas adjacent to the sites	DSC environment specialist	Ongoing monitoring
		Contractor to immediately re-vegetate stripped areas and remove alien species by weeding. This significantly reduces the amount of time and money that must be spent on alien plant management during rehabilitation.	DSC environment specialist	Ongoing monitoring
		Contractor to ensure, where possible, that cleared indigenous vegetation is kept in a nursery for	DSC environment specialist	As the work front progresses

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		use at a later stage (such as site rehabilitation)		
9.	Materials management	Contractor to ensure stockpiles do not obstruct natural water pathways.	DSC environment specialist	As necessary
		Contractor to ensure stockpiles do not exceed 2m in height unless otherwise permitted by the DSC environment specialist	DSC environment specialist	As necessary
		Contractor to cover stockpiles exposed to windy conditions or heavy rain with vegetation, cloth, or tarps	DSC environment specialist	As necessary
		Contractor to ensure stockpiles are kept clear of weeds and alien vegetation growth by regular weeding	DSC environment specialist	Monthly monitoring
		Contractor to ensure all concrete mixing takes place on a designated, impermeable surface	DSC environment specialist	Ongoing monitoring
		Contractor to ensure vehicles transporting concrete to the site are not washed on-site	Contractor	Ongoing monitoring
		Contractor to prohibit mixing of lime and other powders during excessively windy conditions	DSC environment specialist	As necessary
		Contractor to store all substances required for vehicle maintenance and repair in sealed containers until they can be disposed of or removed from the sites	DSC environment specialist	Ongoing monitoring
		Contractor to ensure hazardous substances/materials are transported in sealed containers or bags	DSC environment specialist	Ongoing monitoring
		Contractor to prohibit spraying of herbicides/pesticides during windy conditions	DSC environment specialist	As necessary
10.	Waste management	Contractor to place refuse in designated skips/bins and rubble in demarcated areas, remove them from the site, and transport them to pre-approved disposal sites. Waybills proving disposal at each site shall be provided for the DSC environment specialist's inspection.	DSC environment specialist	Checked at each site meeting
		Contractor to prohibit littering on-site and clear the site of litter at the end of each working day.	DSC environment specialist	Ongoing monitoring
		Contractor to encourage recycling by providing separate receptacles for different types of waste and	DSC environment specialist	Ongoing monitoring

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		make sure that staff are aware of their uses.		
		Contractor to clean toilets regularly and avoid contamination of soils, water, pollution, and nuisance to adjoining areas	DSC environment specialist	Weekly monitoring
11.	Social impacts ^m	Contractor to restrict activities and movement of staff to designated construction areas	DSC environment specialist	Ongoing
		Contractor to assist in locating DSC environment specialist and/or PMU environment specialist in the event a construction staff is approached by members of the public or other stakeholders	DSC environment specialist	Ongoing monitoring
		Contractor to ensure conduct of construction staff, when dealing with the public or other stakeholders, shall be in a manner that is polite and courteous at all times. Failure to adhere to this requirement may result in the removal of staff from the site.	DSC environment specialist	Ongoing monitoring
		Contractor to ensure disruption of access for local residents is minimized and approved by the DSC environment specialist	DSC environment specialist	Ongoing monitoring
		Contractor to provide walkways and metal sheets where required to maintain access across for people and vehicles	DSC environment specialist	Ongoing monitoring
		Contractor to increase workforce in front of critical areas such as institutions, places of worship, business establishments, hospitals, and schools	DSC environment specialist	Ongoing monitoring
		Contractor to consult businesses and institutions regarding operating hours, and factor this in work schedules	DSC environment specialist	At least 1 week prior to the activity taking place
		Contractor to inform affected persons in writing of disruptive activities at least 24 hours beforehand. This can be done by way of leaflets giving DSC environment specialist and contractor's details or other method approved by the DSC environment specialist.	DSC environment specialist	At least 24 hours prior to the activity taking place
		Contractor to provide sign boards for pedestrians to inform them of the nature and duration of	DSC environment specialist	At least 1 week prior to the activity taking place

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		construction works and contact numbers for concerns/complaints		
		Contractors to ensure lighting at the construction site is pointed downwards and away from oncoming traffic and nearby houses.	DSC environment specialist	Ongoing monitoring
		Contractor to ensure machinery and vehicles are in good working order to minimize noise nuisance	DSC environment specialist	Ongoing monitoring
		Contractor to restrict noisy activities to the daytime	DSC environment specialist	Ongoing monitoring
		A complaints register (refer to the grievance redress mechanism) shall be available at the site office. This shall be in carbon copy format, with numbered pages. Any missing pages must be accounted for by the contractor. This register is to be tabled during monthly site meetings.	DSC environment specialist	Monthly monitoring
		Interested and affected people need to be made aware of the existence of the complaints book and the methods of communication available to them.	PMU environment specialist and DSC environment specialist	Ongoing monitoring
		Contractor to initially handle and document queries and complaints; submit these for inclusion in the complaints register; bring issues to DSC environment specialist's attention immediately; and take remedial action as per DSC environment specialist's instruction	PMU environment specialist and DSC environment specialist	As necessary
		Contractor to assign staff for formal consultation with the interested and affected people in order to explain and answer questions on the construction process	DSC environment specialist	Ongoing monitoring
12.	Cultural environment	Contractor to note possible items of historical or archaeological value, including old stone foundations, tools, clayware, jewelry, remains, fossils, etc. If something of this nature is uncovered, contractor is to stop work immediately and notify the DSC environment specialist, who in turn will inform the PMU and coordinate with Archaeological Survey of India (ASI) or State Department of Archaeology.	DSC environment specialist	As required
Post-construction activities (defects liability period)				

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
1.	Construction camp	All structures comprising the construction camp are to be removed from site.	DSC environment specialist	Subproject completion
		The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up.	DSC environment specialist	Subproject completion
		All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area top soiled and regrassed using the guidelines set out in the revegetation specification that forms part of this document.	DSC environment specialist	Subproject completion
		The contractor must arrange the cancellation of all temporary services.	DSC environment specialist	Subproject completion
2.	Vegetation	All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of alien vegetation.	DSC environment specialist	Subproject completion
		Open areas are to be replanted as per the revegetation specification.	DSC environment specialist	Subproject completion
		All vegetation that has been cleared during construction is to be removed from site or used as much as per the revegetation specification (except for seeding alien vegetation).	DSC environment specialist	Subproject completion
		The contractor is to water and maintain all planted vegetation until the end of the defects liability period, and is to submit a method statement regarding this to the DSC environment specialist.	DSC environment specialist	Subproject completion
3.	Land rehabilitation	All surfaces hardened due to construction activities are to be ripped, and imported materials thereon removed.	Contractor	Subproject completion
		All rubble is to be removed from the site and disposed of at an approved site. Burying of rubble on-site is prohibited.	Contractor	Subproject completion
		The site is to be cleared of all litter.	Contractor	Subproject completion
		Surfaces are to be checked for waste products from activities such as concreting or asphaltting, and cleared in a manner approved by the DSC environment specialist.	Contractor	Subproject completion

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		All embankments are to be trimmed, shaped, and replanted to the satisfaction of the DSC environment specialist.	DSC environment specialist and contractor	Subproject completion
		Borrow pits are to be closed and rehabilitated in accordance with the pre-approved management plan for each borrow pit. The contractor shall liaise with the DSC environment specialist regarding these requirements.	DSC environment specialist	Subproject completion
		The contractor is to check that all watercourses are free from building rubble, spoil materials, and waste materials.	Contractor	Subproject completion
4.	Materials and infrastructure	Fences, barriers, and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the DSC environment specialist.	DSC environment specialist	Subproject completion
		All residual stockpiles must be removed to spoil or spread on-site as directed by the DSC environment specialist.	DSC environment specialist	Subproject completion
		All leftover building materials must be returned to the depot or removed from the site.	Contractor	Subproject completion
		The contractor must repair any damage that the construction work has caused to neighboring properties.	Contractors	As directed by the DSC environment specialist
	General	A meeting is to be held on-site between the DSC environment specialist, PMU environment specialist, and the contractor to approve all remediation activities and to ensure that the site has been restored to a condition approved by the DSC environment specialist.	DSC environment specialist and PMU environment specialist	Upon completion of the construction and maintenance phases
		Temporary roads must be closed and access across these blocked.	DSC environment specialist and PMU environment specialist	Upon completion of construction
		Access or haulage roads that were built across watercourses must be rehabilitated by removing temporary bridges and any other materials placed in or near to watercourses. Revegetation of banks or streambeds is necessary,	DSC environment specialist and contractor	Upon completion of construction

	Activity	Management/Mitigation	Responsible for Monitoring	Frequency
		and these must be approved by the DSC environment specialist.		
		All areas where temporary services were installed are to be rehabilitated to the satisfaction of the DSC environment specialist.	DSC environment specialist and contractor	On completion of construction
Operations and maintenance				
1.	Pollution monitoring	Monitor the environmental quality in terms of pumps' discharge, sludge, ambient air, and noise levels.	KMC	As specified in the CTO to be issued by WBPCB
2.	Leak detection and repairs	Conduct pipe repairs at the soonest time possible to avoid disruption of service and disturbance to users/sensitive receptors.	KMC	As necessary
3.	Sludge disposal	Analyze for hazardous elements and accomplish safe disposal at pre-approved sites.	KMC	As necessary
4.	Trees and landscaping maintenance	Young trees require sufficient water until their roots are able to tap available groundwater. Make every effort to water existing trees during periods of drought. When pruning, cut as close as possible to the branch collar. Do not injure or remove the collar.	KMC	

- ^a Careful planning of the construction camp can ensure that time and costs associated with environmental management and rehabilitation are reduced.
- ^b Storage areas can be hazardous and unsightly and can cause environmental pollution if not designed and managed carefully.
- ^c Materials must be sourced in a legal and sustainable way to prevent offsite environmental degradation.
- ^d These points need to be made clear to all staff on-site before the subproject begins.
- ^e It is important to take notice of the needs and wishes of those living or working adjacent to the site. Failure to do so can cause disruption to work.
- ^f Establishment of the campsite and related temporary works can reduce air quality.
- ^g Serious financial and environmental impacts can be caused by unmanaged storm water.
- ^h Incorrect disposal of substances and materials and polluted runoff can have serious negative effects on groundwater quality.
- ⁱ Alien plant encroachment is particularly damaging to natural habitats and is often associated with disturbance to the soil during construction activities. Care must be taken to conserve existing plant and animal life on and surrounding the site.
- ^j (i) no alcohol/drugs present on-site; (ii) prevent excessive noise; (iii) construction staff are to make use of the facilities provided for them, as opposed to adhoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility are forbidden); (iv) no fires to be permitted on-site; (v) trespassing on private/ commercial properties adjoining the site is forbidden; (vi) other than pre-approved security staff, no workers shall be permitted to live on the construction site; (vii) no worker may be forced to do work that is potentially dangerous or for which he/she is not trained.
- ^k Main causes of air pollution during construction are dust from vehicle movements and stockpiles, vehicle emissions, and fires.
- ^l Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment are also detrimental to water quality. Mismanagement of polluted runoff from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.
- ^m Regular communication between the contractor and the interested and affected parties is important for the duration of the contract.

SAMPLE GRIEVANCE REGISTRATION FORM
(To be available also in Bengali, Hindi, and Urdu)

The _____ Project welcomes complaints, suggestions, queries, and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date		Place of Registration			
Contact Information/Personal Details					
Name		Gender	* Male * Female	Age	
Home Address					
Village/Town					
District					
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 Official(s) Reviewing Grievance)	
Action Taken:	
Whether Action Taken Disclosed:	Yes No
Means of Disclosure:	

Description of Impact	Mitigation Measures	Proposed Implementation Status	Detail/Remarks on implementation	Monitoring Methods and Frequency	Monitoring Conducted By	Monitoring Remarks (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory/ Poor/Very Poor)	Remarks and Actions Taken to Improve Implementation
Operation (Defect Liability Period)							

Dated

Signature
 Name
 Designation