Environmental Assessment and Review Framework

March 2022

India: Chennai Metro Rail Investment Project

Prepared by the Chennai Metro Rail Corporation Limited for the Asian Development Bank.

CURRENCY EQUIVALENTS
(as of 28 February 2022)

Currency unit	–	Indian Rupee (₹)
₹1.00	=	$0.01333
$1.00	=	₹74.9915

ABBREVIATIONS

ADB	–	Asian Development Bank
AIIB	–	Asian Infrastructure Investment Bank
CMA	–	Chennai Metropolitan Area
CMRL	–	Chennai Metro Rail Corporation Limited
EARF	–	Environmental Assessment and Review Framework
EHSO	–	Environment, Health and Safety Officer
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
EMoP	–	Environmental Monitoring Plan
GRM	–	Grievance Redress Mechanism
IEE	–	Initial Environmental Examination
JICA	–	Japan International Cooperation Agency
MDB	–	Multilateral Development Bank
MFF	–	Multi-tranche Financing Facility
REA	–	Rapid environmental assessment checklist
SPS	–	Safeguard Policy Statement 2009

WEIGHTS AND MEASURES

km – kilometer
m – meter

CONTENTS

APPENDIXES

I. INTRODUCTION

1. Chennai Metro Rail Limited (CMRL), a Joint Venture of the Government of India and the Government of Tamil Nadu, developed the Comprehensive Mobility Plan for Chennai Metropolian Area (CMA) in 2015 to identify the present and future mobility patterns of CMA. The detailed study identified three corridors (corridors 3, 4, and 5) for the second phase of the Chennai Metro Rail to alleviate CMA's transportation capacity constraints.

2. The proposed Chennai Metro Rail Investment Project (the Project) will finance construction of a new, dedicated, high-capacity, rapid rail-based commuter transit system that will provide safe, reliable, and high-capacity commuter transit services in Chennai, the capital of State of Tamil Nadu in India. It is expected to reduce journey times through high frequency operations (4 minutes) and a design speed of 90 kilometers (km) per hour. The project will complement Metro Phase I in providing efficient, safe and socio-environmentally sustainable mobility in Chennai Metropolitan Area.

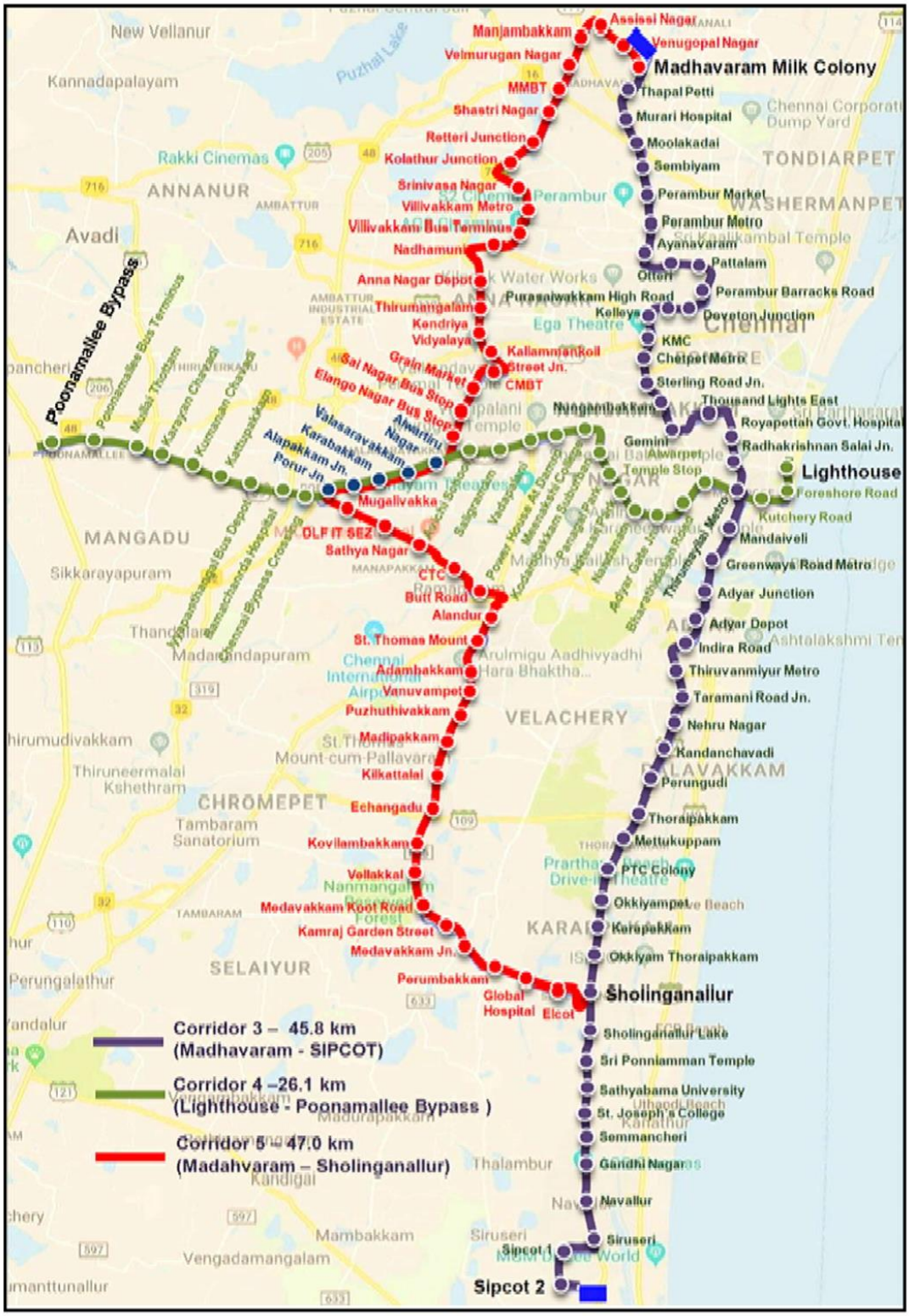
3. The three corridors under phase II are proposed for financing by multiple Multilateral Development Banks (MDBs). Figure 1 shows the three lines and the interlinkages, table 1 provides an overview of the different project components and their respective proposed financers.

Table 1: Project Components as Proposed

Corridor	Section		Description	MDB
	From	To		
3	Madhavaram Milk Colony	Sholinganallur	Alignment (35.0 km) and formation or tunneling, **10 elevated stations, 30 underground stations, 1 depot** structural civil costs and system packages	JICA
3	Sholinganallur	Sipcot-2	Alignment (10.13 km) and formation, **9 elevated stations,** structural civil costs and system packages	ADB
4	Lighthouse	Meenakshi College	Alignment (10.0 km) and formation or tunneling, **9 underground stations** structural civil cost	ADB
4	Meenakshi College	Poonamallee Bypass	Alignment (15.8 km) and formation, **18 elevated stations** structural civil cost	AIIB
4	Lighthouse	Poonamallee Bypass	P. way, station building components VAC and TVS, E&M, Lifts and Escalators, Architectural finishes and MMI	NDB
4	Lighthouse	Poonamallee Bypass	Formation of depot, rolling stock	State
5	Madhavaram Milk Colony	CMBT	Alignment (16.9 km) and formation or tunneling, 11 elevated stations, 6 underground stations, 1 at grade station structural civil costs and system packages	JICA
5	CMBT	Sholinganallur	Alignment (30.1 km) and formation, 29 elevated stations structural civil costs and system packages	AIIB
5	CMBT	Sholinganallur	Traction and power supply, telecommunication, electrical and mechanical works	ADB

ADB = Asian Development Bank, AIIB = Asian Infrastructure Investment Bank, CMBT = Chennai Mofussil Bus Terminus, JICA = Japan International Cooperation Agency, NDB = New Development Bank.
Source: Chennai Metro Rail Limited.

Figure 1: Overview of proposed corridors 3, 4 and 5



Source: Chennai Metro Rail Limited.

4. The ADB components of the Project are to be financed through a multitranche financing facility (MFF). In accordance with the Safeguard Policy Statement, 2009 (SPS) an EARF is required for ADB multi-tranche financing facilities that have potential environmental impacts. An EARF is intended to help ensure that the borrower has an agreed system in place that clarifies safeguard principles and requirements governing screening and categorization and environmental assessment, and preparation and implementation of safeguard plans and components, projects and subprojects to be prepared after MFF approval. This EARF will be disclosed on the ADB website.

5. This EARF lists the requirements of Indian environmental laws and ADB SPS 2009, and describes the procedures CMRL will follow to ensure that the project will comply with both. In particular the EARF will

(i) describe the project and its subprojects and/or components;
(ii) explain the general anticipated environmental impacts;
(iii) specify the requirements that will be followed in screening and categorization, assessment and planning, including arrangements for meaningful consultation with affected people and other stakeholders, grievance redress mechanism and information disclosure requirements;
(iv) assess the adequacy of the borrower's or client's capacity to implement national laws and ADB's requirements and identlfy needs for capacity building;
(v) specify implementation procedures, including the budget, institutional arrangements and capacity development requirements;
(vi) specify monitoring and reporting requirements, and;
(vii) describe the responsibilities of the borrower or client and of ADB in relation to the preparation, implementation and progress review of safeguard documents of subprojects and/or components.

6. The Department of Planning, Development and Special Initiatives, Government of Tamil Nadu, acting through CMRL, will be the executing agency. Managing Director, CMRL will be in charge of the overall project activities and will be responsible for environmental assessment, due diligence, and preparation and implementation of all required safeguard documents. Depending on the significance of project impacts and risks, the assessment may comprise a full-scale environmental impact assessment (EIA) for Category A projects, an initial environmental examination (IEE) or equivalent process for Category B projects, or a desk review. The project unit in CMRL, headed by the project director, is responsible for the overall execution of the project and implementation of the environmental management plan (EMP) and the environmental monitoring plan (EMoP) contained in the environmental impact assessments (EIA) prepared for the Project. The project unit will be assisted by the general consultant for the Project.

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

7. India has well defined institutional and legislative framework. The legislation covers all components of environment viz. air, water, soil, terrestrial and aquatic flora and fauna, natural resources, and sensitive habitats. India has also signed various international conventions and protocols. The environmental legislations in India are framed to protect the valued environmental components and comply with its commitment to international community under above conventions and protocols. ADB has also defined its environmental and social safeguard policy requirements. This assessment is about the applicability of above laws and regulations, conventions, protocols, and safeguards.

8. The laws, regulations, policies and guidelines applicable to this project based on the location, design, construction and operation are summarized in the subsequent sections in following order.

(i) National (India) Environmental Legislation and Legal Administrative Framework,
(ii) ADB Safeguard Policy Statement (SPS) 2009 Requirements, and
(iii) Summary of international treaties and applicability to the project.

A. National (India) Environmental Laws and Regulations

9. The Government of India's environmental legal framework comprises a set of comprehensive acts and regulations aimed at conserving various components of the biological and physical environment including environmental assessment procedures and requirements for public consultation. The policies and requirements, which are most relevant in context of this project, are provided in Table 2 below.

Table 2: Summary of Relevant Environmental Legislation

Legislation	Objective	Responsible Institution
Environment (Protection) Act (1986) and Rules (1986); National Conservation Strategy and Policy Statement on Environment and Development of 1992; National Environment Policy of 2006	To protect and improve the overall environment	Ministry of Environment, Forests, and Climate Change (MoEF&CC)
Environmental Impact Assessment (EIA) Notification under Environmental Protection Rules (2006, 2009, 2011) and relevant Office Memorandums (OM)	To provide guidance on environmental clearance requirements and clarification on related specific technical issues	MoEF&CC
Coastal Regulation Zone (CRZ) Notification, 2019	To ensure livelihood security to the fishing communities and other local communities living in the coastal areas; To conserve and protect coastal stretches; To promote development in a sustainable manner based on scientific principles, taking into account the dangers of natural hazards in the coastal areas and sea level rise due to global warming	Tamil Nadu Coastal Zone Management Authority (TNCZMA) and MoEF&CC
The Forest (Conservation) Act 1980 (Amended 1988) and Rules 1981 (Amended 2003); National Forest Policy of 1998	To protect and manage forests	MoEF&CC
The Wildlife Protection Act (1972 and amended in 1993)	To protect wild animals and birds through the creation of National Parks and Sanctuaries	MoEF&CC
The Noise Pollution (Regulation and Control) Rules, 2000 amended 2010 summary 10.08.2017; Schedule-VI of Environment (Protection) Rules,1986 amended 19th May,1993 ; Environment (Protection) second Amendment Rules dated 17th May 2002 amended 15.03.2011	To provide for the prevention and control of noise pollution and for the establishment of Boards to carry out these purposes	Central Pollution Control Board (CPCB)
The Water (Prevention and Control of Pollution) Act 1972 (Amended 1988) and Rules 1974	To provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water	CPCB

Legislation	Objective	Responsible Institution
The Tamil Nadu Water (Prevention and Control of Pollution) Rules, 1983 amended May 2009		State Pollution Control Board (SPCB)
Model Groundwater (Control and Regulation) Bill 1970, amended in 1972, 1996 and 2005	To provide for the prevention, control and abatement of groundwater pollution	Central Ground Water Authority (CGWA)
The Air (Prevention and Control of Pollution) Act, 1981(Amended 1987) and Rules 1982	To provide for the prevention, control and abatement of air pollution, and for the establishment of Boards to carry out these purposes	CPCB and Road Authorities
Policy Statement for Abatement of Pollution of 1992	To provide for the prevention, control and abatement of pollution	CPCB
Solid Waste Management Rules, 2016	Provisions for collection, storage segregation, transportation, processing and disposal of municipal solid wastes	SPCB
Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules 2019	To protection the general public against improper handling, storage and disposal of hazardous wastes	SPCB
Construction and Demolition Waste Management Rules, 2016	Large generators (who generate more than 20 tons or more in one day or 300 tons per project in a month) will submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodeling work	SPCB
Guidelines on Environmental Management of Construction and Demolition (C&D) Waste, March 2017	Hazardous wastes / toxic wastes streams, including asbestos, should be kept separately from other wastes to avoid further contamination, their disposal to be done in consultation with SPCBs/PCCs under HW Management Rules 2016. The concerned authorities shall examine the DEMOLITION PLAN submitted by the applicant to assess if there are any HW streams.	SPCB
The Mines and Minerals (Development and Regulation) Act, 1957	To protect the environment from quarry operation	State Department of Mines and Geology
Central Motor Vehicle Act (1988) and Rules (1988)	To control vehicular air and noise pollution. To regulate development of the transport sector, check and control vehicular air and noise pollution	State Transport Department
Indian Treasure Trove Act, 1878 (as modified upto September 1949); Ancient Monuments and Archaeological Sites and Remains Act (1958)	Conservation of Cultural and historical remains found in India Chance find during construction	Archaeological Dept. Government of India
Annexure XXV, Special Rules for conservation of Heritage Buildings Vol II: Second Master Plan for Chennai Metropolitan Area 2026 amended May 2013	To protect heritage assets	Chennai Metropolitan Development Authority (CMDA)
National Policy on HIV/AIDS and the World of Work National Policy on Safety, Health and Environment at Workplace	To regulate the safety, health and environment at workplace	Ministry of Labour and Employment,
Tamil Nadu Building and Construction Workers (Conditions of Employment and Miscellaneous Provisions) Act, 1984 The Contract Labour (Regulation & Abolition) Act, 1970	To regulate the employment and conditions of service of building and other construction workers and to provide for their safety, health and welfare measures	Ministry of Labour and Employment

Legislation	Objective	Responsible Institution
Employees State Insurance Act, 1948 (ESI); Minimum Wages Act, 1948, The Payment of Wages Act, 1936, amended in 2005; The Tamil Nadu Labour Welfare Fund Act, 1972 The Equal Remuneration Act 1976; Workmen's Compensation Act, 1923		
Interstate Migrant Workmen (Regulation of Employment and conditions of Service) Act 1979	In case workers and labourers working at the project sites are migrants from other states during construction	Ministry of Labour and Employment
Child and Adolescent Labour (Prohibition and Regulation) Act, 1986	To regulate the employment of children including age limits, type of employment, timing of work, information disclosure and health and safety	Ministry of Labour and Employment
Schedule – XIV, (Model Factories Rules 120 (MFR 120) under Section 87)	Handling and processing of Asbestos, manufacture of any article of Asbestos and any other process of manufacture or otherwise in which Asbestos is used in any form.	Ministry of Labour & Employment, GOI, Directorate General Factory Advice Service & Labour Institute.
Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	To ensure a humane, participative, informed and transparent process for land acquisition for development of essential infrastructural facilities, industrialisation and urbanisation with the least disturbance to the owners of the land and other affected families and provide fair compensation to the affected families whose land have been acquired or proposed to be acquired or are affected by such acquisition and make adequate provisions for such affected persons for their rehabilitation and resettlement.	Government of India

Source: Chennai Metro Rail Limited.

B. Required Clearances and/or Permissions

10. For implementation of ADB projects on Chennai Metro Phase II, possible required clearances or permissions related to natural and built environment are summarized in Table 3. Before the start of civil works for the any section of the project the implementing agency must obtain necessary clearances or permits from statutory authorities.

Table 3: Permits and Clearances Required for the Project when applicable

Sl. No.	Permissions and/or Clearances	Acts, Rules, Notifications and/or Guidelines	Concerned Agency	Responsibility and Timeframe
A. Pre-construction Stage				
1.	Forest Clearance	Forest Conservation Act, 1980 and amendments	State Forest Department	Chennai Metro Rail Limited (CMRL) To be obtained before start of implementation stage
2.	Permission for felling of trees	Forest Conservation Act, 1980	Chennai Metropolitan Development	CMRL 3 - 6 months, to be obtained before start

Sl. No.	Permissions and/or Clearances	Acts, Rules, Notifications and/or Guidelines	Concerned Agency	Responsibility and Timeframe
			Authority (CMDA)	of implementation stage
3.	Coastal Regulation Zone (CRZ) clearance for CRZ IV-B CRZ permission for CRZ II	CRZ Notification, 2019	Tamil Nadu Coastal Zone Management Authority (TNCZMA) and Ministry of Environment, Forests, and Climate Change (MoEF&CC)	CMRL 6 months, to be obtained before start of implementation stage
4.	Permission of construction near Ancient Monuments and Archaeological Sites and Remains	The Ancient Monuments and Archaeological Sites and Remains (Amendment) Bill, 2018 Annexure XXV, Special Rules for conservation of Heritage Buildings Vol II: Second Master Plan for Chennai Metropolitan Area 2026 amended May 2013	Central and State Govt. Dept. of Archeology	Contractor and CMRL 3-6 months, to be obtained before start of implementation stage
5.	Building Permissions for stations and depots	Second Master Plan for Chennai Metropolitan Area 2026 amended May 2013	CMDA	Contractor and CMRL 6 months, to be obtained before start of implementation stage
B. Implementation Stage				
6.	Consent to Establish & Operate for Ready Mix Concrete plant & casting yard	Air (Prevention and Control of Pollution) Act 1981 Water (Prevention and Control of Pollution) Act 1974 amended 1988,	State Pollution Control Board (SPCB)	Contractor engaged by CMRL To be obtained before installation
7.	Permission for withdrawal or dewatering of groundwater[a]	Environment (Protection) Act, 1986 Chennai Metropolitan Area Groundwater (Regulation) Act, 1987 as amended till 2008 Guidelines and/or Criteria for evaluation of proposals or requests for ground water abstraction (With effect from 16.11.2015)	Central Ground Water Authority (CGWA)	Contractor engaged by CMRL 3 months, to be obtained before construction
8.	Consent to recharge groundwater with dewatering water	Water (Prevention and Control of Pollution) Act 1974 amended 1988, Environment (Protection) Amendment Rules, 2017 (Discharge Standard for	Central Groundwater Board and/or Public Works Department	Contractor engaged by CMRL 3 months, to be obtained before construction

Sl. No.	Permissions and/or Clearances	Acts, Rules, Notifications and/or Guidelines	Concerned Agency	Responsibility and Timeframe
		Sewage Treatment Plants), Model Groundwater (Control and Regulation) Bill 1970, amended in 1972, 1996 and 2005		
9.	Permission for sand mining from riverbed. **Banned as on 3 September 2020.**	Environment (Protection) Act, 1986	Mining Department and/or MoEF&CC	Contractor engaged by CMRL To be obtained before installation. **Banned.** (*Crl.OP.No.13334 of 2020 etc batch IN THE HIGH COURT OF JUDICATURE AT MADRAS DATED : 03.09.2020)*
10.	Authorization for storage (diesel) and disposal of Hazardous Waste	Petroleum Rules, 2002 and amendments Hazardous and Other Wastes (Management& Transboundary Movement) Amendment Rules, 2019	SPCB	Contractor engaged by CMRL 3 months, to be obtained before installation
11.	Consent for disposal of sewage from labour camps.	Water (Prevention and Control of Pollution) Act 1974 amended 1988 Environment (Protection) Amendment Rules, 2017 (Discharge Standard for Sewage Treatment Plants)	SPCB	Contractor engaged by CMRL 3 months, to be obtained before installation
12.	Pollution Under Control Certificate for various vehicles use for construction	Central Motor and Vehicle Act, 1988	Department of Transport, Govt. of Tamil Nadu authorised testing centres	Contractor engaged by CMRL To be obtained before installation
13.	Employing Labour and/or workers	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996	District Labour Commissioner	Contractor engaged by CMRL 1 month, to be obtained before installation
14.	Roof Top Rainwater Harvesting (RWH)	Central Groundwater Authority and Chennai Metro Water Guidelines	CGWA and Chennai Metropolitan Water Supply and Sewerage Board	Contractor engaged by CMRL 3 months ,to be obtained before installation
15.	Permission for use of fresh water for construction and drinking purpose.	Environment (Protection) Act, 1986	Municipal Corporation	Contractor engaged by CMRL 3 months , to be obtained before installation

Sl. No.	Permissions and/or Clearances	Acts, Rules, Notifications and/or Guidelines	Concerned Agency	Responsibility and Timeframe
16.	Permission for Quarry Operation	The Mines and Minerals (Development and Regulation) Act, 1957	State Department of Mines and Geology	Contractor engaged by CMRL 2-6 months, to be obtained before construction
17.	Authorization for Disposal of Construction and Demolition Waste	Construction and Demolition Waste Management Rules, 2016	SPCB	Contractor engaged by CMRL 2 months, to be obtained before installation
18.	Heritage Assets	Annexure XXV, Special Rules for conservation of Heritage Buildings Vol II: Second Master Plan for Chennai Metropolitan Area 2026 amended May 2013	CMDA	Contractor engaged by CMRL 2 months, to be obtained before construction
19.	Consent to Establish labour camps, pre-casting and material yards, hot mix plant, crushers, batching plant, stations, depots	Air (Prevention and Control of Pollution) Act 1981 and amendments The Noise Pollution (Regulation and Control) Rules, 2000 and amendments Water (Prevention and Control of Pollution) Act 1974 and amendments	SPCB	Contractor engaged by CMRL 3 months, to be obtained before installation The Application forms for seeking Consent are available from the office of SPCB at Chennai.
20.	Consent to muck or waste disposal	Construction and Demolition Waste Management Rules, 2016 Solid Waste Management Rules, 2016	SPCB	Contractor engaged by CMRL 2 months, to be obtained before installation
21.	Consent to Operate Depot and Compliance with discharge norms of wastewater	Water (Prevention and Control of Pollution) Act 1974 amended 1988; The Tamil Nadu Water (Prevention and Control of Pollution) Rules, 1983 amended May 2009; Environment (Protection) Amendment Rules, 2017 (Discharge Standard for Sewage Treatment Plants)	SPCB	CMRL 3 months
22.	Installation and operation of DG sets at stations and depots	Air (Prevention and Control of Pollution) Act, 1981 amended 1987; Central Pollution Control Board Notification April 1994 of National Ambient Air Quality Standards	SPCB	CMRL 2 months

[a] The Contractor will avoid extraction of groundwater as much as possible. If not avoidable, the permission will be obtained prior to the extraction.

Source: Chennai Metro Rail Limited.

11. Rail-based systems have been excluded from the scheduled list under the Environmental Impact Assessment (EIA) Notification of 2006 and its subsequent amendments under the under the Environment (Protection) Act, 1986. Therefore, the proposed phase II metro project is not required to secure environmental clearance in the form of an approved EIA from the Ministry of Environment, Forest and Climate Change (MoEFCC) per national policies and regulations. Similarly, the metro stations and depots proposed along the metro rail corridor being part of Metro rail project do not attract EIA Notification prescribing environmental clearance. In light of National Green Tribunal orders and MoEFCC requirement, environmental clearance is not required since commercial development equal to or above threshold of 20,000 sq.m is not proposed.

C. International and Regional Agreements and Conventions

12. India is a party and signatory to several international and regional environmental agreements to which the MOEFCC is the National Focal Point. Key international agreements that India is signatory to and relevant for the project are listed below. The interventions proposed for the ADB project shall be implemented in compliance with applicable international and/or regional conventions and declarations to which India is a party.

Table 4: International and/or Regional Conventions and Declarations

No.	Nature Conservation
1	Ramsar Convention on Wetlands
2	CITES (Convention on International Trade in Endangered Species of Fauna and Flora)
3	CMS (Convention on the Conservation of Migratory Species)
4	CBD (Convention on Biological Diversity)
5	ITTC (International Tropical Timber Organisation)
6	UNFF (United Nations Forum on Forests)
7	IUCN (International Union for Conservation of Nature and Natural Resources)
8	GTF (Global Tiger Forum)
No.	**Hazardous material**
1	Cartagena Protocol on Biosafety
2	SAICM (Strategic Approach to International Chemicals Management)
3	Stockholm Convention on Persistent Organic Pollutants (POPs)
4	Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and Their Disposal
5	Rotterdam Convention on Prior Informed Consent (PIC) for certain Hazardous Chemicals and Pesticides in International Trade

No.	Atmospheric emissions
1	UNFCCC (United Nations Framework Convention on Climate Change)
2	Kyoto Protocol
3	UNCCD (United Nations Convention to Combat Desertification)
4	Montreal Protocol (on Ozone Depleting Substances)

Source: Chennai Metro Rail Limited.

D. Safeguards Policy Statement and Requirements

13. The Asian Development Bank has defined its safeguard requirements under its Safeguard Policy Statement 2009 (SPS 2009). The prime objectives of safeguard policy are to: (i) avoid adverse impacts of projects on the environment and affected people, where possible; and (ii) minimize, mitigate, and/or compensate for adverse project impacts on the environment and affected people when avoidance is not possible. This policy requires assessment, mitigation and

commitment towards environmental protection. The extent of assessment depends on the category of the project. ADB's SPS 2009 classify a project depending on following three categories.

(i) **Category A:** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
(ii) **Category B:** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, none or very few of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
(iii) **Category C:** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

14. **Category of the Project as per SPS.** The Project has been evaluated considering the outcome of latest ADB's Rapid Environmental Assessment Checklist (Appendix 1). Corridor 3 and 4 of the Project will entail construction of viaducts and underground sections of rail tracks, platform and stations. The lines will be constructed along existing road corridors in a busy urban area. Part of the alignment of corridor 4 passes through the ecologically sensitive Coastal Regulation Zone. Heritage structures might be impacted during tunnel construction due to vibration and subsidence. The civil works for both corridor 3 and 4 may increase congestion and pose safety risks for traffic on the existing roads. The tunneling works for corridor 4 will result in large amounts of muck that has to be disposed of. Transport of large quantities of construction material and heavy equipment machinery may bring safety risks and inconvenience to the local communities in the project area. Large numbers of construction workers may need to be brought in from other states of India posing health and communicable disease risks. Due to the significant environmental risks described above, corridor 3 and 4 under the Project has been categorized as "A" for environment. The scope of corridor 5, under ADB financing is limited to system packages only. Hence, this component is categorized as 'C'. However, since project categorization is based on the most environmentally sensitive component, the project as a whole will be categorized as A.

15. Environment safeguards documentation for the 3 corridors as per the categorization described above as follows:

(i) Corridor 3, Sholinganallur to Sipcot-2: A separate EIA will be prepared for this category A component;
(ii) Corridor 4, Lighthouse to Meenakshi College: component has been prepared jointly by AIIB and ADB;
(iii) Corridor 5, CMBT to Sholinganallur: since the proposed financing is limited to system packages and the associated civil works are covered by AIIB's EIA, this component is categorized as 'C' for ADB, a review of AIIB's EIA for corridor 5 will be performed as Due Diligence.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

16. Based on analysis of project and environmental settings a detailed assessment of potential environmental adverse impacts due project location and design, construction and operation has been carried out. For each of these adverse impacts, mitigation measures have been proposed.

17. The key positive environmental impacts of the project include reduced use of private vehicle leading to reduction in pollutants, noise and vibration due to traffic; road safety improvements; increased accessibility and mobility, and a modest reduction in greenhouse gas emissions.

18. The main residual negative environmental impacts of the project include:

(i) permanent conversion of land for stations and depots;
(ii) loss of private structures and resettlement of families;
(iii) loss of trees and biodiversity;
(iv) use of scarce, sometimes carbon intensive, materials such as cement;
(v) consumption of water and energy;
(vi) fugitive and point source dust emission;
(vii) noise, vibration and visual intrusion for properties adjacent to the alignment, including historical and cultural sites and sensitive receptors like hospitals, educational institutes and religious buildings;
(viii) disposal of large quantities of muck and of construction and demolition wastes;
(ix) traffic inconveniences during construction;
(x) occupational and community health and safety risks;
(xi) community health and safety

19. The main mitigation measures proposed are as follows:

(i) compensation for loss of land and properties to affected people as per The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and Policy approved by Government of Tamil Nadu;
(ii) compensatory afforestation through planting 12 saplings for each tree to be cut;
(iii) lighting of such brightness and frequencies on elevated stations and viaduct whch will not disorient birds;
(iv) various energy saving measures such as regenerative braking and use of solar panels;
(v) noise and vibration reduction measures (i.e. elastic steel fastenings and plastic or rubber dampers on the rails and noise barriers at sensitive receptor locations);
(vi) reuse of excavated material where feasible;
(vii) disposal of construction waste in a regulated manner;
(viii) Solar panels on station buildings to reduce the use of grid-generated energy;
(ix) Designing stations to ensure the authorized route is safe, clearly indicated, and easy to use
(x)
(xi) Rainwater harvesting to recharge the groundwater.

20. An Environmental Management Plan (EMP) with budgetary provisions and an Environmental Monitoring Plan (EMoP) has been prepared for each corridor. The EMP includes appropriate mitigation measures to address all construction- and operation-related impacts.

IV. ENVIRONMENTAL ASSESSMENT FOR FUTURE NEW COMPONENTS

21. **Screening and Classification**. The environmental assessment of future new components, if any, will follow the EARF guidelines as well as Safeguards Requirements 1 of the

SPS. ADB will ensure that the EARF requirements will be followed upon submission of environmental impact assessment (EIA) reports.

22. CMRL will propose the categorization of future new components by filling up project specific information in the Rapid Environmental Assessment (REA) Checklist (Appendix 1). ADB will confirm the categorization indicated in the checklist with CMRL.

23. **Prohibited investment activities.** Pursuant to ADB's Safeguard Policy Statement (2009), ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009). None of the activities included in the PIAL list will be financed under the project.

24. The following criteria shall be followed for new components selection:

(i) Activities included in the ADB exclusion list will not be considered.
(ii) Only activities included in the MFF will be considered.
(iii) Activities that are within a legally protected area or critical habitat area or will have direct impacts on cultural heritage sites will be avoided to the extent possible.

25. **Environmental Assessment.** Based on the results of the REA screening EIA reports will be prepared for category A components and IEE reports will be prepared for category B componens. The EIA report will follow the outline of Safeguards Requirements 1 of SPS (Appendix 2). The EIA report will be submitted to ADB for review and approval. The draft EIA report will be disclosed in the ADB website 120 days prior to approval of new components by ADB.

26. Any EIA or IEE for new components shall detail the new components scope, the baseline environmental conditions in the new components project area, the legal framework applicable to the new components, the activities that will generate potential impacts, analysis of alternatives, the anticipated potential impacts, the environmental management plan to address the environmental impacts, the institutional arrangement to implement EMP and EMoP, the grievance redress mechanism to address complaints and concerns about the project, and the disclosure policy to be implemented.

27. **Due Diligence of Existing Tranches.** As required under SPS 2009, CMRL will carry out environmental due diligence of existing tranches while preparing the next tranche. The due diligence report will be submitted to ADB as part of documentation for approval of the next tranche.

V. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

28. The Department of Planning, Development and Special Initiatives, Government of Tamil Nadu, acting through CMRL, will be the executing agency.

29. In view of the common principles of EMP and common project implementation philosophy of MDB projects, the general consultant will be common for all MDB projects. Supervision, review of implementation and assistance to CMRL will be the responsibility of the general consultant. Monitoring of EMP implementation by Contractor for each MDB project will be responsibility of the Social, Gender and Environmental Management (SGEM) team. The SGEM shall be assisted by the general consultant. Implementation of Environmental Management Plan including Resettlement & Rehabilitation Plan will be responsibility of the SGEM. The SGEM team shall report, in consultation with Head of Environment & Social Unit CMRL, Director Projects CMRL

and Managing Director CMRL. The SGEM will be responsible for the review of monthly monitoring reports and submission of quarterly progress reports by CMRL to ADB.

30. Contractor will have an environmental, health and safety officer (EHSO) who will be responsible for implementation of the EMP and SHE Manual activities. EHSO will prepare monthly report on progress of EMP implementation.

31. Since this is a Category A project, an external monitor consultant will be required to monitor and report the implementation of environmental safeguards aspects of the project. The external environment monitor will be responsible for independent monitoring of the EMP implementation and will submit semi-annual reports to CMRL who in turn will report to MDBs. CMRL has an in-house team that understands the national laws as well as the requirements of ADB Safeguard Policy Statement, 2009.

32. The following key players are involved in EMP implementation during construction stage:

(i) Department of Planning, Development and Special Initiatives, Government of Tamil Nadu, acting through CMRL, as the executing agency
(ii) Project unit and SGEM;
(iii) General Consultant;
(iv) Contractors;
(v) External Monitor; and
(vi) ADB (as financier).

33. Detailed responsibilities of each agencies involved in the project implementation are described in following paragraphs.

A. Department of Planning, Development and Special Initiatives, Government of Tamil Nadu, acting through CMRL, as Project Executing Agency

(i) Ensure overall compliance of the project with national or state level environmental policies and ADB's SPS; and
(ii) Ensure timely decisions on the project including on environment safeguard matters.

B. CMRL as Project Implementing Agency

(i) Ensure compliance of project with ADB's Safeguard Policy Statement and the laws and regulations of Government of India;
(ii) Ensure the project's compliance with the environmental assessment and review framework;
(iii) Prepare the appropriate environmental documents such as EIA reports compliant with SPS 2009 requirements;
(iv) Recruiting an external monitor to conduct third party environmental monitoring since this is a category A project;
(v) Prepare the Rapid Environmental Assessment (REA) screening checklist (Appendix 1) and send the filled-up form to ADB for review and confirmation of the category of the project;
(vi) Upon ADB's confirmation of the environmental categorization of new components, prepare the terms of reference (TORs) for the consultants to conduct EIA studies, where such additional reports might be required, in compliance with ADB's SPS;

(vii) Ensure meaningful consultation with affected people and other stakeholders, as required under SPS;
(viii) Review the draft EIA reports to conform with the Government of India's environment regulations and ADB's SPS;
(ix) Ensure the appropriation of budgetary needs for environmental safeguards;
(x) Obtain the necessary environment safeguard related clearances or permits from relevant government institutions;
(xi) Ensure securing all regulatory clearances before commencing any project civil works;
(xii) Submit to ADB the final EIA report with consent letter agreeing to disclose the report in ADB website;
(xiii) Ensure that the ADB approved environmental management plan (EMP) forms part of bidding documents;
(xiv) Provide contractors with access to the EIA report, including the EMP;
(xv) Ensure that contractors have access to the EIA report including EMP of the projects;
(xvi) Organize training and awareness programs on implementation of environment safeguards for relevant staff of CMRL, project units and contractors;
(xvii) Ensure that contractors understand their responsibilities to mitigate environmental problems associated with their construction activities;
(xviii) Ensure and monitor that the EMP including Environmental Monitoring Plan will be properly implemented;
(xix) In case of unanticipated environmental impacts during project implementation stage arrange to prepare and implement an updated EMP to account for such impacts after seeking concurrence from ADB. The updating shall be carried out after due consultation with stakeholders;
(xx) In case during project implementation a project needs to be realigned, review the environmental classification and revise accordingly, and identify whether supplementary studies are required. If it is required, prepare the TOR for undertaking supplementary studies and hire an environment consultant to carry out the study;
(xxi) Ensure that construction workers work under safe and healthy working environment in accordance with the World Bank EHS guidelines relating to occupational health and safety;
(xxii) Ensure effective implementation of Grievance Redress Mechanism to address affected people's concerns and complaints, promptly, using understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people;
(xxiii) Submit semi-annual monitoring reports for all project components on implementation of EMP and EMoP during construction and annually during initial years of operation and maintenance to ADB for disclosure on the ADB website. The suggested outline of the monitoring report is provided in Appendix 3;
(xxiv) Ensure proper implementation of corrective action plan if identified in the monitoring report;
(xxv) Carry out environmental due diligence of existing tranches while processing the next tranche and submit due diligence report to ADB; and
(xxvi) Disclose information as defined in this EARF.

C. General Consultant

(i) Ensure that the Project complies with ADB's SPS and the Government of India's laws and regulations;
(ii) Ensure that the project complies with all environment safeguard requirements as given in this EARF;
(iii) In coordination with CMRL, ensure that all necessary regulatory clearances are obtained prior to commencing any civil work of the respective contract package;
(iv) Ensure that the EMP and EMoP are updated based on detailed design and implementation of the EMP is included under the contractor's responsibilities;
(v) Ensure that the SHE Manual is included in the bidding documents;
(vi) Ensure that the EMP and EMoP which includes required mitigation measures and monitoring requirements with defined Bill of Quantity (BOQ), forms part of bidding document for the case of item rate based contracts;
(vii) Ensure that contractors have access to the EIA report including EMP and EMoP of the project;
(viii) Ensure that contractors understand their responsibilities to mitigate environmental problems associated with their construction activities;
(ix) Ensure and monitor that all required permits, no objection certificates etc. are obtained by the contractor for establishment and operation of equipment and facilities as detailed in EIA;
(x) With the support of the EHSO of the contractors, ensure that the contractor implements the EMP including EMoP as given in the respective EIA report;
(xi) Review and approve site-specific environmental mitigation and enhancement designs submitted by the Contractor based on the EMP;
(xii) Review and recommend the Contractor on implementation plans for approval and suggest any changes that may be necessary to ensure compliance with the environmental provisions of the Contract;
(xiii) Review and approve management plans for communicable diseases such as COVID-19 and any other health and safety management plans in consultation with CMRL;
(xiv) Organize training workshops on environment safeguar requirements for the contractor and other members of the general consultant. Provide on site guidance and training to contractor and general consultant staff as necessary.
(xv) In case of unanticipated environmental impacts during project implementation stage, prepare and implement an updated EIA and EMP to account for such impacts after seeking concurrence from ADB. The updating shall be carried out after due consultation with the stakeholders and concerned government agencies;
(xvi) In case during project implementation a project needs to be redesigned, review the environmental classification and revise accordingly, and identify whether supplementary EIA study is required. If it is required, prepare the ToR for undertaking supplementary EIA and assist CMRL in hiring environment consultant to carry out the study;
(xvii) Ensure that construction workers work under safe and healthy working environment;
(xviii) Support CMRL to ensure effective implementation of Grievance Redress Mechanism to address affected people's concerns and complaints;
(xix) Ensure regular consultations are taking place with affected communities and key stakeholders during construction as well as operation phases of the project;

(xx) Review monthly reports submitted by contractors on implementation of all environment safeguard requirements including the EMP and EMoP during construction of respective project and submit to CMRL.

D. Contractors

(i) Ensure that adequate budget provisions are made for implementing all mitigation measures specified in the EMP;
(ii) Appoint an Environmental Health & Safety Officer for every construction site. The EHSO must have the professional skills to be able to draw up management plans on communicable diseases such as COVID-19;
(iii) Prepare site specific SHE Plans and site specific construction EMPs for each contract package;
(iv) Participate in training and awareness programs on implementation of environment safeguards;
(v) Identify further needs for specific training during project implementation by the general consultant or project unit;
(vi) Obtain necessary environmental permission etc. from relevant agencies as specified by EARF for project works, borrow areas and quarries, batching plant, hot-mix plant etc. prior to commencement of civil works contracts;
(vii) Implement all mitigation measures as given in the EMP in the contract documents;
(viii) Ensure that all workers, site agents, including site supervisors and management participate in training sessions organized by the general consultant or project unit;
(ix) Ensure compliance with environmental statutory requirements and contractual obligations;
(x) Respond promptly to grievances raised by the local community or any stakeholder and implement environmental corrective actions or additional environmental mitigation measures as necessary, and
(xi) Based on the results of EMP monitoring, cooperate with the project unit and general consultant to implement environmental corrective actions and corrective action plans, as necessary.
(xii) Submit monthly reports on implementation of EMP and EMoP during construction to general consultant.

E. External Monitor

(i) Third party monitoring of implementation of environment safeguards including EMP under the project by the contractor and supervision by project unit and general consultant;
(ii) Review progress and monitoring reports prepared by the contractor and general consultant and verify if they are correct and consistent with site conditions;
(iii) Conduct site visits to the project site at least once every quarter during project construction;
(iv) Carry out public consultations with residents and communities living near the project sites to check if the project is generating any adverse impacts;
(v) Provide technical guidance and advise CMRL on environment, health and safety issues during construction and initial years of operation;
(vi) Advise CMRL and the project units on the need for corrective actions if any, and
(vii) Prepare external monitoring report on a semi-annual basis during construction and annually during intial years of operation and maintenance and submit to CMRL who in turn report it to MDBs.

F. Asian Development Bank

(i) Review REA checklist and endorse or modify the project classification proposed by CMRL;
(ii) Review EIA reports, including this EARF, and disclose draft and final reports on the ADB website as required;
(iii) Issue project component's approval based on the respective EIA report;
(iv) Monitor implementation of environment safeguard requirements under the project through due diligence missions;
(v) Provide assistance to CMRL, if required, in carrying out its responsibilities for implementing environment safeguards and for building capacity for safeguard compliance;
(vi) Review and approve quarterly and/or semi-annual EMP and EMoP reports prepared and submitted by CMRL and semi-annual and/or annual reports prepared by External Monitor and submitted by CMRL. Disclose the reports on the ADB website; and
(vii) Monitor CMRL's commitments under EARF.

VI. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

34. **Meaningful Consultation.** With the help of non-government and community-based organizations, consultation for future new project components if any will build on the previous consultations and community participation exercises undertaken during the detailed project reports preparation and preparation of EIA reports. Consultation shall start early and should be undertaken in an atmosphere free of intimidation or coercion. The consultation shall consider the participation of women and disadvantaged and vulnerable groups. The consultation process and its outcome will be documented in the updated EIA report (including minutes of the meetings as annexure) which will explain how relevant comments from stakeholders were addressed in project design and will give a justification for any comments not acted upon.

35. Key stakeholders that will be consulted as part of the consultation process include, but are not limited to:

(i) Ministry of Environment, Forests and Climate Change (MoEF&CC);
(ii) Central Pollution Control Board;
(iii) Tamil Nadu State Pollution Control Board;
(iv) State Environmental Impact Assessment Authority;
(v) Tamil Nadu Coastal Zone Management Authority;
(vi) State Traffic Police Department;
(vii) Municipal Corporation;
(viii) State Archaeology Department;
(ix) Central Ground Water Authority;
(x) District Forest Office;
(xi) Indian Meteorological Department;
(xii) Non-governmental organizations;
(xiii) Women groups;
(xiv) Shopkeepers associations.

36. **Information Disclosure.** All relevant documents, such as the final EIA, any updated EIA, corrective action plans prepared during project implementation and the environmental monitoring reports will be disclosed to the public following ADB requirements. The documents will be disclosed on CMRL's and ADB's website in English language and its Executive Summary will be disclosed in both English and the local language Tamil. Draft EIA reports will be disclosed to the public on the ADB website 120 days before ADB Board consideration. Hard copies of EIA reports will also be made available to all stakeholders as part of the consultation process required under the SPS 2009.

37. **Grievance Redress Mechanism.** Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing or resolving the concern and grievances in a transparent and swift manner. Grievances related to the implementation of the project, particularly regarding the environmental management plan, rehabilitation and resettlement, compensation etc. will be acknowledged, evaluated, and responded to the complainant with corrective action proposed using understandable and transparent processes that are gender responsive, culturally appropriate, and readily accessible to all segments of the affected people. Records of grievances received, corrective actions taken, and their outcomes will be properly maintained and form part of the quarterly environmental monitoring report to MDBs.

38. Many minor concerns of peoples are addressed during public consultation process initiated at the beginning of the project. However the most common reason for delay in implementation of projects in urban areas is grievances of people losing their land and residential and commercial structures. Resolving such cases in the Court of Law will be a very time consuming process. Considering this and based on CMRL's past experiences of dealing with PAP grievances, a GRM has already been put in place in order to address the grievances of project affected persons. Such a redress mechanism available at the project level itself will mean that the complainants do not necessarily have to directly approach a Court of Law although availability of Grievance Redress Committee (GRC) mechanism will not bar them from doing so.

39. GRM will be in two layers: (i) project unit level and (ii) Grievance Redressal Committee (GRC) level. The first level of interaction of GRM with the stakeholders will be the executing engineers from the project unit to resolve ground level grievances including construction nuisances to affected people with support from contractor GRM focal point. Issues should be resolved within 14 days. Those that cannot be resolved by the project unit and complaints which cannot be addressed by the project unit will be forwarded to be examined by the GRC who will address the issue within one month (***Note: as per latest EIA***) . Alternately complainants aggrieved by inadequacy of actions taken by the executing engineer can be escalated to the GRC.

40. The Environmental Health and Safety Expert on the CMRL project unit who is an environmental engineer will coordinate the GRC which will report to MD, CMRL and Director Projects, CMRL. The other members of the GRC will be:

(i) CMRL Project Manager of the package or section
(ii) EMP implementation teams from CMRL and general consultant
(iii) EMP Manager from construction contractor
(iv) Assisting NGO in case of Rehabilitation & Resettlement
(v) Affected persons and representatives
(vi) To enhance women inclusivity, one woman representative of local community from each 5km section of the alignment.

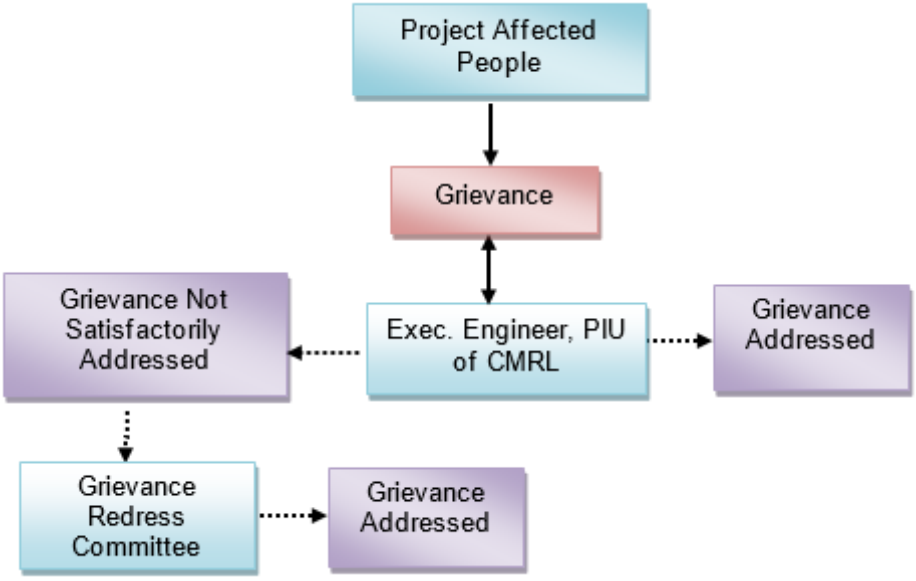
41. The Contractor will record the complaint in the onsite Environmental Complaints Register in the presence of the aggrieved person for further resolution. Records of the following stages will be maintained on website of CMRL throughout the life of the project:

(i) Complaints received
(ii) Acknowledgement of receipt of complaint by executing engineer of the project unit
(iii) Actions taken by executing engineer and their efficacy
(iv) Escalation by executing engineer or by aggrieved parties
(v) Records of further action and closure of complaints.

42. Complaints and escalation by aggrieved parties can be done by paper mode as well as through email. The GRC will deliberate upon time limits for each of the above stages; the time limits will be placed on website of CMRL. However, a complainant will receive a plan of action describing how the complaint will be handled within one week after receipt of the complaint by the GRC latest.

43. Figure 2 shows the proposed Grievance Redress Mechanism.

Figure 2: Grievance Redress Mechanism



Source: Chennai Metro Rail Limited.

44. The following process is followed for consideration of various cases by GRC:

(i) The GRC functions independently.
(ii) A separate file or processing document, including contact details of the complainant, is created for each case, based on its category (project, location etc.) and all observations and documents related to the case are maintained in such file.
(iii) Cases related to environment pollution, noise, eligibility, entitlements, disputes etc. are promptly handled after consultation with relevant authorities.
(iv) GRCs can seek necessary record or information (such as survey details, past written communication etc.).

(v) Written notices are sent to the aggrieved persons and respondents to appear for hearing along with documents, and further dates are provided in case of genuine inconvenience to the party about the appointed date.
(vi) Multiple hearings are conducted as per the requirements of cases and aggrieved persons (including their representatives) and respondents are heard and are provided opportunities to submit further documents or proofs.
(vii) Site visit documents submitted by the parties are verified from appropriate sources, as may be considered necessary.
(viii) In normal circumstances (excluding those requiring information from external agencies) the entire process is carried out in a time bound manner within one month (***Note: as per latest EIA***) (On an average, it takes about 1-2 months for disposal of each case in GRC).
(ix) After due consideration of the cases, written and reasoned orders are passed under the signature of Head of concerned GRC.
(x) Any fatality accident should be reported to GRC and MDBs immediately.

45. In addition to the above GRM for addressing complaints from the local community, a separate GRM will be constituted for addressing the issues of the workers, forming part of the bidding document.

VII. MONITORING AND REPORTING

46. Environmental monitoring involves regular checking of the environmental management issues detailed in the EMP to ascertain whether the mitigation measures are achieving their objectives, according to the EMP, with the progress of the construction works. Reporting system ensures and provides the necessary feedback for the project unit to keep the monitoring programme on schedule and achieve the expected outcomes.

47. CMRL has the responsibility for undertaking environmental due diligence and monitoring the implementation of environmental mitigation measures for all project components. The due diligence report as well as monitoring implementation of the environmental management plan needs to be documented systematically. ADB must be given access to undertake environmental due diligence for all project components, if needed.

48. Monitoring during construction will also be the responsibility of CMRL. Monitoring will relate to compliance with construction contracts, effectiveness of mitigation measures, renewal of environmental clearances, status of previously mandated corrective actions, GRM implementation and resolution of past issues, training and capacity building activities and the state and health of nearby environmental resources (also known as ‘ambient environmental monitoring’). Ambient monitoring will follow the approach to selecting quantitative standards, as recommended in the ADB’s SPS 2009.

49. The environmental monitoring plan is a companion document of the EMP. The EMoP contains parameters, location, sampling and analysis methods, frequency, and standards to compare to or agreed actions that will indicate non-compliances and trigger necessary corrective actions. More specifically, the objectives of the EMoP are:

(i) ensure that impacts do not exceed the established legal standards or baseline levels;
(ii) check the implementation of mitigation measures in the manner described in the EIA report;

(iii) monitor implementation of the EMP;
(iv) provide an early warning of potential environmental damage; and
(v) check whether the proposed mitigation measures have been achieved the intended results, and/or other environmental impacts occurred

50. Monitoring during initial years of operation shall be conducted in accordance with the procedures set out in the respective EIA.

51. The reporting system will start with the Contractor who executes project works. The Contractor reports to the project unit who in turn reports to CMRL. The Contractor shall formally submit monthly environmental compliance reports to the general consultant. The general consultant shall submit separate quarterly environmental monitoring reports to the CMRL project unit for internal monitoring purposes in addition to submission of the summary of the activities for the month in the formal monthly report including any deviations and corrective actions. CMRL shall be responsible for ensuring compliances and preparation of targets for identified non-compliances with respect to EMP and reports to MDBs. Semi-annual monitoring reports must be submitted to ADB for discuslore on the ADB website during construction and annual monitoring reports during early stages of operation. Monitoring will continue until a Project Completion Report is issued.

APPENDIX 1: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

Instructions:

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

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

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

Country/Project Title:

Sector Division:

Screening Questions	Yes	No	Remarks
A. PROJECT SITING IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS?			
▪ CULTURAL HERITAGE SITE			
▪ PROTECTED AREA			
▪ WETLAND			
▪ MANGROVE			
▪ ESTUARINE			
▪ BUFFER ZONE OF PROTECTED AREA			
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY			
B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?			
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?			
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?			
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?			

Screening Questions	Yes	No	Remarks
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation during project construction and operation?			
▪ noise and vibration due to blasting and other civil works?			
▪ dislocation or involuntary resettlement of people?			
▪ dislocation and compulsory resettlement of people living in right-of-way?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?			
▪ hazardous driving conditions where construction interferes with pre-existing roads?			
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?			
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?			
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?			
▪ increased noise and air pollution resulting from traffic volume?			
▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?			
▪ social conflicts if workers from other regions or countries are hired?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
▪ community safety risks due to both accidental and natural causes, 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.			

A Checklist for Preliminary Climate Risk Screening

Country/Project Title:
Sector:
Subsector:
Division/Department:

Screening Questions		Score	Remarks[a]
Location and Design of project	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?		
	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.)?		
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)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?		
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?		

[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

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high-risk project.

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

Other Comments:___-

_____

_____

Prepared by: _____

APPENDIX 2: OUTLINE OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1. An environmental assessment report is required for all environment category A projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. A typical EIA report contains the following major elements. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown.

A. Executive Summary

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

B. Introduction

3. This section provides a brief background and context of the project.

C. Policy, Legal, and Administrative Framework

4. This section summarizes 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.

D. Description of the Project

5. 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.

E. Description of the Environment (Baseline Data)

6. This section describes relevant physical, biological, and socioeconomic conditions within the study area, and may be based largely on secondary data if relevant and accurate secondary data is available. 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.

F. Anticipated Environmental Impacts and Mitigation Measures

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

G. Analysis of Alternatives

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

H. Information Disclosure, Consultation, and Participation

9. 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.

I. Grievance Redress Mechanism

10. 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.

J. Environmental Management Plan

11. 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.

K. Conclusion and Recommendations

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

APPENDIX 3: OUTLINE OF QUARTERLY AND SEMI-ANNUAL EMP MONITORING REPORT

1. The borrower is required to prepare and submit to ADB semiannual monitoring reports that describe progress with implementation of the project EMP, compliance issues, and corrective actions. A sample Table of Contents that can be adapted as necessary is provided below.

A. Introduction

2. (Report Purpose, Brief project background including organizational set up, list of roads, planned project schedule etc., Details on Project Implementation Progress with details on current site works, location, earthworks, vegetation clearing, spoils disposal, establishment of construction camp and other construction related facilities (e.g., concrete mixing plant, asphalt batching plant, crushing plant, etc.), establishment and operation of quarry or borrow areas, etc., including locations, schedules, dates, etc., Schedule of construction activities for the subsequent months).

B. Compliance on Environment Safeguards Requirements

3. (Status of compliance with ADB loan covenants: provide a list of environmental loan covenants and specify level of compliance).

4. Status of compliance with government environmental requirements: provide a list of government environmental requirements (permits, etc.) for the project as well as construction-related facilities or activities and specify level of compliance, indicate any required environmental permit, license, or consent obtained to date and to be obtained (including schedule) for the project and construction related facilities or activities).

C. Changes in project scope

5. (Such as change in alignment or footprint in case of horizontal infrastructure, implementation of additional Project component/s, etc. (with reference to the Project scope identified in the ADB-cleared environmental assessment report, i.e., EIA) and corresponding safeguard measures undertaken, if applicable).

D. Implementation of Environmental Management Plan

6. (Indicate the manner by which EMP requirements are incorporated into contractual arrangements, such as with contractors or other parties.

7. Summary of Environmental Mitigations and Compensation Measures Implemented.

8. Based on EMP; may include measures related to air quality, water quality, noise quality, pollution prevention, biodiversity and natural resources, health and safety, physical cultural resources, capacity building, and others. Provide a table/matrix showing a summary of each environmental mitigation measure specified in the EMP.

EMP Requirement (list all mitigation measures specified in the EMP)	Compliance Attained (Yes, No, Partial)	Comment on Reasons for Partial or Non-Compliance	Issues for Further Action and Target Dates
1.			
2.			

EMP Requirement (list all mitigation measures specified in the EMP)	Compliance Attained (Yes, No, Partial)	Comment on Reasons for Partial or Non-Compliance	Issues for Further Action and Target Dates
3.			
4.			
5.			

E. Environmental Monitoring Activities

9. (Compliance Inspections, Summary of Inspection Activities, Mitigation Compliance[1] Mitigation Effectiveness.[2] Findings of Environmental Monitoring Plan (EMOP) on quality of air, noise, water etc. and Results Assessment)[3]

F. Key Environmental Issues

10. (Key Issues Identified (e.g., non-compliance to loan covenants, EMP and/or government environmental requirements, insufficient mitigation measures to address Project impacts, incidents, accidents, etc.) Actions Taken and Corrective Action Plan (specify actions taken and corrective action plans to be implemented to address non-compliance and other identified issues. Such action plan should provide details of specific actions to be undertaken to resolve identified issues, responsible persons who will carry out such actions and timeframe/target date to carry out and complete required actions. The action plan could be presented in a tabular/matrix form

[1] Overall compliance with mitigation implementation requirements could be described in qualitative terms or be evaluated based on a ranking system, such as the following:
1. Very Good (all required mitigations implemented)
2. Good (the majority of required mitigations implemented)
3. Fair (some mitigations implemented)
4. Poor (few mitigations implemented)
5. Very Poor (very few or no mitigations implemented)

Additional explanatory comments should be provided as necessary.

[2] Effectiveness of mitigation implementation could be described in qualitative terms or be evaluated based on a ranking system, such as the following:
1. Very Good (mitigations are fully effective)
2. Good (mitigations are generally effective)
3. Fair (mitigations are partially effective)
4. Poor (mitigations are generally ineffective)
5. Very Poor (mitigations are completely ineffective)

Additional explanatory comments should be provided as necessary.

[3] Discharge levels should be compared to the relevant discharge standards and/or performance indicators noted in the EMP. Any exceedances should be highlighted for attention and follow-up. In addition, discharge levels could be compared to baseline conditions (if baseline data is available) and described in qualitative terms or be evaluated based on a ranking system, such as the following:
1. Very Good (overall conditions are generally improved)
2. Good (conditions are maintained or slightly improved)
3. Fair (conditions are unchanged)
4. Poor (conditions are moderately degraded)
5. Very Poor (conditions are significantly degraded)

Additional explanatory comments should be provided as necessary.

(see below). Timeframe and responsibilities for reporting to ADB on the progress of implementation of corrective action plan should also be specified under this section.)

Issue	Cause	Required Action	Responsibility	Timing (Target Dates)	Description of Resolution and Timing (Actual)
Old Issues from Previous Reports					
1.					
2.					
New Issues from this Report					
1.					
2.					

11. Complaints: Details of Complaint/s (Provide details of any complaints that have been raised by the local population and other stakeholders regarding environmental performance and environmental impacts (complainant, nature of complaint, date complaint was filed, which office received the complaint, etc.)

12. Action Taken (Document how the complaints were addressed or will be addressed by indicating the following:

(i) names and designation of specific staff or officials within the grievance redress committee, executing agency, project unit, local government, contractor and/or supervision consultant involved in receiving, documenting, and resolving the complaint/s; and
(ii) specific actions taken to be taken to resolve the complaint and corresponding timeframe

G. Conclusion and Recommendation

Overall Progress of Implementation of Environmental Management Measures[4]
Problems Identified and Actions Recommended
Monitoring adjustment (recommended monitoring modifications based on monitoring experience/trends and stakeholders response)

H. Appendices

Site Inspection / Monitoring Reports
Source and Ambient Monitoring Results (Laboratory Analysis)
Photographs
Location Map of Sampling Stations
Copies of Environmental Permits/Approvals
Other relevant information/documents

[4] Overall sector environmental management progress could be described in qualitative terms or be evaluated based on a ranking system, such as the following:
1. Very Good
2. Good
3. Fair
4. Poor
5. Very Poor
Additional explanatory comments should be provided as necessary.