



Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects

Doc. No. CDSO_GUD_DS_08_v1.0

November 2020



Central Water Commission
Ministry of Jal Shakti
Department of Water Resources
River Development & Ganga Rejuvenation
Government of India

Front Cover Photograph: View of Rehabilitation work in progress at Pechiparai Dam, Tamil Nadu

Copyright © 2020 Central Water Commission. All rights reserved. This publication is copyright and may not be resold or reproduced in any manner without the prior consent of Central Water Commission, Government of India.



**Government of India
Central Water Commission
Central Dam Safety Organisation**

November 2020

**Dam Safety Rehabilitation Directorate
3rd Floor, New Library Building
R. K. Puram
New Delhi - 110066**

Government of India
Central Water Commission
Central Dam Safety Organisation

The Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects has been published for the first time in November 2020 under the Dam Rehabilitation and Improvement Project (DRIP).

Disclaimer

The Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects has been prepared to guide the dam owners to integrate the environmental concerns in their dam rehabilitation projects and for addressing the regulatory requirements on environmental and social safeguards as per law of the land. The Central Dam Safety Organization of the Central Water Commission cannot be held responsible for the efficacy of the safeguards measures taken based on these guidelines. The basic objective of this document is to provide necessary guidance in general to a dam owner, but in no way is any substitute or supplement to any of the statutory requirement for executing any of the rehabilitation work at any dam site. The applicability or compliance to any clause of any statutory provision is the sole responsibility of dam owner. The dam owners and operators should exercise appropriate discretion while addressing environmental issues during rehabilitation of their dams.

For any information, please contact:

The Director
Dam Safety Rehabilitation Directorate
Central Dam Safety Organisation
Central Water Commission
3rd Floor, New Library Building
R. K. Puram, New Delhi – 110066.
Email: dir-drip-cwc@nic.in

MESSAGE

Dams are important assets serving the people in many ways like providing irrigation, power generation, drinking water, industrial water supply and mitigate flood and drought to a certain extent. The existing dams have been constructed with huge investments including substantial investments in terms of social and environmental costs. Long-term sustenance of these assets is vital for drawing planned operational benefits from these assets. Presently, India has about 5334 completed large dams and 411 large dams are under construction. In addition to this, there are thousands of medium and small dams in the country.

Many of these dams, owing to the issues of deferred maintenance or because of the design and construction practices being of an earlier era, have safety concerns and therefore pose risks to life and safety of very vast population.

Government of India has initiated dam safety programmes to address the safety concerns of these structures as well as institutional strengthening to improve safety and operational performance of these assets. The first such program titled Dam Safety Assurance and Rehabilitation Project (DSARP) was implemented during 1991-99. The second such initiative is Dam Rehabilitation and Improvement Project (DRIP), first phase of which was started in the year 2012 and will continue for next ten more years in its two more phases. During implementation of DRIP, Central Water Commission felt that there is no guidelines to deal with environmental and social issues to guide the dam authorities during execution of various rehabilitation works. Few of these rehabilitation activities invite the compliance of various social and environmental statutory provisions. In absence of explicit guidelines and operational protocols, during planning and execution of rehabilitation activities, dam authorities, in general, do not take into account the compliances required for seeking various approvals which result into great delay in completion of these activities or sometimes these works have to be dropped altogether due to inordinate delay in getting such approvals.

This document titled “Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects” would provide valuable guidance to the dam authorities for obtaining statutory social and environmental clearances required for taking up various dam rehabilitation activities. This document is the compilation of relevant regulations and statutes pertaining to the environmental safeguards in India and to provide procedures and guidance for obtaining different clearances and permissions under various rules and regulations as well as to guide the dam owners and other stakeholders in implementation and monitoring of mitigation measures during project execution. It has a matrix table listing all important rehabilitation activities in dams along with listing of various applicable approvals on environmental safeguards. A Review Committee consisting of officials of CWC, Central Electricity Authority (CEA), Ministry of Environment, Forest and Climate Change (MoEF&CC) and the World Bank has thoroughly reviewed the draft of this document, which was prepared by the DRIP CPMU consultant. It has been approved by the MoEF&CC on the recommendations of their Expert Appraisal Committee (EAC) for River Valley and Hydroelectric Projects. This will prove a very

useful guiding document for dam authorities as well as other statutory agencies in dealing with matters related to approval process for rehabilitation activities of existing dams.

I would like to put on record the appreciations and acknowledgement to MoEF&CC for officially concurring this document which would further guide the various stakeholder agencies in giving timely approval and clearances for any proposed dam rehabilitation activity. I also appreciate the dedication and hard work put in by the members of the Review Committee in completing this commendable job.



(R. K. Jain)

Chairman

Central Water Commission

New Delhi,
November, 2020

FORWARD

India has 5334 existing operational large dams. About 400 large dams are under construction having gross storage of more than 300 billion cubic meter. Among the existing dams, about 300 dams are more than 100 years old and about 80% of these dams are more than 25 years old. Without proper maintenance, repairs, and rehabilitation, a dam may not be able to serve its intended purpose and could be at risk for failure. Importance of the timely and regular rehabilitation of the structures can also be understood from the fact that some of the dam failures happened in recent past globally. In India, case of failure of Tiware dam in Maharashtra in year 2019, highlights the extent of catastrophic consequences of such events.

Implementation of some of the maintenance and rehabilitation works in existing dams such as de-silting of dams, construction of additional spillway or carrying out structural activity where dams are located in the environmentally sensitive areas etc. may have certain environmental and social implications and they may have potential to impact adversely the environment and social issues in case not addressed during planning and execution of these rehabilitation works. So far, there was no guidance document available for managing environmental and social risks while carrying out rehabilitation of existing dams which are very different than in case of construction of new structure at all.

During the execution of the some of the rehabilitation works under Dam Rehabilitation and Improvement Project, it came to notice that works of de-silting of one dam in Tamil Nadu got delayed significantly due to want of clearance from National Board of Wildlife, and contract had to be cancelled after a period of about three years. Also, few of the works could not be taken up which were located in reserved forest areas as contractors did not respond due to anticipated complicated procedures of approvals linked with cost implication. Also, enactment of Dam Safety Legislation is under progress which would warrant numerous rehabilitation activities to be taken up by dam owners in order to meet various provisions given in Bill. Therefore, in order to bring awareness among the dam owners especially in respect of requirement of various necessary approvals to be taken well in advance before execution of such important rehabilitation activities, publication of this document was very much essential.

The current *Guideline on Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects* has been recommended by Expert Appraisal Committee (EAC) of Ministry of Environment, Forest and Climate Change (MoEF&CC) as well as it has been approved by MoEF&CC, which would prove a very useful document for the dam owners as well as other line agencies granting the necessary approval. It will help in saving the precious time as well as timely addressing of any safety concerns in a given dam, which ultimately would ensure timely upkeep of these existing assets.

I hope that this publication by Central Water Commission will help all dam owners, practicing Engineers as well as other stakeholders through awareness, guide and planning of the

environmental and social concerns in the rehabilitation of existing dams and managing the likely environmental and social risks effectively.

I would like to extend thanks to MoEF&CC and especially to Dr. S. Kereketta, Director (IA-I) and Member Secretary of EAC, MoEF&CC and his team for valuable guidance as well as regular support in drafting and finalizing this document. Also, I appreciate all members of the Review Committee who have made commendable efforts in bringing this document. I am also thankful to the Experts of World Bank and Asian Development Bank (ADB) for supporting us in this endeavour.



(Dr. R. K. Gupta)
Member, D&R
Central Water Commission

New Delhi,
November, 2020

PREFACE

The Central Water Commission (CWC) is involved in giving need based support to various dam owners of India especially dams having distresses and safety issues. The role of CWC is advisory only as currently no legislation exists to regulate dam safety activities in India. But Government of India is in the process of enactment of Dam Safety Act to strengthen the institutional arrangement at central and State levels and standardise various procedures, guidelines and standards to deal with this matter. The CWC is incessantly working to promote dam safety culture. The overall responsibility and supervision for various externally aided programs related to dam safety in the past had been entrusted to CWC including the upcoming one. Under the Schemes, dam safety institutional strengthening has been one of important component wherein number of manuals and guidelines related to safety and rehabilitation of existing dams has been published by CWC. This operational procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects is one of the another document in this series.

It is well established that some of rehabilitation activities may induce environmental impacts of varying extent, although these impacts may not be as severe as that for the new dam projects. It has been a vibrant experience of CWC especially in implementing more than 1000 work rehabilitation packages on ground, not even a single representation/complain/ grievance reported during the implementation of on-going DRIP. This indicates, that rehabilitation activities altogether are maintenance activities in true nature and do not have any adverse implication in majority of cases. However, all anticipated environmental impacts can be mitigated successfully with implementation of proper mitigation measures. Some of activities of the dam rehabilitation project may also fall in the purview of different statutory and regulatory norms, which are required to be complied under different Acts and Rules. Due to lack of awareness regarding the applicability of different statutory norms, sometimes the projects get delayed. So it is imperative to act in advance for obtaining different clearances, permits and licenses for the project under different rules and regulations during the project planning and preparation stage.

It is also important to consider and assess the potential environmental impacts into the project as an integral part of project preparation and accordingly the environmental mitigation plan to be formulated in order to ensure environmental and social sustainability of the project. All the anticipated environmental impacts due to dam rehabilitation activities can be successfully managed with proper planning and implementation of environmental and social mitigation measures.

The present document on operational procedures is an effort to identify the statutory implications of the proposed dam rehabilitation works, the procedures to be followed for getting different statutory clearances along with timelines as well as compliance requirements. It also provide guidelines on compliance requirements on environmental and social safeguards for

funding agency like World Bank & Asian Development Bank as per their safeguards policies, which will help the dam authority to plan their project judiciously.

Guidelines Review Committee

Chairman	Gulshan Raj	Chief Engineer, Dam Safety Organization, Central Water Commission, New Delhi
Member Secretary	Pramod Narayan	Director, Dam Safety Rehabilitation Directorate and Project Director, DRIP, Central Water Commission, New Delhi

Committee Members

Dr S. Kerketta	Director (IA-I), Ministry of Environment, Forest & Climate Change, Govt. of India
Shravan Kumar	Director, Central Electricity Authority, Ministry of Power, Government of India
Piyush Dogra	Sr. Environment Specialist, World Bank India, N Delhi
Nitya Nand Rai	Director, Hydrology (South), Central Water Commission
B.B. Saikia	Director, EM&EIA, Central Water Commission

Team Involved in Preparing this Guideline

Pramod Narayan	Director, Dam Safety Rehabilitation Directorate and Project Director, DRIP, Central Water Commission, New Delhi
Saurabh Sharan	Deputy Director, Dam Safety Rehabilitation Directorate, Central Water Commission, New Delhi
Bhise Yogesh Nanasaheb	Deputy Director, Dam Safety Rehabilitation Directorate, Central Water Commission, New Delhi
Ravinder PS Bhatia	Environmental Specialist, CPMU Consultant DRIP
Pankaj Kumar Awasthi & Anil Kumar	Typing and Formatting Support, CPMU Consultant, DRIP

CONTENTS

Message	i
Forward	iii
Preface	v
List of Tables	xiii
List of Figures.....	xiv
List of Abbreviations.....	xv
Executive Summary	xxi
Chapter 1. Introduction.....	1
1.1 Need of Guidelines.....	1
1.2 Scope and Objective	3
1.3 Sustainable Operation and Maintenance of Projects	3
1.4 Appraisal	4
1.5 Acknowledgement	4
Chapter 2. Existing Policies and Legal Framework	5
2.1 Background.....	5
2.2 Institutional Framework	6
2.3 Environmental and Social Laws and their Regulations.....	6
2.3.1 Environment (Protection) Act, 1986	6
2.3.2 EIA Notification, 2006 and Amendments thereafter.....	6
2.3.3 Water (Prevention and Control of Pollution) Act, 1974	7
2.3.4 Air (Prevention and Control of Pollution) Act, 1981	7
2.3.5 Forest (Conservation) Act, 1980	7
2.3.6 Wild Life (Protection) Act 1972.....	7
2.3.7 Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.....	8
2.3.8 Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Ordinance, 2014.....	10
2.3.9 Wetlands (Conservation and Management) Rules, 2017	11
2.3.10 National Green Tribunal Act, 2010.....	11
2.3.11 Corporate Environmental Responsibility (CER)	12
2.3.12 Other Legislation Applicable in Dam Projects.....	12
Chapter 3. Procedure for Environment, Forest and Wildlife Clearances.....	27
3.1 Procedure for Environment Clearance for Dam Projects	27
3.1.1 Requirement of Environmental Clearance under EIA Notification, 2006 and amendment thereafter	27
3.1.2 Process of EC for Borrow Area	31
3.2 Forest Clearance.....	33
3.2.1 Role of Processing Authority	34
3.3 Wildlife Clearance	39

Chapter 4. EIA Procedure.....	41
4.1 Steps of EIA Study.....	41
4.2 Screening.....	42
4.3 Scoping.....	43
4.4 EIA Report Preparation.....	43
4.4.1 Baseline Environmental Conditions	43
4.4.2 Prediction and Mitigation	44
4.4.3 Environmental Management Plan	44
4.5 Public Consultation	45
4.6 Appraisal	45
Chapter 5. Good Environmental Safeguards Practices in Construction	51
5.1 General.....	51
5.2 Pre-Construction Stage	51
5.3 Construction Stage.....	51
5.4 Agencies for EMP Implementation	51
5.4.1 Project Proponent.....	52
5.4.2 Environmental Management Cell and R&R Cell.....	52
5.4.3 Engineer and His Representatives	52
5.4.4 Contractors.....	52
5.5 Supervision, Monitoring and Report Writing.....	52
5.5.1 One-Time Approval.....	53
5.5.2 Activities Requiring Periodical Inspection and Monitoring.....	53
5.5.3 Penalty Clause.....	54
Chapter 6. Procedures for Environmental Management and Control.....	55
6.1 Procedures for Borrow Area Operations and Management.....	55
6.1.1 Identification of Borrow Areas.....	55
6.1.2 Borrow Area Operations	56
6.1.3 Site Inspection.....	57
6.1.4 Statutory Clearance for Borrow Area	58
6.2 Procedures for Quarry Operations and Management.....	58
6.2.1 Procedure.....	58
6.2.2 Site Inspection.....	59
6.2.3 Statutory Clearance for Quarry.....	59
6.2.4 Non-Conformance	59
6.3 Procedure for Storage area and Workshop Management	59
6.3.1 Site Selection Criteria	60
6.3.2 Operational Procedures.....	60
6.4 Procedure for Handling and Disposal of Construction Wastes and Muck	63
6.4.1 Objective.....	63
6.4.2 Identification of Disposal Site.....	63
6.4.3.1 Transportation of muck	65
6.4.3.2 Traffic Survey	66

6.4.4	Site Inspection.....	67
6.4.5	Non-Conformance	67
6.5	Procedure for Soil Erosion and Sediment Control	68
6.5.1	Objective.....	68
6.5.2	Procedure.....	68
6.5.3	Site Inspection.....	68
6.5.4	Non-Conformance	69
6.6	Procedure for Air, Water and Noise Pollution Control & Monitoring	69
6.6.1	Objective.....	69
6.6.2	Procedure.....	69
6.6.3	Site Inspection.....	69
6.6.4	Non-Conformance	69
6.7	Procedure for Occupational Health and Safety Measures	69
6.7.1	Objective.....	69
6.7.2	Procedure.....	70
6.7.3	Site Inspection.....	71
6.7.4	Non-Conformance	71
6.8	Construction Plants and Equipment Management	71
6.8.1	Introduction.....	71
6.8.2	Site Selection Criteria for Batch Mix Plant/ Stone Crusher Plant.....	74
6.8.3	Statutory requirements.....	74
6.8.4	Pollution Control Measures	74
6.8.5	Site Inspection.....	76
6.9	Construction and Labour Camps Management	76
6.9.1	Introduction.....	76
6.9.2	Pre-construction stage	76
6.9.3	Setting up of Labour Camp	77
6.9.4	Fire Fighting Arrangement.....	79
6.9.5	Interactions with Host Communities.....	80
6.9.6	Construction Stage.....	80
6.9.7	Post Construction Stage.....	80
6.9.8	Site Inspection.....	81
6.9.9	Non-Conformance	81
6.10	Revisit of Implementation of Catchment Area Treatment (CAT) Plan	81
6.10.1	Survey and Investigation:.....	82
6.10.2	CAT Plan	84
Chapter 7.	Documentation and reporting on environmental compliance	87
7.1	Environmental Monitoring Records	87
7.2	Annual Environmental Statement	88
Chapter 8.	External Funding Agency's Policy and Requirements on Environmental and Social Safeguards	91
8.1	World Bank's Environmental and Social Safeguard Policies and Requirements..	91
8.1.1	World Bank Requirements	97

8.1.2	Environmental and Social Commitment Plan (ESCP).....	97
8.1.3	Project Categorisation:.....	97
8.1.4	Environmental and Social Management Framework.....	98
8.1.5	Environment and Social Impact Assessment (ESIA).....	98
8.1.6	Environmental and Social Management Plan (ESMP).....	98
8.1.7	Management of Contractors.....	99
8.1.8	Stakeholder Consultation and Participation	99
8.1.9	Grievance Redressal Mechanism.....	99
8.1.10	Monitoring and Reporting.....	99
8.2	ADB's Safeguard Policy	100
8.2.1	Safeguard Requirements of ADB.....	100
8.2.2	ADB's Safeguard Requirements during Project Preparation:	101
8.2.3	Safeguard Requirements during Project Construction / Implementation 105	
8.2.4	Monitoring and reporting:	105
8.3	Institutional Arrangement for Environmental and Social Safeguard Implementation	106
8.3.1	Role and Responsibility of CPMU at Central Level.....	107
8.3.2	Role & Responsibility of SPMU at State Level.....	107
8.3.3	Role & Responsibility of Dam Manager.....	107
8.3.4	Role & Responsibility of Contractor.....	108
	World Bank Template - I: Environmental and Social Commitment Plan (ESCP)	111
	World Bank Template - II: Labour Management Procedures	120
	World Bank Template - III: Template for ESS10: Stakeholder Engagement and Information Disclosure	124
	World Bank Template – IV: Grievance Redress Mechanism	132
	Annexure-1.1: Minutes of EAC meeting MoEF&CC.....	135
	Annexure-1.2: Guidelines Approval Letter from MoEF&CC.....	153
	Annexure-2.1: Schedule of EIA Notification, 2006.....	155
	Annexure-7.1: Templates for One Time Site Records.....	165
	Annexure-7.2: Templates For Periodical Inspection Of Environmental Safe Guards	175
	Annexure-7.3: Annual Environmental Statement (as per MOEFCC)	185
	Appendix-I: Gazette Notification of TOR Validity.....	189
	Appendix-II: Standard Terms Of Reference For EIA Study Of River Valley Projects	191
	Appendix-III: Gazette Notification of Environmental Clearance of Borrow Area	201
	Appendix-IV: MOEFCC OM Regarding Standardisation of Environmental Clearance Conditions for River Valley & Hydro-Electric Project.....	213

LIST OF TABLES

2.1	Overview of Acts and Rules on Environmental Safeguards in India	15
2.2	Activity-wise Applicability of Environmental, Forest and Wildlife Clearances for Dam Rehabilitation and Improvement Works	17
4.1	Steps in EIA and SIA at different Stages of Project	42
4.2	Environmental Concerns in Project Preparation	46
6.1	Details to be inspected for Monitoring Borrow Area Operation & Management	57
6.2	Details to be inspected for Monitoring Quarry Area Operation & Management	60
6.3	Details to be inspected for Monitoring Storage Area Management	62
6.4	Details to be inspected for Monitoring Construction Material/Muck Reuse & Disposal	64
6.5	Template for Traffic Survey	68
6.6	Details to be inspected for Monitoring Soil Erosion & Sediment Control	71
6.7	Details to be inspected for Air, Water & Noise Pollution Monitoring	72
6.8	PPE Requirement List	72
6.9	Details to be inspected for Monitoring Occupational Health & Safety Measures	72
6.10	Details to be inspected for Plant Management Measures	75
6.11	Selection Criteria for Campsite	76
6.12	Details to be inspected for Campsite Management	82
7.1	Type of Template to be used for one time site record	88
7.2	Type of Template to be used for periodical inspection	88
8.1	Environmental and Social Standards as per World Bank ESF	92
8.2	Categorisation of Project and Safeguard Requirements of ADB	101

LIST OF FIGURES

3.1	Flow chart for Environmental Clearance Process	32
3.2	Flow chart for obtaining Stage-I Forest Clearance as per Forest (Conservation) Amendment Rules, 2014	35
3.3	Flow Chart for obtaining Forest Clearance (Stage-II) as per Forest (Conservation) Amendment Rules, 2014	37
3.4	Wildlife Clearance Process	40

LIST OF ABBREVIATIONS

Abbreviation	Full Form
ADB	Asian Development Bank
AISS&LUP	All India Social Survey and Land Use Planning
APCCF	Additional Principal Chief Conservator of Forests
BSI	Botanical Survey of India
CAD	Command Area Development
CAT	Catchment Area Treatment
CCA	Culturable Command Area
CCF	Chief Conservator for Forest
CDSO	Central Dam Safety Organisation
CER	Corporate Environmental Responsibility
CFE	Consent for Establishment
CLO	Community Liaison Officer
CNP	Construction Noise Permit
CPA	Corrective Preventive Action
CPCB	Central Pollution Control Board
CPMU	Central Project Management Unit
CR	Conservation Reserve
CRZ	Coastal Regulation Zone
CTE	Consent to Establish
CTO	Consent to Operate
CWC	Central Water Commission
CWW	Chief Wildlife Warden
DCF	Deputy Conservator of Forest
DEAC	District Level Expert Appraisal Committee
DEIAA	District Environmental Impact Assessment Authority

Abbreviation	Full Form
DFO	Divisional Forest Officer
DPR	Detailed Project Report
DRIP	Dam Rehabilitation and Improvement Project
EAC	Expert Appraisal Committee
EAP	Emergency Action Plan
EC	Environmental Clearance
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environment Protection Act
ERCP	Emergency Response and Contingency Plan
ES	Executive Summary
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environment and Social Management Framework
ESMP	Environmental and Social Management Plan
FAC	Forest Advisory Committee
FPIC	Free, Prior and Informed Consent
FRA	Forest Right Act
FRL	Full Reservoir Level
G&D	Gauge and Discharge
GIS	Geographical Information System
GRM	Grievance Redressal Mechanism
GRC	Grievance Redressal Cell
HEP	Hydro Electric Project
IA	Implementing Agency
IEE	Initial Environmental Examination
IPDP	Indigenous People Development Plan

Abbreviation	Full Form
IPP	Indigenous Peoples Plan
IRC	Indian Road Congress
IUCN	International Union for Conservation of Nature
JICA	Japan International Corp. Agency
LMP	Labour Management Procedure
LPG	Liquid Petroleum Gas
MoEFCC	Ministry of Environment, Forests and Climate Change
MoRD	Ministry of Rural Development
MoTA	Ministry of Tribal Affairs
MSDS	Material Safety Data Sheet
MSIHC	Manufacture, Storage and Import of Hazardous Chemicals
NBWL	National Board of Wildlife
NC	Non Conformity
NCSDP	National Committee on Seismic Design Parameters
NEL	Non Emission Level
NFIP	National Flood Insurance Programme
NGO	Non-Government Organization
NGT	National Green Tribunal
NOC	No Objection Certification
NP	National Parks
NPRR	National Policy for Resettlement and Rehabilitation
NPV	Net Present Value
NRCS	Natural Resources Conservation Service, USA
NRSC	National Remote Sensing Centre, India
O&M	Operation and Maintenance
OECD	Organisation for Economic Co-operation and Development
OFD	On Farm Development
OM	Operational Manual

Abbreviation	Full Form
OP	Operational Policy
OSMEFWC	Online Submission & Monitoring of Environmental, Forests and Wildlife Clearance
PA	Protected Area
PAF	Project Affected Families
PAP	Project Affected Person
PCCF	Principal Chief Conservator of Forests
PFR	Pre-Feasibility Report
PH	Public Hearing
PMU	Project Management Unit
PPE	Personal Protective Equipments
PRI	Panchayati Raj Institutions
PUC	Pollution Under Control
RAP	Resettlement Action Plan
REC	Regional Empowered Committee
RET	Rare, Endangered and Threatened
RFCTLARR	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement
RO	Regional Officer
RSPM	Respirable Suspended Particulate Matter
SAG	State Advisory Group
SBWL	State Board of Wildlife
SCADA	Supervisory Control and Data Acquisition
SEAC	State Expert Appraisal Committee
SEDAC	Socioeconomic Data and Application Centre
SEF	Stakeholder Engagement Framework
SEIAA	State Environmental Impact Assessment Authority
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
SLUSOI	Soil and Land Use Survey of India

Abbreviation	Full Form
SOI	Survey of India
SPCBs	State Pollution Control Boards
SPM	Suspended Particulate Matter
SPMU	State Project Management Unit
SPS	Safeguards Policy Statement
SYI	Sediment Yield Index
ToR	Terms of Reference
TR	Tiger Reserves
tph	Tonnes per hour
ULB	Urban Local Bodies
UNESCO	United Nations Educational, Scientific and Cultural Organization
UTPCC	Union Territory Pollution Control Committee
UV	Ultraviolet
WB	World Bank
WCED	World Commission on Environment and Development
WLS	Wild Life Sanctuaries
ZSI	Zoological Survey of India

This page has been left blank intentionally.

EXECUTIVE SUMMARY

Introduction

Dams are major components of the comprehensive strategy to address water resource challenges posed by drought, flooding, depleted aquifers, environmental needs, energy demands, increased consumption due to population increase in India. India has about 18% of the world's population but approximately 4% of world's utilisable water resources, hence role of these water reservoirs become even more important to ensure water security. The existing dams have been constructed with huge investments including substantial investments in terms of social and environmental costs. Long-term maintenance of these assets is vital for drawing planned operational benefits from these assets. Many of these dams have inter-state ramifications in case of failure. Approximately 80% of large dams are more than 25 years old and most were built well before modern state-of-the-art design and construction practices were in use. Many of these dams, owing to issues of deferred maintenance or because of the design and construction practices being of an earlier era may pose risks to life and safety of vast population downstream, property, environment and riverine ecology. The probability of dam failure is very minimal but consequences are huge. In addition to various stresses our dams are facing, the new threat posed by a changing climate is also playing a larger role in enhanced safety risks. The India's large and medium dams together have a water storage of about 300 billion cubic meters.

Apart from regular maintenance activities, these dams require periodic rehabilitation works broadly consisting of civil and hydro-mechanical work such as rip rap replacement, grouting, reaming of drainage holes, re-sectioning, repair of energy dissipation arrangement, under water rehabilitation, raking and pointing, geo-membrane application on u/s face of dams, reaming of drain holes, repair and replacement of spillway gates/gantry cranes; and basic facility improvement such as repair of approach roads, office building, lighting etc. Most of the rehabilitation works are limited to dam body/complex and do not fall under any category requiring any permission/clearance from environmental angle. Only very few activities such as construction of additional spillway, may require additional land – private/forest, therefore would require land acquisition/forest clearance. In some cases, due to location of dams within or in proximity to protected areas; wildlife clearance may also be required.

Presently there are no guidelines available for managing the environmental impacts due to the dam rehabilitation works and guide the dam owners explicitly whether any advance action is required to address environmental protocols for executing a particular rehabilitation work. As some of the activities may require advance action to mitigate and manage the anticipated impacts, this warrants integration of environmental and social safeguards in the project planning and execution. In exceptional cases, few of the activities attract the statutory provisions for environmental clearance, wildlife clearance and forest clearance.

This document has been prepared to serve as a guiding document for the dam owners to systematically address in advance the environmental safeguard requirements of the proposed

dam rehabilitation projects. This document is divided into eight (8) sections, the summary of each section is as follows.

Existing Policies and legal framework

The construction activities in the case of a new dam and rehabilitation activities for an existing dam are altogether different. This section provides a brief overview of different environmental and social statutes which may be applicable to a particular type of dam rehabilitation work, but not necessarily to all rehabilitation activities. This guideline shall not to be treated as supplement in any way to existing statutes and shall be referred on need basis to original provisions. It provides an insight into the institutional framework for environmental management and pollution control in India. It describes the environmental acts and rules - their objective and applicability, types of permits required and stage of applicability along with administrative and regulatory authority.

Procedure for Environment Forest and Wildlife Clearances

Requirement for environment, forest and wildlife clearances are mainly for new dam projects and most of the rehabilitation work limited to dam area; may not fall under its purview, however, in certain cases, where large rehabilitation work is proposed it may attract amendment of environment clearance (EC) accorded to the project; in case of forest land requirement for additional structures, forest clearance will become applicable and due to location of the project wildlife clearance may get applicable. This section provides the procedures for Environment forest and wildlife clearances process with the help of flow charts for clarity to dam owners.

For the purpose of environmental clearance, as per the EIA Notification, 2006; dam projects are covered under river valley projects (hydroelectric and irrigation projects) listed at item 1(c) in the Schedule of the notification. Hydroelectric projects are categorised as “A” if installed capacity is greater than equal to 50 MW and “B” if the installed capacity is greater than equal to 25 MW but less than 50 MW. Irrigation projects are categorised as “A” if the Culturable Command Area (CCA) is greater than equal to 50,000 ha; B1 for CCA between 50,000 and greater than equal to 10,000 ha; and B2 for CCA less than 10,000 ha and greater than equal to 2000 ha. Category A projects are appraised at Centre and EC is issued by MoEF&CC, whereas Category B projects are appraised at state level and EC is issued by SEIAA. Amendment of EC follow the same pattern. The entire system of environment clearance is online.

Similar to Environmental Clearance the MoEF&CC has developed online system for making application of forest clearance under the Forest (Conservation) Act. For any dam project (New or Expansion /maintenance dam project) involving acquisition of forest land, forest clearance is required for diversion of forest land under Forest (Conservation Act), 1980.

The projects which are located inside or in proximity i.e. within 10 Km distance in the absence of notified Eco sensitive Zone (ESZ) or within (ESZ) if it is notified; to a protected area declared under Wildlife Protection Act; will attract the provision of Wildlife (Protection) Act and hence will require wildlife clearance for the project.

Procedure for environment forest and wildlife clearance are discussed in detail in relevant section with the help of flow charts.

EIA Procedure

The EIA process ensures that environmental issues are understood when a project or plan is prepared and that all concerns are addressed as the project proceeds for implementation. EIA procedure, as defined in EIA Notification 2006 is followed for rehabilitation work where amendment of EC gets applicable. In this section four stage process has been explained i.e. screening, scoping, public consultation and appraisal. Screening decides the project category, scoping provides the terms for EIA study, public consultation process records and assess public opinion and concerns for the project and appraisal by expert appraisal committee is meant to review the project impacts, mitigation and management measures proposed to minimise the impacts and decide on the environmental viability of the project and issue clearance accordingly.

Good Environmental Safeguards Practices in Construction

During the Construction/implementation stage it is imperative to implement environmental safeguard measures including those of statutory requirements in a uniform and well-coordinated manner among contractors, Engineer, Implementing teams. This section provides suggestive measures for adopting good environmental practices for ensuring effective implementation of environmental and social safeguards measures for different environmental impacts and covers the issues/activities during Pre-Construction and Construction Stages relevant to the specific projects. This further identifies the agencies along with their roles and responsibilities in EMP implementation. Supervising, monitoring and reporting requirements have been discussed along with the compliances with the legal requirement.

Procedure for Environment Management and Control

Various procedures have been stipulated under different statutory regulations and conditions of the statutory permissions and clearances are to be followed by the dam authority as well as the Contractor. This includes borrow areas operation and management; quarry area operation and management, storage area and workshop management including that for hazardous substances, construction and demolition waste management, muck and other waste management including hazardous wastes. Monitoring of environment quality parameters such air quality, sound levels, water and soil quality is part of the procedure for performance monitoring. Occupational health and Safety is an important component of rehabilitation work requiring procedures for workers safety have been covered in detail. Similarly various environment and social issues associated with workers camp/colonies set up close to dam site during rehabilitation work require labour management procedure to minimize impacts.

Documentation and Reporting on Environmental Compliances

The documentation and reporting on implementation of environmental safeguards during project implementation is important to demonstrate the commitment towards environmental safeguards. It is also important to help in identification of gaps, corrective measures required for

improvement, any requirement of modification/ additional mitigation measures. This will provide the input on efficiency of mitigation measures during auditing by the regulatory authority or funding agencies. The maintained data and record is also required for compilation of progress reports. Record generation and maintenance requirements have been identified and sample templates have been provided to ensure uniformity and complete coverage.

External Funding Agency's Policy and Requirements on Environmental and Social Safeguards

As many of the rehabilitation projects involve external lending agencies such as World Bank, Asian Development Bank and Japan International Corp. Agency (JICA) etc. . It is important to understand their policies and frameworks for environment and social safeguards to be implemented in the borrower's projects. The external lending agencies have their environmental and social safeguards policies and it is mandatory requirement to comply with such policies for seeking financial assistance from these funding agencies. This section provide overview on the funding agencies requirement and role and responsibility of different agencies involved in implementation of Environmental and Social compliances of a project. These environment and social frameworks cover various aspects of rehabilitation work including carrying out environment and social due diligence and categorising the projects based on environment and social risks as High, Substantial, Moderate and Low and further carrying out environment and social impact assessment for high and substantial risk projects. The Environmental and Social Management Plan (ESMP) consists of the set of mitigation, monitoring and institutional measures to be taken during the design, construction and operation stages of the project to eliminate adverse environmental and social risks and impacts, to offset them, or to reduce them to acceptable levels.

Appraisal of Guidelines

The guidelines have been drafted with inputs from experts of MoEFCC, CWC and the World Bank. Draft guidelines have been placed before Expert Appraisal Committee (EAC) of MoEFCC for River valley and Hydroelectric Projects in its meeting held on July 19, 2019 for appraisal. The final guidelines after incorporation of the suggestions of EAC, have been approved by MoEF&CC, vide its letter dated September 17, 2020.

Chapter 1. INTRODUCTION

During the past few decades the importance of environmental protection and conservation measures has been increasingly recognized at global level. With the experience, it has generally been accepted that all the economic development strategies must be in coherent with environment in order to achieve the goal of sustainable development. This can be achieved only through incorporation of environmental dimensions into the development process.

In the course of development of India after independence, water resource projects played major role in green revolution not only for irrigation but also helped in meeting the energy, drinking water requirement along with mitigation of floods and drought upto certain extent. However, like any other developmental activities, the water resources projects have certain environmental and social impacts, which may be harmful or beneficial. Accordingly, there are well defined social and environmental mitigation measures in order to minimize the adverse environmental and social impacts and to maximize the positive impacts of the project.

The environmental impact assessment is a tool for decision makers and helps in identifying the environmental sensitivity of any project, identification of positive and negative impacts due to the proposed development project and for developing necessary environmental mitigation measures and management plan to be adopted.

1.1 Need of Guidelines

Presently, India ranks third globally with 5334 large dams in operation and about 411 are under construction. In addition, there are several thousand smaller dams. These dams are vital for ensuring the water security of the Country. Most of the dams

have been constructed long back and require maintenance and rehabilitation from time to time. These rehabilitation measures are very essential to execute timely in order to address the safety concern of dam, population, environment and property downstream of dam in case of dam failure.

There are various rehabilitation measures whose impact is limited to within the dam body due to their limited scope and do not have any adverse impacts on environment as well as human population. Therefore, such measures may not warrant any exhaustive environmental impact assessment as well as other compliance.

Based on experience of ongoing Dam Rehabilitation and Improvement project, following are the major activities to be taken up in general, but not limited to:

- Pointing of upstream face of masonry dams with special UV resistant mortar to control seepage.
- Treatment of dam construction joints for damaged seals using hydrophilic materials.
- Grouting of Masonry/Concrete dams to control seepage.
- Reaming of porous drains and re-drilling of foundation drains.
- Replacement of rubber seals of the spillway and sluice gates and periodic overhauling of gate hoisting systems.
- Repair and replacement of spillway gates/under sluice gates or provision of additional stop log gates
- Repair or replacement of gantry cranes

- Provision of automation of spillway gates and control room structures.
- Bringing the earth dam section to design section to address the stability aspect.
- Improvement of rip-rap, turfing on downstream face, chute drains, toe drains, rock toe and general drainage system for earthen dams.
- Improvement of access roads to different components of the dam project and dam crest railing.
- Providing security system to guard dam compound/project area.
- Improving dam instrumentation and monitoring, SCADA and automation system of dams.
- Providing additional spillway structures/fuse plugs/flush bars to take care of hydrological safety
- Raising height of dams to cater for increased design flood to address hydrological safety.
- Repair of spillway glacis, discharge channel and energy dissipation arrangements.
- Survey and mapping of cracks and its remedial measures
- De-siltation of dam reservoirs on selective basis.
- Provision of standby DG Sets, de-watering pumps.
- Geo-membrane sealing system for upstream face treatment of dams
- Repair of sluice structures
- Downstream face pointing with mortar
- Grouting of embankment dam and foundation curtain
- Provision or repair of parapet walls
- Providing backing concrete structures
- Catchment Area Treatment
- Various kind of investigations i.e. geo-technical, underwater, survey, geo-physical/sonic tomography etc.
- Pre and post Bathymetry survey for de-siltation of dam
- Development of dam tourism, water recreation facilities, incidental power, high end fisheries etc.
- Establishment of telemetric stations, automatic weather stations and other equipment for integrated flood forecasting and reservoir operation etc.
- De-weeding of Dam body/ Reservoir

For rehabilitation of existing dam projects involving one or more of the above activities, majority of time all these activities are executed within the dam body or dam compound without any impact to nearby habitation, environment and surrounding due to very limited nature. In few of the cases, or exceptional basis, following activities in case of necessity, may have some impacts on environment of different extent:

- Acquisition of forest land,
- Borrow materials/ area
- Quarry materials / area
- Blasting
- Excavation
- Dredging/De-siltation
- Heavy machinery Hot mix plant
- Concrete Batch Plant, Crusher Plant and heavy pumps

- Material handling and storage
- Temporary land acquisition
- Tree felling/ vegetation clearance
- Haulage of machinery
- Debris Disposal
- Transport of materials
- Sheds to keep machines and tool
- Resettlement and Rehabilitation
- Hill cutting

In the rehabilitation works, more than 99% of activities do not fall in above categories, only very few activities e.g. construction of additional spillway to safely pass some increased flood volume in case land acquisition or R&R issues involved, desiltation of reservoir may sometimes warrant some of the above activities, but not always. The supporting fact for this para is that out of more than 1300 work packages in the ongoing DRIP, only one case i.e. construction of additional spillway of Hirakud dam, falls in the category of EIA, EMP, R&R etc. that too because of limited R&R issues.

Presently there is no guidelines available for managing the environmental impacts due to the dam rehabilitation works and guide the dam owners explicitly whether any advance action is required to address environmental protocols for executing a particular rehabilitation work. As some of the activities may require advance action to mitigate and manage the anticipated impacts. This warrants integration of environmental and social safeguards in the project planning and execution. In exceptional cases, few of the activities attract the statutory provisions for environmental clearance, wildlife clearance and forest clearance.

This document has been prepared to serve as a guiding document for the dam owners to systematically address in advance the environmental safeguard requirements of the proposed dam rehabilitation projects in case it is applicable, and execute the relevant

rehabilitation work safety and systematically without any concern to meet the particular timelines of a given project, facilitate the contract agencies to transport construction material, manpower and machineries without any hassle by taking necessary approval in advance from the concerned agency/department.

1.2 Scope and Objective

The scope of this document is to summarise the various existing environmental and social safeguards in India and their applicability to various kind of rehabilitation works for the existing dams.

Objective of this document is to guide a dam owner during execution of various rehabilitation works under any dam rehabilitation Project to systematically and correctly implement its activity within the environmental and social management and monitoring safeguards, take advanced actions to fulfil the requirement of any law and successfully implement and complete the rehabilitation of any dam within the given project timeline.

It is important to understand that an EIA activity should not be considered just as part of the approval process but as a good practice to integrate the environmental issues with the project planning and execution to achieve the goal of sustainable development which is the demand of the time. A key output of the EIA should be an action plan for the impact mitigation and monitoring to be followed during and after implementation.

1.3 Sustainable Operation and Maintenance of Projects

The sustainable Operation and Maintenance is essential for existing dam assets of India keeping in view size of population of India, limited water resources, and new challenges in construction of new dam projects due to

various reasons. Keeping in view these facts, importance of existing water resources assets become manifolds. In order to ensure sustainable water, energy and food security, each dam owner must find the effective and sustainable ways to operate and maintain its dam assets successfully. The effective operation and maintenance mechanism further renders the long life to existing structure, reduces associated risks and ensure safety of downstream habitation, property and environment in case of any dam failure.

Keeping in view above facts, rehabilitation measures implemented from time to time by a dam owner is a part of effective operation and maintenance process and must be facilitated by all concerned agencies within the existing safeguards and policies instead of discouraging to defer the requisite maintenance and rehabilitation which may have widespread repercussion which generally may not be desired by a responsible society.

1.4 Appraisal

The guidelines have been drafted with inputs from experts of MoEF&CC, CWC and the World Bank. Draft guidelines have been placed before Expert Appraisal Committee (EAC) of MoEF&CC for River valley and Hydroelectric Projects in its meeting held on July 19, 2019 for appraisal. The final guidelines after incorporation of the suggestions of EAC, have been approved by MoEF&CC, vide its letter dated September 17, 2020. Minutes of the EAC meeting and approval from MoEF&CC are enclosed as ANNEXURE-1.1 and 1.2 respectively.

1.5 Acknowledgement

For development of this guidelines following documents have been referred:

- Safeguard Policy Statement, June, 2009 Asian Development Bank.
- World Bank Environmental and Social Framework, 2017
- Standard Terms of Reference (TOR) For EIA / EMP report for Projects / activities requiring Environment clearance Under EIA notification, 2006; Ministry of Environment Forest and Climate Change, Government of India; April, 2014.
- Environmental Impact Assessment (EIA) Notification, 2006, Ministry of Environment Forest and Climate Change, Government of India.
- Environmental Assessment Guidelines (2003) Asian Development Bank.
- Environmental Impact Assessment and Environmental and Social Management Framework, Final Report, Dam Rehabilitation and Improvement Project (DRIP), Central Water Commission, Government of India.
- Environment safeguards: A Good Practice Sourcebook Draft working Document, Asian Development Bank, December 2012.
- User Manual (Version 1.0) Online Submission & Monitoring of Environmental, Forests and Wildlife Clearance- A Single Window Clearance (OSMEFWC) System, 2015, Environment, Forest and Climate Change Informatics Division, Ministry of Environment. Forest and Climate Change, Government of India.

Chapter 2. EXISTING POLICIES AND LEGAL FRAMEWORK

The construction activities in the case of a new dam and rehabilitation activities for a existing dam are altogether different in terms of scope, magnitude, duration, financial implications, environment and social safeguards etc. and shall not be compared. The spatial spread of majority of rehabilitation activities are generally limited to a dam compound only whereas in the construction of new project these are spatial spread on a green field involving change of landuse.

Construction of a new dam project in general fall under the purview of various environmental and social regulations promulgated from time to time by the Government of India and the State Governments, whereas routine maintenance and operational activities do not. The dam owner, design consultant, project implementation agency, contractors and other project stakeholders need to be aware of the applicable environmental and social regulations and their safeguards in respect of a particular category of project, so that design, and construction of the dam can comply with the applicable regulations. Awareness about applicable environmental and social regulations with respect to a particular category of a project always helps in timely action for obtaining statutory clearances/compliances to avoid delay in project implementation and public resentment.

The following sections provides a brief overview of different environmental and social statutes which may be applicable to a particular type of dam project, but not necessarily mean to all rehabilitation activities. Also, under these existing statutes, dam rehabilitation activities have not been given any description, as these activities do not come under any category of a Project as in true sense as majority of rehabilitation

activities directly or indirectly linked to deferred maintenance of a dam project except very few which addresses the structural and hydrological safety due to some major changes in the design and hydrological practices as compared to earlier time when the dam was constructed. This basic summary given under shall not be treated as a supplement in any way to existing statutes and shall be referred on need basis to original provisions, this document is only a guiding document to the dam owners by compiling relevant existing statutes at one place only.

2.1 Background

The EIA study in India primarily started in 1976-77 in order to examine the river-valley projects from environmental angle. Later on it was extended for the projects requiring approval of the Public Investment Board. These were administrative decisions, and lacked the legislative support.

In 1976, the 42nd Constitutional Amendment created Article 48A and 51A, placing an obligation on every citizen of the country to attempt to conserve the environment. As a result, a number of laws related to environmental conservation were passed to strengthen existing legislation. On 23rd May, 1986 The Government of India enacted the Environment (Protection) Act for the protection of environment and aims at plugging the loopholes in the other related acts. Under the Act, the environmental impact assessment has been made a statutory requirement.

The Government of India laid down various policy guidelines, acts and regulations pertaining to environment, which are applicable to Dam projects also. The Construction of dams and reservoirs requires project-specific environmental

assessment and environmental management plan (EMP) for mitigation of potential adverse impacts. The rehabilitation and improvement of the existing dams are generally known to have impact on environmental components to lesser extent compared to construction of new dam projects. It is worthwhile and important to have an understanding of the policies and institutional framework which may have a bearing on different activities either for improvement of existing dam projects or construction of new dam projects.

The different policies and statutes pertaining to environmental safeguards are briefly described below.

2.2 Institutional Framework

The increase of environmental concerns has necessitated appropriate tools to protect the environment. After Stockholm Conference, first exclusive environmental act, Water (Pollution Prevention and Control) Act was enacted in India in 1974. In accordance with this act, Central and State Boards for Prevention and Control of Water Pollution were set up. Later these boards were renamed to Central Pollution Control Board and respective State Pollution Control Boards. Department of Environment was set up in 1980. Subsequently in 1985, it was upgraded to a full-fledged Ministry of Environment and Forests to serve as the focal point in the administrative structure for the planning, promotion and coordination of environmental and forestry programmes. In 2014 the Ministry was renamed as Ministry of Environment, Forests and Climate Change (MoEFCC). The MoEFCC has overall authority for the administration and implementation of government policies, laws and regulations related to the environment, including conservation, environmental assessment, sustainable development and pollution control. MoEFCC identifies the need to enact new laws and amend existing environmental legislation when required, in order to continue to conserve and protect the environment..

The Ministries / Statutory Bodies responsible for ensuring environmental compliance by project proponents include:

- The Ministry of Environment Forests and Climate Change (MoEFCC)
- Ministry of Rural Development (MoRD)
- Central Pollution Control Board (CPCB)
- State Pollution Control Boards (SPCBs)
- State Revenue Department
- Ministry / Department of Environment in the State
- Department of Forests
- Department of Wildlife

2.3 Environmental and Social Laws and their Regulations

2.3.1 Environment (Protection) Act, 1986

The Environment (Protection Act) 1986 of the Government of India is an umbrella act for the prevention, control and abatement of environmental pollution for the conservation, preservation, protection, enhancement and management of the environment; and for matters incidental to or connected with the foregoing. This act authorizes the central government to intervene directly in order to protect the environment and also allows public interest litigation for the same purpose. In terms of responsibilities, this Act and the associated Rules require for obtaining environmental clearances for specific type of projects addressed under EIA notification.

2.3.2 EIA Notification, 2006 and Amendments thereafter

The MoEFCC issued EIA Notification, 2006 vide No. S.O.1533(E), dated 14/09/2006. The notification specifies that prior environmental clearance is required for the projects listed in the Schedule of the notification (Enclosed as ANNEXURE-2.1) before any construction work, or

preparation of land by the project management except for securing the land, is started on the project or activity. The Schedule of the notification lists eight broad categories of projects that require prior environmental clearance.

These projects are categorized in to Category 'A' and category 'B' based on the magnitude of the project generally linked to production/generation capacity. Clearance is to be obtained from the Ministry of Environment, Forest and Climate Change for Category 'A' projects, and from the State Environment Impact Assessment Authority (SEIAA) for Category 'B' projects. Category 'B' projects will be further classified in to category 'B1' and category 'B2' based on their magnitude and environmental impacts. Category 'B2' projects do not require an EIA study. The scope and ToR of the EIA study for category 'A' and category 'B' projects will be decided by the MoEF&CC and the SEIAA, respectively.

The Notification also defines applicability of General conditions to different projects and activities which specifies that any project or activity specified in Category 'B' will be treated as Category 'A' if located in whole or in part within 10 Km from the boundary of:

- (i) Protected areas notified under Wildlife (Protection) Act, 1972
- (ii) Critically polluted areas as notified by CPCB from time to time
- (iii) Notified Eco-sensitive areas
- (iv) Inter-state boundaries and international boundaries

The proposed development in dam projects falling under any of these categories will have to obtain environmental clearance from the authority as applicable.

2.3.3 Water (Prevention and Control of Pollution) Act, 1974

This Act came in the year 1974 for the prevention and control of water pollution and for maintaining or restoring of wholesomeness of water. The Act resulted in the establishment of the Central and State level Pollution Control Boards whose responsibilities include managing and monitoring water quality and effluent standards, prosecuting offenders and issuing licenses for construction and operation of projects in order to ensure compliance of the provisions of the Act by the project proponents.

2.3.4 Air (Prevention and Control of Pollution) Act, 1981

This Act provides for the prevention, control and abatement of air pollution. It is triggered by air polluting activity in an area or when emissions of any air pollutants into the atmosphere exceed the standards set by the Central Pollution Control Board.

2.3.5 Forest (Conservation) Act, 1980

This Act provides for the conservation of forests and regulating diversion of forestlands for non-forestry purposes. As per the provisions of the Forest (Conservation) Act, 1980 and Forest (Conservation) Rules, 2003, every user agency desiring to use any forest land for non-forestry purposes shall obtain forest clearance from the MoEFCC prior to the construction within forestland.

2.3.6 Wild Life (Protection) Act 1972

The Wildlife Protection Act, 1972 has allowed the government to establish a number of National Parks and Sanctuaries to protect and conserve the flora and fauna of the state. Wherever the dam project is located in the protected area such as

Wildlife Sanctuary, National Parks, Tiger Reserves or Biosphere Reserves or other ecologically protected areas, the wildlife clearance and permissions are required under this Act.

2.3.7 Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013

The Government of India earlier framed National Policy for Resettlement and Rehabilitation (NPRR, 2007) to deal with rehabilitation and resettlement issues in the process of land acquisition under the Land Acquisition Act, 1894. Later on, this Policy has been superseded by a new act which is called “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013”. The intent for bringing the new land acquisition law is to combine the land acquisition law and laws related to compensation, rehabilitation and resettlement together. The salient features of RFCTLARR Act are:

- **It defines public purpose:** it states the context in which land acquisitions can be termed as public purposes. The list even includes private sector projects to qualify as public purpose. Specifically mentioned public purposes are strategic purposes relating to armed forces of the Union, national security or defence, police, safety of the people, land for railways, highways, ports, power, irrigation, public sector companies, land for the project affected people, etc. It restricts the use of urgency clause to defence, national security and natural calamities. It means urgency clause is limited to very strategic sectors of national importance.
- **Combined law:** Land Acquisition and Rehabilitation & Resettlement or LARR need to be seen necessarily as two sides of the same coin. Earlier R&R were provided by different laws. Not combining the R&R and land

acquisition within one law leads to neglect of R&R.

- **Both LA and R&R Provisions will apply when:** (a) Government acquires land for its own use, hold and control (b) Government acquires land with the ultimate purpose to transfer it for the use by private companies for stated public purpose (including PPP projects but other than state or national highway projects) (c) Government acquires land for immediate and declared use by private companies for public purpose. Public Purpose stated once can't be changed for both b and c.
- **Provides for procedural safeguards of consent by project affected people:** The act provides that consent of 70% of project affected people must be taken if the acquisition is made by the government for its own use, hold and control. If acquisition of land is for private sector projects, then consent must be given by 80% of project affected people.
- **Provides for other procedural safeguards:** Other procedural safeguards like Social Impact Assessment by independent people to weigh pros and cons of the land acquisition in particular area. For SIA, Gram Sabha must be consulted. Another procedural safe guards is Multi-crop irrigated land will not be acquired except as a demonstrably last resort measure, which in no case should lead to acquisition of more than 5 percent of multi-crop irrigated area in a district. Wherever multi crop irrigated land is acquired, an equivalent area of cultivable wasteland shall be developed for agricultural purposes. In districts where net sown area is less than fifty per cent of total geographical area, no more than ten per cent of the net sown area of the district may be cumulatively acquired under all land acquisition projects put together in that district.

- **Fair compensation mechanism:** The mechanism includes compensation up to four times the average market value in rural areas and for urban areas the compensation is two times the market value. In addition to the compensation, there are other payments for resettlement and rehabilitation. The act also provides measures for timely payment of compensation to the affected people. In case the acquired land is sold later at a higher rate, then 40% of the profit made must be shared with the people who lost the land in the process of acquisition.

A comprehensive R&R package is given in Schedule II of the act.

R&R is applicable to both land owners as well as people dependent on the land acquired:

1. Subsistence allowance at Rs. 3000 per month per family for 12 months;
 2. The affected families shall be entitled to one of the following based on choice of the project affected family:
 - where jobs are created through the project, employment for one member per family;
 - Rupees 5 lakhs per family; and
 - Rupees 2000 per month per family as annuity for 20 years, with appropriate index for Inflation.
 3. If a house is lost in rural areas, a constructed house shall be provided as per the Indira Awas Yojana specifications. If a house is lost in urban areas, a constructed house shall be provided, which will be not be less than 50 sq mts in plinth area. In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family;
 4. One acre of land to each family in the command area, if land is acquired for an irrigation project;
 5. Rs 50,000 for transportation.
- **The infrastructural facility to be provided in area of resettlement are:** Schools and playgrounds, Health centres, Roads and electric connections, Assured sources of safe drinking water for each family, Panchayat Ghars, Anganwadi's providing child and mother supplemental nutritional services, Places of worship and burial and/or cremation ground, Village level Post Offices as appropriate with facilities for opening saving accounts, Fair price shops and seed-cum-fertilizer storage facilities.
 - Application of bill on prior acquisition: This Bill proposes that LARR 2013 will apply to all cases of Land Acquisition where before date of commencement of LARR Act either (a) Award has not been made under LA Act 1894; or (b) Possession of land has not been taken.
 - Compliant with other laws: The bill is compliant with other laws like. The Panchayats (Extension to the Scheduled Areas) Act, 1996, The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Land Transfer Regulations in Schedule V Areas etc.
 - Stringent and Comprehensive Penalties Regime for Companies and Government: the act provides for Punishment for false information, mala fide action, etc. Penalty for contravention of provisions of Act.
 - LARR does not apply to many significant enactments pertaining to land acquisition and use, including, the following enactments: a) The Special Economic Zones Act, 2005,

b) The Cantonments Act, 2006, c) The Land Acquisition (Mines) Act, 1885 [d) The Metro Railways (Construction of Works) Act, 1978, e) The National Highways Act, 1956, f) The Petroleum and Minerals Pipelines Act, 1962, g) Resettlement of Displaced Persons (Land Acquisition) Act, 1948 h) The Coal Bearing Areas Act, 2003, i) The Electricity Act, 2003, etc.

2.3.8 Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Ordinance, 2014

An Ordinance was promulgated by the President of India further to amend the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 on the 31st December, 2014.

Background for bringing the ordinance

LARR, Act 2013 was meant to make the acquisition process smooth and faster. It was designed in the mode of the government's other landmark laws on information, education, and food — using a rights-based approach — where the primary objective was to deliver “fairness” to the people affected by land acquisition. LARR expanded the definition of project-affected people and expanded the rights, protections and compensations for people who lose land or livelihood as a result of acquisition. All these were laudable and necessary. But LARR was lacking recognition of some simple economic principles - on land markets and on transaction and opportunity costs. The underlying presumption was that the price of land matters to the land-loser but not to the land-acquirer; as a result, LARR raised the price of land acquisition to unsustainable levels.

This price is not simply the money paid for acquisition and rehabilitation and resettlement. That is just one component of price, its direct component. There is a second component, an indirect price. This includes (a) transaction costs, which include the cost of doing social impact assessments, conducting referenda, running the massive new multi-layered acquisition process, etc. and (b) opportunity costs, which arise from the time taken to conclude an acquisition — doing social impact assessments, conducting referenda, etc. — time during which capital is not invested, infrastructure is not created, and production does not take place. If all the steps defined in LARR were accomplished in the allotted time, each land acquisition would require about five years; in practice, it could take a lot longer. Longer period of time means longer gestation period for projects which will render them unviable. LARR had placed an impossible double-burden on land acquirers: pay double or quadruple the highest prices as per market and wait for several years to begin work on the ground. The first burden remains and its consequences are grave. But the second burden has been mitigated by this ordinance. The ordinance, 2014 resolve subsequent some basic issues. The stringent consent requirement makes it very difficult to acquire land even for public purposes. The punishment provision makes acquisition difficult as many may fear any mistake will make them liable for punishments. The amendment ordinance seeks to speed up the development process which needs the balance between interests of people affected by the land acquisition and the needs of the industry. The ordinance is also expected to remove the difficulties faced during the process of approving the land acquisition.

The salient features of the ordinance are as follows:

- **Expansion of the scope of compensation:** The amendment has extended the scope of compensation by including the various acts listed in schedule IV which were exempted by

LARR. Some of the 13 acts are Ancient Monuments and Archaeological Sites and Remains Act 1958, Atomic Energy Act 1962, etc.

- **Relaxation of consent and social impact assessment requirements:** The amendment has relaxed the requirements of consent and social impact assessment survey for projects in five areas of national security and defence, rural infrastructure and electrification, affordable housing for poor, development of industrial corridor including infrastructure and social infrastructure including PPPs in which ownership rests with the government.
- **Higher rate of compensation** as provided in LARR has been retained without any change.
- **Relaxation of procedural requirement:** the procedure of land acquisition has been changed to make the acquisition faster. Bureaucracy has been given protection by including the requirement of the prior permission of the government before a court can take cognizance of the offense under the Act.

2.3.9 Wetlands (Conservation and Management) Rules, 2017

The rule is applicable to all the wetlands categorised as 'Wetlands of International Importance' under the Ramsar Convention¹; and other wetlands as notified by the Central Government, State Government and Union Territory Administration.

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.

The rules lists wetlands that need to be protected like those covered under Ramsar Convention¹, those in UNESCO heritage site, those which are ecologically sensitive etc and prohibits the following activities within such wetlands:

- Reclamation of wetlands
- Setting up of new industries and expansion of existing industries
- 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;
- Solid waste dumping
- Discharge of untreated effluents
- Any permanent construction except boat jetties
- Any other activity affecting ecosystem of the wetland

2.3.10 National Green Tribunal Act, 2010

This act provides for establishment of National Green Tribunal for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right to environment and giving relief and compensation for damages to persons and property and for matters connected

¹ The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Convention came in force in India from 1st February, 1982

therewith or incidental. The National Green Tribunal established under this act is a specialized legal body equipped with the necessary expertise to handle environmental disputes involving multi-disciplinary issues. The Tribunal shall not be bound by the procedure laid down under the Code of Civil Procedure, 1908, but shall be guided by principles of natural justice.

The following Table 2.2 provides a bird's eye-view of different applicable regulations in dam projects and requirements of legal permits/ clearances along with the responsible regulatory authorities.

2.3.11 Corporate Environmental Responsibility (CER)

The MoEFCC has developed a policy for incorporating Corporate Environmental Responsibility as one of the conditions of the Environmental Clearance for the project, which includes separate allocation of budget for CER activities vide their Office Memorandum. F.No.22-65/2017-IA.III dated 1st May, 2018 The cost of CER is to be in addition to the cost envisaged for – the implementation of the EIA/EMP which includes the measures for the pollution control, environmental protection and conservation, R&R wildlife and forest conservation/protection measures including the NPV and Compensatory Afforestation, required, if any, and any other activities, to be derived as part of the EIA process. The Ministry has finalised maximum percentage of budget allocation based on the project investment cost separately for green field and brown filed projects. The budget allocation for CER activities will be in the following order:

S.N	Capital Investment / Additional Capital Investment (in Rs)	Greenfield Project: % of Capital Investment	Brownfield Project : % of Additional Capital Investment
1	≤100 Crores	2%	1%
2	>100 Crores to ≤ 500 Crores	1.5%	0.75%

3	>500 Crores to ≤1000 Crores	1%	0.5%
4	>1000 Crores to ≤10000 Crores	0.5%	0.25%
5	>10000 Crores	>0.25%	0.125%

2.3.12 Other Legislation Applicable in Dam Projects

The key issues of sustainability during construction stage generally involve environmental, safety and public health issues. Other than the above environmental legislations, the dam construction agencies require complying with laws of the land, which include inter alia, the following:

- *Workmen's Compensation Act 1923*: the Act provides for compensation in case of injury by accident arising out of and during the course of employment;
- *Payment of Gratuity Act, 1972*: Gratuity is payable to an employee under the Act on fulfilling of certain conditions on separation if an employee has completed 5 years;
- *Employees PF and Miscellaneous Provision Act 1952*: The Act provides for monthly contributions by the employer plus workers;
- *Maternity Benefit Act, 1951*: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage, etc.;
- *Contract Labour (Regulation and Abolition) Act, 1970*: The Act provides for certain welfare measures to be provided by the contractor to contract labour;
- *Minimum Wages Act, 1948*: The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act;
- *Payment of Wages Act, 1936*: It lays down as to by what date the wages are to be paid, and what deductions can be made from the wages of the workers;

- *Equal Remuneration Act, 1979*: The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees;
- *Payment of Bonus Act, 1965*: The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages;
- *Industrial Disputes Act, 1947*: The Act lays down the machinery and procedure for resolution of industrial disputes; in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment;
- *Industrial Employment (Standing Orders) Act, 1946* the Act provides for laying down rules governing the conditions of employment;
- *Trade Unions Act, 1926*: The Act lays down the procedure for registration of trade unions of workers and employers. The trade unions registered under the Act have been given certain immunities from civil and criminal liabilities;
- *Child Labour (Prohibition and Regulation) Act 1986*: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labour is prohibited in Building and Construction Industry;
- *Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979*: The inter-state migrant workers, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home to the establishment and back, etc.;
- *The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996*: All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act; the employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace, etc.);
- *The Factories Act, 1948*: The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours and rendering information-regarding accidents or dangerous occurrences to designated authorities);
- *Hazardous Wastes (Management and Handling) Rules, 1989*; The rules deal with various environmental aspects related with hazardous wastes.
- *Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996*: This stipulates conditions for dealing with the emergency situation .

Keeping in view the nature of rehabilitation activity in the case of a dam project, the activity wise applicability of clearances and permissions under different acts is summarised in Table 2.2. for ready reference. In case, due to complex nature of any new rehabilitation activity mentioned in this Table 2., in the condition of any doubt arises, appropriate consultation may be done with concern statutory authority for its clarification.

Table 2-1: Overview of Acts and Rules on Environmental Safeguards in India

Acts / Rule/ Policy	Year	Objective	Applicability	Type of permit and stage of applicability	Administrative / Regulatory Authority
Environmental (Protection) Act	1986	To protect and improve the overall environment.	All environmental legislation is covered in this umbrella Act		MoEFCC GoI; CPCB; State Pollution Control Board
Environment Impact Assessment Notification	2006 and amended thereafter	To provide environmental clearance to new development activities or expansion projects following environmental impact assessment	Applicable only for new project or expansion of project falling within the criteria mentioned in the River Valley and Irrigation Project crossing the optimal capacity	Environmental Clearance	MoEFCC/State Environmental Impact Assessment Authority(SEIAA)
		For regulating mining of ordinary soil and minor minerals (borrow area and stone quarries)	For operating new borrow area for earth of new stone quarry	Environmental Clearance	District Environmental Impact Assessment Authority for the size of borrow area and quarry less than 5 Ha. for more than 5 ha area State Environmental Impact Assessment Authority(SEIAA)
		For conservation of biodiversity within Eco-sensitive Zone on Wildlife Sanctuary/ National Parks	The project or activities requiring Environmental clearance , falls within the Eco-sensitive zone of National Parks/ Wildlife Sanctuary area	Recommendation of NBWL	Standing Committee of NBWL, MoEFCC
Indian Forest Act	1927	To check deforestation by restricting conversion of forest areas into non forest areas.	In case of acquisition of Reserved Forest Area or Protected Forest	Forest Clearance	State Forest Department / MoEFCC, Regional Office
The Forest (Conservation) Act	1980				
The Forest (Conservation)	1981				

Acts / Rule/ Policy	Year	Objective	Applicability	Type of permit and stage of applicability	Administrative / Regulatory Authority
Rules					
Wild Life (Protection) Act	1972	To protect wildlife through certain of National Parks and Sanctuaries. This Act seeks to protect wildlife, by creating protected areas and controlling trade in wildlife products.	Project activities or area that fall in protected area (Wildlife Sanctuary or National Park/Tiger reserve) regimes then requisite permission must be obtained.	Wildlife Clearance	Standing Committee of NBWL, MoEFCC
National Forest Policy (Revised)	1952/ 1988	To maintain ecological stability through preservation and restoration of biological diversity.	For acquisition of forest area clearing of forest/ felling of Trees		State Forest Department/ GoI
Water (Prevention and Control of Pollution) Act	1974	To control water pollution by controlling discharge of pollutants as per the prescribed standards.	NOC for establishment and operation during construction	Consent to Establish & Consent to Operate for Batching plant & stone crushers	CPCB/ State Pollution Control Board
Air (Prevention and Control of Pollution) Act	1981	To control air pollution by controlling emission of air pollutants as per the prescribed standards.	For establishing stone crusher, hot mix and batchmix plants	Consent to Establish (CTE) & Consent to Operate (CTO) for Hot mix and Batching plant & stone crushers	CPCB/State Pollution Control Board
Noise Pollution (Regulation and Control Rules)	2000 and amendment thereof	Applicable Ambient Noise Standards for different areas and zones		No permits issued under this act. However the Contractor has to comply with the limits during construction	CPCB/State Pollution Control Board

Acts / Rule/ Policy	Year	Objective	Applicability	Type of permit and stage of applicability	Administrative / Regulatory Authority
Permission for extraction of Ground water		To regulate over exploitation of ground water	For initiation of installation of Bore wells and abstraction of water from such source)	NOC for use of ground water for construction	Central Ground Water Board
Right to fair compensation and transparency in land acquisition, rehabilitation and Resettlement Act	2013	Fair compensation for acquisition of immovable assets; Resettlement of displaced population due to LA and economic rehabilitation of all those who are affected due to land acquisition.	Prior to construction	Compensation for R&R	Revenue Department/ District Land Acquisition Authority
Right to fair compensation and transparency in land acquisition, rehabilitation and Resettlement (Amendment) Ordinance	2014				

Table 2.2: Activity-wise Applicability of Environmental, Forest and Wildlife Clearances for Dam Rehabilitation and Improvement Works

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
1.	Pointing of upstream face of masonry dams with special UV resistant mortar to control seepage.	This activity is a localized activity limited to the U/S face of masonry dam. It requires grouting materials, light drills/ hand tools only with few manpower. This does not require any major equipment/batching plant/Crusher. Materials for work (cement, sand, additives etc.) are to be brought to dam top for use.	No	No	No	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. govt. level to transport construction material, manpower and equipment to dam site.
2.	Treatment of dam contraction joints for damaged seals using hydrophilic materials.	This activity is localized at the transverse contraction joints of the dam. This activity requires drilling of hole at the transverse contraction joints of the dam and filling with hydrophilic materials. It is normally carried out from dam top spillway crest. Requires transportation of drilling equipment to dam site and joint filler material along with few manpower	No	No	No	
3.	Grouting of Masonry/Concrete dams to control seepage.	This activity is confined to body of Masonry/ Concrete dam. This activity is carried out from dam top or spillway crest or from d/s face or from dam galleries.	No	No	No	
4.	Reaming of porous	This is a localized activity. It is	No	No	No	

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
	drains and re-drilling of foundation drains.	undertaken from dam top and from inspection/ foundation galleries.				
5.	Replacement of rubber seals of the spillway gates, sluice gates and periodic overhauling of gate hoisting systems.	It is a localized activity. Replacement of rubber seal require hand tools etc. Servicing/ overhauling of gate require lubricants, painting works, transportation of materials, etc.	No	No	No	
6.	Repair and replacement of spillway gates/under sluice gates or provision of additional stop log gates	In the case of gate repair, it is a minor activity. In case gates are to be replaced, then it requires transportation of fabricated components of Gates/Stop logs using heavy duty cranes/trailers supply of material and gates to the dam site.	No	No	No.	
7.	Repair or replacement of Gate Hoist/ Gantry Cranes	Requires transportation of fabricated components of Gates/Shop logs using heavy duty cranes/trailers, and assembly and installation of gantry on dam top etc.	No	No	No	
8.	Provision of automation of spillway gates and control room structures.	It is a localized work. It involves transportation of construction materials, concrete mixer, etc for construction of control room. Automation of Gates require transportation of control panels and related equipment.	No	No	No	
9.	Bringing the earth	It is a minor and localized work, It	No	No	No	If a given dam is located within

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
	dam section to design section to address the stability aspect	requires survey works and transportation of selected earth from borrow areas, compaction equipment, etc.				protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR); then permission is required from concerned department at State Govt. govt. level to transport construction material, manpower and equipment to dam site.
10.	Improvement of rip-rap, turfing on downstream face, chute drains, toe drains, rock toe and general drainage system for earthen dams	This activity is limited to the dam body, It involves transportation of requisite materials for carrying out of these works. These works are to be carried out manually.	No	No	No	
11.	Improvement of existing access road to dam body as well as existing access roads to different components of the dam project and dam crest railing.	This activity involves transportation of construction materials, use of heavy equipment like road rollers, hot mix asphalt plant, paving machine etc.	No	No	No	
12.	Providing security system to guard dam / project area.	This work would be limited to project area only. It involves transportation of construction materials for fencing/security and construction of fencing to guard the dam / Project area	No	No	No	
13.	Improving dam instrumentation and monitoring, SCADA and automation system of dams	Involves carriage of the instruments, cables etc to project site and their installation in the project area.	No	No	No	

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
14.	Providing additional spillway structures/fuse plugs/flush bars to take care of hydrological safety	<p>Case(a) In this case, no public as well as forest land acquisition required, no R&R issues involved, no change in reservoir storage, no submergence, no increase in CCA of dam project, no flow modification during lean period etc.</p> <p>Case(b) In this case, <i>some public/forest land acquisition required, R&R issues involved</i>, no change in reservoir storage, no submergence, no increase in CCA of dam project, no flow modification during lean period etc.</p> <p>This is a major civil work, involving transportation of all construction materials and equipment, Hydro-Mechanical, electrical works including spill channel within the project area.</p>	<p>Amendment in EC only in case of change in original EC conditions. In case of older dams, not having EC; fresh EC is not required.</p> <p>Amendment in EC only in case of change in original EC conditions. In case of older dams, not having EC; fresh EC is not required.</p>	<p>No</p> <p>Yes (if forest land is to be diverted)</p>	<p>No</p> <p>Yes (in case activity fall in the WLS/ NP/ TR areas)</p>	<ul style="list-style-type: none"> If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR); then permission is required from concerned department at State Govt. govt. level to transport construction material, manpower and equipment to dam site. The proposal may involve displacement of population living in the proposed layout of newly proposed spillway or living in water way of newly proposed spill channel connecting spillway and river to dispose off the flood water.
15.	Raising height of dams to cater for increased design flood to address hydrological safety	<p>This is a major work within the dam body involving construction activities like earthwork, concrete works, H-M works. Also transportation of construction materials and equipment is involved.</p> <p><u>There is no change in the storage</u></p>	<p>Amendment in EC only if EC has been given to dam earlier. In case of dams, not having any EC, fresh EC is not required.</p>	No	No	<p>If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR); then permission is required from concerned department at State Govt. govt. level to</p>

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
		<u>capacity of reservoir at the FRL.</u> This is required for free board purposes only. Also, no change in CCA, no flow modification pattern, no submergence etc.				transport construction material, manpower and equipment to dam site.
16.	Repair of spillway glacis, discharge channel and energy dissipation arrangements etc.	It is a activity limited to existing spillway area, energy dissipation arrangements, and discharge channel. Involves transportation of construction materials, equipment for undertaking the repair works, and manpower within the dam compound area.	No	No	No	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. level to transport construction material, manpower and equipment to dam site.
17.	Survey and mapping of cracks and its remedial measures	This is limited to the dam body only. Require hand tools, repair materials, and manpower.	No	No	No	
18.	Dredging/ De-siltation of dam reservoirs on selective basis.	This is a activity limited to reservoir water spread area. It requires boats and equipment for bathymetry, heavy equipment/carriers for removal of silt deposited in the pond/reservoir, and transportation to the approved dumping area. This activity generally is a part of maintenance to restore the original	No Dredging and de-siltation of dams, reservoirs, weirs, barrage, river and canals for purpose of their maintenance, upkeep and disaster management is	No	(a) No, in case reservoir is not a declared bird sanctuary, (b) Yes, in case reservoir is a declared Bird	In the de-siltation activity, a proper Feasibility Report along with Environment Management Plan to dispose the silt is required as per the Handbook for Assessing and Managing the Reservoir Sedimentation, CWC, 2019. • NOC from State Pollution Control Board (SPCB)/Union Territory Pollution Control

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
		capacity of reservoir.	exempted from environmental clearance as per S.O.141(E) of MoEFCC dated 15 th January, 2016		Sanctuary	Committee (UTPCC) as well as concerned local authorities is required in advance for disposal site for disposal of dredged materials. <ul style="list-style-type: none"> Dredging/desilting of dam reservoirs which are declared as Wetland/Protected Areas should not be carried out during breeding and spawning season of fish species and also should not be carried out during breeding and migratory period of bird species.
19.	Provision of standby DG Sets, dewatering pumps etc.	These are very minor items, and their installation is limited to the dam compound only.	No	No	No	
20.	Geo-membrane sealing system for upstream face treatment of dams	This is a localized work. It involves transportation and storage of geo-membrane materials, equipment and manpower to the dam site.	No	No	No	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. level to transport construction material, manpower and equipment to dam site.
21.	Repair of sluice outlet structures	This is a localized work. It is limited to sluice outlets only, which	No	No	No	

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
		is within dam body and overflow section of dam and very minor spatial extent. It involves transportation of materials and equipment to the dam.				
22.	Downstream face pointing with mortar	This is a minor activity and localized work. It involves transportation of materials, equipment and manpower to the dam site. It is managed by few persons with small supporting equipment etc.	No	No	No	
23.	Grouting of embankment dam (with low pressure slurry) & foundation curtain	This is a minor activity and localized work. It is limited to dam body only. It involves transportation of materials and equipment to the dam.	No	No	No	
24.	Provision or repair of parapet wall	This is a minor activity and localized work. It involves transportation of materials and equipment to the dam.	No	No	No	
25.	Providing backing concrete to dam for stability improvement	This is a localized but major work. It involves transportation of materials and equipment to the dam.	No	No	No	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. govt. level to transport construction material, manpower and equipment to

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
						dam site.
26.	Catchment Area Treatment (CAT) and Reservoir rim treatment	This activity is widespread within the dam catchment. Generally, this activity is executed by Agriculture department/Forest department/Watershed department of a given State. It involves transportation of materials and equipment for slope stabilization, check dams, sapling etc. Also this activity is very rare and exceptional in the rehabilitation Project as it is done at the time of construction of a new Project.	No	No	No	The proposed CAT works in forest area will be carried out by the forest department, whereas in the non-forest area CAT works will be responsibility of the dam authority.
27.	Various kind of investigations i.e. geo-technical, underwater, survey, geo-physical/sonic tomography etc.	These activities are limited to dam compound only, and may require movement of experts/technician with few manpower to support the investigations etc.	No	No	No	
28.	Pre and post Bathymetry survey for de-siltation of dam or for physical modelling inputs	This is a specialised activity have spatial extension to cover the water spread area of reservoir upto FRL/MWL. It may require one or two motor boat along with necessary bathymetry equipment, and 3 to 4 supporting manpower	No	No	No	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. govt. level to transport construction material, manpower and

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
						equipment to dam site.
29	Development of dam tourism, water recreation facilities, incidental solar power, in-situ conservation of fisheries etc.	(a) This is an activity which may require initial planning, survey, design and preparation of Feasibility Report requiring movement of few experts, survey team with requisite equipment etc.	No	No	No	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. govt. level to transport construction material, manpower and equipment to dam site.
		(b) The execution and implementation of dam tourism activity may require construction of some landscaping structures, opening of restaurants, public conveniences, licences to authorised agencies expert in water recreations, movement of tourist etc.	No	No	No	
		(c) Development of high end fisheries, this activity is limited to reservoir water spread area	No	No	No	
		(d) Incidental solar power	No	No	No	
30.	Development of Incidental hydel power	Incidental hydel power	EC is required if Hydropower generation capacity is ≥ 25 MW	Yes (only if diversion of forest land is required)	Yes (only if project is located within PA/within notified ESZ/within 10 Km from	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. govt. level to transport construction material,

S.N.	Types of Rehabilitation Works	Nature of Activities	Environmental Clearance	Forest Clearance	Wildlife Clearance	Remarks
					boundary of PA where ESZ is not notified)	manpower and equipment to dam site.
31.	Establishment of telemetric stations, automatic weather stations and other equipment for integrated flood forecasting and reservoir operation etc.	These are point activities generally do not have any spatial extent and limited to installation of equipment along with their transmission network	No	No	No	If a given dam is located within protected Area (PA) – Wildlife Sanctuary (WLS), National Park (NP), Tiger Reserve (TR), Conservation Reserve (CR) ; then permission is required from concerned department at State Govt. govt. level to transport construction material, manpower and equipment to dam site.
32.	De-weeding of Dam body/ Reservoir	This is localised activities confined to embankment & Dam body	No	No	No	This is a routine maintenance activity and dam body is cleaned regularly by removing weeds, shrubs and unwanted trees grown on the dam body including area upto the toe drains, as per the Guidelines on Safety Inspection of Dam, CWC year 2018.

Chapter 3. PROCEDURE FOR ENVIRONMENT, FOREST AND WILDLIFE CLEARANCES

3.1 Procedure for Environment Clearance for Dam Projects

The environmental clearance (EC) is a regulatory requirement governed by the Environmental Impact Assessment Notification, 2006 and amendments thereafter. The following section describes the procedures for obtaining environmental clearance for dam projects.

3.1.1 Requirement of Environmental Clearance under EIA Notification, 2006 and amendment thereafter

The projects or activities listed in the schedule of the EIA Notification require prior environmental clearance from the concerned regulatory authority before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity. The project requires prior environmental clearance under the following three conditions:

- (i) All new projects or activities listed in the Schedule to this notification;
- (ii) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;
- (iii) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range.

The River Valley projects and Irrigation projects have been listed in Schedule of the

project and activities requiring EC. The river valley projects having hydroelectric power generation capacity equal to or greater than 25 MW and less than 50 MW have been classified as Category B projects and will require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA) based on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC). The River Valley Projects having capacity equal to or more than 50 MW hydroelectric power generation have been classified as Category A projects and therefore will require prior environmental clearance from Central Government in the Ministry of Environment and Forests (MoEFCC) on the recommendations of an Expert Appraisal Committee (EAC). It may be noted that if a Category B river valley project is located within 10 Km radius of the following areas, the project will be appraised as 'Category A' project : (i) Protected Areas notified under the Wild Life (Protection) Act, 1972 (53 of 1972); (ii) Critically Polluted areas as notified by the Central Pollution Control Board constituted under the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) from time to time; (iii) Eco-sensitive areas as notified under sub-section (2) of section 3 of the Environment (Protection) Act, 1986, and (iv) inter-State boundaries and international boundaries; Hence such project will require environmental clearance from Central Government.

The Environmental clearance process includes following four steps:

- (i) Screening
- (ii) Scoping
- (iii) Public Consultation
- (iv) Appraisal

During the TOR approval the detailed scope for study during detailed EIA is defined by the EAC/SEAC.

In the subsequent stage the detailed EIA study is required to be conducted in accordance with the approved TOR for the project.

(i) Screening

The first task for environmental clearance process is Screening of the proposed project. An application seeking prior environmental clearance in all cases shall be made online (<https://parivesh.nic.in>) in the prescribed Form-1 annexed to the Environmental Impact Assessment Notification. All the requisite information in Form -1 is required to be provided online on the MoEFCC portal. The applicant shall furnish, along with the application, a copy of the pre-feasibility project report (PFR). A PFR may, on the basis of analysis of secondary information, establish the adequacy of natural resources for the project and viability of the project if Environmental Clearance were to be accorded.

Validity of TOR Approval:

As per initial approval accorded by MoEFCC/SEIAA the validity period of ToRs for River Valley and HEP Projects, for submission of EIA/EMP report is five years as per amendment to EIA notification issued by the MoEFCC, GoI vide Gazette Notification No. S.O. 751(E) dated 17th February 2020. Copy of Notification is enclosed as Appendix-I).

(ii) Scoping

The EIA study is required to be conducted in accordance with the prescribed Standard TOR (enclosed as Appendix-II) and additional conditions stipulated in the approved TOR. The EIA study consists of following tasks:

- Project Description

- Review of regulations and policy on environmental safeguards
- Collection and compilation of Baseline Environmental data
- Identification of anticipated potential environmental impacts and mitigation measures
- Environmental Management and Monitoring Plan

It may be noted that the baseline data used for preparation of EIA/EMP reports may be collected at any stage irrespective of the request for ToR or the issue thereof. However, such baseline data and the public consultation should not be older than 3 years, at the time of submission of the proposal, for grant of Environmental Clearance, as per prescribed TOR.

(iii) Public Consultation

As defined by the EIA Notification, 2006 Public Consultation refers to the process by which the concerns of local affected persons and others who have possible stake in the environmental impacts of the project or activity are ascertained with a view to take into account all the material concerns in the project or activity design as appropriate.

All Category A and Category B1 projects or activities shall undertake Public Consultation, in accordance with the procedure described in APPENDIX IV of the EIA Notification, except the following:

- (a) modernization of irrigation projects (item 1(c) (ii) of the Schedule).
- (b) all projects or activities located within industrial estates or parks (item 7(c) of the Schedule) approved by the concerned authorities, and which are not disallowed in such approvals.
- (c) expansion of Roads and Highways (item 7 (f) of the Schedule) which do not involve any further acquisition of land.

- (d) maintenance dredging provided the dredged material shall be disposed within port limits.
- (e) All Building or Construction projects or Area Development projects (which do not contain any category 'A' projects and activities) and Townships (item 8 (a) and 8(b) in the Schedule to the notification).
- (f) all Category 'B2' projects and activities.
- (g) all projects or activities concerning national defence and security or involving other strategic considerations as determined by the Central Government.
- (h) all linear projects such as Highways, pipelines, etc., in border States.
- (i) all standalone pelletization plants, which were in existence and in operation on or before the 27th day of May, 2014 and have valid consent to establish and consent to operate from the concerned State Pollution Control Board or the Union Territory Pollution Control Committee.

The procedure for the public hearing is stipulated in the APPENDIX IV of the EIA Notification. The public hearing is required to be conducted in the close proximity of the project in each district in which jurisdiction the area falls as per prescribed procedure as per the Notification.

The public hearing is conducted by the State Pollution Control Board (SPCB) or the Union territory Pollution Control Committee (UTPCC) concerned in the specified manner which shall forward the proceedings to the regulatory authority (MoEFCC or SEIAA) concerned within 45 (forty five) days of a request to the effect from the applicant.

After completion of Draft EIA report, the applicant (Project Proponent) shall make a request through a simple letter to the Member Secretary of the SPCB or Union

Territory Pollution Control Committee, (UTPCC) in whose jurisdiction the project is located, to arrange the public hearing within the prescribed statutory period. In case the project site is covering more than one District, State or Union Territory in which the project is located and the applicant shall make separate requests to each concerned SPCB or UTPCC for holding the public hearing as per this procedure.

The Applicant has to enclose the letter of request alongwith at least 10 hard copies and an equivalent number of soft (electronic) copies of the draft EIA reports including the Summary Environment Impact Assessment report in English and in the official language of the state / local language, prepared strictly in accordance with the Terms of Reference communicated after Scoping (Stage-2). Simultaneously the applicant has to arrange to forward copies, one hard and one soft, of the above draft EIA Report along with the Summary EIA to the following authorities or offices, within whose jurisdiction the project will be located:

- (a) District Magistrate / District Collector / Deputy Commissioner
- (b) Zila Parishad or Municipal Corporation or Panchayats Union
- (c) District Industries Office
- (d) Urban Local Bodies (ULBs) / PRIs concerned / Development Authorities
- (e) Concerned Regional Office of the Ministry of Environment and Forests

On receiving the draft Environmental Impact Assessment report, the above-mentioned authorities except the MoEFCC, arrange to widely publicise it within their respective jurisdictions requesting the interested persons to send their comments to the concerned regulatory authorities. They also make the draft EIA Report available for inspection electronically or otherwise to the public during normal office hours till the Public Hearing is over.

The SPCB or UTPCC concerned also make similar arrangements to publicise the draft EIA report.

The Member-Secretary of the concerned SPCB or UTPCC has to finalize the date, time and exact venue for the conduct of public hearing within 7(seven) days of the date of receipt of the draft Environmental Impact Assessment report from the project proponent, and advertise the same in one major National Daily and one Regional Vernacular Daily / Official State Language. It is to be noted that a minimum notice period of 30 (thirty) days is required to be provided to the public for furnishing their responses;

It is also required to inform the public about the places or offices where the public could access the draft Environmental Impact Assessment report and the Summary Environmental Impact Assessment report before the public hearing. In places where the newspapers do not reach, the Competent Authority should arrange to inform the local public about the public hearing by other means such as by way of beating of drums as well as advertisement / announcement on radio / television.

Once the date of public hearing is notified , the date, time, venue of the public hearing cannot be postponed unless some untoward emergency situation occurs and then only on the recommendation of the concerned District Magistrate / District Collector / Deputy Commissioner, the postponement is required to be notified to the public through the same National and Regional vernacular dailies and also prominently displayed at all the identified offices by the concerned SPCB or Union Territory Pollution Control Committee.

In case of postponement of the Public Hearing due to exceptional circumstances explained above, a fresh date, time and venue for the public consultation is again required to be decided by the Member – Secretary of the concerned SPCB or

UTPCC only in consultation with the District Magistrate / District Collector / Deputy Commissioner, and notified afresh as per procedure described above.

The entire public hearing process is required to be supervised and presided over by The District Magistrate / District Collector / Deputy Commissioner or his or her representative not below the rank of an Additional District Magistrate assisted by a representative of SPCB or UTPCC.

The entire proceeding of the public hearing is required to be recorded through video recording and the minutes of the proceeding are required to be prepared by the representative of SPCB or UTPCC. The agreed minutes shall be signed by the District Magistrate / District Collector / Deputy Commissioner or his or her representative on the same day and forwarded to the SPCB/UTPCC concerned.

The public hearing shall be completed within a period of 45 (forty-five) days from date of receipt of the request letter from the Applicant. Therefore, the SPCB or UTPCC concerned shall send the public hearing proceedings to the concerned regulatory authority within 8 (eight) days of the completion of the public hearing. Simultaneously, a copy will also be provided to the project proponent.

After receiving the approved minutes of the meeting, the EIA report is required to be finalised after incorporating the concerns expressed during public consultation with action plan and financial allocation to address those concerns. The final Environmental Impact Assessment report is then submitted to the concerned regulatory agency online for onwards action for appraisal and grant of environmental clearance.

In case the SPCB or UTPCC fails to hold the public hearing within the stipulated 45 (forty-five) days, the Central Government in Ministry of Environment and Forests for

Category 'A' project or activity and the State Government or Union Territory Administration for Category 'B' project or activity at the request of the SEIAA, shall engage any other agency or authority to complete the process, as per procedure laid down in this Notification.

(iv) Appraisal

After preparation of final EIA report incorporating the addressal of public concerns raised during public consultation, it is required to apply for appraisal of EIA report and EC to the regulatory authority concerned (MoEFCC/SEIAA) online (<https://parivesh.nic.in>). The following documents are required to be enclosed along with the application:

- Hard copy and soft copy of Final EIA Report
- Information furnished in prescribed Form-2 "Application for Prior Environmental Clearance"²
- A copy of the public hearing proceedings
- A copy of final layout plan
- A copy of the project feasibility report

All the submitted reports and documents are scrutinized in office within 30 days from the date of its receipt by the concerned Regulatory Authority strictly with reference to the TOR. If any inadequacy is recorded, then the same is communicated electronically or otherwise in a single set to the Members of the EAC /SEAC enclosing a copy each of the Final EIA Report including the public hearing proceedings and other public responses received along with a copy of Form-1 or Form-1A and Form-2 scheduled date of the EAC /SEAC meeting for considering the proposal.

² Office Memorandum F.No. 22-8/2018-IA.III of MoEFCC dated 20 April, 2018 to be filled up and submit online

Every application shall be placed before the EAC/SEAC and its appraisal completed within 60 days of its receipt with requisite documents/details in the prescribed manner.

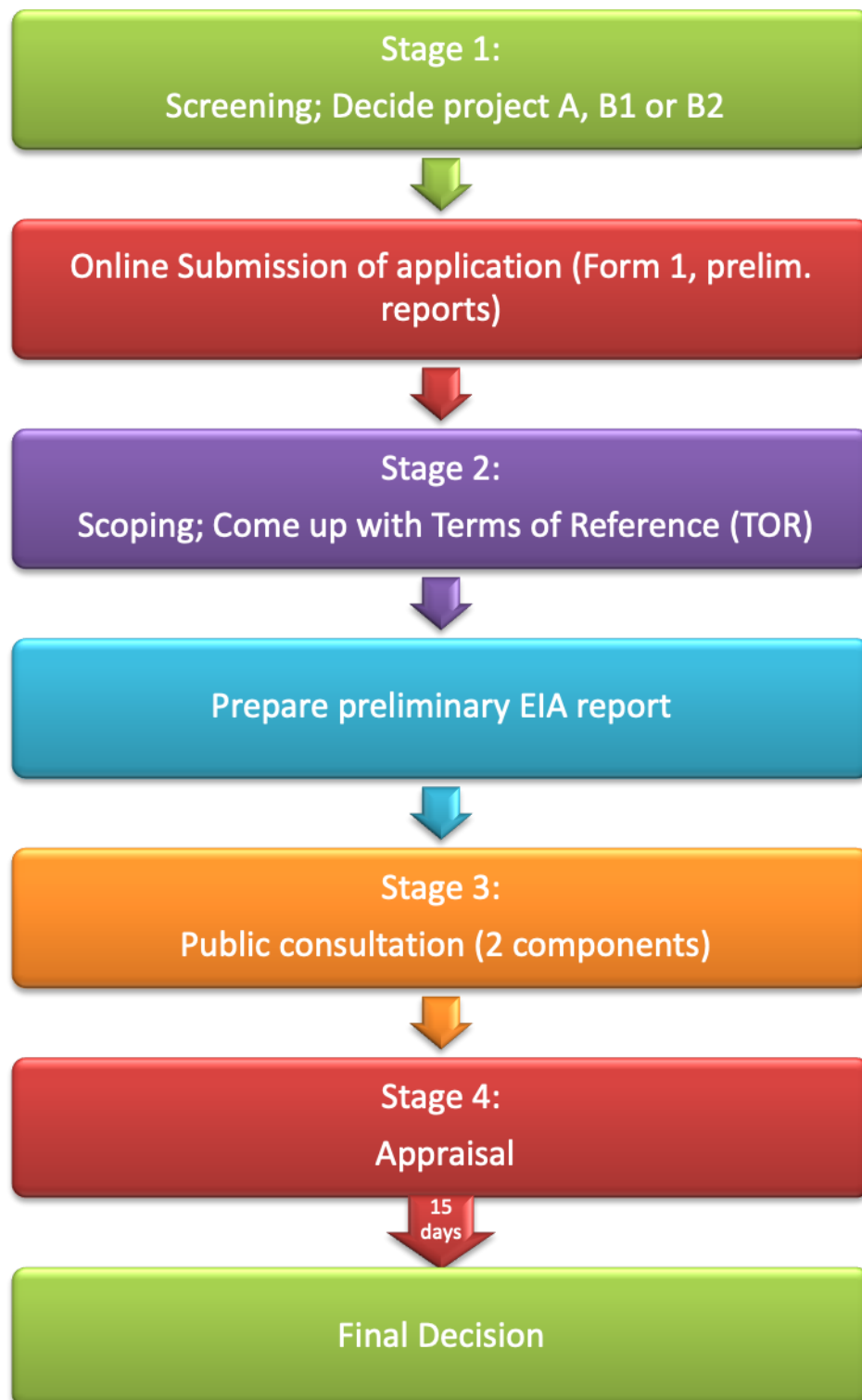
Figure 3.1 depicts the flow chart of procedure for Environment Clearance for the qualified project for environmental clearance under EIA Notification, 2006.

3.1.2 Process of EC for Borrow Area

In pursuance to the order of Hon'ble Supreme Court dated the 27th February, 2012 in I.A. No.12- 13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., prior environmental clearance has now become mandatory for borrow areas involving mining of minor minerals including rock boulders and ordinary soil irrespective of the area of mining lease. For regularising the environmental clearance process for operating borrow areas the MoEFCC has issued amendments in the Environment Impact Assessment Notification, 2006, vide Gazette Notification No. S.O. 141(E) dated 15 January, 2016 defining the procedures for getting prior environmental clearance for borrow areas. The copy of the Notification is enclosed as Appendix-III. To simplify the process, the MOEFCC has directed formation of District Environmental Impact Assessment Authority (DEIAA) and District Level Expert Appraisal Committee (DEAC) to deal with Environmental Clearance of borrow areas having area less than or equal to 5 Ha. As per the Notification the Borrow area/lease area for minor mineral has been classified as Category B-2 if the individual lease area is less than or equal to 5 Ha or in cluster having total area upto 25 Ha. If the mine lease/borrow area is having equal to or greater than 25 Ha area in cluster with individual lease size less than 50 Ha, then such borrow area/mine area is classified under Category-B1 project. If the individual

lease area is equal to or greater than 50 Ha, it is categorised as Category-A project.

Figure 3-1: Flow chart for Environmental Clearance Process



For Category B-2, i.e. individual borrow area having an area of upto 5 Ha, or in cluster upto 25 Ha will not require EIA study for getting environmental clearance, neither will require Public Hearing. All the Borrow areas falling under Category B-2 will be appraised by the DEAC and the clearance will be accorded by the DEIAA. For making application the Project Proponent (Contractor) will have to submit completed Form –1M as specified in Appendix-VIII of the Notification (given in Appendix-III), PFR and Approved Mine Plan including site plan and lease agreement.

For the cluster borrow areas having equal to or less than 25 Ha of total area is also Categorises at Category-B2 Project, but for such area it is required to submit Form –I, PFR and Approved Mine Plan and EMP including the site plan and lease agreement. Such borrow areas in cluster under Category-B2 is appraised by SEAC and the EC is granted by the SEIAA.

For borrow areas falling in Category B-1 Project will be appraised by SEAC and the EC will be granted by SEIAA. For B-1 Project, it is required to conduct EIA study and Public Hearing. Similarly, for the Category-A mining area the EC is appraised by EAC and the EC is granted by the MoEFCC. For Category-A and Category-B1 mining projects all the procedures are required to be followed as explained in the previous section.

In the amendment of EIA Notification of 15 January, 2016 exemptions from prior environmental clearance has also been given for certain mining activities, which are listed in Appendix-IX of the notification. It may be noted that in dam projects dredging and de-silting of dams, reservoirs, weirs, barrages, river, and canals for the purpose of their maintenance, upkeep and disaster management is exempted from Environmental Clearance.

3.2 Forest Clearance

Similar to Environmental Clearance the MoEFCC has developed online system for making application of forest clearance under the Forest (Conservation) Act. The main objective of introduction of online system is:

- To enhance efficiency, transparency and accountability in the forest clearance process
- Reduction in turnaround time for activity
- To enhance responsiveness through workflows automation and availability of real time information
- To enhance ease and convenience of citizens and businesses in accessing information and services
- To achieve standardization in processes across regional and state level

For any dam project (New or Expansion /maintenance dam project) involving acquisition of forest land, forest clearance is required for diversion of forest land under Forest (Conservation Act), 1980. The forest clearance will be applicable for all kind of forests viz. Reserve Forest Land, Protected Forest and Unclassed Forest. The final authority for according the forest clearance lies with State Government/ Regional Officer, MoEFCC and Central Government, MoEFCC depending upon the total forest area required for the proposed project. According to the existing procedure, the project proponent has to fill the prescribed form A related to obtaining forest clearance(seeking approval of the proposal by the State Government and other authorities under section 2 of the (Forest Conservation Act1980), that has to be vetted/approved by the State Government (through various steps involving approval/recommendations from District Forest Officer/Chief Conservator of Forests/ State Forest Department (Part I to Part V of the form A for Forest Clearance) and then finally by Central Govt.

at the MoEFCC/any other authority, depending upon the area of the forest land proposed to be acquired by the project proponent.

The Forest Clearance is a two stage process:

(i) Stage-I Forest Clearance

The Stage-I clearance is in-principle approval, in which the conditions are specified and the total cost of NPV and Compensatory Afforestation including maintenance is determined, based on which a demand note is issued to the User Agency by the Forest Department. The Figure 3.2 depicts the flow chart for the process of obtaining Stage-I Forest Clearance as per Forest (Conservation) Amendment Rules, 2014 along with the tentative timeline.

No activity is allowed in the forest stretch until final clearance accorded.

(ii) Stage-II Forest Clearance

Stage-II clearance is the final clearance which is accorded after deposit of payment as per demand note and fulfillment of stipulated conditions. Figure 3.3 presents the overview of the process for Stage-II Forest Clearance as per Forest (Conservation) Amendment Rules, 2014 along with the tentative timeline.

Depending upon the total forest area required for the project, different authorities accord forest clearance.

- If the forest land is below or equal to 5 Ha., the State Government can accord permission;
- If the forest land is between 5 to 40 Ha., then permission from the Regional Office of MoEFCC is required;
- If the area of forest land to be cleared or diverted is more than 40 Ha, then prior permission of Central Government is required;

Proposals involving forest land up to 40 hectares are sent to the concerned regional offices of MoEFCC. These offices are situated at Shillong, Lucknow, Chandigarh, Bhopal, Bhubaneswar, Chennai, Dehradun, Nagpur, Ranchi and Bengaluru. In regional offices of the MoEFCC, proposal involving forest land between 5-40 Ha are examined by the State Advisory Group (SAG) pertaining to the concerned State / UT. The decision is then taken by the competent authority in the MoEFCC, New Delhi on the basis of the recommendation of the SAG.

The Chief Conservator of Forests, who heads the Regional Office, has been empowered to take decision on proposals involving Forest land up to 5 Ha except the proposals relating to mining and regularization of encroachment.

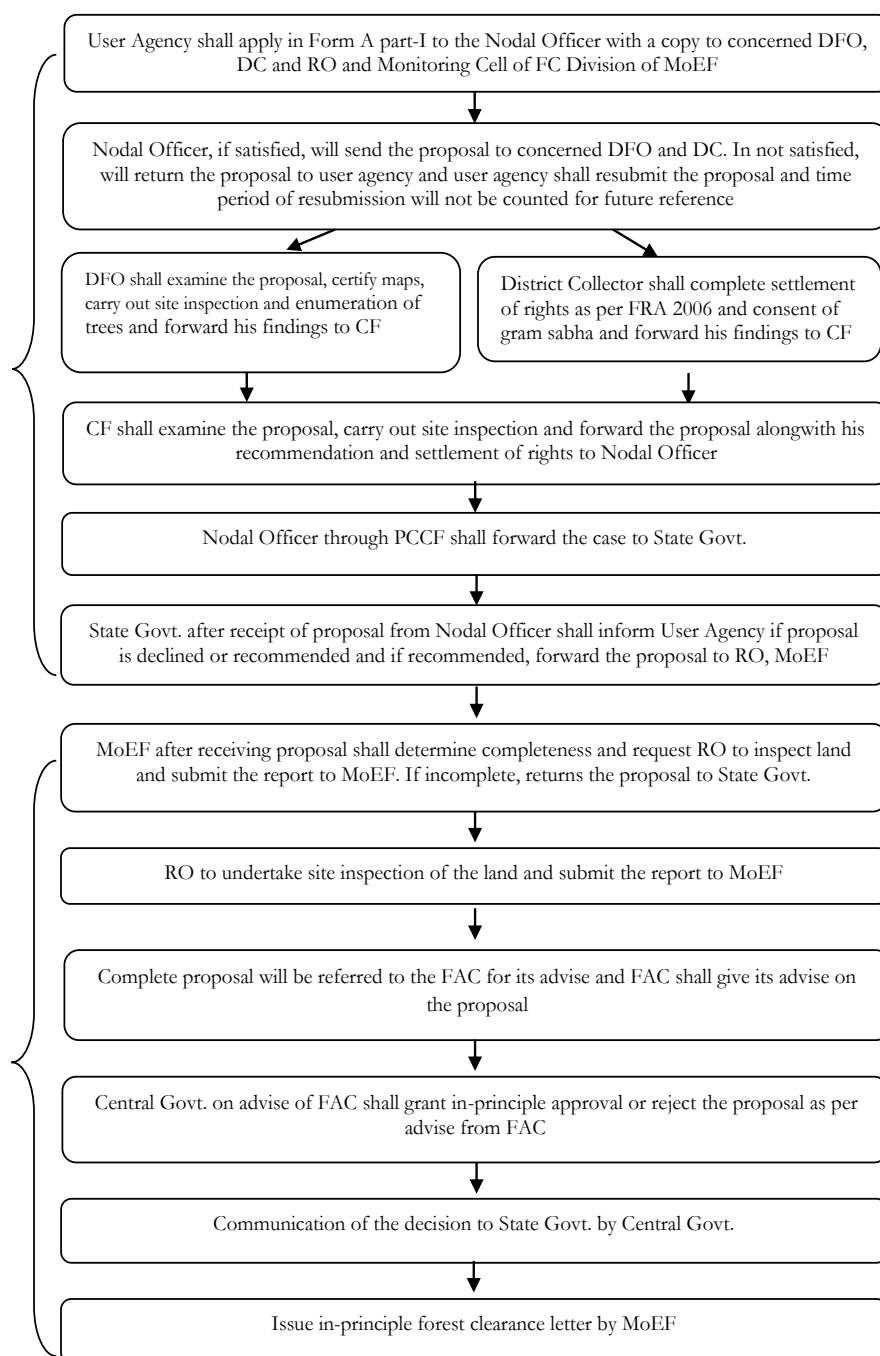
In MoEFCC at New Delhi, the proposals involving more than 40 Ha are examined by Forest Advisory Committee (FAC) constituted under Sec 3 of the Forest (Conservation) Act 1980. The decision is then taken by the Competent Authority in the MoEFCC on the basis of the recommendations of the FAC.

3.2.1 Role of Processing Authority

For processing the forest clearance following agencies are involved as per stipulated procedure

- User Agency (UA) –Part-1
- State Nodal Officer:
- DFO/DCF & DC Part-2
- CF/CCF-Part-3
- Nodal Officer/PCCF State Secretary/ State Government: Part-V
- Regional Office
- RO (HQ) Delhi & MoEFCC Head Office, Delhi

Figure 3.2: Flow chart for obtaining Stage-I Forest Clearance as per Forest (Conservation) Amendment Rules, 2014



Role of User Agency

The owner of the project is the UA. The UA is responsible for submitting the proposal for Forest Clearance in specified format Form-A Part-1 on the MoEFCC portal giving all the requisite information supporting documents. After submission of the proposal at the nodal office for the mandatory check for the completeness of the application.

State Nodal Officer: Every state has generally nominated their Chief Conservator of Forests or PCCF as State Forest Nodal Officer for scrutinizing the proposals for Forest Clearance. Once the forest proposal is submitted by the UA, the Nodal Officer will scrutinize the proposal for its completeness within 10 days.

In case the proposal is incomplete, then the Nodal Officer will raise query regarding the shortcomings for compliance by the UA. The reply along with the additional documents (if any) will be sent by UA to Nodal Officer for further scrutiny.

Once the proposal is complete, the State Nodal Officer will send a communication of acceptance of proposal to UA along with a request to upload an acknowledgement slip of the submission of a signed hard copy of original proposal to concerned Divisional Forest Officer/Deputy Conservator of Forest, District Collector and Nodal Officer.

After receiving acknowledgement slip, Nodal Officer will upload final Acceptance on portal and proposal will be forwarded to concerned DFOs / DCFs and DCs for further processing

Role of DFO/DCF

After receipt of the forest proposal the concerned DFO/DCF will review the proposal. The DFO/DCF is responsible for undertaking the following activities:

- Examining factual details
- Feasibility of the proposal
- Map certification
- Site inspections
- Enumeration of the trees
- Preparation of Compensatory Afforestation Scheme
- Valuation of affected land and trees

The DFO/DCF may seek Additional / Essential details (if required) from UA. After receiving the compliance to the additional/ essential details, he Processes the proposal (Form A Part-II). The findings are to be forwarded to the Nodal Officer within 90 days as per the specified Form A Part II format and upload Site Inspection report and Recommendations on portal. When Recommendation is uploaded, proposal will be moved to CF/CCF for further processing.

Role of DCs

The concerned District Collector has to upload the details related with settlement of rights under FRA and NOC of Gram Sabhas, if any.

Role of CF/ CCF

After receiving the proposal online from DFO/DCF alongwith site inspection report and recommendations, the concerned CF/CCF reviews the Form A Part-I and Part-II. After reviewing the documents, the CF/CCF may raise query to the concerned division, if needed. After receiving the clarifications/compliance, CF/CCF completes his/her information and recommendations in Form-A Part III. The proposal would then be forwarded to concerned Nodal Officer automatically.

Role of PCCF/ Nodal Officer

After receiving the proposal from CF/CCF, alongwith Part-I, Part-II and Part-III of Form A the concerned Nodal Officer would process it and will complete his/her recommendations and Site Inspection Report (If site inspection is done) in part-IV of Form-A which is forwarded to the State or UT Secretary, Forest Department.

Role of State / UT Government (Secretary of Forest Department)

After receiving the PCCF/Nodal Officer's recommendations along with Part-I, Part-II, Part-III and Part-IV of Form-A the Secretary reviews the proposal and the attached recommendations and adds his /her recommendations in Part-V of Form-A and forwards the proposal as per the following cases:

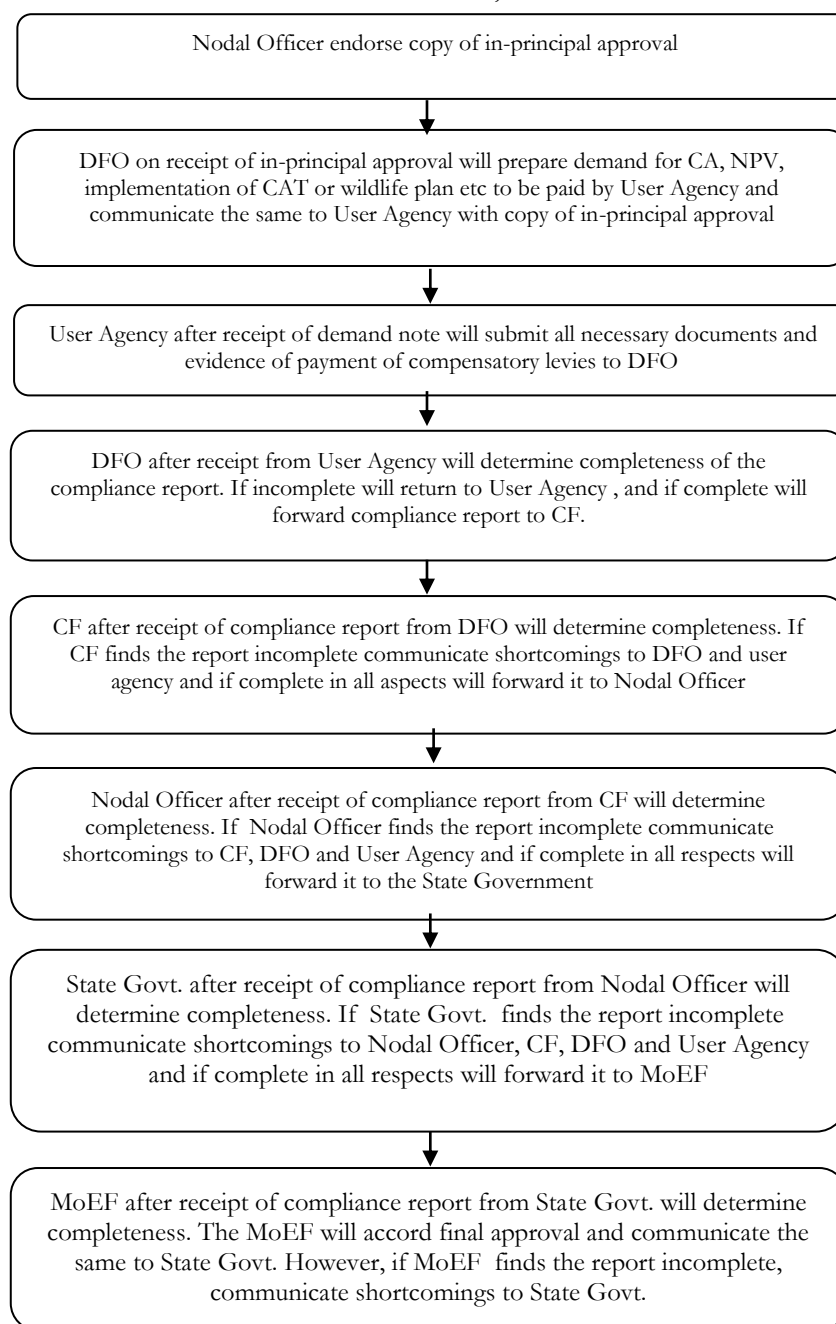
- All linear projects and other proposals related with diversion of forest land from 0 to 40 ha. are forwarded to Regional Office.

- All proposals related with diversion of forest land for more than 40 ha. excluding linear projects are forwarded directly to Head Office, Delhi for the processing at Head Office (MoEFCC, Delhi).

Role of Regional Office

The Regional Office after receiving all the documents and recommendations processes the proposal for forest clearance. The fate of the proposals related with diversion of forest land up to 5 Ha (except mining and regularization of encroachments) is decided at RO (without any State Advisory Group/Regional Empowered Committee meeting). There is a provision of deciding the fate of these proposals at State

Figure 3.3: Flow Chart for obtaining Forest Clearance (Stage-II) as per Forest (Conservation) Amendment Rules, 2014



In principle approval shall be valid for a period of 5 years thereafter shall be summarily revoked and fresh proposal will be required to be submitted

Secretary/State Government level also.

RO conducts SAG/REC meetings for the proposals related with diversion of forest land up to 5 Ha (Mining and regularization of encroachments only) and all other projects related with diversion of forest land from 5 to 40 Ha. All mining, Hydel and regularization of encroachment proposals (0-40 Ha) along with recommendations of SAG/REC are forwarded to RO (HQ), Delhi for the approval of Competent Authority of Ministry of Environment, Forests & Climate Change. The fate of other proposals are decided at RO level only.

Role of Regional Office (HQ)

The Regional Office (HQ) processes and scrutinizes proposals related to mining & encroachment and those where area is greater than 40 Hectares

Role of HO, Delhi

MoEFCC HO (Delhi) reviews the proposal and recommendations of DFO, CF/CCF, Nodal Officer, State Secretary and Regional Office and then conducts FAC meetings. After the FAC meeting the Stage-1 approval is accorded. The proposals between 5 – 40 Hectares are processed at regional level

Different Forest Committees and their responsibility

- **SAG Committee** at regional level for providing Stage-I approval
- **Forest Advisory Committee, MoEF:** The Forest Advisory Committee is responsible for handling all mining & encroachment related cases as well as proposals on forest diversion for areas above 40 hectares.
- **Regional Empowered Committee, MoEF:** The committee is responsible for deciding the proposals for forest diversions up to 40 hectares not inclusive of mining and encroachment cases.

Stage-II Forest Clearance

For the Stage-II clearance, following activities are involved:

- (i) After receiving the Stage-I clearance a demand note is raised by the DFO/DCF to the UA for making payment for NPV and CA .
- (ii) After receipt of the demand note the UA has to upload the demand letter for verification by the Nodal Officer
- (iii) The Nodal Officer verifies the demand letter of DFO/DCF uploaded by UA.
- (iv) After verification and acceptance of demand letter by the Nodal Officer, Challan is required to be raised by the UA for the amount to be paid through the portal. Once the Challan is uploaded, payment is required to be made by UA (through any mode) in bank
- (v) The NIC, UBI and Corporation Bank will take action for reconciliation of payment of UA
- (vi) The UA is required to upload the status of land to be transferred to forest department, if any
- (vii) The UA is required to upload the compliance to the conditions stipulated in Stage-I Clearance.
- (viii) Once the payment is made and compliance to the conditions stipulated in Stage-I clearance is uploaded by the UA, the Nodal Officer forwards the Compliance (to the conditions stipulated in Stage-I Clearance) report submitted by UA to DFO/CF manually for his report and updates status on portal.
- (ix) After receiving the compliance report from DFO/CFs the Nodal Officer will update the status on portal. and forward the compliance report to the State Government

- (x) The State Government then processes the Compliance Report submitted by Nodal Officer.

If Stage-I clearance is issued by State Government, then they will issue stage-II clearance otherwise they will forward Compliance report to Regional Office/HO, New Delhi.

- (i) The Regional Office then Processes the Compliance Report submitted by the State Government. If Stage-I clearance is issued by the Regional Office, then they will issue stage-II clearance otherwise will forward Compliance report to HO, New Delhi.
- (ii) The HO after receiving the Compliance Report from Regional Office, processes the Compliance Report and accords Stage-II Forest Clearance.

3.3 Wildlife Clearance

The projects which are located inside any Wildlife Sanctuary, National Parks or Tiger Reserve and the proposed activities are within the boundary of such areas will attract the provision of Wildlife (Protection) Act and hence will require wildlife clearance for the project. The following agencies are involved in wildlife clearance process:

- (i) User Agency
- (ii) DFO/Wildlife Warden/DC
- (iii) Chief Wildlife Warden
- (iv) SBWL/State Government
- (v) NBWL/Ministry

The User Agency/Project Proponent is required to file the application online on the portal in stipulated format. Once the application is filed by the User Agency, the proposal will be forwarded to the concerned

DFO/Wildlife Warden. The concerned DFO and Wildlife Warden will review the proposal, inspect the site and make his recommendations. He may seek additional information from UA.

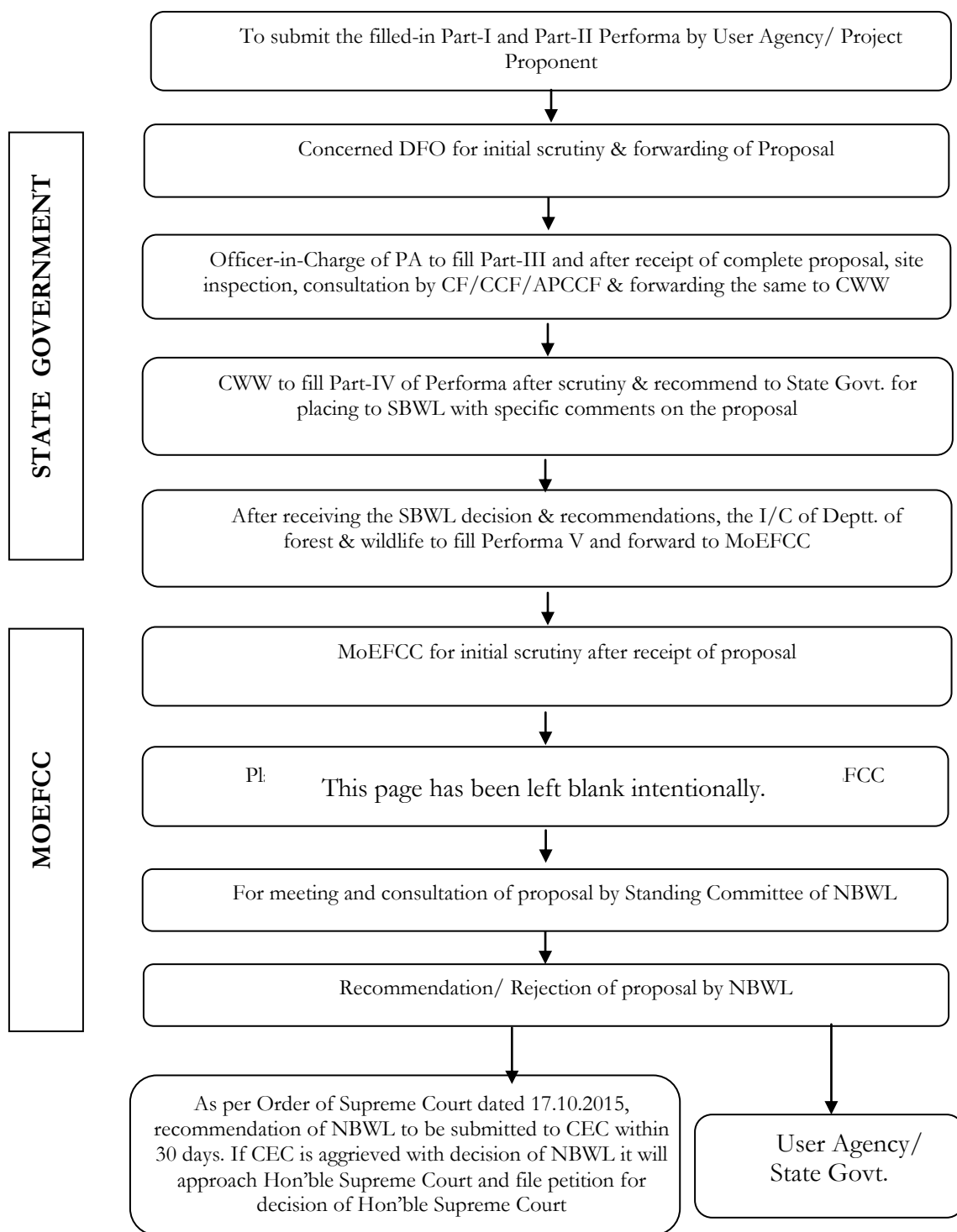
When, DFO uploads his/her recommendation and Site Inspection Reports of the portal, proposal details are forwarded automatically to concerned Chief Wildlife Warden (CWW) for necessary action.

CWW processes the proposal and uploads his/her recommendation and Site Inspection report (if site inspection done) and forwards it to State Government. The State Government then reviews the proposal and recommendations of DFO and CWW for processing it. The case for wildlife clearance is then appraised in the State Board of Wildlife and necessary recommendations for Wildlife Clearance are issued. The State Government then uploads the recommendation of State Board of Wildlife (SBWL) on the portal along with State Government report/recommendation. Once, these are uploaded on the portal, the proposal is forwarded to Head Office (Wildlife), New Delhi for further consideration.

After receiving the proposal online from SG, the proposal is then processed for the approval of the Competent Authority of MoEFCC (HO). After taking approval of the Competent Authority the recommendation letter of NBWL is uploaded on the portal.

After receiving the NBWL recommendation and approval of competent authority, the State Government then uploads the Wildlife Clearance. A flow chart of the Wildlife Clearance Process is presented in the following Figure 3.4

Figure 3.4: Wildlife Clearance Process



Source: MoEFCC Workflow Forests and Wildlife Clearances

Chapter 4. EIA PROCEDURE

The EIA process ensures that environmental issues are understood when a project or plan is first discussed and that all concerns are addressed as the project gains momentum for implementation. Recommendations made by the EIA may necessitate redesign of some of the project components, require further studies, suggest changes which alter the economic viability of the project or cause a delay in project implementation. It is essential that an environmental assessment is carried out to determine significant impacts early in the project cycle so that recommendations can be built into the design and cost-benefit analysis without causing major delays or increased design costs. An important output from the EIA process should be the delineation of enabling mechanisms for an effective management.

4.1 Steps of EIA Study

The EIA is the most commonly used tool to ensure that environmental aspects are considered during decision making – by influencing design to avoid /minimize, and where unavoidable mitigating the residual adverse impacts and/or enhancing positive impacts. It also provides a platform for getting views from stakeholders including the directly affected population to improve the design so that the asset quality is improved. The EIA study includes the following:

- Overview of the sub-project – its location, proposed improvements, along with a map, its benefits, costs and implementation schedule for all activities
- Characteristics of the existing environment (baseline) of the alignment, within the broader region of the project.
- Description of potential impacts – both positive and negative, with quantified

estimates where possible, otherwise qualitative judgments

- Analysis of alternatives available to minimize negative impacts and maximize positive ones, including changes to alignment, materials, technologies, etc.
- Consultations undertaken, with all stakeholders including affected people, in project area and with other line departments
- Management measures selected to reduce the adverse impacts and increase positive impacts, monitoring and reporting arrangements, and capacity building needs if any, along with costs of each as a management plan including roles and responsibilities of various agencies involved in implementation and supervision of the environmental safeguards measures.
- Conclusion regarding the completeness of analysis and need for any follow-on study beyond monitoring of predicted impacts

The Environmental Impact Assessment is a process comprising a series of steps. These steps are

- Screening
- Scoping
- EIA Study
- Public Consultation
- Appraisal

The following Table 4.1 provides the steps involved in EIA and SIA study for a project at its different stages.

Table 4.1: Steps in EIA and SIA at different Stages of Project

A	<i>Project Identification & Pre-Feasibility Studies (Pre-Construction) Phase</i>
	<ol style="list-style-type: none"> 1. Environmental and Social screening 2. Social performance frameworks for projects not requiring specific resettlement and land acquisition studies
B	Project Design Phase
	<ol style="list-style-type: none"> 3. Environmental Screening/Initial Environmental Examination (IEE): Assess project sensitivity and environmental impacts to determine if EIA is required; its recommendations are incorporated into the project design. Also examine the requirement of Environmental Clearance for the proposed project as per EIA Notification, 2006 and amendments thereafter. 4. Scoping: Identify significant potential impacts and project alternatives, and propose terms of reference for the EIA and SIA. 5. Baseline Data Collection, as part of SIA: Identify existing environmental and socio-economic conditions in and around project area and anticipated changes in accordance with changes in the project. 6. Public consultation and participation of stakeholders of different level at various stages in the assessment process for understanding the of issues, public perception towards project and their expectations. The Public Consultation is also required to be conducted as a statutory requirement under Environmental Clearance Process. It is required to be ensured that stakeholders' views are adequately addressed. 7. Prepare EIA Report and SIA Report: Compiles all information obtained, analyzed and interpreted in a report form; should contain a non-technical summary including methods used, results, interpretations and conclusions. The report should also include identification of potential environmental and social impacts and recommendations for mitigation of negative impacts, enhanced opportunities and relevant policy and regulatory actions. 8. Prepare Environmental and Social Management Plan (ESMP) of the project to determine specific actions to be taken during the designing of the project that includes plans for land acquisition, engineering design and construction stages to minimize or mitigate adverse environmental and social impacts. 9. Preparation of Resettlement Action Plan (RAP) and Indigenous People's Development Plan (IPDP) on the basis of SIA and update them in accordance with changes in the project requiring land acquisition. 10. Public Consultation: The finding of the study should be shared with stakeholders participating in the consultation process and affected by the recommendations the outcome of the consultation to be included in the project and reflected in the report. 11. Design mitigation measures: to avoid, reduce and minimize adverse environmental and social impacts and enhance beneficial impacts.
C	Project Appraisal/ Approval Phase
	<ol style="list-style-type: none"> 12. Review and Approval of EIA and SIA Report: review report to assess if all issues have been adequately addressed and to facilitate the decision-making process; decide if project should proceed, or if further alternatives must be examined.

4.2 Screening

The screening step involves review of the available environmental information about the project and its surrounding areas. It would help identify issues to be verified during reconnaissance site visits and also

provide a preliminary idea regarding the nature, extent, and timing of environmental issues that would need to be handled during the subsequent stages. It will also help to identify opportunities for avoidance and/or minimization early in the project cycle so that the design process can be informed

appropriately. The steps to be followed include the following:

- Confirm the presence of environmentally sensitive areas from secondary sources or site observations
- The proposed activities and components having potential environmental impacts
- Verify the extent of applicability of State Government, Government of India, lending agency's policies in sub-project activities
- Identify potential negative and positive impacts and provide clarity on which issues need to be investigated more comprehensively during preparation of Environmental Impact Assessment that will be done during the Design stage.
- This should help with sequencing of sub-projects, and factoring in timelines like those associated with regulatory clearance processes into project implementation.

The Screening exercise defines the sensitivity of the project and provide precursor for Scope of further study.

4.3 Scoping

Scoping is the process of determining which are the most critical issues to study and will involve community participation to some degree. It is at this early stage that EIA can most strongly influence the outline proposal. For the project requiring environmental clearance from MoEFCC or State level environmental impact assessment authority, the scope of EIA study is required approval from respective authority after making application in Form-1 (as stipulated in EIA Notification, 2006 and amendment thereafter). After making the presentation to the Expert Appraisal Committee or state level appraisal Committee, the TOR for EIA study is approved defining the scope of study during detailed EIA. The MoEFCC

has formulated standard TOR for EIA study for River Valley Projects which is applicable in general to all the river valley projects requiring environmental clearance and EIA study to be carried out accordingly unless otherwise the Appraisal committee put any separate conditions for additional study during EIA. Copy of standard TOR of MoEFCC is enclosed as APPENDIX-II as a ready reference.

For the funded project after determining the project category and extent of environmental impact, the scope of further study during detailed EIA study is defined as per lending Agency's policy on environmental safeguards. As per World Bank or ADB safeguards policy, the project falling under Category-A project requires detailed EIA study. For Category-B projects, only environmental screening for World Bank projects and Initial Environmental Examination (IEE) for ADB funded project is required which will define generic environmental mitigation measures for the anticipated adverse environmental impacts. For Category C projects no further action is required for Environmental Assessment.

4.4 EIA Report Preparation

4.4.1 Baseline Environmental Conditions

Different environmental features are required to be studied to establish baseline environmental conditions in and around the project area. The data on different environmental/social settings of the project area are collected from different authentic secondary sources as well as primary sources. All the information on the environmental conditions are to be collected as per approved TOR during scoping. The secondary data are collected mainly to cover the information of Physiography, Geology, soil, waterbody, drainage pattern, meteorology, Forest and vegetation, flora and fauna, protected areas, other ecological sensitive area, landuse pattern, demography, socio economic aspects within study area.

These secondary sources are like published literatures from various government agencies, or institutions. The data are required to and verified for establishing existing environmental and socio-economic profile within and around the project area. The primary data on different environmental and social attributes are generated through surveys at site for collecting and collating the baseline information. These primary data are mainly air quality, water quality, noise level, soil quality, socioeconomic and census data of affected population, flora fauna, forest and other ecologically important area, sensitive receptors, etc. All the baseline data are compiled and analysed with respect to the project and all the critical issues are identified which are analysed for identification of impacts and their mitigation measures.

4.4.2 Prediction and Mitigation

The main objective of Environmental Assessment study is to predict the likely impacts on different environmental components due to the location of the proposed project, proposed activities and components. Both direct and indirect impacts and their extent are identified through the EIA study. After analyzing the impacts, the mitigation measures are identified for offsetting or minimising the negative impacts and for enhancing positive environmental impacts.

4.4.3 Environmental Management Plan

The Environmental Management Plan (EMP) consists of the set of mitigation, monitoring and institutional measures to be taken during the design, construction and operation stages of the project to eliminate adverse environmental impacts, to offset them, or to reduce them to acceptable levels

It acts as a tool to implement environmental safeguard measures in a project. It also serves as a vehicle to communicate

environmental control measures to various statutory / regulatory bodies by the project proponent.

After identification of impacts and their mitigation measures, an action plan is formulated for implementation along with location, timeframe and responsibility for implementation and supervision. The management plan also includes proposal of environmental enhancement measures, monitoring of performance indicators and budget allocation for mitigation measures.

The EMP should be project specific, clearly and concisely describing adverse impacts, selected management measures to bring it to an acceptable level and timelines for implementing these measures. It would be useful if contract specific EMPs are prepared as these would facilitate integration with the bidding documents. The building blocks of an EMP are:

- Identification of potential adverse environmental impacts and their mitigation, together with conditions within which one or other measure would apply at different stages of the project including Design, Pre-construction, Construction and Operation stages.

In general the Environmental Management Plan should include the following but not limited to:

- R&R plan (if resettlement issue is envisaged)
- Catchment Area Treatment Plan
- Compensatory Afforestation Scheme (If tree felling is envisaged)
- Pollution Control Measures
- Soil Erosion and sediment control plan
- Biodiversity Conservation Plan
- Fishery Management Plan
- Campsite Management Plan
- Greenbelt development plan

- Public Safety plan
- EHS Plan
- Waste Management and Muck disposal plan
- Free fuel plan
- Any other specific plan as stipulated in the conditions of TOR
- Enhancement plans for positive impacts
- Monitoring Plan with indicators, mechanisms, frequency, locations,
- Budgetary allocations for all the above activities
- Institutional arrangements for each activity and mitigation measures
- Implementation schedules for each activity and its integration with the sub-project implementation timelines
- Reporting procedures, including redressing grievances related to environmental issues

The general Environmental Concerns during DPR stage and project implementation stage associated with rehabilitation and maintenance of existing Dam projects are presented in Table 4.2. These concerns are required to be addressed properly in preparation of Environmental Management Plan.

4.5 Public Consultation

Once the draft EIA as per approved TOR is ready, the same alongwith summary EIA in English and local language and compliance to the conditions of the TOR is submitted to the concern State Pollution Control Board for carrying out public hearing as stipulated in the EIA Notification if environmental clearance is applicable to the project. The Pollution Control Board will conduct Public Hearing in each concerned District close to the project site in presence of the representative of District Collector after widely advertising the purpose, date

and venue of public hearing at least 30 days in advance by District Authority. The proceedings of Public Hearing will be recorded by the pollution control board and will be signed by the District representative who has chaired the Public Hearing .

It may be noted that the Public Hearing is exempted for modernization of irrigation projects listed under item 1(c) (ii) of the Schedule of EIA Notification, 2006..

4.6 Appraisal

The final draft EIA report incorporating the proceeding of public hearing and addressal of public issues in the project is required to be submitted to the MoEFCC or SEIAA for appraisal by the Appraisal Committee (EAC or SEAC). The committee after getting satisfied with the information provided in the EIA report and mitigation measures, give their recommendation for Environmental clearance.

The MoEFCC has framed a standardised Environmental Clearance conditions vide F. No. 22-34/2018-IA.III dated 9th August, 2018 which also include standardized Environmental Conditions for “River Valley and Hydro-electric Projects”. The compliance to these standard environmental conditions will be required for all the projects where environmental clearance has been issued. The Committee may impose some additional specific conditions depending upon the project. The copy of the Office Memorandum of MoEFCC regarding Standardization of Environmental Clearance Conditions is enclosed as APPENDIX –IV.

Table 4-2: Environmental Concerns in Project Preparation

S. No.	Activity	Items to consider	Measures to address
1.0	Environmental Inventory	Trees	Inventorisation of environmental features Avoidance, design modifications to minimize adverse environmental impacts Incorporating community concerns into finalizing the design and alignment
		Forests	
		Wildlife sanctuary/National Park/Tiger reserves/notified Eco-sensitive zones	
		Rivers / water crossings	
		Water bodies	
		Wetland of ecological importance	
		Grazing lands	
		Cultural properties	
		Utilities	
		Community facilities	
		Major settlement and rehabilitation issues	
2.0	Detailed Surveys	Geological, geotechnical studies	Stability analysis and measures to address slope instability, embankment and bridge works, etc. Detailing of features
		Topographical surveys	
		Hydrology	
3.0	Identification of material sources	Borrow material	Utilizing alternative materials
			Minimize requirements through design modifications
			Location criteria
		Quarry material	Utilizing alternative materials
			Material extraction from existing quarries
		Water availability	Identification of perennial/community/private sources
			Scheduling construction to suit water availability
			Utilizing community water sources without conflict of uses
		Water bodies/Reservoir	Provision of silt fencing
			Rehabilitation of water bodies
		Stability of slopes	Measures for slope stabilization
		Soil erosion	Erosion control measures
		Land use changes	Land use control measures adjacent to the project
			Empowering Gram Sabha to regulate development
			Avoidance from setting up construction camps, borrow areas
			Conservation of top soil

S. No.	Activity	Items to consider	Measures to address
			Site restoration after construction
		Cultural properties	Avoidance through design modifications
			Planning for Relocation & rehabilitation
		Common Property	Avoidance through design modification
		Resources	Planning for Relocation of consultation with community
		Drainage	Provision of adequate number of CD Structures
		Trees	Compensatory plantation & arrangements for plantation
		Forest areas	Avoidance through design modifications
5.0	Precautionary measures during construction to avoid/ mitigate environmental impacts		Environment Management measures during construction
		Natural Habitats	Avoidance through design modification or formulating additional measures for avoiding impacts
		Top soil	Stockpile topsoil and preservation
		Construction sites	Provision of pollution control measures
			All measures to ensure public & worker's health/safety
			Water Management
		Construction camps	Criteria for identification of sites and Infrastructure arrangements
			Safe disposal of all wastes
			Enforcement of pollution control measures
		Borrow areas	Arrangements with land owners to include redevelopment and compliance with conditions stipulated in EC conditions
		Quarry areas	Rehabilitation of quarry areas if new quarries are opened
		Muck Disposal	Criteria for selection of disposal of muck
			Provision of pollution control measures
			Safe disposal procedure
			Personal and public safety
		Soil Erosion and Sediment Control	Erosion control measures at vulnerable locations
			Plantation scheme
			Measures for sediment control
		Forest Area/ Wildlife	Measures for avoiding tree cutting or damage to the forest resources
			Access outside the forest area
			No camps/ stockyards or plants to be established in forest area
			Provision of cooking gas cylinder or kerosene to avoid tree felling for firewood

S. No.	Activity	Items to consider	Measures to address
		Public/workers health & safety	Personal Protective Equipment to be provided
			Public safety at construction sites to be undertaken
			Measures for worker's health & hygiene at construction camps
		Site Restoration	Restoration of all the temporary sites after completion of works and dismantling of construction establishments (campsite, temporary access, diversions, borrow/ quarry areas, plant site/ stockyards etc.
			Removal of all debris and surplus materials from site of activities
			Landscaping of the disturbed area
6.0	Consultations with community	Land for borrowing	Agreement to include borrow area rehabilitation
		Water for construction	Agreements with owners/community for utilizing water
		Site for construction camps	Rehabilitation of the land after construction
		Removal of trees	Compensation for the trees cut
		Resettlement issues	Relocation costs to be covered in the project
		Traffic during construction	Provision of alternate routes or prior notice to the users
7.0	Finalization of alignment/ location	Concerns of community	Community concerns to be incorporated
		Environmental impacts identified	Impacts identified are to be mitigated by incorporation of provisions as per guidelines
		Design aspects	Impacts that can be mitigated through design modifications should be incorporated
8.0	Monitoring of Progress	All environmental aspects identified	Monitoring of implementation of Environmental measures

Generic structure of EIA report:**EXECUTIVE SUMMARY****1. General Introduction**

- 1.1 Background
- 1.2 Overview of the Proposed Project

2. Project Description

- 2.1 Contents, Scale, Investment and Construction Schedule

- 2.2 Relations with Existing Infrastructure and Plan

3. Legal Framework for EIA Report Preparation

- 3.1 Indian Legislations and Policy
- 3.2 World Bank/ ADB Policy Requirements

- 3.3 List of planning and technical documents supporting EIA preparation
- 3.4 EIA Approaches:
- 3.5 Assessment scope and key areas for assessment
- 3.6 Applicable standards
- 4. Baseline Environment**
 - 4.1 Physical Environment
 - 4.1.1 Climate
 - 4.1.2 Physiography
 - 4.1.3 Geology and soils
 - 4.1.4 Topography
 - 4.1.5 Hydrology and drainage pattern
 - 4.1.6 Surface water and groundwater
 - 4.1.7 Vegetation and wildlife Biodiversity
 - 4.1.8 Protected and special management areas
 - 4.1.9 Aesthetic resources
 - 4.1.10 Noise
 - 4.1.11 Air quality
 - 4.2 Social Environment
 - 4.2.1 Social-economic status
 - 4.2.2 Social assessment
 - 4.2.3 Land use pattern
 - 4.2.4 Physical cultural resources
 - 4.2.5 Archaeological sites
 - 4.3 Identification of Environmental Sensitive Sites for the Project
- 5. Analysis of Alternatives**
 - 5.1 Without-Project scenario
 - 5.2 Project strategy alternatives (if applicable)
- 5.3 Alternatives for project site/alignment/design
- 6. Impact Assessment and Mitigation Measures**
 - 6.1 Design and Pre-Construction Stage
 - 6.1.1 Impact on landuse
 - 6.1.2 Impact on forest and Protected Areas
 - 6.1.3 Impact on People and properties
 - 6.1.4 Impact on Waterbodies and drainage pattern
 - 6.2 Construction Stage
 - 6.2.1 Air quality
 - 6.2.2 Soil erosion
 - 6.2.3 Surface and groundwater
 - 6.2.4 Vegetation and wildlife biodiversity
 - 6.2.5 Protected and special management areas
 - 6.2.6 Aesthetic Resources
 - 6.2.7 Noise
 - 6.2.8 Physical cultural resources
 - 6.2.9 Impact of land acquisition and resettlement
 - 6.2.10 Social impact
 - 6.3 Operation Stage
 - 6.3.1 Wildlife and natural habitats
 - 6.3.2 Groundwater
 - 6.3.3 Noise
 - 6.3.4 Air
 - 6.3.5 Solid waste
 - 6.3.6 Social and cultural impact
 - 6.4 Induced Impact
 - 6.5 Cumulative Impacts

7. Environmental Management Plan

- 7.1 Environmental mitigation measures including Catchment Treatment Plan, Compensatory Afforestation, R&R Plan, Biodiversity Conservation Plan,
- 7.2 Environmental management organization and responsibilities
- 7.3 Environmental supervision and reporting procedures
- 7.4 Environmental monitoring plan
- 7.5 Institutional Arrangements and Capacity Building

- 7.6 Environmental Grievance Redressal Mechanism

- 7.7 Environmental Budgeting

8. Public Consultation and Information Disclosure

- 8.1 Objectives
- 8.2 Methodologies
- 8.3 Consultation process and results
 - 8.3.1 Consultation at early stage of EA preparation
 - 8.3.2. Draft EIA consultation
- 8.4 Information disclosure

9. Conclusions

Annexures

Chapter 5. GOOD ENVIRONMENTAL SAFEGUARDS PRACTICES IN CONSTRUCTION

5.1 General

During the Construction/implementation stage it is imperative to implement environmental safeguard measures including those of statutory requirements in a uniform and well-coordinated manner among contractors, Engineer, Implementing teams.

The present Chapter provides suggestive measures for adopting good environmental practices for ensuring effective implementation of environmental and social safeguards measures for different environmental impacts. This broadly covers the issues / activities during Pre-Construction and Construction Stages relevant to the specific projects.

5.2 Pre-Construction Stage

During pre-construction stage, the activities and actions involved are related to approval, consent, clearances, permits and safeguard measures related to the proposed identification/establishment of Quarry site, Stone Crusher units, Blasting, Borrow Area, batching plant, workers camp, workshops, storage yards, waste disposal mechanism including environmental clearance, forest clearance, wildlife clearance from relevant Government agencies prior to concerning any civil work of the subproject.

5.3 Construction Stage

For construction stage Guidelines entail procedures and responsibilities related to construction activities as under:

- Borrow Area Operation and Management
- Quarry Area Operation and Management
- Plant site Management
- Material Storage Area Management
- Topsoil Preservation and Management
- Construction Material Re-Use & Disposal
- Workers Camp Management
- Soil Erosion and Sediment Control
- Drainage Control
- Air, Noise and Water Pollution Control and Monitoring
- Workers Safety
- Public Safety

5.4 Agencies for EMP Implementation

The EMP is being implemented by the Project Proponent. The other key players are involved in EMP implementation during different stages of the project are:

- Project Proponent
- Engineer and his representatives
- Contractors
- State Forest Department- for CAT
- State Fishery Department – for fisheries management
- State Government – Implementation of R&R

Besides, implementation of EC conditions are also being monitored by following agencies:

- Regional Office, MoEFCC
- State Pollution Control Board
- Multidisciplinary Environmental Monitoring Committee at Project Level approved by MoEFCC

- National level Monitoring Committee with members from CWC, Niti Ayog, MoEFCC, Ministry of Tribal Affairs (MOTA), etc.
- Supreme Court/NGT/Other Courts, etc.

5.4.1 Project Proponent

The project owner/proponent is overall responsible for implementation of environmental safeguards. They are responsible for ensuring compliance of safeguard measures at the projects planning and tendering stage and will be responsible for monitoring of progress on EMP implementation through Contractors during the construction stage. They will also be responsible for liaising with the statutory and regulatory authorities in connection with obtaining different statutory clearances such as forest clearance, wildlife clearance, environmental clearance etc. will submit various reports to the regulatory bodies. They will also be responsible for ensuring incorporation of the specifications and contract clauses on environmental safeguards including environmental mitigation and management plan.

5.4.2 Environmental Management Cell and R&R Cell

It is required to constitute separate Environmental Management and R&R Cell within project for ensuring implementation of EMP. The role of this cell will be monitoring of environmental safeguards and R&R activities, liaising with the concerned officials, facilitating the clearance processes, redressal of grievances on safeguards, etc.

5.4.3 Engineer and His Representatives

The Engineer and his representative is responsible for supervising all the construction works of contractor including implementation of EMP to ensure that

Contractors are complying with the requirements of various environmental safeguard measures through supervision, monitoring and reporting on the same. Chief Engineer and Site Engineer and their Field Representatives shall be responsible for discharging the duties of supervising EMP implementation.

5.4.4 Contractors

The Contractors and their Sub-Contractors shall be responsible for implementation of various environmental safeguard measures as per the EMP and Contract specifications and comply with the requirements of regulatory and statutory bodies. The Project Manager with the assistance of his Environmental Health and Safety Officer shall be responsible for implementation of EMP under the contractual obligations.

5.5 Supervision, Monitoring and Report Writing

Environmental Monitoring provides a systematic review of planning, designing, construction practice and operation activities that may have adverse impact on the surrounding environment.

Environmental monitoring enables identification of

- Degradation/improvement of surrounding ecology
- Damage to surrounding habitation and
- Extent of compliance with the EMP

The strict supervision is required on all construction activities of the project for compliance with applicable environmental, health and safety laws and regulations as well as the technical specifications on environmental safeguards.

Supervision of EMP implementation has been divided in two categories based on the

type of approval and inspection required for the same, as below:

- i. Supervision of activities which require one-time approval of Engineer, and
- ii. Supervision of activities which require periodic inspection and monitoring by Engineer

Details for each category are discussed in the following sub-sections.

5.5.1 One-Time Approval

Activities, which involve one time approval of Engineer, are

- Contractor's Environmental and Safety Plan
- Identification of borrow areas
- Identification of quarries
- Site identification and setting up of workers camps
- Site identification and setting up of Stone crusher units, Batching Plants, Hot mix Plant
- Identification and setting up of workshops / vehicle maintenance yards
- Identification of material storage (stock yards) and waste disposal sites

The objectives behind one time approval by Engineer are:

- To identify environmental attributes, which shall be disturbed, damaged within the construction zone of the project stretch.
- To identify environmentally suitable sites
- To ensure compliance of site selection with the statutory / legislative requirement
- To install plants / machinery with required environmental pollution control devices and safety measures.

- To ensure necessary clearances / permits from concerned authorities are obtained before start of the operation.

The sample checklists for collecting information on environmental issues of various sites are given Annexure-7.1. The contractor for submission of the information and data on environmental aspects to the respective Engineer may use these Checklists or they may customise checklist according to the project.

The Engineer shall forward the information to his Environmental representative for checking the adequacy of information. In case of any significant information gap, the Environmental representative shall prepare note on additional information required and submit to Contractor Engineer. Any new site shall be inspected by the Environmental Representative personally or as directed by him to his Field Representative (FR) for the inspection. On completion of inspection, Environmental Representative shall prepare note on the same and forward to Engineer for his necessary instruction to Contractor. In case, site is not accepted, the Engineer shall instruct Contractor for identifying alternate site. The Engineer's Representative with the assistance of Environmental Representative shall maintain a record of all the approved site in a Monthly Progress Report.

5.5.2 Activities Requiring Periodical Inspection and Monitoring

Periodic inspections for implementation of various safeguards measures during construction are required for adequacy and effectiveness. The Periodical inspection may be i.e. daily, weekly, fortnightly and monthly, depending on the operation, severity and possibility of occurrence of environmental hazards due to such activity. All the construction related activities having potential for environmental and safety

hazards shall be inspected on periodic basis during the whole construction period.

The Objectives of periodic inspections and supervision during construction stage are to

- Ensure strict monitoring of compliance with the stipulated conditions of the contract
- Avoid / minimize disturbances on natural resources beyond the construction zone.
- Ensure environmentally sound operation and management of plant sites; material collection, transportation and storage;
- Monitor and control of pollution on air quality, noise level and water quality.
- Maintain occupational health and safety of the workers
- Ensure safety of the general public
- Ensure emergency response system in case of any accident.
- Ensure compliance on statutory / regulatory requirements for operation of plants and machinery.
- Ensure compliance of statutory requirements and conditions through EMP implementation during construction.

In general, the criteria for Non-conformance shall be as follow:

- Failure to comply with requirements of statutory / regulatory bodies and those of EMP and Technical Specification on environment and safety.
- Failure to furnish information / documents to the Engineers' representative/s, SPCB as may be required during their inspection

Any non-conformance (NC) found during the periodic inspections by Field Representative (FR) and Environmental

Representative of the Engineer shall be brought in to the notice of Dam Authority, who is the implementing agency. The Dam Authority shall give necessary instruction to Contractor for taking corrective action/s within stipulated time frame.

The Environmental Representative of the Engineer shall follow up with his counterpart and facilitate in taking corrective action/s within stipulated timeframe. If Contractor fails to take corrective actions within stipulated time frame, without assigning any satisfactory reasons thereof, Environmental Representative of the Engineer shall take up the issue with IA (Dam Authority). IA shall take necessary action in consultation with Environmental Nodal Officer for safeguarding the environment.

5.5.3 Penalty Clause

Generally the environmental mitigation measures are incidental to works and in absence of any penalty clause most of the environmental mitigation measures are remained unattended during the construction activities. Penalty clause against non-conformance to the environmental safeguards measures is required to be incorporated in the tender document. Imposition of penalty should be done as per contract conditions if the contractor fails to comply with the stipulated conditions on environmental safeguards measures during construction. A condition of performance guarantee on environmental safeguards may be considered in the line with the World Bank Standard Bid Document as a good practices.

Chapter 6. Procedures for Environmental Management and Control

This chapter suggests the procedures generally required for ensuring effective Environmental Management and Control. These are only suggestive measures. However, the required procedures as stipulated under different statutory regulations and conditions of the statutory permissions and clearances are to be followed by the dam authority as well as the Contractor. Wherever there is conflict in the suggested procedures and legal requirements, the statutory requirements will prevail as per the relevant rules and regulations.

6.1 Procedures for Borrow Area Operations and Management

For construction of embankment, dyke constructions, earth materials are required which are to be brought from borrow areas designated for the purpose. Borrow areas operations have adverse environmental impacts if appropriate mitigation measures are not taken. The scope of this guideline includes measures that are required during project planning and design stage, preconstruction, construction stage and post construction stage. Borrow areas are related only to canal embankment, dam dyke and road construction activities.

The objective of this procedure is to ensure that environmentally sound good-practice guidelines are followed during collection of materials from borrow material and the areas are properly rehabilitated instead of creating environmental hazards and nuisance.

The procedure for environmentally sound operation and management of borrow area is given below:

- Specific locations of borrow areas will be identified by contractor. Generally government approved operational borrow areas in the nearby area should be selected for extracting the earth materials for construction. However, if Contractor opens new borrow area, then he has to follow the MoEFCC guidelines for operating the borrow areas. The selection and recommendations of borrow areas will be based on environmental as well as civil engineering considerations. Location of source of supply of material for embankment or sub-grade and the procedure for excavation or transport of material shall be in compliance with the environmental requirements of MoEFCC.
- All precautions have to be taken to restrict unauthorized borrowing by the contractor. No borrow area shall be opened without permission of the Engineer. The borrowing shall not be carried out in cultivable lands, unless and until, it shall be agreed upon by the engineer that there is no suitable uncultivable land in the vicinity for borrowing or private landowners are willing to allow borrowing on their fields.

6.1.1 Identification of Borrow Areas

- Identify barren land or riverside land for borrowing of earth.
- Prefer areas of highland with respect to surroundings;
- Avoid locating borrow area close to any road (maintain at least 30m distance from ROW and 10 m from toe of embankment, whichever is higher);
- Should not be located in eco-sensitive zone

- Should be at least 1.0 km away from inhabited areas;
- Guidelines of FC Act, 1980 shall be followed for maintaining minimum distance from forest areas (Reserve Forest/Protected Forest)
- Minimum distance of about 1.0 km from school, hospital and any archaeological sites;
- Having adequate approach road with minimum length of earthen road;
- Ensure that unsuitable soft rock is not prominent within the proposed depth of excavation which will render rehabilitation difficult;
- Controlled operation as per agreed / approved plan
- Prior approval of Rehabilitation Plan considering terrain, land use and local need;
- Restricting operation as agreed by landowner and approved by the engineer in Charge.

Borrowing to be avoided on the following areas:

- Lands close to toe line.
- Irrigated agricultural lands (In case of necessity for borrowing from such lands, the topsoil shall be preserved in stockpiles.);
- Grazing land.
- Lands within 1km of settlements;
- A distance of 1km should be maintained from environmentally sensitive areas such as Reserve Forests, Protected Forests, Sanctuary, wetlands.
- Designated protected areas / forests.
- Unstable side-hills.
- Seepage areas.
- Areas supporting rare plant/ animal species;

- Ensure unsuitable soft rock is not prominent within the proposed depth of excavation which will render rehabilitation difficult.

The environmental information shall be submitted by the Contractor to the Engineer for one time approval .

6.1.2 Borrow Area Operations

- Contractor shall estimate the quantity of material to be collected from each borrow area based on allowable depth of excavation and top soil preservation
- Contractor shall provide appropriate fencing all around the borrowed/excavated pit to prevent any mishap.
- Contractor shall ensure adequate access road; Contractor shall intimate the Engineer on start date of operation of each approved borrow area at least 48 hours in advance;
- Contractor shall first preserve topsoil, if any, by stripping and stacking aside separately at corners;
- Contractor shall carry out excavation as per agreed operational plan complying with the requirements of Ministry of Environment, Forests and Climate Change (MoEFCC).
- The borrowing/excavation activity shall be restricted to a maximum depth of 2 m below general ground level at the site and restricted to 2 m above the groundwater table at the site.
- It shall be ensured that borrowing/excavation activity shall not alter the natural drainage pattern of the area
- Contractor shall maintain a ***Material Collection Register*** on daily material collection for each of the borrow areas, which shall be produced to Engineer's representative as and when requested;
- The Contractor shall maintain photographic record of each borrow area

for Pre, During and Post excavation stage.

- Regular periodic joint inspections shall be carried out during operation of the area by Contractor and Engineer's representatives or by the regulatory authority
- Contractor shall redevelop the area within agreed timeframe after completion of material collection;

6.1.3 Site Inspection

Periodical site inspection shall be undertaken for all the borrow areas under operation by the Contractor's Environmental & Safety In-charge and Engineer's Field Representative. In addition, Field Engineer supervising the borrow material collection will be given responsibility for checking the requirements on each attribute on regular basis. In general the Contractor shall ensure compliance of the requirements as given in Table 6.1

Table 6.1: Details to be inspected for Monitoring Borrow Area Operation & Management

Attributes	Requirements
Access road	✓ Only approved access road shall be used
Top soil preservation	✓ Top soil, if any, shall be stripped and stored at corners of the area before start of excavation for material collection; ✓ Top soil should be re-used / re-laid as per agreed plan
Depth of excavation	✓ For cultivable (agriculture) land, total depth of excavation should be limited to 45 cm including top 15 cm for top soil preservation; ✓ In other area, the borrowing/excavation activity shall be restricted to a maximum depth of 2 m below general ground level at the site and shall be restricted to 2 m above the ground water table at the site. ✓ If borrow area is located within 800 m of towns or villages, they should not exceed 30 cm in depth and should be properly drained; ✓ Borrow areas close to ROW should be rectangular in shape with one side parallel to centre line of the alignment and depth should be so regulated that it should not cut an imaginary line having slope of 1 in 4 projected from the edge of the final section of the embankment.
Damage to surrounding land	✓ Movement of men & machinery should be regulated to avoid damage to surrounding land. ✓ A minimum distance of 15 m from any civil structure shall be kept from the periphery of any excavation area.
Drainage control	✓ The borrowing/excavation activity shall not alter the natural drainage pattern of the area ✓ The surface drainage in and around the area should be merged with surrounding drainage; ✓ No water stagnation shall occur.
Dust suppression	✓ Water should be sprayed on <i>kutchra</i> (earthen) haul road twice in a day or as

	<p>may be required to avoid dust generation during transportation of material;</p> <p>✓ Depending on moisture content, 0.5 to 1.5% water may be added to excavated soil before loading during dry weather to avoid fugitive dust emission.</p>
Covering material transport vehicle	<p>✓ Material transport vehicle shall be provided with tarpaulin cover</p>
Personal Protective Equipment	<p>✓ Workers should be provided with helmet, gumboot and air mask and their use should be strictly enforced.</p>
Redevelopment	<p>✓ The area should be redeveloped agreed timeframe on completion of material collection as per agreed plan.</p>

6.1.4 Statutory Clearance for Borrow Area

Regarding the borrow area for ordinary soil, the Contractor has to obtain environmental clearance from State Environmental Impact Assessment Authority (SEIAA) or District Environmental Impact Assessment Authority (DEIAA) of MoEF&CC vide their notification no. S.O. 141(E) dated 15th January 2016. If the area of a borrow area is less than 5 Ha then this will be treated as Category-B-2 Project and will be appraised and approved based on Form-1. No EIA study will be required for such area. However if the size of the borrow area is more than 5 Ha then it will be categorized as “Category-B1” and therefore will require EIA study, based on which the SEIAA will give clearance for the same. All the conditions stipulated in the clearance is required to be complied during borrow area operations.

6.2 Procedures for Quarry Operations and Management

The objective of this procedure is to ensure that environmentally sound good-practice guidelines are followed during quarrying and the areas are properly rehabilitated instead of creating environmental hazard spot.

6.2.1 Procedure

Generally government approved operational quarry in the nearby area should be selected for meeting the requirement of boulders or sand. Alternatively, they should procure the materials from approved vendors. In case, the contractor opens their own quarry they have to follow the guidelines for quarry operations and management. The procedure for environmentally sound operation and management of quarry sites is given below:

- Contractor shall estimate the quantity of quarry material to be collected from each quarry area;
- Contractor shall demarcate the entire quarry area by fencing and putting red-flag poles;
- Contractor shall ensure adequate metallic access road;
- Contractor shall submit the site information in specified template for approval and shall intimate the Engineer on start date of operation of each approved quarry area at least 48 hours in advance;
- Contractor shall obtain environmental clearance for the stone quarry and carry out excavation as per agreed operational plan complying with the requirements of Ministry of Environment, Forests and Climate Change (MoEF&CC)

- Contractor shall first preserve topsoil from the quarry compound, if any, by stripping and stacking aside separately at corners;
- Contractor shall carry out blasting as per agreed operational plan complying with the statutory requirements
- Contractor shall maintain a 'Material Collection Register' on daily material collection for each of the quarry area, which shall be produced to Engineer's representative as and when requested;
- Periodic inspections shall be carried out during operation of the area by Contractor and Engineer's representatives as well as by the regulatory authority
- Contractor shall redevelop the area stipulated time after completion of quarry material collection;
- Contractor shall intimate the Engineer about completion of quarry material collection and redeveloping the area as per agreed plan for inspection;
- Joint inspection shall be carried out by the Contractor's and Engineer's Environmental Officer to ensure compliance of agreed redevelopment plan;
- After joint inspection, Engineer's Representative shall, in consultation with the Environmental Representative, intimate Contractor on satisfactory completion of that particular quarry area operation & management;

6.2.2 Site Inspection

Weekly joint site inspection shall be undertaken for all the quarry sites under operation by the Contractor's Environmental & Safety Engineer and Engineer's Field Environmental & safety representative. Engineer's Environmental Officer shall join in every fortnight inspection or as may be required. In addition, Field Engineer supervising the

quarry material collection will be given responsibility for checking the requirements on each attribute on regular basis. The details, which are to be inspected, are given below. The Contractor shall ensure compliance of the requirements as given in Table 6.2

6.2.3 Statutory Clearance for Quarry

Like borrow area for ordinary soil, quarry operation also requires environmental clearance under EIA Notification. The same process is required as explained in section 6.1.4 for borrow area as both activities come under mining of minor minerals and are covered under EIA Notification, 2006 and amendment thereafter.

6.2.4 Non-Conformance

The criteria for Non-conformance shall be as follow:

Failure to comply with Engineer's recommendation within stipulated time frame with respect to avoiding adverse impacts / safeguarding any environmental attributes and safety of workers and local people based on findings during joint inspection.

- Failure to comply the statutory requirements including the conditions stipulated under the environmental clearance
- Failure to redevelop the area after completion of material collection upto the satisfaction of the Engineer and the regulatory authority

6.3 Procedure for Storage area and Workshop Management

The main objective of the environmental management at storage area is

- To ensure that statutory / regulatory requirements are complied with

- To ensure that safeguard measures are taken to avoid / mitigate / minimize the adverse environmental impacts.
- To ensure that adequate safeguard measures are taken to avoid/minimize risk during storage, handling, transportation and disposal of hazardous substances
- To ensure safety of the workers and general public
- To ensure that emergency response system and contingency plan is in place to cope with occurrence of any accident.
- Should be sufficiently away from settlement area
- The stockyard and workshops should be sufficiently away from line of trees
- The capacity of storage area should be at least 110% of the required storage volume. Give required and provided storage volume.
- The Contractor has to follow all the norms related to storage and handling of Hazardous materials/ chemicals
- Contractor shall prepare layout plan and cross-section of storage/ disposal and workshop areas incorporating safeguard measures, as directed by the Engineer.
- Contractor shall demarcate the areas and submit site layout plan and plan showing mitigation measures along with details as provided in specified reporting template.

6.3.1 Site Selection Criteria

The procedure for identification and finalization of storage / disposal areas shall be as given below:

- Contractor shall ensure that necessary permissions are obtained from concerned authority for storage and handling of any hazardous substances as per the applicable rules;
- Provide separate storage area for hazardous substances fuel, oil, cement, steel etc. at stockyard;
- Should be away from water body and natural drainage.

6.3.2 Operational Procedures

The following procedure should be followed for upkeep of storage and disposal sites;

- Contractors shall prepare list of various hazardous substances being used / shall be used during construction and furnish a copy to the Engineer;

Attributes	Requirements
Top soil preservation	<ul style="list-style-type: none"> ✓ Top soil, if any, should be stripped and stored at designated area before start of quarry material collection; ✓ Top soil should be re-used / re-laid as per agreed plan
Controlled blasting & safety	<ul style="list-style-type: none"> ✓ Storage of explosive magazine as per threshold quantity with all the safety measures; ✓ Handling of explosive by licensed blaster only; ✓ Use low intensity explosive; ✓ Check unfired explosive, if any, before drilling; ✓ Carryout blasting at lean time only; ✓ Cordon the area within 500 m radius with flagmen having whistle for signalling preparedness; ✓ Keep ready an emergency vehicle near blasting area with first aid facility and with active emergency response system.

Attributes	Requirements
Damage to surrounding land	✓ Movement of men & machinery should be regulated to avoid damage to surrounding land.
Drainage control	✓ The surface drainage in and around the area should be merged with surrounding drainage; ✓ No water stagnation shall occur.
Dust control	✓ Haul road should be made metallic; ✓ Dust arrester e.g. water scrubber, should be provided during drilling; ✓ Water spraying at quarry complex, if required.
Covering material transport vehicle	✓ Material transport vehicle should be provided with tarpaulin cover as mentioned in EMP of the Construction Agreement
Personal Protective Equipment	✓ Workers shall be provided with helmet, gumboot, ear muffler and air mask and their use should be strictly enforced.
Redevelopment	✓ The area should be redeveloped within two weeks on completion of material collection as per agreed plan.

Table 6.2: Details to be inspected for Monitoring Quarry Area Operation & Management

- Contractor shall ensure storage of hazardous substances and various construction materials at designated sites only;
- Contractor shall authorize a person for up-keep of each of the storage area.
- A raised impervious (concrete) platform should be provided for workshop for servicing of vehicles and equipment as well as oil storage area. A lined drains around the platform connected with catch pit/ oil trap shall be provided to contain oil spills from the workshop/ oil storage area.
- The Contractor shall make a list of all the materials including hazardous materials to be stacked at storage area.
- The contractor will maintain Material Safety Data Sheet (MSDS) for all kind of Hazardous materials such as LPG, High Speed Diesel and Gasoline if stored at storage area.
- The Contractor will regularly clean the spilled chemicals/ oil from the workshop area and store separately for disposal.
- The spend oil generated after servicing of vehicles, equipment and plants shall be stored separately in containers and shall be sold to the vendors authorized by the State Pollution Control Board.
- The waste tyres and other scrap to be staked in earmarked area at service centre and shall be sold to vendors for disposal
- Appropriate fire-extinguishers and first aid facility to be provided at Storage and Workshop area.
- Contractor will make emergency action plan to deal with accidental fire and accidents at these areas.
- Contractor and Engineer's representatives shall undertake joint inspection to ensure compliance of various environment and safety requirements as mentioned in Table 6.3.

6.3.3 Site Inspection

The Engineer should generally carry out inspection of for all the storage/ workshop areas to check the compliances. The details of attributes, which are generally to be inspected, are given in Table 6.3. The Contractor shall ensure compliance of the requirements as given in the Table 6.3:

Non-Conformance

Criteria for non-conformance shall be:

- Failure to comply with the above mentioned requirement/s

Table 6.3: Details to be inspected for Monitoring Storage Area Management

Attributes	Requirements
Storage of hazardous substances	<ul style="list-style-type: none"> ✓ All storage tanks / drums should be properly labeled indicating the content and with cautionary marking i.e. “Hazardous & handle with Care” in Red colour on fluorescent yellow background; ✓ Whether quantity of storage is limited to stipulated threshold quantity as per Hazardous Chemical Rules ✓ Whether Material Safety Data Sheet (MSDS) for all kind of Hazardous materials such as LPG, High Speed Diesel and Gasoline (if stored) maintained at site ✓ Whether all valves and trigger guns are regularly checked; ✓ Secondary containment of liquid hazardous substances by means of protective wall and impervious base having provision for collection of spillage, if any, e.g. concrete base with channel all around leading to catch pit etc. to avoid soil contamination; ✓ Whether oil spillage is collected in cans, re-used and / or disposed of to the approved recyclers/ vendors ✓ Readiness for emergency response system i.e. fire extinguisher, emergency vehicle, first aid box etc.; ✓ Adequate protective equipments for personnel involved in handling i.e. safety jacket, gloves, goggles etc.; ✓ Is any incidence of contamination of water body due to oil spillage occurred and action taken; ✓ Is any incidence of fire occurred and action taken. ✓ Inform concerned authorities in case of major accident i.e. District Collector, SPCB, Chief Inspector of Mines etc.
Up-keep of stock yards	<ul style="list-style-type: none"> ✓ Stacking of aggregates and earth material as to maximum stack height of 2m; ✓ Whether water spraying Adequate water spray at stockyard to avoid fugitive dust emission, if any, as per the Engineer’s instruction
Storage of construction waste	<ul style="list-style-type: none"> ✓ Any temporary storage of construction waste material, if required, should be at designated site/s with prior approval of the Engineer; ✓ Construction waste material should be disposed off at approved site/s within a week of generation; ✓ No material generated due to construction activities should be thrown, spread, laid outside the project and beyond designated area/s; ✓ quantity of waste generation, re-use and disposal of scarified material and other debris should be separately estimated and record to be maintained ✓ The spent oil generated from servicing of vehicles, equipments and plants should be stored separately in drums for selling it to vendors approved by Pollution Control Board and a record of the same to be maintained ✓ All the waste tyres and other metal scrapes should be stored at designated area and sold to the authorised vendors

6.4 Procedure for Handling and Disposal of Construction Wastes and Muck

6.4.1 Objective

Muck is generally generated due to excavation, dredging and demolition activities. Deposition of these mucks in random manner will have potential adverse environmental impacts. The objective of muck disposal plan is to ensure that proper measures are taken to control ill-effect on environment due to haphazard disposal of muck generated due to excavation, dredging and demolition activities

The main objective of reuse and disposal of materials are:

- To maximize re-use of material generated during construction and
- To avoid environmental hazards due to improper handling of muck and other materials generated during construction activities.

6.4.2 Identification of Disposal Site

- All the disposal sites shall be identified and operated in accordance with the guidelines of the State's Forest Department.
- Disposal sites shall be identified at the project planning stage and the location shall be marked on the plans. Following criteria should be followed for identification of disposal area:
- The site preferably selected on government land. But it should not restrict the contractor from disposal of the waste material at alternate site after obtaining approval of the competent authority and without any extra investment.

- The dumping sites should preferably be located in the nearby area of Excavation/ Dredging to avoid the long distance transportation of dredged material
- The dumping site should be sufficiently away from human habitation area.
- The site should not be located in ecologically sensitive areas, water coarse/ water ways and erosion prone areas. Care should be taken so that the sites do not have a possibility of toe erosion related slope failure.
- The base levels of the sites should be at higher elevation than the maximum flood level.
- There should not be any channel of small streams flowing through the dumping sites. If it is not avoidable, adequate care shall be taken so that there would be no contact between the muck and the stream and there is no blockage of water way. A suitable plan shall be proposed for the same.
- The Contractor is expected to carry out site protection measures (including toe wall protection, slope stabilizing as may be necessary) and to ensure that no leeching of toxic materials take place. It shall be ensured that the leaching from the fill, if any, is properly drained and do not cause damage to adjoining properties or agricultural fields.
- The Contractor has to take NOC from local municipal area/ Panchayat and state Pollution Control Board for the new disposal area, if applicable for disposal of dredged material.

Table 6.4: Details to be inspected for Monitoring Construction Material/ Muck Reuse & Disposal

Attributes	Requirements
Construction material generation and re-use	<ul style="list-style-type: none"> ✓ Segregating re-usable portion of debris and storing preferably near areas of re-use; ✓ Temporary storage of waste material at sites as directed by the Engineer;
Waste/Muck disposal	<ul style="list-style-type: none"> ✓ Disposal of waste material at approved disposal site within a week of generation; ✓ Disposal site should be properly demarcated; ✓ Proper levelling / grading at disposal site/s; ✓ Recommended / agreed safeguard measures to avoid ground water contamination by leachate from disposal of potential hazardous waste material are to be implemented; ✓ Recommended / agreed safeguard measures to avoid soil erosion are to be implemented; ✓ Recommended / agreed plan for surface treatment of waste disposal site/s are to be implement. ✓ Drainage and slope protection measures
Dust Control	<ul style="list-style-type: none"> ✓ Application of dust control measures and its efficiency
Workers & Public Safety	<ul style="list-style-type: none"> ✓ Supply of appropriate PPEs to the workers and their use ✓ Safe access and safe working platforms ✓ Movement of Dumpers and other construction vehicles and equipments on designated route and parking at designated area only. ✓ Installation of safety signboards and barricading

6.4.3 Operation Procedure

The following procedures should be followed for disposal sites:

- Contractor shall maintain register for keeping records on quantities of material generated during grubbing, stripping, excavation, dismantling and dredging;
- Contractor shall re-use construction material and dredged materials to the extent possible based on engineering properties. Possible re-use areas are fill sections, embankment slope etc. soil debris can be used for backfilling of quarry/borrow areas as recommended by the Engineer.
- Contractor shall restrict disposal of waste/ silt / dredged materials strictly at approved site/s only;
- Contractor shall prepare a plan including detailed lay out plan and cross-section for

disposal of debris/ dredged materials and other unusable waste and get approval of the same by the Engineer;

- Contractor and Engineer shall ensure that disposal areas are properly treated as per agreed plan;
- The Contractor shall educate his workforce on issues related to disposal of waste/ muck, the location of disposal site as well as the specific requirement for the management of these sites.
- At the disposal site retaining wall of 1m height & 0.5m width followed by garland drain of 1m width and 0.5m depth will be provided around the proposed dumps.
- The contractor will construct at least 2 no. of settling tanks in suitable locations and also connected with the garland drain to arrest the soil that comes during rains despite the above measures.

- The settled water should be used in construction activity and plantation.
- To ensure that the spills, which might result from the transport of muck materials do not impact the environment, it will be ensured that the carrying of muck will be done during day time only.
- Workers / labourers shall be provided with necessary PPEs. The use of PPE at all time during works will be ensured.
- The ultimate dump slope to be maintained around in 1:4 ratio.
- The dump edge will be covered with bund. A garland drain will be constructed adjacent to proposed dump, following the contour & different terrace will be connected to the catch drain. The drainage pattern should be such that the runoff will be channelized to the catch drain before releasing to the garland drain outside the periphery of dump. Catch drain preferably to be made up of half concrete with number of cemented stairs to check the heavy flow off of water as well as to reduce gully formation due to constant run off.
- Dumping area should be rehabilitated immediately after completion of dumping of materials to the satisfactions of the land owner and the Engineer. The Contractor should provide completion certificate of proper management of each dump issued by the land owner, if required. The following methods to may be adopted for stabilization of dumps:

a Vegetative /Biological Measures

Taking into consideration the site specific soil condition, indigenous species growing naturally are proposed to be planted. The topsoil to be encountered during mining of earth material will be spread over during plantation on muck & spill dump areas. Prior to that broadcast grass seeds on

the slope of terrace to bind the soil. It is also proposed to plant hardy species such as Agave, Pongamia, Neem as they can survive in degraded and poor soils along the slope & toe of dump and prove to be most useful for controlling soil erosion.

b. Bio-Engineering Measures

Bio-engineering approach is proposed to be adopted with a view to retain loose spoils/ fines being transported from various waste /fines dumps to the water course. Muck spoils are typically devoid of organic matter and the micro-flora count is not very conducive for plant. So in spite of plantation, survival and growth is observed to be very less. To combat this problem, actions are needed to supplement the organic carbon need and at the same time develop a micro eco-system with organisms tolerant to harsh environment. These requirements can be fulfilled by coir matting followed by grass/herbs plantation.

c. Structural Measures

Wash offs and rolling down of excavated materials from the dump slopes give way to slope failures and the dumps become unstable. Hence structural measures like construction of Catch drain, Garland drain, Check dam, Settling tank, Loose boulder structure etc. should be adopted for prevention of wash offs excavated material from dump area.

6.4.3.1 Transportation of muck

The muck generated due to excavation and dredging/ desilting activities are required to be transported from the source of generation to the approved disposal area. Normally the muck are transported through dumpers/ trucks. If the disposal site is located at different location, then it is likely to use public road for movement of dumpers from the source to disposal site and vice versa. The contractor will take the

following precautionary measures for transporting the muck/ dredged materials:

- The Contractor shall make traffic flow plan for the construction vehicles and movement of transportation vehicles to be used for muck disposal based on traffic flow over the public road network
- Transportation of muck shall be carried out through covered trucks only and the vehicles carrying dredged material shall not be overloaded. Wheel washing facility should be installed at the exit point from start point and dumping site.
- All the vehicles used for transportation of debris/ dredged materials shall meet prescribed emission norms, i.e. they shall have valid Pollution Under Control (PUC) Certificates.
- The Contractor will take consent from the concerned department for use of public road for transportation of muck/dredged materials.
- The Contractor shall take necessary measures to protect the road from damage and in case of damage the Contractor will repair the same at their own cost.
- The contractor will not stack any material along the road side
- The village/ habitation area should be avoided during transportation of dredged material.
- Junction at take off point of approach road with main road be properly developed with proper width and geometry required for safe movement of traffic
- Transportation of dredged materials/muck will not be carried out during peak traffic period in order to avoid disturbance of regular traffic in the area. The working hours to be restricted depending on the site condition (like

forest area, areas with busy transportation).

6.4.3.2 Traffic Survey

For using public road network for transportation of muck/ dredged materials, it is required to analyse the existing traffic pattern in and around the proposed site. For this, it is required to carry out classified traffic volume count as well as turning movement count.

The purpose of classified traffic volume count is to understand the traffic composition, traffic flow pattern hourly distribution of vehicles and peak hour. The traffic survey will also help to plan the timeframe and trips for transportation of muck with least interference with the existing traffic, identification of vulnerable location of traffic congestion and requirement of improvement of road junction, etc.

The traffic will be typically analysed for hourly pattern and daily pattern. Recording of hourly pattern of traffic flow gives the idea of peak flow. Typical hourly patterns of traffic flow, particularly in urban areas, generally show a number of distinguishable peaks. Peak in the morning followed by a lean flow until another peak in the middle of the afternoon, after which there may be a new peak in the late evening. The peak in the morning is often more sharp by reaching the peak over a short duration and immediately dropping to its lowest point. The afternoon peak on the other hand is characterised by a generally wider peak. The peak is reached and dispersed over a longer period than the morning peak.

The recording of daily traffic flow will give the idea of variation in traffic flow on daily basis. The traffic volume generally varies throughout the week. The traffic during the working days (Monday to Friday) may not vary substantially, but the traffic volume during the weekend is likely to differ from

the working days on different type of roads and in different directions

a. Methodology for Traffic Volume Count

The traffic volume is required to be counted manually at 15 minute intervals for 24 hours a day for 7 consecutive days. The manual counting is done through group of trained enumerators recording number of vehicles passing, on a pre-determined location, using tally marks in inventories by using the specified format as per guidelines of Indian Road Congress (IRC: SP:19-2001). The vehicle classification format is to be used for analysing the traffic characteristics and classification of vehicles. The selection of survey site should be one near the take off point, one at the main road at entry point of Dumping site and major intersections in between in order to ensure maximum capture of traffic. The traffic volume count is required to be carried out in both directions.

b. Methodology for Turning Movement Survey

Turning movement count is required to be conducted for one day (to capture morning and evening peak hour) on a typical working day at identified major junction along the influence corridor. At each identified location, all turning movements will be covered and the data will be collected by vehicle category. The format and classification used is same as that used for volume count survey.

Based on the data traffic collected from different survey location is then required to analyse for hourly pattern and daily pattern of traffic flow. This will help in finalizing

the schedule of the transportation of muck with least interference with the normal traffic.

c. Precautions to be taken During Traffic Volume Survey:

- Surveyor should not affect the flow of traffic.
- Survey station should be located at a position where queuing do not take place.
- Vehicles should be classified if possible as it saves time for Classified Traffic Volume Survey.
- Safety of surveyors should be kept in mind and safe location should be selected.

6.4.4 Site Inspection

Periodical site inspection shall be undertaken for all the disposal areas. The details of attributes, which are to be inspected, are given in below. The Contractor shall ensure compliance of the requirements as given in table 6.5

6.4.5 Non-Conformance

Criteria for non-conformance shall be:

- Disposal at site/s not approved by the Engineer.
- Failure to remove waste material from construction site/s within agreed timeframe to disposal site/s.
- Failure to comply with agreed disposal site management plan

Table 6.5: Template for Traffic Survey

CLASSIFIED TRAFFIC VOLUME & TURNING MOVEMENT COUNT SURVEY																	
Road Name: Section from: To: Location Km: Direction Towards:								Road No.: Station No.: Date & Day: Hour:				ADDL. INFORMATION: WEATHER:					
Time Period		FAST MOVING VEHICLES										SLOW MOVING VEHICLES				Others (pl. Specify) Drawn	
		2 Wheeler	Three Wheelers /Auto	Car / Jeep/ Van/ Taxi	BUS		LCV	TRUCK			Agri. Tractor		Cycl e	Cycle Rickshaw	Animal & Hand Drawn		
From	To				Mini Bus	full		2Axle	Multi Axle	Artic / Semi Artic	With Trailer	Without Trailer			Bullock Cart	Horse	
:00	:15																
:15	:30																
:30	:45																
:45	:00																

Name & Signature of Enumerate

Name & Signature of Supervisor

6.5 Procedure for Soil Erosion and Sediment Control

6.5.1 Objective

The objective of soil erosion and sediment control is to ensure that proper measures are taken to control soil erosion at construction sites and other ancillary sites thereby preventing sedimentation to the receiving water bodies.

6.5.2 Procedure

The following procedures shall be followed to ensure avoiding soil erosion and sedimentation control:

- Contractor shall first construct temporary / permanent side drains along the section of the approach road under construction connecting to natural drainage as will be directed by the Engineer;

- Contractor shall implement erosion control measures on embankment slope, culvert and bridge works, spillway, spill channels and ancillary sites as mentioned in the following section below.
- Contractor and Engineer's representatives shall undertake joint weekly inspections to ensure compliance of various environment and safety requirements as mentioned in Table 6.6

6.5.3 Site Inspection

Weekly joint site inspection shall be undertaken for all the construction sites. The details of attributes, which are to be inspected, are given in below. The Contractor shall ensure compliance of the requirements as given in table 6.4.

6.5.4 Non-Conformance

Criteria for non-conformance shall be:

- Failure to undertake weekly joint inspections.
- Failure to comply with Engineer's recommendation/s for erosion and sediment control.

6.6 Procedure for Air, Water and Noise Pollution Control & Monitoring

6.6.1 Objective

- To ensure that statutory / regulatory requirements are complied with
- To ensure that adequate safeguard measures are taken to avoid / minimize air, water and noise pollution due to various project activities and associated environmental impacts

6.6.2 Procedure

The following procedures shall be followed for avoiding / minimizing air, water and soil pollution:

- In consultation with the Engineer, Contractors shall identify hotspots for air, water and noise pollution based on various project activities, i.e. borrow and quarry areas, stone crusher units, Batching Plant Concrete mixing plant, diesel generator (DG) sets, stretches of embankment under construction, workers camp etc.;
- Contractors shall avoid generation of pollution at sources itself by means of control devices, enclosure, containment etc. instead of mitigating / minimizing impacts afterwards;
- Contractor shall carry out periodical monitoring of air, water and noise quality and compare with pre-project scenario,

temporal variation and stipulated permissible standards

- Location of various air, water and noise quality monitoring stations shall be identified jointly by the Engineer and Contractor;
- Contractor shall install additional control measures if monitored values exceed threshold limits;
- Contractor shall submit monitoring result of air and noise quality, at Stone Crusher units and Batching Plant in compliance to the statutory requirement stipulated under the Consent issued by the State Pollution Control Board to the Engineer.

6.6.3 Site Inspection

Periodical site inspection shall be undertaken for all the potential hotspots for air, water and noise pollution. The details of attributes, which are to be inspected, are given in below. The Contractor shall ensure compliance of the requirements as given in table 6.7.

6.6.4 Non-Conformance

Criteria for non-conformance shall be:

- Uncontrolled dust emission
- Failure to submit monitoring information on pollution monitoring.
- Failure to comply with Engineer's recommendation/s on pollution control measures in case of exceeding threshold limits.

6.7 Procedure for Occupational Health and Safety Measures

6.7.1 Objective

- To ensure that statutory / regulatory requirements are complied with

- To ensure that adequate safety measures are adopted for construction workers and the public.

6.7.2 Procedure

The following procedures shall be followed for occupational health and safety of workers and general public:

- Contractor shall minimize the occurrences of health hazards throughout the construction period by adopting this good-practice-construction guideline;
- Contractors shall provide necessary personal protective equipment (PPE) and medical facility to every workers and keep ready emergency response system. Contractor shall prepare boards / pamphlets containing Do's & Don'ts, display the same at every high risk areas and conduct periodic training program with the workers on controlling sexually transmitted diseases, safety measures associated with each construction activities, proper use of PPE and Do's & Don'ts in case of accident. Engineer shall provide advice, guidance and assistance on the same if so requested by the Contractor;

Depending on the nature of work and the risks involved, contractors must provide the following protective equipment without any cost to the workers.

- Helmet shall be provided to all workers or visitors visiting the site for protection of the head against impact or penetration of falling or flying objects.
- Safety belt shall be provided to workers working at heights (more than 20 ft) such as roofing, painting and plastering.
- Safety boots shall be provided to all workers for protection of feet from impact or penetration of falling objects on feet.

- iv. Ear protecting devices shall be provided to all workers and will be used during the occurrence of extensive noise.
- v. Eye and face protection equipment shall be provided to all welders to protect against sparks.
- vi. Respiratory protection devices shall be provided to all workers during occurrence of fumes, dusts, or toxic gas/vapour.
- vii. Safety nets shall be provided when workplaces are more than 25 feet (7.5 m) above the ground or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors or safety belts is impractical.
- viii. First Aid Box with all essential first aid items will be kept and maintained at the work site.
- ix. The Contractor will have to make arrangement with nearby doctor/ health centre for attending injured person due to accident.

The specific PPE requirements for each type of work are summarized below (Table 6.8).

- Contractors shall ensure that no worker gets entry into the work site without wearing protective equipment especially for high accident prone activities i.e. blasting, dismantling of tall structures, fabrication, stone crusher and Batching plants operation, transport vehicle operation, working close to traffic movement, working at height etc.;
- Contractor shall conduct periodic mock drilling at high-risk areas to ensure effectiveness and readiness of safety measures and emergency response system;
- Contractor and Engineer's representatives shall undertake weekly joint inspection to ensure compliance of

hygienic and safety requirements of workers.

6.7.3 Site Inspection

Periodical site inspection shall be undertaken for all construction sites. The details of attributes, which are to be inspected on compliance of occupational health and safety requirements, are given in below. The Contractor shall ensure compliance of the requirements as given in table 6.9.

6.7.4 Non-Conformance

Criteria for non-conformance shall be:

- Failure to comply with Engineer's recommendation/s on safety, emergency response system and contingency plan as well as statutory norms.

6.8 Construction Plants and Equipment Management

6.8.1 Introduction

During execution of the project, construction equipment, machinery and

plants always have impact on the environment. The impact can be due to the gaseous emissions, dust, noise and oil spills that concern the safety and health of the workers, surrounding settlements and environment as a whole. This code of practice describes the activities during the project stages where pollution control measures are required.

For the construction purpose the major construction plants such as Stone Crusher Plants, batch mix plants, etc. will be required to be established. In case the contractor establishes his own plant he has to follow all the applicable statutory norms. The objective of this plan is:

- To ensure that statutory / regulatory requirements are complied with
- To ensure that safeguard measures are taken to avoid / mitigate / minimize environmental impacts.

The present section provides general guidelines for siting of plants and environmental safeguard measures based on the statutory requirements:

Table 6.6: Details to be inspected for Monitoring Soil Erosion & Sediment Control

Attributes	Requirements
Erosion & sediment control	<ul style="list-style-type: none"> ✓ Construction of temporary permanent / temporary side drains along the section of the alignment under construction as directed by the Engineer; ✓ Erosion control measures for embankment slope i.e. turfing, pitching, seeding etc. as per embankment height and site condition (plan showing chainage-wise details should be submitted to Engineer for approval); ✓ Adequate measures to avoid soil erosion and control of sedimentation if crosswater drains, bridges or other structures should be constructed during monsoon and / or having water flow at drains / streams / rivers e.g. dyke, diversion channel, sediment basin etc.; ✓ Using less erodable earth material with adequate long and cross drains for diversion road, newly constructed haul roads etc.; ✓ Providing silt-trap at construction site/s having potential for erosion during high downpour, before discharging to water bodies.

Table 6.7: Details to be inspected for Air, Water & Noise Pollution Monitoring

Attributes	Requirements
Air, Noise and Water Pollution	<ul style="list-style-type: none"> ✓ Selection of air, water and noise quality monitoring station as per the requirements of regulatory bodies; ✓ Mode and duration of sampling conforming to statutory / regulatory requirements; ✓ Necessary pollution control measure should be installed and functioning to keep the pollution level within the stipulated limits.

Table 6.8: PPE Requirement List

Type of Works	Type of PPEs requirement
Elevated work	Safety helmet, safety belt (height greater than 20 ft), footwear for elevated work.
Handling work safety	Helmet, leather safety shoes, work gloves.
Welding and cutting work	Eye protectors, shield and helmet, protective gloves.
Grinding work	Dust respirator, earplugs and eye protectors.
Work involving handling of chemical substances	Dust respirator, gas mask, chemical-proof gloves. Chemical proof clothing, air-lined mask, eye protectors.
Wood working	Hard hat, eye protectors, hearing protection, safety footwear leather gloves and dust respirator.
Blasting	Hard hat, Safety Shoes, eye and hearing protection
Concrete and masonry work	Hard hat, eye protectors, hearing protection, safety footwear leather gloves and dust respirator.
Excavation, heavy equipment, motor graders, and bulldozer operation	Hard hat, safety boots, gloves, hearing protection.
Quarries and Borrow area operations	Hard hat, eye protectors, hearing protection, safety footwear leather gloves and dust respirator.

Table 6.9: Details to be inspected for Monitoring Occupational Health & Safety Measures

Attributes	Requirements
Safety measures	<ul style="list-style-type: none"> ✓ All the construction vehicles and equipments should be operated only by authorized operators with valid license for handling/driving the same category of vehicles and equipments. ✓ The operators before deployment must be tested for the competency and should be issued competency certificate which shall be available with the operators all the time at work ✓ All the construction vehicle should be fitted with functional reverse horn; parking light, indicator light, back mirror, tail boards, etc. ✓ Barricade / Fencing/ Displaying danger sign, warning sign by way of red flag /tape/ light etc. should be provided at each construction zone;

Attributes	Requirements
	<ul style="list-style-type: none"> ✓ Surrounding area should be cordoned during demolition; ✓ Provision of safe working conditions at site such as safe access to work site, proper working platform, Ladders for deep trench, stacking of materials and equipments at flat area with safe distance from trenches and railway track; ✓ Presence of underground electrical cable, water supply line, steam /gas line etc. should be verified and disconnected / relocated before start of any excavation; ✓ Electrical cable connection/ water / steam /gas line etc. should be disconnected before demolition; ✓ All electrically operated equipment should be having proper earthing and connected through ELCB; ✓ Combustible material should be kept away from source of heat /fire; ✓ No Smoking Board / Caution Board should be displayed for prevention of fire; ✓ Fire extinguishers should be kept ready near sites of fabrication, fuel storage and any other sites having potential to catch fire for emergency.
Drinking water & sanitation facilities	<ul style="list-style-type: none"> ✓ Safe & sufficient drinking water and proper sanitation facilities at workers camp as mentioned in EI-3
Personal protective equipments (PPE)	<ul style="list-style-type: none"> ✓ Workers at hazardous activity should wear helmet and safety shoes ✓ Workers at stone crusher units, Batching should wear helmet, ear muffler, air mask and safety boots; ✓ Workers at borrow area should wear safety boots, helmet and air mask; ✓ Workers at quarry sites working close to blasting site should wear helmet, ear muffler, air mask and safety boots; ✓ Workers handling with fuel & hazardous chemical should wear gloves, thermal jackets, goggle and gumboot depending on the nature of chemical; ✓ Workers at fabrication site should wear thermal jackets and goggles; ✓ Workers working at height should wear safety belts and helmets.
Medical facilities	<ul style="list-style-type: none"> ✓ First aid box should be located at all work sites, construction areas and workers camp with a designated person for administering; ✓ Periodic health check-up for workers is to be undertaken (attach Doctor's certificate is to be maintained and copy submitted to Engineer if requested); ✓ Raising awareness level on sexually transmitted diseases and HIV/AIDS among workers.
Emergency response system	<ul style="list-style-type: none"> ✓ Whether emergency vehicle is ready at sites having accidental risk i.e. fabrication, blasting, crusher plant, demolition site, work near reservoir etc.; ✓ Whether emergency response and contingency plan (ERCP) is in place with clear understanding of who-will-do-what in case of any accident i.e. ACTION TREE (Action Tree is to be submitted to Engineer for necessary action)

6.8.2 Site Selection Criteria for Batch Mix Plant/ Stone Crusher Plant

- 1.0 km away from settlement, school, hospital towards downwind directions.
- 1.0 km from any archaeological site.
- 5 km from Wildlife Sanctuary, National Park or notified ecologically sensitive areas or outside the notified or outside the declared Eco-sensitive Zone.
- 1 Km away from forest area.
- 1.0 km from rivers, streams and lakes.
- 500 m from ponds.
- 500 m from National Highway, 250 m from State Highway, 100 m from District roads and other roads (The distance are to be measured from edge of Road to boundary of site).
- Away from agricultural land.
- Preference to barren land.

6.8.3 Statutory requirements

- Obtaining NOC [Consent-to-Establish (CtE) and Consent to Operate (CtO)] under Air and Water Acts from the State Pollution Control Board (SPCB) before start of installation.
- Complying with the terms and conditions laid down in the CtE and CtO, which generally include providing Dust containment cum suppression system for the equipment, Construction of wind breaking walls along periphery of plant sites, construction of the metal roads within the premises, regular cleaning and wetting of the ground plantation, periodic (monthly) pollution monitoring i.e. ambient air, noise and stack emission
- Obtain certificates from manufacturer for type approval and conformity of

production for Diesel Generator (DG) set. For DG sets of capacity up to 1000 KVA, the noise level at 1m from the enclosure surface shall not exceed 75 dB (A)

6.8.4 Pollution Control Measures

- The Contractor shall undertake measures (as mentioned in table below) to minimize -the dust generation, emissions, noise, oil spills, residual waste and accidents at the plant site as well as during transportation of material to construction site.
- The Contractor must ensure that all machinery, equipments, and vehicles shall comply with the existing Central Pollution Control Board (CPCB) noise and emission norms, as applicable.
- The Contractor shall submit a copy of the approvals and PUC Certificates, as applicable to the PIU before the start of relevant work.
- The Contractor will ensure adequate stack height as stipulated in CtE, install emission control devices such as bag house filters, cyclone separators, water scrubbers etc., as attached with the plant by the manufacturer or stipulated in CtE.
- Bag house filter / multi-cone cyclone for emission control. For bag house, cartridge filters reported to be more efficient than fabric filters.
- The stone crusher plants should be installed with operational water sprinklers over jaw crusher, conveyor belts and vibratory screens.
- Pollution control measures for Diesel Generator (DG) set i.e. stack height, acoustic enclosure etc.
- Periodical maintenance of all the plant and equipment to keep the plants in order.

- Damaged bag-house and filters should be immediately replaced.
- The Contractor must educate the workers to undertake safety precaution while working at the plant/site as well as around heavy equipment
- All the workers shall use all the time helmets, footwear, earplugs, nasal masks etc. when the plants are operational. During maintenance of plants also the workers involved in maintenance will not enter the plant premises without PPE.
- No workers should be allowed to work in loose clothes near conveyor belts.
- Proper lighting arrangement shall be made around plant site if the plants are operated during dark hours.
- Provision of readily available first aid kit, firefighting equipment at the plant site at appropriate location to respond in case of accident.
- Periodical monitoring of air quality and noise levels as per conditions stipulated under the statutory clearance from SPCB. Whenever the emission exceeds the permissible level

Table 6.10: Details to be inspected for Plant site Management

Attributes	Requirements
Pollution Control Measures	<ul style="list-style-type: none"> ✓ Copy of valid statutory permission for construction plants (Batch mix Plant/Stone Crusher plant) ✓ PUC certificate of all the construction vehicles ✓ Functional dust and emission control system ✓ No discharge from plant site on surrounding land ✓ The office complex, residential units shall be constructed on upwind direction ✓ Transportation of materials in covered vehicles
Safety measures	<ul style="list-style-type: none"> ✓ Stacking of materials away from waterways, forest area, trees, etc. ✓ Supply and use of appropriate PPEs by workers during plan operations. ✓ First-Aid box with adequate supply of first-aid items ✓ Safe access and working platform ✓ Proper lighting arrangements ✓ Safe wiring system, ✓ Functional fire fighting arrangement
Medical facilities	<ul style="list-style-type: none"> ✓ Provision of readily available first aid kit, fire fighting equipment at the plant site at appropriate location to respond in case of accident First aid box should be located; ✓ First Aid Register ✓ Periodic health check-up for workers is to be undertaken (attach Doctor's certificate is to be maintained and copy submitted to Engineer if requested); ✓ Raising awareness level on sexually transmitted diseases and HIV/AIDS among workers.
Pollution Monitoring	<ul style="list-style-type: none"> ✓ Periodical monitoring of air quality and noise levels as per conditions stipulated under the statutory clearance from SPCB. Whenever the emission exceeds the permissible level the plants should be stopped and necessary repairing works of faults will be done to bring down the emission levels.
Emergency response system	<ul style="list-style-type: none"> ✓ Whether emergency vehicle is ready at sites having accidental risk i.e. fabrication, blasting, crusher plant, demolition site, work near railway track etc.; ✓ Whether emergency response and contingency plan (ERCP) is in place with clear understanding of who-will-do-what in case of any accident i.e. ACTION TREE (Action Tree is to be submitted to Engineer/IA for necessary action)
Site restoration	<ul style="list-style-type: none"> ✓ All the temporary structures to be dismantled and the land shall be levelled properly. ✓ All the Debris should be disposed off suitably ✓ Consent and Satisfaction letter to be obtained from the land owner after demobilization of all the plants and equipment

the plants should be stopped and necessary repairing works of faults will be done to bring down the emission levels.

- The office complex, residential units shall be constructed on upwind direction.

6.8.5 Site Inspection

The Engineer/IA shall carry out periodic inspections in order to ensure that all the measures are being undertaken as per this guidelines. The Contractor shall ensure compliance of the requirements as given in Table 6.10.

6.9 Construction and Labour Camps Management

6.9.1 Introduction

The scope of this guideline pertains to the siting, development, management and restoration of construction and labourers camps to avoid or mitigate impacts on the environment. The area requirement for the construction camp shall depend upon the number of labourers employed and the extent of machinery deployed. The following sections describe the siting, construction, maintenance, provision of facilities in the camps and finally rehabilitation of the construction and labourers camps. These are described in three stages, pre-construction, construction and post-construction stage. The issues related to construction camps are similar in the case of road construction and hence

have been taken together.

6.9.2 Pre-construction stage

Identification of site for construction and labour camps is the first task. The Contractor shall identify the site for construction camp in consultation with the individual owners in case of private lands and the concerned department in case of Government lands. The suitable sites shall be selected and finalized in consultation with the Engineer in charge. Table 6.11 gives site selection criteria for establishment of labour camp.

The contractor will work out arrangements for setting up his facilities during the duration of construction with the land owner/concerned department. These arrangements shall be in the form of written agreement between the contractor and the land owner (private/government) that would specify:

- Photograph of the proposed camp site in original condition;
- Activities to be carried out in the site;
- Environmental mitigation measures to be undertaken to prevent land, air, water and noise pollution;
- Detailed layout plan for development of the construction and labourer camp that shall indicate the various structures to be constructed in the camp including temporary drainage and other facilities; and
- Restoration plan of camp site to

Table 6.11: Selection Criteria for Campsite

Avoid the following	Prefer the following
<ul style="list-style-type: none"> • Lands close to habitations • Irrigated agricultural lands. • Lands belonging to small farmers. • Lands under village forests. Lands within 100m of community water bodies and water sources as rivers. • Lands within 100m of watercourses. • Low lying lands. • Lands supporting dense vegetation. • Grazing lands and lands with tenure rights. • Lands where there is no willingness of the landowner to permit its use. 	<ul style="list-style-type: none"> • Waste lands. • Waste Lands belonging to owners who look upon the temporary use as a source of income. • Community lands or government land not used for beneficial purposes. • Private non-irrigated lands where the owner is willing. • Lands with an existing access road.

previous camp conditions.

The arrangements will be verified by the Engineer in charge to enable redressal of grievances at a later stage of the project.

6.9.3 Setting up of Labour Camp

The contractor shall provide labour camps with all basic facilities for all the migrant workers employed by him till completion of construction/maintenance work is in progress in accordance with the Building and Construction Workers (Regulation of Employment and Conditions of Service) Act, and Rules, 1996

- The Contractor agency will setup their camping locations at different places as would be identified.
- Each labour camp may house 50 imported labourers.
- These camps should be located away from the existing village or semi urban households to prevent likely social conflicts.
- Necessary permissions may be obtained from the respective revenue/municipal authorities.
- Temporary house structures should be provided by the contractor agencies to accommodate the labourers and their families, with provision of minimum infrastructure facilities, like water supply, sanitation and electricity etc.
- A minimum area of 6 sq.mts per person shall be provided.
- The rooms of labourer shall be well lighted and ventilated.

The facilities to be provided for the labourers are discussed below:

a) Drinking Water

Towards the provision and storage of drinking water at the construction camp, the contractor shall ensure the following.

- The contractor shall provide for a continuous and sufficient supply of potable water in the camps, in earthen pots or any other suitable containers.
- If any water storage tank is provided, the bottom of the tank will be kept at least 1mt. above from the surrounding ground level.
- The contractor shall identify suitable community water sources for drinking. Only in the event of non-availability of other sources of potable water, the Contractor shall obtain water from an unprotected source only after the testing for its potability. Where water has to be drawn from an existing open well, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with dust proof trap door.
- Every water supply or storage shall be at a distance of not less than 15m from any wastewater / sewage drain or other source of pollution. Water sources within 15m proximity of toilet, drain or any source of pollution will not be used as a source of drinking water in the project.
- A pump shall be fitted to covered well used as drinking water source, the trap door shall be kept locked and opened only for cleaning or inspection, which shall be done at least once a month.
- Else a new well can be constructed and a pump will be fitted to the well for drinking water purpose of the labourers at the camp.

b) Washing and Bathing Facilities

In every site, adequate and suitable facilities for washing clothes and utensils shall be provided and maintained for the

use of contract labor employed therein. Separate and adequate bathing shall be provided for the use of male and female workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic conditions.

c) Toilets Facilities

Each labour camp should be provided with community toilets with septic tank and soak pit arrangement. Sanitary arrangements, latrines and urinals shall be provided in every work place separately for male and female workers. The arrangements shall include:

- A latrine for every 15 labourers or part thereof.
- Every latrine shall be under cover and so partitioned as to secure privacy, and shall have a proper door and fastenings.
- Where workers of both sexes are employed, there shall be a display board of “For Men Only” or “For Women Only” outside each block of latrine and urinal in the language understood by the majority of the workers.
- The latrines and urinals shall be adequately lighted and shall be maintained in a clean sanitary condition at all times and should have a proper drainage system.
- Water shall be provided in or near the latrines and urinals by storage in suitable containers.

d) Supply of Free Fuel

- These labour forces may adopt unscrupulous methods of cutting trees and bushes for meeting their fuel wood requirement which would destroy the adjacent green cover and affect the local ecology.
- The project authorities would ensure supply of free fuel to these

labourers through the contract agencies so as to prevent such unscrupulous activities.

- Arrangement may be made with the local Civil Supply Authorities for Supply of kerosene oil at a fixed quota.
- Use of LPG gas cylinders may also be encouraged for intending labourers.

The contract specification should include these fuel supplies free of cost to the labour force within the bid value of relevant contract items.

e) Waste Disposal

- Disposal of sanitary wastes and excreta shall be into septic tanks.
- Kitchen waste water shall be disposed into soak pits/kitchen sump located preferably at least 15 meters from any water body. Sump capacity should be at least 1.3 times the maximum volume of wastewater discharged per day. The bottom of the pit should be filled with coarse gravel and the sides shored up with board, etc. to prevent erosion and collapse of the pit. New soak pits shall be made ready as soon as the earlier one is filled.
- Solid wastes generated in the kitchen shall be reused if recyclable or disposed off in land fill sites.
- Provide segregated garbage bins in the camps and ensure that these are regularly emptied and disposed off in a hygienic manner as per the Comprehensive Solid Waste Management Plan approved by the Environmental Expert of PMU.
- The camping area should be periodically sprayed with Bleaching powder and other disinfectants.

f) Medical and First Aid Facilities

Medical facilities shall be provided to the labourers at the construction camp. Visits of doctor shall be arranged twice a month wherein routine checkups would be conducted for women and children. A separate room for medical checkups and keeping of first aid facilities should be built. The site medical room should display awareness posters on safety facilitation hygiene and HIV/AIDS awareness.

First Aid Box will be provided at every construction camp site and under the charge of a responsible person who shall always be readily available during working hours. He shall be adequately trained in administering first aid-treatment. Formal arrangement shall be prescribed to carry injured person or person suddenly taken ill to the nearest hospital.

The first aid box shall contain the following.

- 6 small sterilized dressings
- 3 medium size sterilized dressings
- 3 large size sterilized dressings
- 3 large sterilized burns dressings
- 1 (30 ml) bottle containing 2 % alcoholic solution of iodine
- 1 (30 ml) bottle containing salvolatile
- 1 snakebite lancet
- 1 (30 g) bottle of potassium permanganate crystals
- 1 pair scissors
- Ointment for burns
- A bottle of suitable surgical antiseptic solution

In case, the number of labour exceeds 50, the items in the first aid box shall be doubled.

The contract agency shall arrange to carry out the following anti-malarial measures.

- Supply of mosquito nets.
- Supply of mosquito repellents to the labourers.
- Periodic cleaning of the area to destroy stagnant water pockets as well as spraying of disinfectants through health workers.
- Supply of preventative medicines to all labour force free of cost.
- Ensure imparting free treatment to the affected people through local health centres.

g) Provision of Shelter during Rest

The work place shall provide four suitable sheds, two for meals and two for rest (separately for men and women). The height of the shelter shall not be less than 3.0m from the floor level to the lowest part of the roof. These shall be kept clean.

h) Crèches

In case 20 or more women workers are employed, there shall be a room of reasonable size for use of children under the age of six years. The room should have adequate light and realisation. A caretaker is to be appointed to look after the children. The use of the room shall be restricted to children, their mothers and the caretaker.

i) Recreation Facilities:

At labour camps recreational facilities such as TV room, indoor and outdoor sports facilities (such as volley ball), etc. shall be provided by the Contractor

6.9.4 Fire Fighting Arrangement

The following precautions need to be taken:

- Demarcation of area susceptible to fires with cautionary signage;
- Portable fire extinguishers and/or sand baskets shall be provided at easily accessible locations in the event of fire; Contractor shall educate the workers on usage of these equipment.

6.9.5 Interactions with Host Communities

To ensure that there is no conflict of the migrant labour with the host communities, the contractor shall issue identity cards to labourers and residents of construction camps.

6.9.6 Construction Stage

The following procedures shall be followed for proper management of workers camp:

- Contractor shall authorize a person for maintenance of workers / construction camp and for ensuring hygienic and safety of workers and intimate the same to the Engineer's Representative;
- Contractor shall Maintain a ***Monthly Register*** on number, sex, age (below or above 14 years) and incidence of sickness (number of persons fall sick, type of illness and status of recovery) of each of the occupants of the camp and produce the same for Engineer's verification during joint inspection;
- Contractor and Engineer's representatives shall undertake ***joint monthly inspections*** to ensure compliance of various environment and safety requirements as mentioned in the following section below.

Construction camps shall be maintained free from litter and in hygienic condition. It should be kept free from spillage of oil, grease or bitumen. Any spillage should be cleaned immediately to avoid pollution of soil, water stored or adjacent water bodies.

The following precautions need to be taken in construction camps.

- Measures to ensure that no leaching of oil and grease into water bodies or underground water takes place.
- Wastewater should not be disposed into water bodies.
- Regular collection of solid wastes should be undertaken and should be disposed off safely.
- All consumables as the first aid equipment, cleaning equipment for maintaining hygiene and sanitation should be recouped immediately.
- The debris/scrap generated during construction of camp site should be kept in a designated and barricaded area.

The Engineer in charge will monitor the cleanliness of construction camp sites and ensure that the sites are properly maintained throughout the period of the contract.

6.9.7 Post Construction Stage

At the completion of construction, all construction camp facilities shall be dismantled and removed from the site. The site shall be restored to a condition in no way inferior to the condition prior to commencement of the works. Various activities to be carried out for site rehabilitation include:

- Oil and fuel contaminated soil shall be removed and transported and buried in waste disposal areas.
- Soak pits, septic tanks shall be covered and effectively sealed off.
- Debris (rejected material) should be disposed off suitably
- Ramps created should be levelled.
- Underground water tank in a barren/non-agricultural land can be covered. However, in an agricultural land, the tank shall be removed.

- If the construction camp site is on an agricultural land, top soil can be spread so as to aid faster rejuvenation.
- Proper documentation of rehabilitation site is necessary. This shall include the following:
 - Photograph of rehabilitated site;
 - Land owner consent letter for satisfaction in measures taken for rehabilitation of site;
 - Undertaking from contractor; and Certification from Engineer in charge.

In cases, where the construction camps site is located on a private land holding, the contractor would still have to restore the campsite as per this guideline. Also, he would have to obtain a certificate for satisfaction from the landowner.

6.9.8 Site Inspection

Periodical site inspection shall be undertaken for all the workers camp areas. The details of attributes, which are to be inspected, are given in below. The Contractor shall ensure compliance of the requirements as given in table 6.12.

6.9.9 Non-Conformance

The criteria for Non-conformance shall be:

- Failure to comply with Engineer's recommendation(s) for proper management of camp site(s).
- Failure to comply with regulatory requirements.

6.10 Revisit of Implementation of Catchment Area Treatment (CAT) Plan

It is a well-established fact that almost all the reservoirs formed by dams on rivers are suffering from sedimentation problem. The

deposition of sediment in reservoir reduces its capacity, and thus affecting the water availability for the designated use. The process of sedimentation involves soil erosion, entrainment, transportation, deposition and compaction of sediment. A scientifically developed catchment area treatment (CAT) plan is one of the key measures for sustainable development of water resource.

In the existing dam projects, where the CAT plan has already been implemented may suffer problem of siltation due to inadequacy and damages of the previously taken measures and emergence of new vulnerable area in the catchment leading to generation of silt in the upstream watershed. So, it is required to analyse the present scenario of erosion in the catchment area, identification and assessment of vulnerable area prone to erosion including new vulnerable areas where necessary protection measures are require to control further erosion and sediment flow into the reservoirs.

The present section provides a framework for developing CAT plan for controlling the sedimentation of reservoirs. The main objective of the CAT Plan is overall improvement in environmental conditions in the project catchment area by treating the degraded area and potential area of severe soil erosion by prevention of gully erosion, enhancing the forest cover for increasing soil holding capacity; and arresting total sediment flow in the reservoir and flowing waters.

The Catchment area Treatment helps in

- Reducing soil surface erosion, gully erosion
- Controlling sediment and debris transport
- Providing quantitative idea about upstream transport
- Decreasing the slope of steep stream reach locally
- Arresting gully erosion process

Table 6.12: Details to be inspected for Campsite Management Measures

Attributes	Requirements
Labour management	<ul style="list-style-type: none"> ✓ Maintaining register on occupants of camp comprising number, sex, age (below or above 18 years) and incidence of sickness (number of persons fall sick, type of illness and status of recovery); ✓ Child labour (below 18 years of age) should be strictly prohibited; ✓ Encourage engagement of local labourer ✓ Regulate mixing of migrant labourer with the local people
Camp facilities	<ul style="list-style-type: none"> ✓ Appropriate dwelling units with stipulated minimum basic facilities ✓ Safe & sufficient drinking water and proper sanitation facilities at workers camp ✓ Toilet and bathroom facilities; separate toilet with septic tanks and soakpits and bathroom units for male and female workers ✓ No effluent from bathroom / toilet should be discharged onto nearby land; ✓ Washing area ✓ Maintenance of drainage system. Regular clearing of storm water drainage and avoid water stagnation at and around the campsite, which acts as mosquito breeding ground. ✓ Supply of free fuel for cooking facilities (cooking gas or kerosene oil) ✓ Canteen facilities as per rule ✓ Waste collection and disposal facilities ✓ Lighting arrangement and safe electric connection ✓ General hygienic condition ✓ Fire fighting arrangement
Medical facilities	<ul style="list-style-type: none"> ✓ First aid box should be located at all work sites, construction areas and workers camp with a designated person for administering; ✓ First Aid Register ✓ Periodic health check-up for workers is to be undertaken (attach Doctor's certificate is to be maintained and copy submitted to Engineer if requested); ✓ Raising awareness level on sexually transmitted diseases and HIV/AIDS among workers.
Dismantling of camp and site restoration	<ul style="list-style-type: none"> ✓ Dismantling of camp site by taking all safety precautions. ✓ Soak pits, septic tanks shall be covered and effectively sealed off. ✓ Debris (rejected material) should be disposed off suitably ✓ Underground water tank in a barren/non-agricultural land can be covered or removed completely ✓ If the construction camp site is on an agricultural land, top soil can be spread so as to aid faster rejuvenation. ✓ Proper documentation of rehabilitation site including photographic record, consent and satisfaction letter of land owner,

- Enhancing forest cover for increasing soil water holding capacity
- Arresting total sediment flow in the reservoir and flowing waters.

6.10.1 Survey and Investigation:

For development of Catchment Area Treatment Plan CWC guidelines should be

followed. It is required to conduct field surveys and study of the already implemented CAT plan as well as analysis of catchment area for identification of vulnerable locations and their trends. Geographical Information System (GIS) and data base management system are extensively used in preparation of CAT plan

The study requires detailed investigation of the following components:

(a) Delineation of Watersheds and Sub-Watersheds:

For assessing the already implemented CAT plan and identification of need of strengthening the CAT plan, it is important to review the catchment conditions and drainage basin in the directly drainage catchment area. For this it is required to delineate the sub watersheds, mini-watersheds and micro-watersheds, their locations and extent in the direct drainage catchment area. Identification and demarcation of sub-watershed, hierarchial delineation system of Watershed, sub-watershed and mini & micro watershed should be carried out by following All India Soil Survey & Land Use Planning (AISS&LUP), Ministry of Agriculture, Government of India guidelines and Watersheds Atlas on 1:50000 scale toposheet of Survey of India.

(b) Physiography, River Basin Studies and Thematic Mapping:

The drainage basin is required to be clearly demarcated and its area and extent, administrative and physiographic boundaries and features should be delineated. The topography of the region is also required to be studies with respect to features viz; soil types, landuse, slope types, forest types, agriculture settlements etc.

(c) Soil Mapping:

To ensure proper maintenance of soil functions and its health, it is important to study the soil type, soil depth and erodibility within the relevant watershed. It is required to prepare soil-based thematic maps using classification of All India Soil Survey& Land Use Planning (AISS&LUP), Nagpur. For preparation of soil map it is also important to collect various attributes related to soil, such as soil depth, texture, drainage, pH of the soil, etc. Some of the

parameters are extremely important to deduce the erosion intensity and developing a susceptible erosion model in a particular region and accordingly to plan various treatment measures and to protect it from soil erosion.

(d) Slope Anlaysis:

Slope has major influence on the loss of soil and water from the watershed and thereby influences the land use capability. The slope percentage determines the erosion susceptibility of the soil depending on its nature and class. This helps in classifying various land suitability classes, which in turn helps to formulate suitable conservation measures for the prevention of soil erosion. The slope analysis within the catchment area should be carried out by using the slope classes and ranges as recommended by the All India Soil Survey and Land Use Planning (AISS & LUP).

(e) Landuse/Land cover classification:

Landuse and land cover classification is an importance parameter for identification of vulnerable locations. A land use/ land cover thematic map depicts the land composition, using land cover classification technique, which is one of the most common applications of remote sensing. The habitats/settlements, settlement patterns, access to road, amenities, administrative boundaries and nearness to project features are required to be mapped.

(f) Soil Erosion Intensity Mapping:

Determination of soil erosion intensity in the catchment area is based upon on soil characters, physiography, slope, land-use/land-cover, lithology and structure. The Soil erosion intensity in the area is generally determined through superimposition of various maps viz soil, slope, land use in order to potential degraded areas and already degraded areas. Based on the erodibility

classification it is required to calculate Sediment yield index (SYI). The calculation of SYI is generally done by following the methodology developed by All India Soil Survey & Land Use Planning (AISS & LUP)

6.10.2 CAT Plan

Based on different categories of landuse catchment area treatment (CAT) plan should be developed. The area and type of treatment to be undertaken is based upon the stream drainage pattern, extent of forest cover, accessibility of the area, land-use, soil profile and slope. As mentioned earlier, degraded/degradable areas in directly draining catchment through erosion intensity maps and their areas and extent should be identified in each mini watershed. Suitable engineering and biological measures for treatment of potential degraded areas in each mini-watershed should be identified. Suitable measures for treatment of degraded area depending upon feasibility of implementation based on slope, relevance and effectiveness.

Engineering Measures: The engineering measures generally identified for treatment are:

- Nallah Bunding
- Contour Bunding
- Angle iron barbed wire fencing
- Step drain
- Stone masonry
- Check dams

Biological Measures: The biological measures for treatment generally include

- Plantation/afforestation
- Pasture development
- Social forestry
- Development and maintenance of nurseries

In addition to the treatment measures the plan should include analysis of institutional arrangement and capacity building, Monitoring and Evaluation Mechanism,

Implementation schedule and Budgetary Provision.

(a) Implementation Plan: After identification of treatment measures of each watersheds, it is important to delineate the schedule for implementation of each activities recommended in the CAT Plan. This should include prioritisation of pockets for implementation of CAT measures, treatment activities, man powers and materials schedule for each milestone.

(b) Institutional Arrangement: The catchment area treatment (CAT) project involves intensive and highly technical operations, which require the expertise of technical personnel. It is, therefore, Important to assess the existing institutional set-up and need for additional resourced are required to be analysed. Training for capacity building of the existing institutional arrangements may be explored in order to effective implementation and monitoring of the treatment measures. The implementation for the Catchment Area Treatment Plan in forest area is the responsibility of forest department whereas support from forest department may be required for implementation of the measures outside the forest area. So the involvement of Forest Department Official in the administrative setups for implementation of CAT plan may be explored.

(c) Monitoring and Evaluation Mechanism:

Monitoring and evaluation is very essential for the various types of activities in CAT plan on daily, monthly and annual basis for proper execution of planned works. Monitoring and evaluation mechanism should be developed as a part of the project management to evaluate the effectiveness of the measures taken at specific interval of time. This will ensure

the field worthiness and efficacy of the CAT plan. The monitoring mechanism should include the parameters to be monitored, its location and timeframe. The indicators for monitoring the impact of CAT plan would generally include:

- Change in silt load.
- Conditions of the engineering measures
- Survival of plantations
- Changes in land-use [private holdings]
- Biotic Interferences

(i) Change in Silt Load: For ensuring the effectiveness of the measures taken it is important to install silt gauges at different locations in different sub-watersheds as well as all the main streams on the upstream of the dam. This will help in recording of silt data at such points. The recording of silt flow is required to be carried out on regularly basis to assess the silt load from each watershed which ultimately help in analyzing and prioritizing the additional corrective measures to be taken in specific time. The requirement of maintenance and repair should also be part of monitoring and evaluation.

(ii) Conditions of Engineering Measures: The conditions of the engineering measures provided are required to be checked on periodical basis to identify the physical damages. The inspection is required to be conducted especially before and after monsoon season. Visual inspection of all the engineering measures is required to be carried out on a predetermined frequency. Necessary action for repair of damaged portion and additional measures for the new area is required to be taken before the next rainy season.

(iii) Survival of Plantation: After afforestation / plantation, periodical monitoring of survival of plantation is important to ensure effectiveness of erosion control measures. Replacement of all the dead/damaged plants with healthy plants is required once the dead plants are observed in order to maintain the biological measures taken in the area. Trend of fire incidences in vulnerable areas is also required to be recorded during monitoring and accordingly action plan to be developed for fire protection measures and to be periodically reviewed.

(iv) Biotic Interferences: Surveillance of biotic interferences in the area where the CAT Plan has been implemented is required to assess the man animal conflict. Damage to the crops has been experienced by the animals in many cases. A suitable measures for preventing grazing in the vulnerable area such as fencing round such area is required to be provided and maintained on regular basis. Physical damage to the fencing is also periodically checked. The identification of change in the pattern of migration route of animals around the area where CAT Plan has been implemented is required to be studied and accordingly the requirement of additional measures is to be assessed.

(d) Budget for CAT Plan and Implementation:

It is required to estimate the unit costs for each watershed. Generally, phase-wise activities are proposed for each sub-watershed/ micro watershed based of prioritization. The estimated cost should normally include the cost for following activities/heads:

- (i) Engineering Measures
 - (ii) Biological Measures
 - (iii) Eco-restoration activities
 - (iv) Monitoring and Evaluation
 - (v) Administrative Setups
- .

Chapter 7. DOCUMENTATION AND REPORTING ON ENVIRONMENTAL COMPLIANCE

The documentation and reporting on implementation of environmental safeguards during project implementation is important to demonstrate the commitment towards environmental safeguards. It is also important to help in identification of gaps, corrective measures required for improvement, any requirement of modification/ additional mitigation measures. This will provide the input on efficiency of mitigation measures during auditing by the regulatory authority or funding agencies. The maintained data and record is also required for compilation of progress reports.

The Contractor needs to submit the data on environmental compliance to the Engineer in the specified template developed for the purpose. The Engineer should verify the data after actual site inspection and certify the correctness of the information furnished in the format. The Engineer's Representative needs to complete the performance rating on the compliance with the key environmental issues of the project listed in the format. This will be submitted to IA for compilation of data for the Monthly Progress Report (MPR) and Quarterly/ semi-annually Progress Report on Environmental safeguards.

During the construction/rehabilitation period following records and data on compliance on environmental safeguards is generally required to be maintained

- Borrow Area details
- Quarry Area details
- Labour Statements
- Training Records

During the periodical site inspection the Engineer's representative needs to use Environmental OK Card

7.1 Environmental Monitoring Records

Two kinds of records should be maintained on environmental and social safeguards aspects. One for the features including environmental and social features of all the sites utilised as allied sites. Maintenance of record features of such sites will help in identification of environmental issues in the area requiring proper attention during operation of such site and ensuring restoration works after completion of works. These records are required to be maintained for one time. Sample templates for collecting site information is enclosed in ANNEXURE-7.1

The another kind of record is related to periodical inspection of different activities of EMP implementation. The second type of records is periodical monitoring of status of implementation of environmental and social mitigation measures during construction stage, which may be used for monthly/quarterly progress report. Different checklists may be utilised for making such records. The list of sample formats for collection of onetime site information and data for monthly/quarterly progress report on the environmental compliance is listed below and the monitoring templates are enclosed with this guidelines in the subsequent section as Annexure 7.1 and Annexure-7.2. The list of such templates have been provided in the following Table 7.1 and 7.2, respectively

- All necessary permits / consent letters
- Periodical monitoring records and checklists
- All written instructions and reports provided to the Contractor
- Record of non-conformances observed and issued to contractor
- Record of monitoring of corrective actions taken

Table 7.1: Type of Template to be used for One Time Site Record

S. No.	Type of Checklists	Responsibility
1.	EI-01: Borrow Area Identification	Filled up by the Contractor and verified and certified by the Engineer's representative
2	EI-02: Quarry Site Identification	Filled up by the Contractor and verified and certified by the Engineer's representative
3	EI-03: Site Identification and Setting up of Workers Camp	Filled up by the Contractor and verified and certified by the Engineer's representative
4	EI-04: Site Identification for Stone Crusher Unit/ Batching Plants	Filled up by the Contractor and verified and certified by the Engineer's representative
5	EI-4A: Installation of Stone Crusher Unit/ Batching Plants	Filled up by the Contractor and verified and certified by the Engineer's representative
6	EI-05: Identification of Material Storage/ Workshop Area	Filled up by the Contractor and verified and certified by the Engineer's representative
7	EI-06: Identification of Muck and Waste Disposal Sites	Filled up by the Contractor and verified and certified by the Engineer's representative
8	EI-07: Setting Up of Storage, Workshop And Disposal Areas	Filled up by the Contractor and verified and certified by the Engineer's representative

7.2 Annual Environmental Statement

For the project for which environmental clearance has been obtained, there is requirement of preparation and submission of Environmental Statement on annual basis by the project proponent in specified Form-V. The format for the annual environmental statement is attached herewith as Annexure-7.3. Periodical monitoring of all the component as specified in Form-V are required to be carried out in systematic manner during project execution. Different checklists may be used for monitoring of EMP implementation. This will help in compilation of data as specified in Form-V for submission to the Regional Office of MoEFCC.

Table 7.2: Type of Template to be used for periodical inspection

S. No.	Type of Checklists	Responsibility
1.	EM-01: Inspection Checklist on Environmental Safeguards	Filled up by the Engineer's representative during periodical site inspection
2	EM-02: Checklist for regulatory permissions and consents	Filled up by the Contractor and verified and certified by the Engineer's representative
3	EM-03: Monthly statement of labours engaged	Filled up by the Contractor and verified and certified by the Engineer's representative
4	EM-04: Status of Borrow Area operations and rehabilitation	Filled up by the Contractor and verified and certified by the Engineer's representative

5	EM-05: Environmental management at campsite	Filled up by the Contractor and verified and certified by the Engineer's representative
6	EM-06: Progress rating on EMP implementation	Filled up by the Engineer's representative

This page has been left blank intentionally.

Chapter 8. External Funding Agency's Policy and Requirements on Environmental and Social Safeguards

The external lending agencies such as the World Bank, ADB have their environmental and social safeguards policy and it is mandatory requirement to comply with their safeguards policy for seeking financial assistance from these funding agencies. The following sections provide overview on the funding agencies requirement and role and responsibility of different agencies involved in implementation of Environmental and Social compliances of a project.

8.1 World Bank's Environmental and Social Safeguard Policies and Requirements

The World Bank has their environmental and social safeguard policies to support those development projects which are environmentally and socially sustainable and to reduce or eliminate the adverse environmental and social effects of development projects. As per safeguards policy, every borrower has to comply with the environmental and social safeguards Policy of the bank in order to get the financial assistance/ support from the Bank.

The main objective of the World Bank Safeguards Policy is to:

- Avoid or mitigate adverse impacts to people and the environment;
- Conserve or rehabilitate biodiversity and natural habitats, and promote the efficient and equitable use of natural resources and ecosystem services;
- Promote worker and community health and safety;

- Ensure that there is no prejudice or discrimination toward project-affected individuals or communities and give particular consideration to Indigenous Peoples, minority groups, and those disadvantaged or vulnerable, especially where adverse impacts may arise or development benefits are to be shared;
- Address project-level impacts on climate change and consider the impacts of climate change on the selection, siting, planning, design and implementation and decommissioning of projects;
- Maximize stakeholder engagement through enhanced consultation, participation and accountability.

In August 2016, the World Bank adopted a new set of environment and social policies called Environmental and Social Framework (ESF). This ESF replaces the following previous Operational Policy (OP) and Bank Procedures (BP):

- OP/BP.4.00: Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard issues in Bank Supported Projects
- OP/BP 4.01: Environmental Assessment,
- OP 4.04: Natural Habitats
- OP4.09: Pest Management
- OP/BP 4.10: Indigenous People
- OP/BP 4.11: Physical Cultural Resources
- OP/BP 4.12: Involuntary Resettlement,

- OP/BP4.36: Forests
- OP/BP 4.37: Safety of Dams

There is no Change in the policies on Performance Standards for Private Sector Activities (OP/BP 4.03), Projects on International Waterways (OP/BP 7.50) and Projects in Disputed Territories (OP/BP 7.60)

The new ESF will boost protections for people and the environment, and driving sustainable development through capacity- and institution-building and country ownership. This will also help in enhancing the efficiency of borrowing country as well as the World Bank. The new ESF has been launched on 1st October, 2018 and will be applicable to all new investment projects after 1st October, 2018. However, the WB's previous safeguards will run in parallel to the new ESF for about seven years to govern projects approved before the effectiveness date of the new ESF.

The Bank has mandate to support Borrowers (in case of Dam projects in India the Borrower is Ministry of Jal Shakti, Govt. Of India) in development and implementation of projects that are environmental and socially sustainable and to enhance the capacity of borrower's

environmental and social frameworks to assess and manage the environmental and social risks and impacts of projects under financial assistance from the World Bank. The Environmental and Social assessment is mandatory for all the projects to be financed by the World Bank.

The Bank's Policy Specifies requirements regarding

- ▶ Due diligence
- ▶ Support to Borrowers with regard to stakeholder engagement
- ▶ Assist Borrowers in selecting methods and tools to assess and manage environmental and social risk
- ▶ Conditions under which the World Bank agrees to provide support to a project
- ▶ Monitoring of environmental and social performance

In the new ESF the World Bank has set out ten Environmental and Social Standards (ESSs) which are designed to avoid, minimise reduce or mitigate the adverse environment and social risks and impacts of any project. These ESSs are applicable to all the projects to fulfill the requirement for funding a project. The following table provides an overview of these ten ESSs set out by the World Bank:

Table 8.1: Environmental and Social Standards as per World Bank ESF

Environmental and Social Standards	Objectives	Applicability of ESS	Safeguard Requirements
Environmental and Social Standard 1 (ESS1): Assessment and Management of Environmental and Social Risks and Impacts;	<p>To ensure that Bank financed projects are environmentally sound and sustainable.</p> <p>The ESS1 has been designed to identify, assess, evaluate, mitigate and manage environment and social risks and impacts of a project.</p> <p>This also provides procedures for conduction environmental and social impact assessment study for the project to be funded by</p>	ESS1 is applicable to all projects financed by the World Bank	Environmental and Social Assessment (ESA) in accordance with ESS1 including Environmental and Social performance monitoring and development of Environmental and Social Commitment Plan (ESCP):

Environmental and Social Standards	Objectives	Applicability of ESS	Safeguard Requirements
Environmental and Social Standard 2 (ESS2): Labor and Working Conditions	<p>the World Bank</p> <p>To promote safety and health and well beings of workers at work and to Promote the fair treatment, non-discrimination, and equal opportunity of project workers with particular emphasis on vulnerable workers.</p> <p>It also provides measures for prevention of use of all forms of forced labor and child labor and accessible means to raise workplace concerns</p>	Applicable to all projects for different kind of workers including direct, contracted, community as well as primary supply workers and the applicability of ESS2 is established during ESA	Occupational health and safety of workers including the working conditions and management of workers relationship. This is to be part of ESA and ESMP.
Environmental and Social Standard 3 (ESS3): Resource Efficiency and Pollution Prevention and Management	<p>The ESS 3 sets out the requirements to address resource efficiency, pollution prevention and management throughout the project cycle</p> <p>The main objective of this ESS is to promote the sustainable use of resources, including energy, water, and raw materials.</p> <p>It also emphasis to avoid or minimize adverse impacts on human health and the environment caused by pollution including from project activities, to avoid and minimize project related emissions including GHGs and black carbon, minimization of generation of hazardous and non-hazardous waste as well as to minimize and manage the risks and impacts associated with pesticide use.</p>	The applicability of this ESS is established during ESA study as described in ESS1.	To implement technically and financially feasible measures for optimizing resource efficiency (Energy use, water use and raw material use), Pollution prevention and Management including management of Air Pollution, hazardous and non-hazardous wastes, chemicals and hazardous materials and management of pesticides
Environmental and Social Standard 4 (ESS4): Community Health and Safety;	<p>To Anticipate or avoid adverse impacts on the health and safety of project-affected communities during project life-cycle from routine and non-routine circumstances.</p> <p>To promote quality, safety, and climate change considerations in infrastructure design and construction, including dams.</p> <p>It ensures that safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected</p>	The applicability of this ESS is established during ESA study as described in ESS1.	Community Health and Safety, community exposure to health issues, management and safety of hazardous materials. Preparation of Emergency preparedness and response. Required for the safety of new Dams and existing dams & under construction Dams

Environmental and Social Standards	Objectives	Applicability of ESS	Safeguard Requirements
Environmental and Social Standard 5 (ESS5): Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;	<p>communities.</p> <p>To Avoid or minimize involuntary resettlement by exploring project design alternatives</p> <p>To Avoid forced eviction.</p> <p>To Mitigate unavoidable adverse impacts from land acquisition or restrictions on land use through timely compensation for loss of assets at replacement cost and assisting displaced persons in their efforts to improve, or at least restore, livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.</p> <p>To Improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure</p> <p>To ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and informed participation.</p>	<p>The applicability of this ESS is established during ESA study as described in ESS1.</p> <p>This standard will be applicable in the projects where there is involuntary displacement of people. This is applicable to permanent or temporary physical and economical displacement persons. However it does not apply to:</p> <ul style="list-style-type: none"> • Impacts on incomes or livelihood that are not a direct result of land acquisition or land use restrictions imposed by the project. • voluntary, legally recorded market transactions • Where a project supports land titling or other activities intended to confirm, regularize or determine land rights • It does not apply to disputes between private parties in land titling or related contexts. • Land use planning or the regularization of natural resources to promote their sustainability on a regional, national or sub-national level • Management of refugee from, or persons internally displaced by, natural disasters, conflict, crime or violence. 	<p>Resettlement Action Plan in consultation with the community and project authorities for eligibility classification, Compensation and benefits for PAP, Community engagement, plan for physically and economically displaced people, development of grievance mechanism</p>
Environmental and Social Standard 6 (ESS6): Biodiversity Conservation and Sustainable Management of Living Natural Resources	<p>The policy recognizes that the conservation of natural habitats is essential for long-term sustainable development. The Bank, therefore, supports the protection, maintenance and rehabilitation of natural</p>	<p>The applicability of this ESS is established during ESA study as described in ESS1.</p>	<p>ESIA and ESMP requires specialised surveys, which will be conducted at the locations wherever wildlife sanctuary, national park or any other eco-sensitive area is encountered in the</p>

Environmental and Social Standards	Objectives	Applicability of ESS	Safeguard Requirements
	<p>habitats in its project financing, as well as policy dialogue and analytical work. The Bank also Support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities</p> <p>The Bank supports and expects the Borrowers to apply a precautionary approach to natural resources management to ensure environmentally sustainable Development.</p>		<p>project. This requires Assessment of risks and impacts, preparation of plan for conservation of biodiversity and habitats, protection and management modified Natural and critical habitats.</p>
<p>Environmental and Social Standard 7 (ESS7): Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities</p>	<p>It Ensure that the development process fosters full respect for affected parties' human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods.</p> <p>This Promote sustainable development benefits and opportunities in a manner that is accessible, culturally appropriate and inclusive.</p> <p>Establish and maintain an ongoing relationship based on meaningful consultation with project-affected parties Obtain the Free, Prior, and Informed Consent (FPIC) of affected parties.</p> <p>Recognize, respect and preserve the culture, knowledge, and practices of Indigenous Peoples, and to provide them with an opportunity to adapt to changing conditions <u>in a</u> manner and in a timeframe acceptable to them.</p>	<p>This ESS applied to a distinct social and cultural group identified in accordance with the ESS.</p>	<p>ESIA study and preparation of Indigenous People Development Plan, where such type of community are found in the project area along with time bound plan and community consultation report in accordance with the ESS7</p>
<p>Environmental and Social Standard 8 (ESS8): Cultural Heritage</p>	<p>This ESS aims at assisting in the preservation of cultural property, historical, religious and unique natural value-this includes remains left by previous human inhabitants and unique environment features, as well as in the protection and enhancement</p>	<p>The applicability of this ESS is established during ESA study as described in ESS1.</p> <p>The requirements of ESS8 apply all the projects that are likely to have risks or impacts on</p>	<p>The impact on such cultural features should be integrated with ESIA study and included in ESMP.</p>

Environmental and Social Standards	Objectives	Applicability of ESS	Safeguard Requirements
	of cultural properties encountered in Bank-financed project	<p>cultural heritage.</p> <p>The requirements of this ESS8 apply to cultural heritage regardless of whether or not has legally protected or previously identified or disturbed.</p> <p>The requirements of ESS8 apply to intangible cultural heritage only if a physical component of a project will have a material impact on such cultural heritage or if a project intends to use such cultural heritage for commercial purposes.</p>	
Environmental and Social Standard 9 (ESS9): Financial Intermediaries	<ul style="list-style-type: none"> ● To Sets out the protocol for Financial Intermediaries (FI) to assess and manage environmental and social risks and impacts associated with the subprojects it finances. ● To promote good environmental and social management practices in the subprojects the FI finances ● To promote good environmental and sound human resources management within the FI 	This ESS is applicable to Financial Intermediaries that receive financial support from World Bank	<p>The FI will have to have their own Environmental and Social Management System which includes policy, procedures, organizational capacity monitoring and reporting and stakeholder engagement.</p> <p>All FI subprojects prepared and implemented in accordance with national law.</p> <p>In addition, apply relevant requirements of ESSs if FI subproject involves resettlement, adverse risks on IPs, or significant risks /impacts on environment, community health and safety, labor, biodiversity or cultural heritage</p>
Environmental and Social Standard 10 (ESS10): Stakeholder Engagement and Information Disclosure	Engagement of stakeholders to assess stakeholder's interests, to take their views in project design and to promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life-cycle as well as disclosure of appropriate project information.	ESS10 is applicable to all the projects funded by the World Bank.	The stakeholder consultation is to be integral part of Project's Environmental and Social Assessment and project design and implementation as per ESS1. The engagement of stakeholders is required throughout the project life cycle. The Grievance redressal mechanism should be part of consultation and ESA study.

8.1.1 World Bank Requirements

As per the ESF, the Bank will require Borrowers to conduct environmental and social assessment of projects proposed for Bank support in accordance with ESS1. The Bank requires the Borrower to prepare and implement projects so that they meet the requirements of the ESSs in a manner and a timeframe acceptable to the Bank. So, there is requirement of integrating the environmental and social safeguards at every stage of a project. The scope of environmental and social assessment will depend upon the risk classification.

It is required to assess, manage and monitor the environmental and social risks and impacts of the projects throughout the project life cycle so as to meet the requirements of the ESSs in appropriate manner and timeframe as acceptable by the World Bank.

As per the requirement of ESS1, the project proponent has to:

- (a) Conduct an environmental and social assessment of the proposed project, including stakeholder engagement;
- (b) Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10;
- (c) Develop an ESCP, and implement all measures and actions set out in the legal agreement including the recommendations made under ESCP; and
- (d) Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs.

The detailed methodology for carrying out the Environmental and Social Assessment including general structure of the reports is provided in Annex-1 of ESS1 of the ESF.

8.1.2 Environmental and Social Commitment Plan (ESCP)

The Environmental and Social Commitment Plan (ESCP) is a specific requirement as per ESF. It is required to agree on an ESCP with the Bank and is required to be complied accordingly during project execution.

The ESCP is required to be developed for all projects funded by the Bank by taking into account the findings of Environmental and Social Assessment study and Bank's Due Diligence as well as the stakeholder's consultations. The ESCP should contain summary of the materials measures and actions to address the potential environmental risks and impacts in accordance with the mitigation hierarchy. This will be used for monitoring of environmental and social performance of the project. The detailed methodology and contents of ESCP is provided as Annex-2 of ESS1 of ESF.

It is required to implement the measures and actions identified under ESCP by the Implementing Agency in specified timeframe. The status of ESCP implementation is required to be reviewed periodically as a part of monitoring and reporting. Therefore it is required to maintain the records of implementations of all the mitigation measures and actions on environmental and social safeguards.

8.1.3 Project Categorisation:

As per the new ESF, the Bank has categorized different projects into four-tier risk classification based on the extent of environmental and social risks:

- High Risks
- Substantial Risks
- Moderate Risks
- Low Risks

The Bank will classify the projects into the above categories taking into account the relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the environmental and social risks and impacts in a manner consistent with the ESSs. The risk categorisation of a project is not constant, rather the Bank will review the risk categorization assigned to a project even during implementation and accordingly the Bank may change the classification depending upon the change in anticipated risks at any stage of the project. Any change to the classification will be disclosed on the Bank's website.

In the case of Dam rehabilitation and improvement activities most of the likely environmental and social risks and impacts fall in the category of low to moderate risks except few of the activities where the proposed improvement and rehabilitation activities involve land acquisition, displacement of people, impact on forest or other ecological protected areas. In such case the impacts may fall in substantial risks category.

8.1.4 Environmental and Social Management Framework

The Environmental and Social Management Framework (ESMF) is guiding tool to examine the environmental and social risks as well as impacts of a project when a project consists of a series of sub-projects which are supposed to be covered in future. The ESMF basically sets out the principles and procedures for conducting of environmental and social assessment. It also contains the measures and plan for mitigating / off setting of the impacts and risks as well as the institutional arrangements and budgeting provision for implementing and managing the

environmental and social mitigation and monitoring plans. After finalization of ESMF, all the sub-projects have to comply with the ESMF.

8.1.5 Environment and Social Impact Assessment (ESIA)

Wherever ESIA study is required in accordance with the World Bank ESF, the generic structure of ESIA should include the following:

- (a) Executive Summary
- (b) Legal and Institutional Framework
- (c) Project Description
- (d) Baseline Data
- (e) Environmental and Social Risks and Impacts
- (f) Mitigation Measures
- (g) Analysis of Alternatives
- (h) Design Measures
- (i) Key Measures for the Environmental and Social Commitment Plan (ESCP)
- (j) Appendices

8.1.6 Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan (EMP) consists of the set of mitigation, monitoring and institutional measures to be taken during the design, construction and operation stages of the project to eliminate adverse environmental and social risks and impacts, to offset them, or to reduce them to acceptable levels. In general, the ESMP may be prepared as a stand alone document or the content may be incorporated in the ESCP. In general, the ESMP should include the following:

- (a) Mitigation
- (b) Monitoring
- (c) Capacity Development and Training
- (d) Implementation Schedule and Cost Estimates

(e) Integration of ESMP with Project

The ESMP or ESCP should be part of bid document for the Contractor.

8.1.7 Management of Contractors

As stated earlier the ESMP or ESCP should be part of bid document for construction. The borrower will require that all the contractors engaged for the project follow the environmental and social safeguards provision in accordance with ESSs and implement the required measures as per ESMP/ESCP. The Contractors compliance is required to be monitored on regular basis. It is also important that the Contractor will have equivalent arrangements for compliance with stipulated environmental and social safeguards measures as per contract for their sub-contractor, if any.

8.1.8 Stakeholder Consultation and Participation

The stakeholder consultation and participation is the key for sustainable development. As per the ESF the borrower requires to engage with stakeholders, including community, groups or individuals affected due to the project. This helps to understand the issues and concerns of the people so that the same may be addressed appropriately in the project through design and formulation of suitable mitigation measures. For ensuring the peoples participation the procedures is requires to be followed at various stages of the project right from project planning to implementation stage in accordance with the ESS10 of ESF. The implementation of consultation and stakeholder participation will be monitored by the Bank as a part of its due diligence.

8.1.9 Grievance Redressal Mechanism

As per World Bank ESF, the borrower is required to develop a grievance mechanism for resolution of concerns and grievances raised by project affected parties arising due

to the project activities in particular about the environmental and social performance. In the Grievance Redressal Mechanism the process of receive public concerns and grievances, responsible persons to approach, timeframe of resolution of grievances, etc. must be clearly spelled out. The public may directly approach the World Bank for resolution of their concerns and they may submit their complaint directly to the World Bank's independent Inspection Panel to request an inspection to determine whether harm has occurred as a direct result of non-compliance with the WB's policies and procedures.

The World Bank has developed four guidance templates as per ESF, which is required to be followed for developing ESCP, Consultation and Engagement of Stakeholders, development of grievance redressal mechanism and management of labours for a particular project. These templates are available on the World Bank's website³

8.1.10 Monitoring and Reporting

It is required to monitor the implementation of Environmental and Social Safeguard measures as set forth in the Environmental and Social Management and Monitoring Plan, legal compliance on safeguard issues as per law of the land and as per agreed action plan with the World Bank during project execution by the Implementing Agency. All the monitoring records are required to be documented. Periodical monitoring reports are required to be prepared and submitted to the World Bank.

The World Bank will monitor the environmental and social performance of a project in accordance with the requirements of the legal agreement, including the ESCP / ESMP. They will also review any revision of the ESCP including changes resulting

³<http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework-resources>

from change in the design of the project or project circumstances and makes mutually agreeable changes during implementation. A project cannot be considered complete until the measures and actions set out in legal agreement, including ESCP, have been implemented.

The World Bank will provide implementation support regarding the environmental and social performance of the project, which will include reviewing the borrower's monitoring reports on compliance of the project with requirements of the legal agreement including the ESCP.

8.2 ADB's Safeguard Policy

In June 2009, ADB developed Safeguard Policy Statement (SPS) ⁴ governing the environment and social safeguards of ADB's operations. The SPS builds upon and enhances the relevance and effectiveness of the three previous ADB safeguard policies on the environment, involuntary resettlement and indigenous peoples by bringing them together into one consolidated safeguard policy framework. The Safeguard Policy Statement describes common objectives of ADB's safeguards, lays out policy principles, and outlines the delivery process for ADB's safeguard policy. The SPS became effective from January 2010. The main objective of the SPS is to promote the environmental and social sustainability of ADB-supported projects by protecting people and their environment from potential adverse impacts and enhancing the benefits provided.

More specifically the objectives of ADB's safeguards are to:

- (i) avoid adverse impacts of projects on the environment and affected people, where possible;

- (ii) minimize, mitigate, and/or compensate for adverse project impacts on the environment and affected people when avoidance is not possible; and
- (iii) help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks.

The SPS applies to all ADB-financed sovereign and non-sovereign projects, and project components that are associated with ADB-supported projects, regardless of whether these components are financed by ADB, the borrower/client, or co-financiers. ADB will not finance projects that do not comply with the requirements laid out in the SPS. Nor will it finance projects that do not comply with the host country's laws and regulations, including those for which the implementing host country has obligations under international law.

In addition to the above the ADB will not finance activities on the prohibited investment activities list (included as Appendix 5 of SPS, 2009).

8.2.1 Safeguard Requirements of ADB

ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental and social impacts and risks of a project. These safeguard requirements are as follows:

- (i) **Safeguard Requirements 1:**
Environment
- (ii) **Safeguard Requirements 2:**
Involuntary resettlement
- (iii) **Safeguard Requirements 3:**
Indigenous Peoples; and

The SPS, 2009 has set out 11 policy principles on Environmental safeguards (indicated in Page No. 16 of SPS, 2009), 12 policy principles on Involuntary Resettlement Safeguards (indicated in Page No. 17 of SPS, 2009) and 9 policy principles

⁴<https://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf>

on Indigenous Peoples Safeguards (indicated in Page No. 18 of SPS, 2009)..

All the above three safeguard policies involve a structured process of impact assessment, planning, and mitigation to address the adverse effects of projects throughout the project cycle.

All the above safeguard policies require that

- (i) impacts are identified and assessed early in the project cycle;
- (ii) plans to avoid, minimize, mitigate, or compensate for the potential adverse impacts are developed and implemented; and
- (iii) affected people are informed and consulted during project preparation and implementation.

8.2.2 ADB's Safeguard Requirements during Project Preparation:

For compliance to the ADB's Environment and Social Safeguard requirements for a projects following steps are involved:

STEP 1: Project Screening and Categorization: As per the safeguard policy it is mandatory to screen all the projects for funding for determining the sensitivity of the project with respect to environment and social impacts and accordingly the project shall be categorized in different categories based on the extent and significance of the environmental and social impacts.

For screening of the project it is required to furnish necessary information in Rapid

Environmental Assessment (REA) Checklist developed by the ADB. For the Dam rehabilitation and improvement projects the two REA checklists are applicable, one for Irrigation Projects and another for Hydropower Projects.

Similar to Environmental screening checklist, the standard Involuntary Resettlement Impact Categorization Screening Checklist and Indigenous Peoples Impact Screening Checklist are used for analysis of impacts and Social Categorisation of project.

ADB assigns different category (Category A, B, C and FI) to the a project depending upon the type and extent of impacts on environment and people covering involuntary resettlement and impacts on indigenous people due to the proposed project.

The determination of the environment category is to be based on the most environmentally and socially sensitive component of the project. This means that if one part of the project is having potential for significant adverse environmental impacts, then project is to be classified as Category A regardless of the potential environmental impact of other aspects of the project. Similarly, if the most sensitive component is classified as B, then the project is to be classified as Category B

The Environmental and Social Categorisation of Project as per SPS and the safeguard requirements for each category of project is outlined in the following Table:

Table 8.2: Categorisation of Project and Safeguard Requirements of ADB

Category	Characteristics	Safeguard Requirements
I. Environmental Impact Categorisation		
Category A (Significant Environmental impacts)	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	A full-scale environmental impact assessment (EIA), including an environmental management plan (EMP), has to be prepared by the borrower/client.

Category	Characteristics	Safeguard Requirements
	facilities subject to physical works.	
Category B (Less Adverse Environmental Impacts)	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, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects.	An initial environmental examination (IEE), including an EMP, has to be prepared by the borrower/client.
Category C (Minimal or No Adverse Environmental Impacts)	A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts.	An EIA or IEE is not required, although environmental implications need to be reviewed.
Category FI (Financial Intermediary)	A proposed project is classified as category FI if it involves the investment of ADB funds to, or through, a financial intermediary The potential Environmental impacts to be determined	Environmental and social management System
II. Involuntary Resettlement Impact Categories		
Category A (Significant impact)	200 or more persons experience major impacts, which are defined as (i) being physically displaced from housing, or (ii) losing 10% or more of their productive (income generating) assets.	Full Resettlement plan (RP), including social impacts assessment (SIA). May require resettlement framework prior to resettlement plan
Category B (Not Significant impact)	Involuntary resettlement impacts are deemed not significant.	Short Resettlement plan (SRP), including assessment of social impacts. May require resettlement framework prior to resettlement plan
Category C (No Involuntary Resettlement impact)	No involuntary resettlement impacts are foreseen.	No action (a due diligence report may be required)
Category FI (Financial Intermediary)	Has potential resettlement impact, to be determine	Environmental and social management System
III. Indigenous Peoples Impact Categorisation		
Category A.	A proposed project is classified as category A if it is likely to have significant impacts on Indigenous Peoples.	An Indigenous Peoples plan (IPP), including assessment of social impacts, is required.
Category B.	A proposed project is classified as category B if it is likely to have limited impacts on Indigenous Peoples.	An IPP, including assessment of social impacts, is required.
Category C	A proposed project is classified as	

Category	Characteristics	Safeguard Requirements
	category C if it is not expected to have impacts on Indigenous Peoples	No further action is required.
Category FI.	A proposed project is classified as category FI if it involves the investment of ADB funds to, or through, a financial intermediary	

STEP 2: Assessment Study

A. Environmental Assessment:

On the requisite information provided in the specified REA checklist the extent of environmental risks and impacts will be identified and accordingly the ADB classify the project impact category. This classification will ultimately decide the extent of the Environmental Assessment, i.e. Initial Environmental Examination (IEE) or full scale EIA study. Most of the Dam rehabilitation projects will fall in Category-B project, so mostly IEE will be required with Generic Environmental Management Plan. However for Category-A project full EIA study will be required to develop project specific EMP covering all the likely impacts.

An IEE, with its narrower scope, may be conducted for projects with limited impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.

An EIA report includes the following major elements:

- (i) Executive summary,
- (ii) Description of the project,
- (iii) Description of the environment (with comprehensive baseline data)
- (iv) Anticipated environmental impacts and mitigation measures,
- (v) Analysis of alternatives,
- (vi) Environmental management plan(s),
- (vii) Consultation and information disclosure, and
- (viii) Conclusion and recommendations.

The detailed procedure for conducting Environmental Assessment of a project is explained in Appendix 1: Safeguard Requirements 1: Environmental Assessment of SPS, 2009 (*available on website <https://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf>*).

B. Involuntary Resettlement:

The objectives of the SPS with respect to the Involuntary Resettlement are to avoid involuntary resettlement wherever possible; to minimize involuntary resettlement by exploring project and design alternatives; to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; and to improve the standards of living of the displaced poor and other vulnerable groups.

The SPS stipulated the requirement of SIA study to identify the socio-economic profile and Resettlement Plan for the affected persons. If the project affected persons are less than 200 then only short/summary Resettlement Plan would be required, but if the number of total affected persons exceeds 200 then full resettlement plan would be required.

The detailed requirements and procedures for conducting SIA and developing Resettlement Plan is provided in Appendix 2: Safeguard Requirement 3: Involuntary Resettlement of SPS, 2009 (*available on website <https://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf>*).

C. Indigenous People

The objective of SPS is to design and implement projects in a way that fosters full respect for Indigenous Peoples' identity, dignity, human rights, livelihood systems, and cultural uniqueness as defined by the Indigenous Peoples themselves so that they (i) receive culturally appropriate social and economic benefits, (ii) do not suffer adverse impacts as a result of projects, and (iii) can participate actively in projects that affect them.

The SPS also specifies the safeguard requirement for covering the interest of affected Indigenous people. If the screening and SIA indicate that the proposed project will have impacts, positive and/or negative, on Indigenous Peoples, the borrower/client will prepare an Indigenous Peoples Planning (IPP) in the context of the SIA and through meaningful consultation with the affected Indigenous Peoples communities. The IPP will outline measures to minimize, mitigate, and compensate for the adverse impacts. The level of detail and comprehensiveness of IPPs will vary depending on the specific project and the nature of impacts to be addressed. The borrower/client will integrate the elements of the IPP into the project's design.

The details safeguard requirements and procedures for impact analysis and development of Indigenous Peoples Plan (IPP) is provided in Appendix 3: Safeguard Requirements 3: Indigenous People of SPS, 2009 (*available on website <https://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf>*).

STEP 3: Public Consultation: Meaningful consultations with different stakeholders including affected persons are required, similar to the World Bank's policy. As per ADB's safeguards policy it is required to conduct meaningful consultation

with affected people to identify the issues, people perception and preferences. The consultation begins early in the project cycle and is carried out on a continual basis throughout the project cycle. The Public consultation is carried out during the environmental and social assessment studies as well as during project implementation stages. Both informal and formal consultations are carried out.

All the consultation processes along with the findings will be appropriately documented in the EIA, IEE, resettlement plan, and/or IPP.

STEP 4: Development of Grievance Redressal Mechanism:

Similar to the World Bank's requirement the ADB also requires establishment of Grievance Redressal Mechanism. As per the ADB Safeguard Policy, the borrower/client has to establish and maintain a grievance redressal mechanism to receive and facilitate resolution of affected peoples' concerns and grievances about the borrower's/client's social and environmental performance at project level. So, it is imperative to develop Grievance Redressal Mechanism (GRM) and Grievance Redressal Cell (GRC) within the organisation in compliance to this requirement. The process of resolving the public grievances are required to be recorded and would be part of reporting.

STEP 5 : Disclosure of Safeguards Documents:

In line with ADB's Public Communications Policy, ADB is committed to working with the borrower/client to ensure that relevant information (whether positive or negative) about social and environmental safeguard issues is made available in a timely manner, in an accessible place, and in a form and language(s) understandable to affected people and to other stakeholders, including the general public, so they can provide meaningful inputs into project design and implementation. ADB will post the

following safeguard documents on its website:

- (i) For environment category A projects, draft environmental impact assessment reports at least 120 days before Board consideration;
- (ii) Draft environmental assessment and review framework, draft resettlement frameworks and/or plans, and draft Indigenous Peoples planning frameworks and/or plans before project appraisal;
- (iii) Final or updated environmental impact assessments and/or initial environmental examinations, resettlement plans, and Indigenous Peoples plans upon receipt;
- (iv) Environmental, involuntary resettlement, and Indigenous Peoples monitoring reports submitted by borrowers/clients during project implementation upon receipt.

The ADB will disburse the fund only after Board approval of safeguard documents (EIA/IEE, SIA RP & IPP). So it is important that environmental and social assessment study of the proposed project and preparation of necessary safeguard documents must be initiated well in advance during project preparation in order to avoid delay in project execution and disbursement of funds by the ADB.

8.2.3 Safeguard Requirements during Project Construction / Implementation

(a) Environmental Safeguards:

The project owner has to ensure that Environmental Management and Monitoring plan, developed during EIA/IEE, is a part of tender document for contractor.

During the project construction/implementation stage it is

required to Implement the EMP and monitor its effectiveness.

(b) Social Safeguards

With respect to resettlement the compensation and other resettlement entitlements are required to be paid as per RP before physical or economic displacement. The resettlement plan should be implemented under close supervision throughout project implementation.

8.2.4 Monitoring and reporting:

Environmental monitoring during project implementation is required to assess performance against agreed standards and criteria, identify any environmental harm and non-compliance issues, provide data to support compliance, and meet government approval and permit conditions and ADB requirements.

All the monitoring results, including pollution control and abatement measures as per EMP, regulatory compliances, compliances with workers and public safety as well as labour standards, development and implementation of corrective actions are required to be documented. Similarly the record of implementation of RP and IPP are also required to be maintained by the Borrower.

Both the borrower/client and ADB have their own separate monitoring responsibilities. The extent of monitoring activities, including their scope and periodicity, will be in accordance with the project's risks and impacts.

Borrowers/clients are required to implement safeguard measures and relevant safeguard plans, as provided in the legal agreements (Loan covenant) , and to submit periodic monitoring reports on their implementation performance. For ensuring safeguard implementation and monitoring the borrower/Project Owner/Implementing Agency has to observe the following

activities in accordance with the ADB's Policy:

- (i) establish and maintain procedures to monitor the progress of implementation of safeguard plans,
- (ii) verify the compliance with safeguard measures and their progress toward intended outcomes,
- (iii) document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports,
- (iv) follow up on these actions to ensure progress toward the desired outcomes,
- (v) retain qualified and experienced external experts or qualified NGOs to verify monitoring information for projects with significant impacts and risks,
- (vi) use independent advisory panels to monitor project implementation for highly complex and sensitive projects, and
- (vii) submit periodic monitoring reports on safeguard measures as agreed with ADB. In general for projects likely to have significant adverse environmental impacts (category A projects), semi-annual reporting to ADB is required as a minimum during construction, and annually during operation. For category B projects, periodic reporting to ADB is required (normally annual or semi-annual, depending on the project). For projects designated as highly complex and sensitive, quarterly reporting to ADB is required.

ADB reviews project performance against borrowers'/clients' commitments as agreed in the legal documents (Loan Covenant). The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards is integrated into the project performance management

system. ADB will monitor projects on an ongoing basis until a project completion report is issued. ADB will carry out the following monitoring actions to supervise project implementation:

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

8.3 Institutional Arrangement for Environmental and Social Safeguard Implementation

For implementation of World Bank's ESF and ESSs or ADB's Environment and Social Safeguard requirements for the projects of dam rehabilitation and improvement at different levels following agencies have to play roles

- Central Project Management Unit (CPMU)

- State Project Management Unit (SPMU)
- Implementing Agency (IA)
- Contractor

The following section provides the roles and responsibility for ensuring implementation of ESF and ESSs at each level

8.3.1 Role and Responsibility of CPMU at Central Level

- On behalf of Ministry of Jal Shakti and Department of Economic Affairs, Ministry of Finance, Government of India, the Central Water Commission needs to prepare ESCP in the standard format appended in the chapter. Both the borrower and the World Bank has to mutually agree on ESCP developed for the project. This forms the part of the legal agreement.
- Review of compliance with the ESSs in accordance with the ESF as stipulated by the World Bank in case of World Bank assistance, whereas for ADB projects to review the compliance with the environmental and social safeguards as stipulated in the loan covenants and approved EMP.
- Providing technical guidance to the SPMU on different technical and Environmental and Social issues of the project
- Review of progress performance on environmental and social safeguard implementation
- Preparation of quarterly and annual progress reports on implementation of environmental and social safeguards measures as per agreed ESCP/ESMP and submission to the World Bank/ ADB as required

8.3.2 Role & Responsibility of SPMU at State Level

At state level State Project Management Unit (SPMU) is generally formed in order to

have single window coordination and implementation mechanism with CPMU. At each SPMU, there is requirement of appointment of Environmental and Social Nodal Officer, who will be responsible for dealing with environmental and social issues of the rehabilitation project at state level as cited below :

- Conducting ESA and preparation of Environmental and Social Safeguards Documents as per ESF
- Ensuring incorporation of the specifications and contract clauses on environmental and social safeguards including environmental and social mitigation and management plan as per agreed ESCP
- To ensure compliance of environmental and social safeguard measures at the projects planning and tendering stage
- Responsible for monitoring of progress on ESMP implementation through Contractors under the supervision of each IA.
- Liaisoning with the statutory and regulatory authorities in connection with obtaining different statutory clearances such as forest clearance, wildlife clearance, environmental clearance etc.
- Preparation of progress reports on implementation status of ESSs during rehabilitation works.
- Preparation and submission various reports to the regulatory bodies, CPMU and the funding agency as required.

8.3.3 Role & Responsibility of Dam Manager

There are number of Implementing Agencies, such as State's Water Resource Department, State's Electricity Board, Power Transmission Boards, etc at project level. These agencies propose certain number of dams for rehabilitation. Each Engineer-in-Charge at dam level has certain roles to play in order to ensure compliance

of various activities under the ESMF/ESMP.

- As per applicability and type of proposed rehabilitation activity, baseline information on environmental and social features and potential environmental and Social Risks and impacts based on ESMF during project preparation stage
- Ensuring incorporation of environmental and social safeguard in tender document
- Monitoring of the Contractor's Compliance with ESMP/ESCP as per contract specifications/ contractual commitments
- Provide technical guidance to the Contractor for implementation of the ESMP/ESCP and preparation of checklist/ formats/ reports, etc.
- Inspect at regular intervals the Contractor's plant and facilities including the worker's accommodation at site, to ensure conformity with the construction contract and all government/ state regulations
- Inspect Contractor's safety measures including labour standards
- Maintenance of record of checking of implementation of ESMP/ESCP
- Obtain or assist in obtaining, as appropriate, the permits, consents and authorizations that are applicable to the Project from relevant national authorities.
- Ensuring compliance of the work contractor with relevant statutory requirements under various rules and regulations such as labour license, NOC from state pollution control board, PUC of construction vehicles and machineries, etc.
- Ensure compliance with the conditions established in permits licenses, consents and authorizations

- Preparation and submission of monthly and Quarterly/ Semi-annual/Annual data on environmental and social compliance of the project as agreed to SPMU. The report should normally contain the information on:

- (a) Compliance status on statutory requirements
- (b) Compliance status on implementation of mitigation measures as set forth in the ESMP/ Contract specification
- (c) Compliance status on Labour standards
- (d) Monitoring of environmental attributes as per Environmental and Social Monitoring Plan
- (e) Grievance Redressal
- (f) Incidence reports
- (g) Non- conformance and action taken reports
- (h) Any additional impacts which was not identified during project preparation and their addressal
- (i) Any additional information sought by the Funding Agency specified in the loan agreement

8.3.4 Role & Responsibility of Contractor

During rehabilitation stage, implementation of Environmental and social safeguards are the responsibility of Contractor at site. Contractor has following roles and responsibilities for environmental and social safeguards compliances:

- Preparation of ESMP/ESCP implementation plan in consonance with the various construction activities and contractual commitments as per the work program given in signed agreement contract.
- Ensuring compliance with the statutory / regulatory requirements for siting and operating plants and equipment i.e.

- obtaining permits / license / consent in time.
- Ensuring compliance with safeguards measures stipulated in the Contract Document and ESMP.
- Maintaining record on implementation of environmental and social safeguard measures at site office and producing the same, as may be required during the inspection of representative/s of IA, SPMU, Third Party Quality Auditors Bank, Regulatory Agencies such as MoEFCC and SPCB.
- Taking necessary corrective action/s as per the instruction of IA/ Third Party Quality Auditors/ monitoring agency.
- Complying with Non-conformance, taking corrective action/s as issued by IA and submits compliance report for inspection.
- Ensuring representation during periodic join inspection.
- Reporting to the IA on all matters related to environment & social safeguards
- Maintaining close interaction with field representative of IA.
- Seek instructions and guidance from IA's Environmental and Social Safeguards In-Charge on any issue related to implementation of environment and social safeguard measures.
- Record keeping, and reporting to the IA on environmental; and social safeguards.
- Give training to the workers on environment and safety
- Preparation of record & reports as per specified checklist supplied by the IA
- Organising health awareness programmes
- Maintaining the record of day to day monitoring of environmental and safety issues at site
- Preparation of incidence report, first aid report, environmental monitoring reports, etc.

This page has been left blank intentionally.

World Bank Template - I: Environmental and Social Commitment Plan (ESCP)

**[Borrower name/Project Implementing Entity]
[Project Title and Number]**

ENVIRONMENTAL AND SOCIAL COMMITMENT PLAN (ESCP)

[Date]

**Borrower name/Project Implementing Entity
Project Title**

ENVIRONMENTAL AND SOCIAL COMMITMENT PLAN

1. [*Borrower name*] is planning to implement the [*name*] Project (the **Project**), with the involvement of the following Ministries/agencies/units: [*name*] [*add other Ministries/agencies/units involved*]. The [*International Bank for Reconstruction and Development/International Development Association hereinafter the Bank/the Association*] has agreed to provide financing for the Project.
2. [*Borrower name*] will implement material measures and actions so that the Project is implemented in accordance with the World Bank Environmental and Social Standards (**ESSs**). This Environmental and Social Commitment Plan (**ESCP**) sets out a summary of the material measures and actions.
3. [Where the ESCP refers to specific plans or other documents, whether they have already been prepared or are to be developed, the ESCP requires compliance with all provisions of such plans or other documents. In particular, the ESCP requires compliance with the provisions set out in [*specify specific plans or documents that are identified in the ESCP, for example, the Environmental and Social Management Plan and Resettlement Action Plan*] that [*have been*] [*will be*] [*developed for the Project.*] [*include this paragraph 3 if there is or will be separate plans or other documents prepared for the Project. Identify each of these plans or other documents by name*].
4. The table below summarizes the material measures and actions that are required as well as the timing of the material measures and actions. [*Borrower name*] is responsible for compliance with all requirements of the ESCP even when implementation of specific measures and actions is conducted by the Ministry, agency or unit referenced in 1. above.
5. Implementation of the material measures and actions set out in this ESCP will be monitored and reported to the [*Bank/ Association*] by [*Borrower name*] as required by the ESCP and the conditions of the legal agreement, and the [*Bank/ Association*] will monitor and assess progress and completion of the material measures and actions throughout implementation of the Project.
6. As agreed by the [*Bank/ Association*] and [*Borrower name*], this ESCP may be revised from time to time during Project implementation, to reflect adaptive management of Project changes and unforeseen circumstances or in response to assessment of Project performance conducted under the ESCP itself. In such circumstances, [*Borrower name*] will agree to the changes with the [*Bank/ Association*] and will update the ESCP to reflect such changes. Agreement on changes to the ESCP will be documented through the exchange of letters signed between the [*Bank/ Association*] and the [*Borrower name*]. The [*Borrower name*] will promptly disclose the updated ESCP. Depending on the project, the ESCP may also specify the funding necessary for completion of a measure or action.
7. Where Project changes, unforeseen circumstances, or Project performance result in changes to the risks and impacts during Project implementation, the [*Borrower name*] shall provide additional funds, if needed, to implement actions and measures to address such risks and impacts, which may include [*specify risks and impacts that are relevant to the Project, such as environmental, health, and safety impacts, labor influx, gender-based violence*].

[Project Title]
ENVIRONMENTAL AND SOCIAL COMMITMENT PLAN
DATE

<i>Summary of the Material Measures and Actions to Mitigate the Project's Potential Environmental and Social Risks and Impacts</i>	<i>Timeframe</i>	<i>Responsibility / Authority and Resources / Funding Committed</i>	<i>Date of Completion</i>
ESCP Monitoring and Reporting			
REGULAR REPORTING: Prepare and submit regular monitoring reports on the implementation of the ESCP.	<i>Indicate frequency of reporting, e.g. six-monthly throughout Project implementation. Coordinate with ISR Report.</i>	<i>Indicate throughout the ESCP and for each ESS category and sub-category the entity(ies) responsible for carrying out the measures and actions (including any third parties) and, where necessary, the details of funding necessary for specified measures and actions.</i>	
INCIDENTS AND ACCIDENTS NOTIFICATION: Promptly notify any incident or accident related or having an impact on the Project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers [including] [specify relevant risks based on the environmental and social assessment]. Provide sufficient detail regarding the incident or accident, indicating immediate measures taken to address it, and include information provided by any contractor and supervising entity, as appropriate.	<i>Promptly after taking notice of the incident or accident.</i>		
SUMMARY ASSESSMENT			
ESS 1: ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS			
1.1 ORGANIZATIONAL STRUCTURE: Establish an organizational structure with qualified staff to support management of E&S risks [including] [where relevant, identify specific positions/resources for E&S management that are a part of the organizational structure].	<i>Indicate timing, e.g. Specify by [date] when organizational structure/staff need to be in place.</i>		
Maintain as necessary throughout Project implementation.			
1.2 ENVIRONMENTAL AND SOCIAL ASSESSMENT: Carry	<i>Indicate timing for</i>		

<i>Summary of the Material Measures and Actions to Mitigate the Project's Potential Environmental and Social Risks and Impacts</i>	<i>Timeframe</i>	<i>Responsibility / Authority and Resources /Funding Committed</i>	<i>Date of Completion</i>
out environmental and social assessment to identify and assess the environmental and social risks and impacts of the Project and appropriate mitigation measures.	<i>preparing the assessment.</i>		
1.3 MANAGEMENT TOOLS AND INSTRUMENTS: Develop and implement [Specify any general assessment and management tools and instruments to be developed under ESS1. Risk specific assessment and management tools dealing with specific risks may be identified under subsequent sections of the ESCP].	<i>Indicate timing for instruments preparation. Once prepared, tools and instruments apply throughout Project implementation.</i>		
1.4 MANAGEMENT OF CONTRACTORS: Develop and implement procedures for managing contractors and subcontractors.	<i>Indicate timing to develop the procedures: e.g. Prior to the preparation of procurement documents. Maintain procedures throughout Project implementation.</i>		
1.5 PERMIT, CONSENTS AND AUTHORIZATIONS: Obtain or assist in obtaining, as appropriate, the permits, consents and authorizations that are applicable to the Project from relevant national authorities. Comply or cause to comply, as appropriate, with the conditions established in these permits, consents and authorizations throughout Project implementation.	<i>Indicate timing e.g. Prior to initiating activities that require permits, consents and authorizations.</i>		
1.6 THIRD PARTY MONITORING: Where it has been agreed that a stakeholder and/or third parties will be engaged to complement and verify the monitoring of environmental and social risks and impacts of the Project, specify the identity and the tasks to be conducted.	<i>Indicate timing of activities.</i>		
1.7 Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project			
ESS 2: LABOR AND WORKING CONDITIONS			
2.1 LABOR MANAGEMENT PROCEDURES: Develop labor	<i>Indicate timing e.g. At an early stage of Project preparation, to be revised</i>		

Summary of the Material Measures and Actions to Mitigate the Project's Potential Environmental and Social Risks and Impacts		Timeframe	Responsibility / Authority and Resources /Funding Committed	Date of Completion
	management procedures.	when further information becomes available.		
2.2	GRIEVANCE MECHANISM FOR PROJECT WORKERS: Develop and maintain a grievance mechanism for Project workers.	Indicate timing – e.g. grievance mechanism operational prior to e.g. engaging project workers and maintained throughout Project implementation.		
2.3	OHS MEASURES: Develop and implement occupational, health and safety (OHS) measures.	Indicate timing e.g. Prior to initiating construction. Maintained throughout Project implementation.		
2.4	EMERGENCY PREPAREDNESS AND RESPONSE: As part of the OHS measures specified in 2.3, include measures on emergency preparedness and response, and ensure coordination with measures under 4.5.	Indicate timing e.g. Prior to initiating construction. Maintained throughout Project implementation.		
2.5	PROJECT WORKERS TRAINING: Implement training of Project Workers designed to heighten awareness of risks and to mitigate impacts on local communities.	Indicate timing e.g. Prior to initiating construction, with regular refresher training.		
2.6	<i>Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project</i>			
ESS 3: RESOURCE EFFICIENCY AND POLLUTION PREVENTION AND MANAGEMENT				
3.1	MANAGEMENT OF WASTE AND HAZARDOUS MATERIALS: Develop and implement measures and actions to manage waste and hazardous materials.	Indicate timing e.g. Prior to initiating construction. Maintained throughout Project implementation.		
3.2	<i>Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project</i>			
ESS 4: COMMUNITY HEALTH AND SAFETY				
4.1	TRAFFIC AND ROAD SAFETY: Develop and implement measures and actions to assess and manage traffic and road safety risks.	Indicate timing e.g. Prior to initiating construction. Maintained throughout Project implementation.		
4.2	COMMUNITY HEALTH AND SAFETY: Develop and implement	Indicate timing e.g. Prior to initiating construction.		

<i>Summary of the Material Measures and Actions to Mitigate the Project's Potential Environmental and Social Risks and Impacts</i>	<i>Timeframe</i>	<i>Responsibility / Authority and Resources /Funding Committed</i>	<i>Date of Completion</i>
measures and action to assess and manage specific risks and impacts to the community arising from Project activities, including in relation to Project Workers and any risks of labor influx.	<i>Maintained throughout Project implementation.</i>		
4.3 GBV AND SEA RISKS: Develop and implement measures and actions to assess and manage the risks of gender-based violence (GBV) and sexual exploitation and abuse (SEA).	<i>Indicate timing e.g. Prior to initiating construction. Maintained throughout Project implementation.</i>		
4.4 GBV AND SEA RISKS DURING PROJECT IMPLEMENTATION: Specify additional funds available to implement measures to address GBV and SEA risks and impacts that may arise during Project implementation.			
4.5 EMERGENCY RESPONSE MEASURES: Develop and implement measures to address emergency events, and ensure coordination with measures under 2.4.	<i>Indicate timing e.g. Prior to initiating construction. Maintained throughout Project implementation.</i>		
4.6 SECURITY PERSONNEL: Develop and implement measures and actions to assess and manage the risks to human security of project-affected communities and project workers that could arise from the use of security personnel.	<i>Indicate timing e.g. Prior to engaging security personnel/ prior to initiating construction. Maintained throughout Project implementation.</i>		
4.7 TRAINING FOR THE COMMUNITY: Conduct training for the community designed to heighten awareness of risks and to mitigate impacts specified in this section.	<i>Indicate timing e.g. Prior to initiating construction, with regular refresher training.</i>		
4.8 <i>Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project</i>			
ESS 5: LAND ACQUISITION, RESTRICTIONS ON LAND USE AND INVOLUNTARY RESETTLEMENT			
5.1 LAND ACQUISITION AND RESETTLEMENT: Assess the nature and degree of expected land acquisition and involuntary resettlement under the Project [<i>also specify important material measures, e.g.</i>	<i>Indicate timing e.g. Prior to commencing project activities.</i>		

Summary of the Material Measures and Actions to Mitigate the Project's Potential Environmental and Social Risks and Impacts		Timeframe	Responsibility / Authority and Resources /Funding Committed	Date of Completion
conduct a census to identify affected people].				
5.2	RESETTLEMENT PLANS: Develop and implement resettlement plans [RAPs] consistent with the requirements of the [RPF and] and ESS5.	e.g. Prior to [insert date]; [RAP] implemented prior initiating activities that involve involuntary resettlement.		
5.3	MONITORING AND REPORTING: Ensure that monitoring and reporting on land acquisition and resettlement activities are conducted separately or as part of regular reporting.	Throughout Project implementation.		
5.4	GRIEVANCE MECHANISM: Develop and implement the arrangements for the grievance mechanism for resettlement (if established separately from the grievance mechanism under ESS10)	Indicate timing e.g. Prior to commencement of resettlement activities		
5.5	Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project			
ESS 6: BIODIVERSITY CONSERVATION AND SUSTAINABLE MANAGEMENT OF LIVING NATURAL RESOURCES				
6.1	BIODIVERSITY RISKS AND IMPACTS: Develop and implement measures and actions to assess and manage risks and impacts on biodiversity, including identification of different types of habitat and circumstances in which offsets will be used.	Indicate timing e.g. Prior to commencing project activities.		
6.2	Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project			
ESS 7: INDIGENOUS PEOPLES/SUB-SAHARAN AFRICAN HISTORICALLY UNDERSERVED TRADITIONAL LOCAL COMMUNITIES				
7.1	INDIGENOUS PEOPLES PRESENT OR COLLECTIVELY ATTACHED TO PROJECT AREA: Assess the nature and degree of the expected direct and indirect economic, social, cultural and environmental impacts on Indigenous Peoples who are present in, or have collective attachment to, the project area.	Indicate timing e.g. Prior to commencing project activities.		

Summary of the Material Measures and Actions to Mitigate the Project's Potential Environmental and Social Risks and Impacts		Timeframe	Responsibility / Authority and Resources /Funding Committed	Date of Completion
7.2	INDIGENOUS PEOPLES PLAN: Develop and implement a [name of the plan] consistent with the requirements of ESS7.	Prior to [insert date]. Prior to undertaking activities that could cause material or significant adverse risks or impacts		
7.3	GRIEVANCE MECHANISM: Develop and implement the arrangements for the grievance mechanism for indigenous people (if established separately for the grievance mechanism under ESS10).	Indicate timing		
7.4	Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project			
ESS 8: CULTURAL HERITAGE				
8.1	CHANCE FINDS: Develop and implement a chance finds procedure.	Indicate timing: e.g. Prior to and maintained throughout construction.		
8.2	CULTURAL HERITAGE: Identify measures to address risks and impacts on cultural heritage.	Prior to disturbance of site		
8.3	Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project			
ESS 9: FINANCIAL INTERMEDIARIES				
9.1	ESMS: Establish and maintain an environmental and social management system (ESMS).	Indicate timing		
9.2	FI ORGANIZATIONAL CAPACITY: Establish an organizational capacity and competency for implementing the ESMS with clearly defined roles and responsibilities [where relevant, identify specific positions/ resources for E&S management that are a part of the organizational structure]. Maintain as necessary throughout Project implementation.	Indicate timing, e.g. Specify by [date] when organizational capacity need to be in place.		
9.3	SENIOR MANAGEMENT REPRESENTATIVE: Designate a senior management representative to have overall accountability for environmental and social performance of FI subprojects.	Indicate timing, e.g. Specify by [date] when the senior management representative needs to be designated.		

Summary of the Material Measures and Actions to Mitigate the Project's Potential Environmental and Social Risks and Impacts		Timeframe	Responsibility / Authority and Resources /Funding Committed	Date of Completion
9.4	Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project			
ESS 10: STAKEHOLDER ENGAGEMENT AND INFORMATION DISCLOSURE				
10.1	SEP PREPARATION: Prepare and disclose a Stakeholder Engagement Plan (SEP).	Indicate timing: e.g. By [insert date or by appraisal as appropriate]		
10.2	SEP IMPLEMENTATION: Implement the SEP.	Throughout Project implementation		
10.3	PROJECT GRIEVANCE MECHANISM: Develop and implement the arrangements for the grievance mechanism.	Indicate timing: e.g. Prior to [insert date].		
10.4	Add other measures and actions that have been agreed, as per the specific risks and impacts of the Project			
Capacity Support				
Specify Training to be provided		Specify Targeted Groups and Timeframe for Delivery	Specify Training Completed	
As example, training may be required in:				
<ul style="list-style-type: none">• stakeholder mapping and engagement• specific aspects of environmental and social assessment• occupational health and safety• emergency preparedness and response				
Training on occupational health and safety including on emergency prevention and preparedness and response arrangements to emergency situations.				
Add other capacity support and training opportunities as per the specifics of the Borrower and the Project.				

World Bank Template - II: Labour Management Procedures

How to Use this Template

Under ESS2 on Labor and Working Conditions, Borrowers are required to develop labor management procedures (LMP). The purpose of the LMP is to facilitate planning and implementation of the project. The LMP identify the main labor requirements and risks associated with the project, and help the Borrower to determine the resources necessary to address project labor issues. The LMP is a living document, which is initiated early in project preparation, and is reviewed and updated throughout development and implementation of the project.

The Template is designed to help Borrowers identify key aspects of labor planning and management. The content is indicative: where the issues identified are relevant in a project, Borrowers should capture them in the LMP. Some issues may not be relevant; some projects may have other issues that need to be captured from a planning perspective. Where national law addresses requirements of ESS2 this can be noted in the LMP, and there is no need to duplicate such provisions. The LMP may be prepared as a stand-alone document, or form part of other environmental and social management documents.

A concise and up to date LMP will enable different project-related parties, for example, staff of the project implementing unit, contractors and sub-contractors and project workers, to have a clear understanding of what is required on a specific labor issue. The level of detail contained in the LMP will depend on the type of project and information available. Where relevant information is not available, this should be noted and the LMP should be updated as soon as possible.

In preparing and updating the LMP, Borrowers refer to the requirements of national law and ESS2 and the Guidance Note to ESS2 (GN). The template includes references to both ESS2 and the GN.

1. OVERVIEW OF LABOR USE ON THE PROJECT

This section describes the following, based on available information:

Number of Project Workers: The total number of workers to be employed on the project, and the different types of workers: direct workers, contracted workers and community workers. Where numbers are not yet firm, an estimate should be provided.

Characteristics of Project Workers: To the extent possible, a broad description and an indication of the likely characteristics of the project workers e.g. local workers, national or international migrants, female workers, workers between the minimum age and 18.

Timing of Labor Requirements: The timing and sequencing of labor requirements in terms of numbers, locations, types of jobs and skills required.

Contracted Workers: The anticipated or known contracting structure for the project, with numbers and types of contractors/subcontractors and the likely number of project workers to be employed or engaged by each contractor/subcontractor. If it is likely that project workers will be engaged through brokers, intermediaries or agents, this should be noted together with an estimate how many workers are expected to be recruited in this way.

Migrant Workers: If it is likely that migrant workers (either domestic or international) are expected to work on the project, this should be noted and details provided.

2. ASSESSMENT OF KEY POTENTIAL LABOR RISKS

This section describes the following, based on available information:

Project activities: The type and location of the project, and the different activities the project workers will carry out.

Key Labor Risks: The key labor risks which may be associated with the project (see, for example, those identified in ESS2 and the GN). These could include, for example:

- The conduct of hazardous work, such as working at heights or in confined spaces, use of heavy machinery, or use of hazardous materials
- Likely incidents of child labor or forced labor, with reference to the sector or locality
- Likely presence of migrants or seasonal workers
- Risks of labor influx or gender based violence
- Possible accidents or emergencies, with reference to the sector or locality
- General understanding and implementation of occupational health and safety requirements

3. BRIEF OVERVIEW OF LABOR LEGISLATION: TERMS AND CONDITIONS

This ***section*** sets out the ***key aspects*** of national labor legislation with regards to term and conditions of work, and how national legislation applies to different categories of workers identified in Section 1. The overview focuses on legislation which relates to the items set out in ESS2, paragraph 11 (i.e. wages, deductions and benefits).

4. BRIEF OVERVIEW OF LABOR LEGISLATION: OCCUPATIONAL HEALTH AND SAFETY

This ***section*** sets out the ***key aspects*** of the national labor legislation with regards to occupational health and safety, and how national legislation applies to the different categories of workers identified in Section 1. The overview focuses on legislation which relates to the items set out in ESS2, paragraphs 24 to 30.

5. RESPONSIBLE STAFF

This ***section*** identifies the functions and/or individuals within the project responsible for (as relevant):

- engagement and management of project workers
- engagement and management of contractors/subcontractors
- occupational health and safety (OHS)
- training of workers
- addressing worker grievances

In some cases, this section will identify functions and/or individuals from contractors or subcontractors, particularly in projects where project workers are employed by third parties.

6. POLICIES AND PROCEDURES

This *section* sets out information on OHS, reporting and monitoring and other general project policies. Where relevant, it identifies applicable national legislation.

Where significant safety risks have been identified as part of Section 2, this section outlines how these will be addressed. Where the risk of forced labor has been identified, this section outlines how these will be addressed (see ESS2, paragraph 20 and related GNs). Where risks of child labor have been identified, these are addressed in Section 7.

Where the Borrower has stand-alone policies or procedures, these can be referenced or annexed to the LMP, together with any other supporting documentation.

7. AGE OF EMPLOYMENT

This section sets out details regarding:

- The minimum age for employment on the project
- The process that will be followed to verify the age of project workers
- The procedure that will be followed if underage workers are found working on the project
- The procedure for conducting risk assessments for workers aged between the minimum age and 18

See ESS2, paragraphs 17 to 19 and related GNs.

8. TERMS AND CONDITIONS

This section sets out details regarding:

- Specific wages, hours and other provisions that apply to the project
- Maximum number of hours that can be worked on the project
- Any collective agreements that apply to the project. When relevant, provide a list of agreements and describe key features and provisions
- Other specific terms and conditions

9. GRIEVANCE MECHANISM

This section sets out details of the grievance mechanism that will be provided for direct and contracted workers, and describes the way in which these workers will be made aware of the mechanism.

Where community workers are engaged in the project, details of the grievance mechanism for these workers is set out in Section 11.

10. CONTRACTOR MANAGEMENT

This section sets out details regarding:

- The selection process for contractors, as discussed in ESS2, paragraph 31 and GN 31.1.
- The contractual provisions that will put in place relating to contractors for the management of labor issues, including occupational health and safety, as discussed in ESS2, paragraph 32 and GN 32.1
- The procedure for managing and monitoring the performance of contractors, as discussed in ESS2, paragraph 32 and GN 32.1

11. COMMUNITY WORKERS

Where community workers will be involved in the project, this section sets out details of the terms and conditions of work, and identifies measures to check that community labor is provided on a voluntary basis. It also provides details of the type of agreements that are required and how they will be documented. See GN 34.4.

This section sets out details of the grievance mechanism for community workers and the roles and responsibilities for monitoring such workers. See ESS2, paragraphs 36 and 37.

12. PRIMARY SUPPLY WORKERS

Where a significant risk of child or forced labor or serious safety issues in relation to primary suppliers has been identified, this section sets out the procedure for monitoring and reporting on primary supply workers.

World Bank Template - III: Template for ESS10: Stakeholder Engagement and Information Disclosure

This template provides guidance for the Borrower on specific aspects of the application of the Environmental and Social Standards (ESSs), which form part of the World Bank's 2016 Environmental and Social Framework. Templates help to illustrate the requirements of the ESSs and propose sample approaches to fulfilling the requirements; they are not Bank policy and are meant to be a useful and voluntary tool. In case of any inconsistency or conflict with the ESSs, the provisions of the ESSs prevail.

Stakeholder Engagement Plan (SEP)

The scope and level of detail of the plan should be commensurate and proportionate with the nature and scale, potential risks, and impacts of the project and the concerns of the stakeholders who may be affected by or are interested in the project. Depending on the nature of the scale of the risks and impacts of the project, the elements of an SEP may be included as part of the Environmental and Social Commitment Plan (ESCP), and preparation of a stand-alone SEP may not be necessary.

The SEP should be clear and concise, and focus on describing the project and identifying its stakeholders. It is key to identify what information will be in the public domain, in what languages, and where it will be located. It should explain the opportunities for public consultation, provide a deadline for comments, and explain how people will be notified of new information or opportunities for comment. It should explain how comments will be assessed and taken into account. It should also describe the project's grievance mechanism and how to access this mechanism. The SEP should also commit to releasing routine information on the project's environmental and social performance, including opportunities for consultation and how grievances will be managed.

1. Introduction/Project Description

Briefly describe the project, the stage of the project, its purpose, and what decisions are currently under consideration on which public input is sought.

Describe location and, where possible, include a map of the project site(s) and surrounding area, showing communities and proximity to sensitive sites, and including any worker accommodation, lay-down yards, or other temporary activities that also may impact stakeholders. Provide a link to, or attach a nontechnical summary of, the potential social and environmental risks and impacts of the project.

2. Brief Summary of Previous Stakeholder Engagement Activities

If consultation or disclosure activities have been undertaken to date, including information disclosure and informal or formal meetings/or consultation, provide a summary of those activities (no more than half a page), the information disclosed, and where more detailed information on these previous activities can be obtained (for example, a link, or physical location, or make available on request).

3. Stakeholder identification and analysis

Identify key stakeholders who will be informed and consulted about the project, including individuals, groups, or communities that:

- Are affected or likely to be affected by the project (project-affected parties); and

- May have an interest in the project (other interested parties).

Depending on the nature and scope of the project and its potential risks and impacts, examples of other potential stakeholders may include government authorities, local organizations, NGOs, and companies, and nearby communities. Stakeholders may also include politicians, labor unions, academics, religious groups, national social and environmental public-sector agencies, and the media.

3.1 Affected parties

Identify individuals, groups, local communities, and other stakeholders that may be directly or indirectly affected by the project, positively or negatively. The SEP should focus particularly on those directly and adversely affected by project activities. Mapping the impact zones by placing the affected communities within a geographic area can help define or refine the project's area of influence. The SEP should identify others who think they may be affected, and who will need additional information to understand the limits of project impacts.

3.2 Other interested parties

Identify broader stakeholders who may be interested in the project because of its location, its proximity to natural or other resources, or because of the sector or parties involved in the project. These may be local government officials, community leaders, and civil society organizations, particularly those who work in or with the affected communities. While these groups may not be directly affected by the project, they may have a role in the project preparation (for example, government permitting) or be in a community affected by the project and have a broader concern than their individual household.

Moreover, civil society and nongovernmental organizations may have in-depth knowledge about the environmental and social characteristics of the project area and the nearby populations, and can help play a role in identifying risks, potential impacts, and opportunities for the Borrower to consider and address in the assessment process. Some groups may be interested in the project because of the sector it is in (for example, mining or health care), and others may wish to have information simply because public finance is being proposed to support the project. It is not important to identify the underlying reasons why people or groups want information about a project—if the information is in the public domain, it should be open to anyone interested.

3.3 Disadvantaged / vulnerable individuals or groups

It is particularly important to understand project impacts and whether they may disproportionately fall on disadvantaged or vulnerable individuals or groups, who often do not have a voice to express their concerns or understand the impacts of a project. The following can help outline an approach to understand the viewpoints of these groups:

- Identify vulnerable or disadvantaged individuals or groups and the limitations they may have in participating and/or in understanding the project information or participating in the consultation process.
- What might prevent these individuals or groups from participating in the planned process? (For example, language differences, lack of transportation to events, accessibility of venues, disability, lack of understanding of a consultation process).

- How do they normally get information about the community, projects, activities?
- Do they have limitations about time of day or location for public consultation?
- What additional support or resources might be needed to enable these people to participate in the consultation process? (Examples are providing translation into a minority language, sign language, large print or Braille information; choosing accessible venues for events; providing transportation for people in remote areas to the nearest meeting; having small, focused meetings where vulnerable stakeholders are more comfortable asking questions or raising concerns.)
- If there are no organizations active in the project area that work with vulnerable groups, such as persons with disability, contact medical providers, who may be more aware of marginalized groups and how best to communicate with them.
- What recent engagement has the project had with vulnerable stakeholders and their representatives?

3.4 Summary of project stakeholder needs

Example

Community	Stakeholder group	Key characteristics	Language needs	Preferred notification means (e-mail, phone, radio, letter)	Specific needs (accessibility, large print, child care, daytime meetings)
Village A	Parents with young children	Approximately 180 households affected; 300 children	Official language	Written information, radio	Child care for meetings—late afternoon preferred timing
Village A	Refugees	38 extended families, poverty level	Language alternative	Visit with translator and civil society representative	Graphics, education on process

4. Stakeholder Engagement Program

4.1 Purpose and timing of stakeholder engagement program

Summarize the main goals of the stakeholder engagement program and the envisaged schedule for the various stakeholder engagement activities: at what stages throughout the project's life they will take place, with what periodicity, and what decision is being undertaken on which people's comments and concerns. If decisions on public meetings, locations, and timing of meetings have not yet been made, provide specific information on how people will be made aware of forthcoming opportunities to review information and provide their views. Include the ESCP as part of such information. For some projects, a stand-alone SEP may not be necessary and its elements may be incorporated into the ESCP.

4.2 Proposed strategy for information disclosure

Briefly describe what information will be disclosed, in what formats, and the types of methods that will be used to communicate this information to each of the stakeholder groups. Methods used may vary according to target audience. For each media example, identify the specific names (for example, *The Daily News* and *The Independent*, *Radio News 100.6*, television *Channel 44*). The selection of disclosure—both for notification and providing information—should be based on how most people in the vicinity of the project routinely get information, and may include a more central information source for national interest. A variety of methods of communication should be used to reach the majority of stakeholders. The project should select those that are most appropriate and have a clear rationale for their choices. The plan should include a statement welcoming comments on the proposed engagement plan and suggestions for improvement. For remote stakeholders, it may be necessary to provide for an additional newspaper outlet or separate meeting, or additional documents that should be placed in the public domain. The public domain includes:

- Newspapers, posters, radio, television;
- Information centers and exhibitions or other visual displays;
- Brochures, leaflets, posters, nontechnical summary documents and reports;
- Official correspondence, meetings;
- Website, social media.

The strategy should include means to consult with project-affected stakeholders if there are significant changes to the project resulting in additional risks and impacts. Following such consultation, an updated ESCP will be disclosed.

Example

Project stage	List of information to be disclosed	Methods proposed	Timetable: Location s/ dates	Target stakeholders	Percentage reached	Responsibilities
Construction	Traffic management plan	Notification on Radio News 100.6 and copy in village hall Poster on community bulletin board	Radio twice daily in weeks of disclosure	Villagers, including pedestrians and drivers	Radio News 100.6 reaches 60% of village Poster on bulletin board reaches another percentage of the population	Community Liaison Officer

4.3 Proposed strategy for consultation

Briefly describe the methods that will be used to consult with each of the stakeholder groups. Methods used may vary according to target audience, for example:

- Interviews with stakeholders and relevant organization
- Surveys, polls, and questionnaires
- Public meetings, workshops, and/or focus groups on specific topic
- Participatory methods
- Other traditional mechanisms for consultation and decision making.

Example

Project stage	Topic of consultation	Method used	Timetable: Location and dates	Target stakeholders	Responsibilities
Construction	Traffic safety	Discussion with village schools Public meeting	ABC elementary school September 4, 3:00 p.m. Village A town hall September 8, 5:30 p.m.	Parents and children in village Community	Community Liaison Officer (CLO) Transportation Engineer, Manager, CLO

4.4 Proposed strategy to incorporate the view of vulnerable groups

Describe how the views of vulnerable or disadvantaged groups will be sought during the consultation process. Which measures will be used to remove obstacles to participation? This may include separate mechanisms for consultation and grievances, developing measures that allow access to project benefits, and so forth.

4.5 Timelines

Provide information on timelines for project phases and key decisions. Provide deadlines for comments.

4.6 Review of Comments

Explain how comments will be gathered (written and oral comments) and reviewed, and commit to reporting back to stakeholders on the final decision and a summary of how comments were taken into account.

4.7 Future Phases of Project

Explain that people will be kept informed as the project develops, including reporting on project environmental and social performance and implementation of the stakeholder engagement plan and grievance mechanism. Projects should report at least annually to

stakeholders, but often will report more frequently during particularly active periods, when the public may experience more impacts or when phases are changing (for example, quarterly reports during construction, then annual reports during implementation).

5. Resources and Responsibilities for implementing stakeholder engagement activities

5.1 Resources

Indicate what resources will be devoted to managing and implementing the Stakeholder Engagement Plan, in particular:

- What people are in charge of the SEP
- Confirm that an adequate budget has been allocated toward stakeholder engagement
- Provide contact information if people have comments or questions about the project or the consultation process; that is, phone number, address, e-mail address, title of responsible person (individual names may change).

5.2 Management functions and responsibilities

Describe how stakeholder engagement activities will be incorporated into the project's management system and indicate what staff will be devoted to managing and implementing the Stakeholder Engagement Plan:

- Who will be responsible for carrying out each of the stakeholder engagement activities and what are the qualifications of those responsible?
- How involved will management be in stakeholder engagement?
- How will the process be documented, tracked, and managed (for example, stakeholder database, commitments register, and so forth)?

6. Grievance Mechanism

Describe the process by which people affected by the project can bring their grievances and concerns to the project management's attention, and how they will be considered and addressed:

- Is there an existing formal or informal grievance mechanism, and does it meet the requirements of ESS10? Can it be adapted or does something new need to be established?
- Is the grievance mechanism culturally appropriate, that is, is it designed to take into account culturally appropriate ways of handling community concerns? For example, in cultures where men and women have separate meetings, can a woman raise a concern to a woman in the project grievance process?
- What process will be used to document complaints and concerns? Who will receive public grievances? How will they be logged and monitored?
- What time commitments will be made to acknowledge and resolve issues? Will there be ongoing communication with the complainant throughout the process?
- How will the existence of the grievance mechanism be communicated to all stakeholder groups? Are separate processes needed for vulnerable stakeholders?

- If a complaint is not considered appropriate to investigate, will an explanation be provided to the complainant on why it could not be pursued?
- Will there be an appeals process if the complainant is not satisfied with the proposed resolution of the complaint? Not all projects will necessarily have an appeals process, but it is advisable to include one for more complex projects. In all cases, complainants need to be reassured that they still have all their legal rights under their national judicial process.
- A summary of implementation of the grievance mechanism should be provided to the public on a regular basis, after removing identifying information on individuals to protect their identities. How often will reports go into the public domain to show that the process is being implemented?

7. Monitoring and Reporting

7.1 Involvement of stakeholders in monitoring activities

Some projects include a role for third parties in monitoring the project or impacts associated with the project. Describe any plans to involve project stakeholders (including affected communities) or third-party monitors in the monitoring of project impacts and mitigation programs. The criteria for selection of third parties should be clear. For further information, see the World Bank's Good Practice Note on Third-Party Monitoring.

7.2 Reporting back to stakeholder groups

Describe how, when, and where the results of stakeholder engagement activities will be reported back to both affected stakeholders and broader stakeholder groups. It is advised that these reports rely on the same sources of communication that were used earlier to notify stakeholders. Stakeholders should always be reminded of the availability of the grievance mechanism.

WORLD BANK TEMPLATE

Checklist to accompany the Guidance Note for ESS10: Stakeholder Engagement Plan and Stakeholder Engagement Framework

Please read this in conjunction with the Stakeholder Engagement Plan Template

In certain instances where the specifics for creating a detailed Stakeholder Engagement Plan are not available, a stakeholder engagement framework (SEF) may be adopted. The SEF will guide the development of an SEP, as soon as the specific locations, stakeholder groups, and schedule of activities are known. The scope and level of detail of the framework SEP should be commensurate with the nature and scale, potential risks, and impacts of the project and the level of concern in the project area. However, since adequate information is not yet available on which people can comment, more detail is needed on the range of issues under consideration than in a specific SEP, which is often attached to or accompanied by a nontechnical summary of the project.

It is important to remember that people make their minds up about a project, whether positive or negative, at an early stage. If only limited information is provided to people from the project, they will form opinions based on their own informal discussions, and perhaps on the basis of less credible information. While it is important to manage expectations, it is typically a mistake to delay providing information to stakeholders, as opinions can be quite firmly established, even when more information is later provided.

When the details of the project location, technology, or other key factors are not known and will be decided at a future date, the Stakeholder Engagement Plan should be presented as the approach to stakeholder engagement that is envisaged, following the information note above, but with the following changes:

- The stakeholder identification may expand to a wider area than the project will affect, if a location has not yet been identified. Be careful to provide information on the range of options under consideration and how these options will be narrowed down.
- Provide information on the process that will be followed in developing a specific stakeholder engagement plan and the objectives of the consultation.
- Provide details on the early stages of consultation, when more information will be gathered to draft the Stakeholder Engagement Plan, and welcome input on the best methods of notification, information disclosure, and consultation.
- The framework needs to be specific about the way people will be informed when more information is known, including specific names of media and websites. It should outline the general process that will be followed, and the number of days/weeks/months that people will have to comment on information when it is available.
- When locations and dates of meetings are not known, provide a general range of the number of meetings planned and the approach to consultation.
- The contact information for the project needs to be provided in full in the framework for people who have more questions or concerns.
- The grievance mechanism needs to be provided in full in the framework. Stakeholders can have problems even during the project planning stage.

World Bank Template – IV: Grievance Redress Mechanism

This Checklist provides guidance for the Borrower on the application of the Environmental and Social Standards (ESSs), which form part of the World Bank's 2016 Environmental and Social Framework. Checklists help to illustrate the requirements of the ESSs and propose sample approaches to implement some of the requirements of the ESSs; they are not Bank policy, nor are they mandatory. Checklists do not substitute for the need to exercise sound judgment in making project decisions. In case of any inconsistency or conflict between the Checklists and the ESSs, the provisions of the ESSs prevail.

Grievance Redress Mechanism Checklist

The appropriate level of complexity of a project's Grievance Redress Mechanism (GRM) depends on the risks and impacts of the project and the project context. The following checklist describes a complex GRM that adheres to good international practice, which may not be necessary for all projects. Nevertheless, this checklist helps to determine whether a grievance mechanism conforms to good international practice.

A. System issues

- | | | |
|--|------------------------------|-----------------------------|
| 1. Does the project invite feedback/grievances? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 2. Does the organization have a policy on grievance redress? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| a. Is the policy available to all staff, beneficiaries, and potential users? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. Is the policy written in the local language(s)? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 3. Does the grievance mechanism have the following features? | | |
| a. A clearly understood procedure for people to provide feedback and/or submit grievances. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. A statement of who is responsible for dealing with feedback/grievances. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. Procedures for resolving or mediating and investigating grievances depending on their seriousness and complexity. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. A system for keeping complainants informed of status updates. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. A system for recording feedback/grievances and outcomes. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Procedures for protecting confidentiality of complainants | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

B. Staff management

- | | | |
|--|------------------------------|-----------------------------|
| 1. Is there a grievance manual for staff? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 2. Do the grievance policy and/or procedures provide guidance on: | | |
| a. What is a grievance/feedback? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. What information to collect from complainants? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. What remedies can or should be used to resolve grievances? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 3. Are the grievance policy and procedures communicated to all staff? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4. Are adequate resources allocated for the grievance mechanism to function effectively? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 5. Does the organization provide training on grievance management to staff? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

C. Communication to grievance mechanism users

1. Are users told how to submit grievances/feedback? Yes ☐ No ☐
 - a. Is an information brochure on the grievance mechanism available to users? Yes ☐ No ☐
 - b. Are feedback/grievance forms available to users? Yes ☐ No ☐
 - c. Are grievance forms or signs displayed prominently and readily accessible? Yes ☐ No ☐
 - d. Are contact details of staff receiving feedback/grievance published and displayed in public areas? Yes ☐ No ☐
 - e. Is information on grievance management available in local languages? Yes ☐ No ☐
2. Are users able to submit grievances/feedback:
 - a. In writing Yes ☐ No ☐
 - b. By email Yes ☐ No ☐
 - c. By fax Yes ☐ No ☐
 - d. By telephone Yes ☐ No ☐
 - e. In person Yes ☐ No ☐
3. Are users provided with assistance to submit feedback/grievances where needed? Yes ☐ No ☐
4. Can the grievance mechanism be accessed free of charge? Yes ☐ No ☐
5. Are users promised confidentiality? Yes ☐ No ☐
6. Are users informed about the appeals process? Yes ☐ No ☐

D. Feedback/grievance recording

1. Are all feedback/grievances recorded? Yes ☐ No ☐
 - a. Are grievances/feedback logged and documented? Yes ☐ No ☐
 - b. Are inquiries/suggestions and recommendations recorded? Yes ☐ No ☐
 - c. Are the outcomes and responses to all grievances/feedback recorded? Yes ☐ No ☐

E. Business standards

1. Are there business standards in place for the process and timing with which grievances/feedback are dealt with? Yes ☐ No ☐
 - a. Is receipt acknowledged within a stipulated time frame? Yes ☐ No ☐
 - b. Are the grievances supposed to be resolved within a stipulated time frame? Yes ☐ No ☐
2. Is there a quality control system in place to:
 - a. Check if all grievances have been dealt with or acted upon. Yes ☐ No ☐
 - b. Check if all aspects of a grievance have been addressed. Yes ☐ No ☐
 - c. Check if all necessary follow-up action has been taken. Yes ☐ No ☐

F. Analysis and feedback

1. Are regular internal reports on grievances/feedback produced for senior management? Yes ☐ No ☐
2. Grievances/feedback reports include data on:
 - Numbers of grievances/feedback received. Yes ☐ No ☐
 - Compliance with business standards. Yes ☐ No ☐
 - Issues raised in grievances/feedback. Yes ☐ No ☐
 - Trends in grievances/feedback over time. Yes ☐ No ☐

The causes of grievances/feedback.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Whether remedial action was warranted.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
What redress was actually provided?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Recommendations/strategies to prevent or limit future recurrences.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. Are reports about grievances/feedback made public, periodically?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Annexure-1.1: Minutes of EAC meeting MoEF&CC

Minutes of the 25th Meeting of the Expert Appraisal Committee for River Valley and Hydroelectric Projects held on 19.07.2019 at Teesta Meeting Hall, 1st Floor, Vayu Block, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-3.

The 25th meeting of the re-constituted EAC for River Valley & Hydroelectric Projects was held on 19.07.2019 under the Chairmanship of Dr. S. K. Jain in the Ministry of Environment, Forest & Climate Change at Teesta Meeting Hall, 1st Floor, Vayu Block, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-3. The following members were present.

- | | | | |
|-----|--------------------------|---|-------------------------------------|
| 1. | Dr. S.K. Jain | - | Chairman |
| 2. | Shri Sharvan Kumar | - | Representative of CEA |
| 3. | Dr. J.A. Johnson | - | Representative of WII |
| 4. | Shri N.N. Rai | - | Representative of CWC |
| 5. | Dr. A.K. Sahoo | - | Representative of Director of CIFRI |
| 6. | Dr. D.M. More | - | Member |
| 7. | Shri Chetan Pandit | - | Member |
| 8. | Dr. S.R. Yadav | - | Member |
| 9. | Dr. J.P. Shukla | - | Member |
| 10. | Dr. (Mrs.) Poonam Kumria | - | Member |
| 11. | Dr. S. Kerketta | - | Member Secretary |

Dr. Vijay Kumar, Prof. R.K. Kohli and Dr. Govind Chakrapani could not present due to pre-occupation. The deliberations held and the decisions taken are as under:

Item No. 25.0 Confirmation of the minutes of 24th EAC meeting.

The Minutes of the 24th EAC (River Valley & Hydroelectric Projects) meeting held on 27.05.2019 were confirmed. Some members opined in the minutes of the 23rd EAC (River Valley & Hydroelectric Projects) meeting held on 23.04.2019, the following:

"As per S.O. 648 (E) dated 03.03.2016 of the Ministry, the project seeking for grant of ToR/Scoping Clearance could only be appraised in the EAC meeting provided the PP is present along with NABET approved Consultant. In this regards, some members expressed that presence of NABET approved Consultant be relaxed because the project implemented by the State Government/PSUs would have difficulty in hiring the Consultant at the initial stages. The Member Secretary clarified that as this is a policy issue of the Ministry, presence of the Consultant is necessary at the time of appraisal of the project for preparation of EIA/EMP report."

Item No. 25.1 Lakhwar Multipurpose Project in the district of Dehradun in Uttarakhand by M/s UJVN LTD - Regarding Fresh ToR.

Proposal No. IA/UK/RIV/107946/2019, File No. J-12011/11/2019-IA-I (R)

Earlier, the project was discussed in the EAC meeting held on 28.01.2019 based on the order vide dated 10.01.2019 (OA No. 431 of 2015 by Manoj Mishra Vs. Union of India and Others) of the Hon'ble NGT, Principal Bench, New Delhi. The EAC had recommended for a site visit by a Sub-Committee of the EAC to the project site for any additional study, if any, to be taken up based on the standard ToR for River Valley Projects. A Sub-committee consisting 7 members was constituted and the Sub-committee visited the project site on 22.04.2019. The Sub-committee made the following observations:

EAC deliberated on the information provided by the PP and deferred the project for want of following information:

- i. An undertaking as part of the EIA report from Project proponent, owning the contents (information and data) of the EIA report with the declaration about the contents of the EIA report pertaining to a project have not been copied from other EIA reports.
- ii. Content of the summary EIA be made as per the Appendix III A of EIA Notification and shall be submitted.
- iii. The details of funds allocation along with the time line and activities under CER as per Ministry's O.M. No. 22-65/2017-IA.III dated 1st May, 2018 shall be submitted.
- iv. Environmental matrix during construction and operational phase needs to be submitted.
- v. Fish species list needs to be reviewed with photographic evidence.
- vi. Both capital and recurring expenditure under EMP shall be submitted.
- vii. Approved conservation plan for Schedule I species from Chief Wildlife Warden should be submitted.
- viii. PH at Rajgarh district was presided by Sub Divisional Magistrate having rank below the Additional District Magistrate. Clarification in this regard is to be submitted.
- ix. Provision of irrigation to kharif crop is to be explored.
- x. Possibilities of fish passages needs to be included for better migration of local fish species.
- xi. Details of ESZ of Narsinghgarh Wildlife sanctuary are to be submitted.
- xii. In EIA report length of central spillway is mentioned 369.65 m long with 18 nos. of vertical gates of size 13.80x12.0 m whereas during presentation length of spillway was mentioned 311 m with 22 nos. of radial gates. Clarification is to be submitted in this regard
- xiii. Maximum dam height mentioned in the EIA report is 25 m whereas in the presentation made before the committee it was submitted 23.40 m high. Clarification is to be submitted in this regard.

Item No. 25.8 Discussion on the report – Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam projects.

Background

The Dam Rehabilitation and Improvement Project (DRIP) is a program under the initiative of the Government of India with financial assistance of the World Bank which aims to mitigate the ageing in Indian dams by not only facilitating the reconditioning and structural upgrading of the participating dams, but also assisting in the development of institutional capacities for the safe operation of all dams in India. In this line, DRIP project has been conceptualized with three main components: Rehabilitation and Improvement of Dams and associated appurtenances, Institutional Strengthening and Project Management.

The first component (i.e. Rehabilitation and Improvement) focuses on structural and non-structural measures at 198 participating project dams, many of which are more than 25 years old. These rehabilitation measures address the safety concern of dam, population, environment and property downstream of dam in case of dam failure. As consequence of these rehabilitation measures (especially for structural measures) there could be location-specific cases where a sub-project activity in

isolation or in combination with other activities, may have substantial environmental and/or social impact.

Objective of The Document:

Presently, no guideline is available for managing the environmental impacts due to the dam rehabilitation works and guide the dam owners explicitly whether any advance action is required to address environmental protocols for executing a rehabilitation work. Depending upon the extend and location of the project as well as extent of environmental impacts, few of the rehabilitation activities may attract the statutory provisions for environmental clearance, forest clearance and wildlife clearance and the Dam owners have to obtain necessary clearance and approval in advance.

Keeping in view of the above, an effort has been made for preparation of a document with an objective to guide the dam owners to systematically address in advance the environmental safeguard requirements of the proposed dam rehabilitation projects in case it is applicable, and execute the relevant rehabilitation work safely and systematically without any concern to meet the particular timelines of a given project, facilitate the contract agencies to transport construction material, manpower and machineries without any hassle by taking necessary approval in advance from the concerned agency/department.

The guidelines have taken into consideration the environmental regulations & policies, lending agencies policies, other literatures and experience gained under DRIP to produce comprehensive Guidelines for all dam owners in India. The document provides:

- General overview of need and extent of environmental impact studies for dam projects,
- Policy and legal framework on environmental safeguards and applicability in Dam Projects
- Procedures for obtaining environmental, forest and wildlife clearances
- Procedures for conducting EIA study
- Good practices for managing environmental issues during different stages of the dam projects.
- Compliance requirements of the lending agencies such as World Bank and Asian Development for seeking financial assistance for the proposed project

Central Water Commission (CWC) constituted a Guideline Review Committee to review the Guideline and provide suggestions for finalization of the Guideline. The committee is as follows:

Chairman	Shri Gulshan Raj	Chief Engineer, Dam Safety Organisation, CWC, New Delhi
Member Secretary	Shri Pramod Narayan	Director, CWC, New Delhi & Project Director, DRIP
Member:		
Shri Nitya Nand Rai	Director, Hydrology (DSR), CWC, New Delhi	
Shri B.B. Saikia	Director, EM & EIA, CWC, New Delhi	

Shri Piyush Dorga	Sr. Environmental Specialist, World Bank, New Delhi
Dr. S. Kerketta	Director (IA.I), Ministry of Environment, Forest & Climate Change, Govt. of India, New Delhi
Shri Sharvan Kumar	Director, CEA, New Delhi

Based on the past experiences and anticipated dam rehabilitation works for upcoming projects, altogether 31 rehabilitation activities have been identified and analyzed for the applicability of different statutes & regulations. For the purpose, a matrix of identified 31 rehabilitation activities for the existing dam projects and applicability of statutory clearances/ permissions under EIA Notification, Forest Conservation Act, Wildlife Protection Act, 1972, etc. has been included in the document. The matrix of dam rehabilitation activities and the applicability of different statutory permissions / clearances are annexed as **Annexure-I**.

Annexure-I.

Activity-wise Applicability of Environmental, Forest and Wildlife Clearances for Dam Rehabilitation and Improvement Works

Sl. No.	Types of Rehabilitation Works	Nature of Activities	EC	FC	WL Clearance	Remarks
1.	Pointing of upstream face of masonry dams with special UV resistant mortar to control seepage.	<p>This activity is a localized activity limited to the U/S face of masonry dam. It requires grouting materials, light drills/hand tools only with few manpower.</p> <p>This does not require any major equipments/batching plant/Crusher. Materials for work (cement, sand, additives etc.) are to be brought to dam top for use.</p>	No	No	No	If a given dam is located within WLS/NP/PT then permission is required from concerned department to transport construction material, manpower and equipments to the dam site.
2.	Treatment of dam contraction joints for damaged seals using hydrophilic materials.	<p>This activity is localized at the transverse contraction joints of the dam.</p> <p>This activity requires drilling of hole at the transverse contraction joints of the dam and filling with hydrophilic materials. It is normally carried out from dam top spillway crest. Requires</p>	No	No	No	

		transportation of drilling equipments to dam site along with few manpower				
3.	Grouting of Masonry/Concrete dams to control seepage.	This activity is confined to body of Masonry/Concrete dam. This activity is carried out from dam top or spillway crest or from d/s face or from dam galleries.	No	No	No	No
4.	Reaming of porous drains and re-drilling of foundation drains.	This is a localized activity. It is undertaken from dam top and from inspection/foundation galleries.	No	No	No	No
5.	Replacement of rubber seals of the spillway gates, sluice gates and periodic overhauling of gate hoisting systems.	It is a localized activity. Replacement of rubber seal require hand tools etc. Servicing/overhauling of gate require lubricants, painting works, transportation of materials, etc.	No	No	No	No
6.	Repair and replacement of spillway gates/under sluice gates or provision of additional stop log gates	In the case of gate repair, it is a minor activity. In case gates are to be replaced, then it requires transportation of fabricated components of Gates/Stop logs using	No	No	No	No.

		heavy duty cranes/ trailers supply of material and gates to the dam site.					
7.	Repair or replacement of Gate Hoist/ Gantry Cranes	Requires transportation of fabricated components of Gates/Shop logs using heavy duty cranes/ trailers, and assembly and installation of gantry on dam top etc.	No	No	No	No	
8.	Provision of automation of spillway gates and control room structures.	It is a localized work. It involves transportation of construction materials, concrete mixer, etc. for construction of control room. Automation of Gates require transportation of control panels and related equipments.	No	No	No	No	
9.	Bringing the earth dam section to design section to address the stability aspect	It is a minor and localized work, It requires survey works and transportation of selected earth from borrow areas, compaction equipment, etc.	No	No	No	No	If a given dam is located within WLS/NP/TR then permission is required from concerned department to transport construction material, manpower and equipments to the dam site.
10.	Improvement of rip-rap, turfing on downstream face, chute drains, toe drains, rock toe and	This activity is limited to the dam body, it involves transportation of requisite materials for carrying out of these works. These	No	No	No	No	

	general drainage system for earthen dams	works are to be carried out manually.				
11.	Improvement of existing access road to dam body as well as existing access roads to different components of the dam project and dam crest railing.	This activity involves transportation of construction materials, use of heavy equipments like road rollers, hotmix asphalt plant, paving machine etc.	No	No	No	
12.	Providing security system to guard dam / project area.	This work would be limited to project area only. It involves transportation of construction materials for fencing/security and construction of fencing to guard the dam / Project area	No	No	No	
13.	Improving dam instrumentation and monitoring, SCADA and automation system of dams	Involves carriage of the instruments, cables etc. to project site and their installation in the project area.	No	No	No	

14.	Providing additional spillway structures/fuse plugs/flush bars to take care of hydrological safety	<p>Case(a) In this case, no public as well as forest land acquisition required, no R&R issues involved, no change in reservoir storage, no submergence, no increase in CCA of dam project, no flow modification during lean period etc.</p> <p>Case(b) In this case, <i>some public/ forest land acquisition required, R&R issues involved</i>, no change in reservoir storage, no submergence, no increase in CCA of dam project, no flow modification during lean period etc.</p> <p>This is a major civil work, involving transportation of all construction materials and equipments, Hydro-Mechanical, electrical works including spill channel, etc. within the project area.</p>	Amendment in EC.	No	No	<p>If activity falls within a WLS/NP/TR then permission is required from concerned department to transport construction materials, manpower and equipments to the dam site.</p> <p>The proposal may involve displacement of population living in the proposed layout of newly proposed spillway or living in water way of newly proposed spill channel connecting spillway and river to dispose off the flood water.</p>
-----	--	---	------------------	----	----	--

15.	Raising height of dams to cater for increased design flood to address hydrological safety (No change in FRL)	This is a major work within the dam body involving construction activities like earthwork, concrete works, H-M works. Also transportation of construction materials and equipment is involved. <u>There is no change in the storage capacity of reservoir at the FRL. This is required for free board purposes only. Also, no change in CCA, no flow modification pattern, no submergence etc.</u>	Amendme nt in EC	No	No	If activity falls within WLS/NP/TR then permission is required from concerned department to transport construction material, manpower and equipments to dam site.
16.	Repair of spillway glacis, discharge channel and energy dissipation arrangements etc.	It is a activity limited to existing spillway area, energy dissipation arrangements, and discharge channel. Involves transportation of construction materials, equipments for undertaking the repair works, and manpower within the dam compound area.	No	No	No	If activity falls within WLS/NP/TR then permission is required from concerned department to transport construction material, manpower and equipments to dam site.
17.	Survey and mapping of cracks and its	This is limited to the dam body only. Require hand	No	No	No	

remedial measures	tools, repair materials, and manpower.					
18. Dredging/ de-siltation of dam reservoirs on selective basis.	This is an activity limited to reservoir water spread area. It requires boats and equipments for bathymetry, heavy equipments/ carriers for removal of silt deposited in the pond/reservoir, and transportation to the approved dumping area. This activity generally is a part of maintenance to restore the original capacity of reservoir.	No Dredging and de-siltation of dams, reservoirs, weirs, barrage, river and canals for the purpose of their maintenance and disaster management is exempted from EC as per S.O.141(E) of MoEFCC dated 15 th January, 2016	No	(a) No, in case reservoir is not a declared bird sanctuary. (b) Yes, in case reservoir is a declared Bird Sanctuary	In the de-siltation activity, a proper Feasibility Report along with EMP to dispose the silt is required as per the Handbook for Assessing and Managing the Reservoir Sedimentation, CWC, 2019. NOC from SPCB/ UTPCC as well as concerned local authorities is required in advance for disposal of site for disposal of dredged materials.	
19. Provision of standby DG Sets, dewatering	These are very minor items, and their	No	No	No	No	

	pumps etc.	installation is limited to the dam compound only.						
20.	Geo-membrane for sealing system for upstream face treatment of dams	This is a localized work. It involves transportation and storage of geomembrane materials, equipment and manpower to the dam site.	No	No	No	No	If activity falls within WLS/NP/TR then permission is required from concerned department to transport dredged material, manpower and equipments to dam site, as well as to disposal site.	
21.	Repair of sluice outlet structures & Fish Passes and Ladders	This is a localized work. It is limited to sluice outlets only, which is within dam body and overflow section of dam and very minor spatial extent. It involves transportation of materials and equipments to the dam.	No	No	No	No		
22.	Downstream face pointing with mortar	This is a minor activity and localized work. It involves transportation of materials, equipments and manpower to the dam site. It is managed by few persons with small supporting equipments etc.	No	No	No	No		
23.	Grouting of embankment of dam	This is a minor activity and localized work. It is	No	No	No	No		

	(with low pressure slurry) & foundation curtain	limited to dam body only. It involves transportation of materials and equipments to the dam.				
24.	Provision or repair of parapet wall	This is a minor activity and localized work. It involves transportation of materials and equipments to the dam.	No	No	No	
25.	Providing backing concrete to dam for stability improvement	This is a localized but major work. It involves transportation of materials and equipments to the dam.	No	No	No	If activity falls within WLS/NP/TR then permission is required from concerned department to transport dredged material, manpower and equipments to dam site, as well as to disposal site.
26.	Catchment Area Treatment (CAT) and Reservoir rim treatment	This activity is widespread within the dam catchment. Generally this activity is executed by Agriculture department/Forest department/ Watershed department of a given State. It involves transportation of materials and equipments for slope stabilization,	No	No,		The proposed CAT works in forest area will be carried out by the forest department, whereas in the non forest area CAT works will be responsibility of the dam authority.

		check dams, sapling etc. Also this activity is very rare and exceptional in the rehabilitation Project as it is done at the time of construction of a new Project.					
27.	Various kind of investigations i.e. geo-technical, underwater, survey, geo-physical/sonic tomography etc.	These activities are limited to dam compound only, and may require movement of experts/technician with few manpower to support the investigations etc.	No	No	No	No	
28.	Pre and post Bathymetry survey for de-siltation of dam or for physical modelling inputs	This is a specialised activity have spatial extension to cover the water spread area of reservoir upto FRL/MWL. It may require one or two motor boat alongwith necessary bathymetry equipments, and 3 to 4 supporting manpower	No	No	No	No	
29.	Development of dam tourism, water recreation facilities, incidental power, in-situ conservation of fisheries, etc.	This is an activity which may require initial planning, survey, design and preparation of Feasibility Report requiring movement of few experts, survey team					If activity falls within WLS/NP/TR then permission is required from concerned department to dredged material, manpower

			No	No	No	No/Yes	and equipments to dam site, as well as to disposal site.
	with requisite equipments etc. The execution and implementation of dam tourism activity may require construction of some landscaping structures, opening of restaurants, public conveniences, licences to authorised agencies expert in water recreations, movement of tourist etc.	No	No	No	No/Yes	No/Yes	
	Development of high end fisheries, this activity is limited to reservoir water spread area.	No	No	No	No	No	
	Incidental solar/hydel power, the incidental solar power is limited to dam compound only, also incidental hydel power is a very rare activity and exceptional under rehabilitation Project, and various scenarios may arise in case it is being developed	Yes, if IC of HEP is >25 MW	No/Yes	No/Yes	No/Yes	No/Yes	

		during the rehabilitation project depending upon the proposal which needs to be examined accordingly							
30.	Establishment of telemetric stations, automatic weather stations and other equipments for integrated flood forecasting and reservoir operation etc.	These are point activities generally do not have any spatial extent and limited to installation of equipments along with their transmission network	No	No	No	No	If activity falls within a sanctuary area, tiger reserve or national park, then permission is required from concerned department to transport dredged material, manpower and equipments to dam site, as well as to disposal site.		
31.	De-weeding of Dam body/Reservoir	This is localised activities confined to embankment & Dam body	No	No	No	No			

The EAC recommended few additions and changes in the matrix, which has been incorporated and recommended the Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam projects for its implementation after approval of the competent authority.

Item No. 25.9 Teesta-IV HEP (520 MW) project in North Sikkim District of Sikkim by M/s. NHPC Ltd- Regarding Amendment in Environmental Clearance.

Proposal No. IA/SK/RIV/10139/2012, File No. J-12011/67/2008-IA-I

The Project Proponent (PP) applied for Amendment in Environmental Clearance for the proposed project online on 12.04.2019 for the proposed project in light of the Hon'ble NGT order dated 15.11.2017 in the matter of Application No.11/2014 (Tenzing Lepcha & Ors. Vs UoI and Ors). The PP along with the Consultant, M/s CIFRI, Barrackpore made a presentation of the proposal in the EAC meeting held on 23.04.2019 and after detailed deliberation, the EAC in the meeting sought the following additional information:

After the detailed deliberations on the issue, the EAC desired some additional information regarding the calculation done by CIFRI for arriving at the figure of 20 m³/ sec for the desired depth of 0.6m. EAC also deliberated and mentioned that the Manning Coefficient taken for such studies is on quite higher side. EAC desired that the calculation done by the CIFRI may be presented before EAC in its next meeting. EAC have also sought clarification on the occurrence of Golden Mahaseer in the study area, which has otherwise been reported to occur in the Teesta river.

The PP submitted the additional information online on 20.06.2019. Accordingly, the PP made a presentation of the proposal based on the additional information provided by CIFRI and *inter-alia*, presented the following:

During the course of study, a total of 7.3 km stretch of Teesta river flowing down stream of Stage - IV HE Project dam axis up to TRT (reservoir tail end of Teesta-V Project) was surveyed during February-April, 2018 and both biotic & abiotic sampling was undertaken for generating the current status on river hydrology, river habitat and biological data including fish and fish food organisms. The survey was conducted in the form of direct site visit, observation from top view, secondary information collection from project officials and other sources on hydrobiology, diversity of plankton, fish species diversity and their migration pattern.

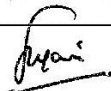
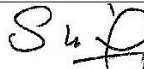
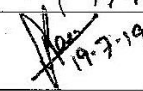
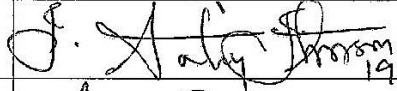

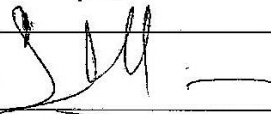
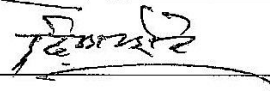

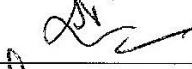
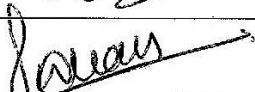
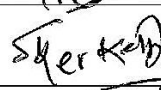
Based on the field surveys and data collected through secondary sources, it was found that *Snow Trout* was the most dominant fish species at the selected sampling sites in Teesta-IV Project area as such e-flow estimation has been done keeping in view that *Schizothorax richardsonii* as the target species. A minimum depth of 0.6 m with a flow velocity of 0.4 m/s would be essential for maintaining the spawning grounds or habitat for *Schizothorax* sp. particularly for the juveniles and other indigenous fish species.

In order to estimate the e-flow as per requirement of target species, hydrodynamic modeling has been carried out in the river stretch between Teesta-IV dam and TRT outlet using HEC-RAS software using available river cross-sections. The flow depths and velocities at different locations along the reach were worked out for discharges ranging from 15 cumecs to 19 cumecs considering two scenarios i.e. (i) without contribution from intermediate tributaries and (ii) with intermediate contribution at locations where tributaries meet the main Teesta river.

Simulation results for discharges ranging from 15 cumecs to 19 cumecs without any contribution of intermediate streams provides an average depth in the range of 1.22 m to 1.33 m and velocity ranges from 1.23 m/s to 1.32 m/s. With the contributions from intermediate

LIST OF MEMBERS**25th MEETING OF RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) FOR
RIVER VALLEY & HYDROELECTRIC PROJECTS**

DATE : 19th July 2019
TIME : 10:30 am onwards
VENUE : Teesta Hall, Indira Paryavaran Bhawan, New Delhi

Sl.No.	Name of Member	Signature
1.	Prof. Sharad Kumar Jain, Chairman	
2.	Shri. T. P. Singh Member	Resigned.
3.	Shri. Sharvan Kumar, Member	 19.7.19
4.	Shri N. N. Rai, Member	 19.7.19
5.	Dr. J.A.Johnson, Member	 19/7/19
6.	Dr. AK Sahoo, Member	 19/7/19
7.	Dr. Vijay Kumar, Member	Abs
8.	Prof. Govind Chakrapani, Member	Abs
9.	Dr. Chetan Pandit, Member	
10.	Dr. Dinkar Madhavrao More, Member	
11.	Prof. R.K. Kohli, Member	Abs.
12.	Prof. S.R. Yadav, Member	
13.	Dr. Jai Prakash Shukla, Member	
14.	Dr. Poonam Kumria, Member	
15.	Dr. Kerketta, Member Secretary Director (IA-1)	 19/7/2019

Annexure-1.2: Guidelines Approval Letter from MoEF&CC



No.J-11013/29/2019-IA.I(R.)
Government of India
Ministry of Environment, Forest and Climate Change
(IA Division)

3rd Floor, Vayu Block,
Indira Paryavaran Bhawan,
Jor Bagh road, New Delhi-3

Date: 17.09.2020

To

The Chief Engineer,
DRIP, 3rd Floor,
Central Water Commission (CWC),
New Library Building, R.K. Puram, Sector- 1,
New Delhi- 110066

Subj.: Guidelines for Dam Rehabilitation and Improvement Projects (DRIP)-Approval thereof

Sir,

With reference to above cited subject, it is to inform that this Ministry has received the Guidelines on Operational Procedure for Assessing and Managing Environmental Impact in existing dam Projects, which has been prepared under the aegis of CWC assisted by various other Departments/Institutions.

2. The report was reviewed in the Ministry and placed before the Expert Appraisal Committee (EAC) for appraisal in its meeting held on 19.07.2019. The final report, after incorporating certain modification, has been submitted to the Competent Authority and has now been approved for publication.
3. It is also requested to submit the updated report to this Ministry to look into the requirement of seeking permission for transportation of material, manpower and equipment for dam rehabilitation work through protected area with a view to eliminate this requirement by following standard guidelines.

It is issued after the approval of the Competent Authority.

Yours faithfully,

(Dr. S. Kerketta)
Director
24695314

Copy to: IG (FC)/JS (GM)/Guard File.

This page has been left blank intentionally.

Annexure-2.1: Schedule of EIA Notification, 2006

SCHEDULE¹

(See paragraph 2 and 7)

LIST OF PROJECTS OR ACTIVITIES REQUIRING PRIOR ENVIRONMENTAL CLEARANCE

Project or Activity		Category with threshold limit		Conditions if any
		A	B	
1		Mining, extraction of natural resources and power generation (for a specified production capacity)		
(1)	(2)	(3)	(4)	(5)
1(a)	(i) Mining of minerals 			

¹ EIA Notification, 2006 dated 14.09.2006 and amendment thereafter, Ministry of Environment, Forests and Climate Change

				<p>already obtained environmental clearance, under this Notification.</p> <p>(ii) Mineral prospecting is exempted.</p>
1(b)	Offshore and onshore oil and gas exploration, development & production	All projects		<p><u>Note</u></p> <p>Seismic surveys which are part of Exploration surveys are exempted provided the concession areas have got previous clearance for physical survey</p>
1(c)	<p>(i) River Valley projects</p> <p>(ii) Irrigation projects</p>	<p>(i) ≥ 50 MW hydroelectric power generation;</p> <p>(ii) $\geq 10,000$ ha. of culturable command area</p>	<p>(i) < 50 MW ≥ 25 MW hydroelectric power generation;</p> <p>(ii) $< 10,000$ ha. > 2000 ha. of culturable command area</p>	<p>General Condition shall apply</p> <p>Note: Irrigation projects not involving submergence or inter-state domain shall be appraised by the SEIAA as Category 'B' Projects. Category 'B' river valley projects falling in more than one state shall be appraised at the central Government Level.</p>
1(d)	Thermal Power Plants	<p>≥ 500 MW (coal/lignite/naphtha & gas based);</p> <p>≥ 50 MW (all other fuels except biomass).</p> <p>> 20 MW (using municipal solid non-hazardous waste, as fuel).</p>	<p>> 50 MW < 500 MW (coal/lignite/ naphtha & gas based);</p> <p>< 50 MW ≥ 5 MW (all other fuels except biomass and municipal solid non-hazardous waste);</p> <p>< 20 MW > 15 MW (using municipal solid non-hazardous waste, as fuel).</p> <p>> 15 MW plants based on biomass fuel.</p>	<p>General Condition shall apply.</p> <p>Note:</p> <p>(i) Thermal Power Plants up to 15 MW based on biomass or non-hazardous municipal solid waste using auxiliary fuel such as coal, lignite / petroleum products up to 15% are exempt.</p> <p>(ii) Thermal Power plants using waste heat boilers without any auxiliary fuel are exempt.</p>
1(e)	Nuclear power projects processing	All projects	-	

2		Primary Processing		
2(a)	Coal washeries	≥ 1 million ton/annum throughput of coal	<1million ton/annum throughput of coal	General Condition shall apply (If located within mining area the proposal shall be appraised together with the mining proposal)
2 (b)	Mineral beneficiation	≥ 0.5 million TPA throughput	< 0.5 million	General Condition shall apply (Mining proposal with Mineral beneficiation shall be appraised together for grant of clearance).
3.		Materials Production		
3(a)	Metallurgical industries (ferrous & non ferrous)	a)Primary metallurgical industry All projects b) Sponge iron manufacturing ≥ 200TPD c) Secondary metallurgical processing industry All toxic and heavy metal producing units ≥ 20,000 tonnes /annum -	Sponge manufacturing <200TPD Secondary metallurgical processing industry i.)All toxic and heavy units <20,000 tonnes /annum ii.)All other non – toxic secondary metallurgical processing industries >5000 tonnes/annum	General Condition shall apply. Note: (i)The recycling industrial units registered under the HSM Rules are exempt. (ii) In case of secondary metallurgical processing industrial units, those projects involving operation of furnaces only such as induction and electric arc furnace, and cupola with capacity more than 30000 tonnes per annum (TPA) would require environmental clearance. (iii)Plant / units other than power plants (given against entry no.1(d) of the schedule), based on municipal solid waste (non- hazardous) are exempted.
3(b)	Cement plants	≥1.0 million tonnes/annum production capacity	<1.0 tonnes/annum production capacity. All Stand alone grinding units	General Condition
4		Materials Processing		
(1)	(2)	(3)	(4)	(5)
4(a)	Petroleum refining industry	All projects	-	-

4(b)	(i) Coke oven plants	$\geq 2,50,000$ tonnes/annum	$< 2,50,000$ & $\geq 25,000$ tonnes/annum	General conditions shall apply
	(ii) Coaltar processing units		All projects	
4(c)	Asbestos milling and asbestos based products	All projects	-	-
4(d)	Chlor-alkali industry	≥ 300 TPD production capacity if a unit located outside the notified industrial area/ estate	(i) All projects irrespective of the size, if it is located in a Notified Industrial Area / Estate. <300 tonnes per day (TPD) and located outside a Notified Industrial Area / Estate.	General as well as specific conditions shall apply No new Mercury Cell based plants will be permitted and existing units converting to membrane cell technology are exempted from the Notification.
4(e)	Soda ash Industry	All projects	-	-
4(f)	Skin/hide processing including tanning industry	New projects outside the industrial area or expansion of existing units outside the industrial area	All new or expansion of projects located within a notified industrial area/ estate	General as well as specific conditions shall apply
5		Manufacturing/Fabrication		
5(a)	Chemical fertilizers	All projects including all Single Super Phosphate with H_2SO_4 production except granulation of chemical fertilizers.	All Single Super Phosphate without H_2SO_4 production	General condition shall apply. Granulation of single super phosphate powder is exempt.
5(b)	Pesticides industry and pesticide specific intermediates (excluding formulations)	All units producing technical grade pesticides	-	-
5(c)	Petro-chemical complexes (industries based on processing of petroleum fractions & natural gas	All projects -	-	-

	and/or reforming to aromatics)			
5(d)	Manmade fibre	Rayon	Others	General Condition
5(e)	Petrochemical products at grade graphite (processes other than cracking & reformation and not covered under the complexes).	Located out side the notified industrial area/ estate	Located in a n	General as well as specific conditions shall apply. Note: Manufacturing of products from polymer granules is exempt.
5(f)	Synthetic organic chemicals industry (dyes)	Located out side the notified industrial area/ estate except small units as defined in column (5)	(i) Located in a notified industrial area/ estate. (ii) Small units as defined in column (5)	General as well as specific conditions shall apply. Small units: with water consumption <25 cu mt per day, fuel consumption <25 TPD and not covered in the category of MAH units as per the Management, Storage and Import of Hazardous Chemical Rules, 1989.
5(g)	Distilleries	(i) All Molasses based distilleries (ii) Non-molasses based distilleries 60 KLD	Non-molasses <60 KLD	General Condition
5(h)	Integrated paint industry	-	All projects	General Condition apply
(1)	(2)	(3)	(4)	(5)
5(i)	Pulp & paper	Pulp manufacturing and Pulp & Paper manufacturing industry except from waste paper	Pulp manufacturing from waste paper and paper manufacturing from waste paper pulp and other ready pulp	General Condition shall apply. Note: Paper manufacturing from waste paper pulp and ready pulp without deinking, bleaching and colouring is exempt.
5(j)	Sugar Industry	- -	≥ 5000 tcd cane crushing capacity	General Condition shall apply
6		Service Sectors		
6(a)	Oil & /sanctuaries/coral reefs /ecologically	All projects		-

	sensitive including	a		
(1)	(2)	(3)	(4)	(5)
6(b)	Isolated storage & handling (2000)	-	All projects	General Condition shall apply
7		Physical Infrastructure including Environmental Services		
7(a)	Air ports	All projects including airstrips, which are for commercial use	-	Air strips which do not involve bunkering / refueling facility and or Air Traffic Control, are exempted.
7(b)	All ship breaking yards including ship breaking units	All projects	-	-
7(c)	Industrial estates/ parks/ complexes/ areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes.	If at least one industry in the proposed industrial estate falls under the Category A, entire industrial area shall be treated as Category A, irrespective of the area. Industrial estates with area greater than 500 ha. and housing at least one Category B industry.	Industrial estates housing at least one Category B industry and area <500 ha. Industrial estates of area > 500 ha. and not housing any industry belonging to Category A or B.	General as well as specific conditions shall apply Note: 1. Industrial Estate of area below 500 ha. and not housing any industry of category A or B does not require clearance. 2. If the area is less than 500 ha. But contains building and construction projects > 20000 sq. mtr. and or development area more than 50 ha it will be treated as activity listed at serial no. 8(a) or 8(b) in the Schedule, as the case may be.
7(d)	Common hazardous waste treatment, storage and disposal facilities (TSDFs)	All integrated facilities having incineration & landfill or incineration alone	All facilities having land fill only	General Condition shall apply
7(da)	Bio-Medical Waste Treatment Facilities	-	All projects	-
(1)	(2)	(3)	(4)	(5)
7(e)	Ports, harbors, break	≥5 million TPA of cargo handling capacity (excluding fishing	< 5 million TPA of cargo handling capacity and/or ports/	General Condition shall apply Note:

	waters, dredging	harbours)	harbours $\geq 10,000$ TPA of fish handling capacity	1. Capital dredging inside and outside the ports or harbors and channels are included; 2. Maintenance dredging is exempt provided it formed part of the original proposal for which Environment Management Plan (EMP) was prepared and environmental clearance obtained
7(f)	Highways	i) New National Highways; and ii) Expansion of National Highways greater than 100 km involving additional right of way or land acquisition greater than 40m on existing alignment and 60 m on re-alignment or by-passes	i) All New State Highway Projects; ii) State Highway expansion projects in hilly terrain (above 1000 m AMSL) and or ecologically sensitive areas.	General Condition shall apply Note: Highways include Expressways
7(g)	Aerial ropeways	(i) All projects located at altitude of 1000 mtr. and above; (ii) All projects located in notified ecologically sensitive areas.	All projects except those covered in column (3).	General Condition shall apply
7(h)	Common Effluent Treatment Plants (CETPs)		All projects	General Condition shall apply
7(i)	Common Municipal Solid Waste Management Facility (CMSW MF)		All projects	General Condition shall apply
(1)	(2)	(3)	(4)	(5)
8		Building or Construction projects or Area Development projects and Townships		
8 (a)	Building		$\geq 20,000$ sq.mtrs and $< 1,50,000$ sq.mtrs. of built up area	The term “built up area” for the purpose of this Notification the built up or covered area on all the floors put together including its basement and other service areas, which are proposed in the building or construction projects.

				<p>Note 1.- The projects or activities shall not include industrial shed, school, college, hostel for educational institution, but such buildings shall ensure sustainable environmental management, solid and liquid waste management, rain water harvesting and may use recycled materials such as fly ash bricks.</p> <p>Note-2.- “General Conditions” shall not apply.</p>
8(b)	Townships		Covering an area of > 50 ha and or built up area > 1,50,000 sq .mtrs	<p>A project of Township and Area Development Projects covered under this item shall require an Environment Assessment report and be appraised as Category ‘B1’ Project.</p> <p>Note.-“General Conditions” shall not apply.</p>

Note:-**General Condition (GC):**

Any project or activity specified in Category ‘B’ will be appraised at the Central Level as Category ‘A’, if located in whole or in part within 5 km from the boundary of: (i) Protected Areas notified under the Wild Life (Protection) Act, 1972 (53 of 1972); (ii) Critically Polluted areas as notified by the Central Pollution Control Board constituted under the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) from time to time; (iii) Eco-sensitive areas as notified under sub-section (2) of section 3 of the Environment (Protection) Act, 1986, and (iv) inter-State boundaries and international boundaries; provided that for River Valley Projects specified in item 1(c), Thermal Power Plants specified in item 1(d), Industrial Estates/ parks/complexes/areas, Export Processing Zones (EPZ), Special Economic Zones (SEZs),

biotech parks, leather complexes specified in item 7 (c) and common hazardous waste treatment, storage and disposal facilities (TSDFs) specified in item 7 (d), the appraisal shall be made at Central level even if located within 10 km.

Provided further that the requirement regarding distance of 5 km or 10 km, as the case may be, of the inter-State boundaries can be reduced or completely done away with by an agreement between the respective States or the Union Territories sharing the common boundary in case the activity does not fall within 5 km or 10 km, as the case may be of the areas mentioned at item (i), (ii), and (iii) above.

Specific Condition (SC):

If any Industrial Estate/Complex / Export processing Zones /Special Economic Zones/Biotech Parks / Leather Complex with homogeneous type of industries such as Items 4(d), 4(f), 5(e), 5(f), or those Industrial estates with pre –defined set of activities (not necessarily homogeneous, obtains prior environmental clearance, individual industries including proposed industrial housing within such estates /complexes will not be required to take prior environmental clearance, so long as the Terms and Conditions for the industrial estate/complex are complied with (Such estates/complexes must have a clearly identified management with the legal responsibility of ensuring adherence to the Terms and Conditions of prior environmental clearance, who may be held responsible for violation of the same throughout the life of the complex/estate).

This page has been left blank intentionally.

Annexure-7.1: Templates for One Time Site Records

EL-01: BORROW AREAS IDENTIFICATION

Contract Package:

Contractor:

Location of Borrow Area alongwith Offset from site:

Survey No. & Village Name:

Land Owner:

Sl. No.	Item / Requirement	Details as per Actual
1	Date of Borrow Area planned to be operational	
2	Current Landuse (preference to barren land, riverside land, otherwise, un-irrigated agriculture land or land without tree cover)	
3	Size (Sq.m) and area (m x m) of Borrow Area	
4	Proposed maximum depth of pit in m (restricted to a maximum depth of 2 m below general ground and restricted to 2 m above the ground water table at the site)	
5	Details of civil structures located around the proposed borrow area (A minimum distance of 15 m from any civil structure shall be kept from the periphery of any excavation area.)	
6	Borrow area in culturable land (should be avoided or restricted to total depth of 45cm including preservation of 15cm topsoil)	
7	Quantity Available (Cum.)	
8	Quantity of top soil to be removed (Sq.m & depth in cm)	
9	Details of preservation (storage) and management (re-use / re-laid) of top soil	
10	Width of Haul road (m)	
11	Total Length of Haul Road (km.)	
12	Length of Non-metal Haul Road (should be as minimum as possible)	
13	No of settlements within 200m of Non-metal Haul Road (should be as minimum as possible)	
14	Distance from settlement (should be minimum 800m)	
15	Should be away from water bodies/ Natural drain. Give details of water bodies within 250m. (The borrowing/excavation activity shall not alter the natural drainage pattern of the area.)	

Sl. No.	Item / Requirement	Details as per Actual
16	Details of water sources for dust suppression	
17	Quantity of water required for dust suppression i.e. sprinkling at borrow area and on haul road (Cum.)	
18	Availability of water required for dust suppression (Cum.)	
19	Details of ecologically sensitive area i.e. RF, PF, Sanctuary etc. within 1000m)- (No borrow area is permitted within 1 km of boundary of national parks and wild life sanctuaries.)	
20	Details of school, hospital and any archaeological sites within 500m (should be nil)	
21	Distance from nearby road embankment, fence line / boundary	
22	Details of berms left from the adjoining field (A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation).)	
23	No of Trees with girth more than 0.3 m (No tree should be affected)	
24	Details of Tree Species located inside and on the boundary of the proposed borrow area	
25	Any other public Utility within or on the edge of the proposed borrow area	
26	Proposed Rehabilitation Plan after completion of Material Extraction (Area to be developed after completion)	

Documents to be attached:

- 1) Site plan and layout plan of borrow area indicating all the environmental features within and on the boundary of the borrow area;
- 2) Photograph of the proposed borrow area showing environmental features within and around the proposed area
- 3) Proposed borrow area operation and redevelopment plan including method statement;
- 4) Written consent of the land owner indicating the survey no., area, depth to be operated, total quantity to be used and proposed rehabilitation works
- 5) Environmental Clearance letter

Certified that the furnished information is correct and all relevant information as required is enclosed

Contractor's Representative:

Verified By:

Engineer's Field Representative:

EI-02: QUARRY SOURCE IDENTIFICATION

Contract Package:

Contractor:

Location of Quarry Site & Offset from Project Site:

Survey No. & Village Name:

Land Owner:

Sl. No.	Item / Requirement	Details as per Actual
1	Present land use (bare land with no prominent vegetation is preferred)	
2	Predominant wind direction	
3	Size and area of Quarry (m xm & Sq.m)	
4	Quantity Available (Cum)	
5	Quantity proposed to be collected (Cum)	
6	No of Trees with girth more than 0.3m	
7	No Settlement within 500m of Quarry	
8	No water body within 500m of Quarry	
9	Width of Haul road (m)	
10	Total Length of Haul Road (km)	
11	Length of Non-metal Haul Road (km) (should be as minimum as possible)	
12	No of Settlements within 200m of Non-metal Haul Road (should be as minimum as possible)	
13	Quantity of water required for dust suppression i.e. sprinkling at borrow area and on non-metal haul road (Cum)	
14	Details of Water sources for dust suppression	
15	Availability of water required for dust suppression (Cum.)	
16	Site Rehabilitation Plan after completion of material extraction	

Documents to be attached:

- 1) Site plan and layout plan of quarry site
- 2) Proposed quarry site operation and redevelopment plan
- 3) Written consent / lease agreement with the Department of Mines & Geology
- 4) Copy of Environmental Clearance
- 5) Photograph of the proposed borrow area showing environmental features within and around the proposed area

Certified that the furnished information is correct and all relevant information as required is attached

Contractor's Representative:

Verified By:

Engineer's

Field

Representative:

EI-03: SITE IDENTIFICATION AND SETTING UP OF WORKERS CAMP

Contract Package:

Contractor:

Location of Proposed Camp Site & Offset from Project Site::

Survey No. & Village Name:

Land Owner:

Sl. No	Item / Requirement	Details as per Actual
1	Details of camp site	
a	Size and area of Camp (mxm & Sq.m)	
b	Date of camp proposed to be operational	
c	Present land use (barren or fallow land having no prominent vegetation should be preferred)	
d	Should be away from settlement to avoid interference. Give no of settlement within 500m.	
e	Should be away from water body to avoid direct contamination. Give details of water bodies present within 500m.	
f	Details of nearest forest or any other ecologically sensitive area (should be away from these areas)	
g	No other trees of girth>0.3m present and will be affected (no tree should be affected)	
2	Details of topsoil stacking	
a	Quantity of top soil to be removed (Sq.m & depth in cm)	
b	Detail of preservation & management of topsoil	
3	Details of workforce (at camp site)	
a	Total No of Labourers	
b	Total no of Male Workers	
c	No of male Workers below 14 years of age	
d	Total no of Female workers	
e	No of Female workers below 14 years of age	
4	Details of dwelling units	
a	No of dwelling units	
b	Minimum size of dwelling (mxm)	
c	No of openings per dwelling and size of openings	
d	Specification of walls	
e	Specification of roofing	
f	Specification of flooring	
5	Details of service facilities	

Sl. No	Item / Requirement	Details as per Actual
a	Specification of drinking water tank	
b	Size and capacity of Drinking water tank (mxmxm & Cum.)	
c	Capacity of Water Tank for water closets (WCs) / Bathrooms and general purpose (Cum.)	
d	Total no of WC	
e	No of WC for female workers (should be separate for male & female workers)	
f	Specification of WC	
g	Total No of bathrooms for female workers (should be separate for male & female workers)	
h	Size of septic tank for WCs/ Baths (mxmxm)	
i	Details of household solid waste collection system (two bins system is recommended)	
j	Details of household solid waste disposal system e.g. trench composting of biodegradable waste and disposal of non-biodegradable waste into nearby town's disposal ground	
k	Details of fuel for cooking i.e. kerosene with stove, LPG etc.	
l	Electricity arrangement	
m	Drainage around the camp site leading to nearby natural drain	

Documents to be attached:

- 1) Site plan and layout plan of Construction Workers Camp;
- 2) Working drawings of dwelling units with allied facilities
- 3) Written consent from competent authority for supply of water and electricity to the camp, if applicable
- 4) Photographic record indicating environmental features within and around the proposed site

Certified that the furnished information is correct and all relevant information as required is attached

Contractor's Representative:

Verified by

Engineer's

Field

Representative:

EI-04: SITE IDENTIFICATION FOR STONE CRUSHER UNIT/ BATCHING PLANTS

Date:

Contract Package:

Name of Contractor:

Installed Capacity (tph):

Location of Plant (Ch. & offset):

Sl. No.	Item / Requirement	Details as per Actual
1	Predominant wind direction	
2	Size and area of the proposed plant site (mxm & Sq.m)	
3	Present land use (barren or fallow land having no prominent vegetation should be preferred)	
4	No dwelling units within 250m from the stone crusher plant boundary in downwind direction	
5	Distance of nearest boundary of State Highways and National Highways should be at least 250m from the plant boundary	
6	No sensitive area such as religious places, schools/educational institutions, reserved / protected forest, sanctuary etc. within 500m	
7	No water body should be present within 500m	
8	Number of trees located (no tree should be affected)	
9.	Number and details of trees affected	
10.	Width of Haul road (m)	
11.	Total Length of Haul Road (km)	
12.	Length of non-metal Haul Road (km) (should as minimum as possible)	

Documents to be attached:

- (i) Site plan showing wind direction, haul road and other environmental features.
- (ii) Photographs of the site
- (iii) Copy of CFE/ application of document submission to SPCB

Certified that the furnished information is correct and all relevant information as required is attached

Contractor's Representative:

Verified by

Engineer's Field Representative:

EI-4A: INSTALLATION OF STONE CRUSHER UNIT/ BATCHING PLANT

Date:

Contract Package:

Name of Contractor:

Installed Capacity (tph):

Location of Plant (Ch. & offset):

Sl. No.	Item / Requirement	Details as per Actual
1	Details of dust and emission control measures in stone crusher plant i.e. water spraying at primary crusher and conveyor & return belts, covered conveyor system, chute at outfall of aggregates, cyclone separator, wind brake wall etc.	
2	Sedimentation tank for treating effluent from water sprinkler	
3	Pollution control measures for Diesel Generator (DG) set i.e. stack height, acoustic enclosure etc.	
4	Quantity of water required for dust and emission control in the crusher plant and plant compound (Cum.)	
5	Details of sources of water for pollution control (Type/Capacity/Present Use/Ownership)	
6	Availability of water required for dust and emission control in the plants (Cum.)	
7	Greenbelt along the periphery of plant site (Sq.m)	

Documents to be attached:

- 1) Detailed layout plan showing environmental mitigation measures
- 2) Written consent from competent authority for use of water for dust suppression and emission control
- 3) Photographs of the units

Certified that the furnished information is correct and all relevant information as required is attached

Contractor's Representative:

Verified By:

Engineer's Field Representative:

EI-05: IDENTIFICATION OF MATERIAL STORAGE/WORKSHOP AREA

Date:

Contract Package:

Name of Contractor:

Location of Storage Area (Ch & offset):

Sl. No.	Requirements	Details
1	Storage Site for Hazardous Fuel, HSD & Chemicals (Paints, Varnish, Glue, adhesive etc.)	
a	Type of land use. (Fallow land, barren land should be preferred)	
b	Give details of natural drainage within 250m of the area. (Should be way from water body and natural drainage.)	
c	Minimum 500m from settlement	
d	Give required and provided storage volume. (The capacity of storage volume should be at least 110% of the required storage volume.)	
2	Workshop Area	
a	Location (Should be way from water body and natural drainage)	
b	Give details of land use (Fallow, barren land should be preferred)	
3	Stock Yard for Construction Material e.g. Stone Aggregates, Sand, Cement, Steel	
4	Temporary Storage of Construction Waste Material (Excavated/Dismantled materials, etc.)	
A i	Type of Excavated materials generated	
ii	Quantity of usable material	
iii	Quantity of disposable material	
iii	Location for temporary storage	
B i	Estimate and furnish quantity of Dismantled material generated	
ii	Quantity of usable material	
iii	Quantity of waste material to be disposed (spoil, debris, etc.)	
iv	Location for temporary storage	

Details to be attached:

Location maps of Stock Yard, Storage of Hazardous Substances and Workshop area
Photographs of the site

Certified that the furnished information is correct and all relevant information as required is attached.

Contractor's Representative:

Verified by:

Engineer's

Field

Representative:

EI-06: IDENTIFICATION OF WASTE/ MUCK DISPOSAL SITES

Date:

Contract Package:

Name of Contractor:

Location of Storage Area (Ch & offset):

Sl. No.	Item / Requirement	Details as per Actual
1	Location of disposal site/s	
2	Stretches of road generating waste (Chainage)	
3	Location/s for temporary storage	
4	Distance/s from source of generation to disposal site/s (km)	
5	Area of disposal site/s (sq.m)	
6	Capacity of disposal site/s (cum)	
7	Type of waste to be disposed and their quantity (cum)	
8	Land use & type of land of disposal site/s	
9	Water table at disposal site/s	
10	The details of natural drainage and water bodies near disposal site/s	

Details to be attached:

- 1) Layout plan of Waste Disposal Site
- 2) Photographs showing pre-condition of the areas

Certified that the furnished information is correct and all relevant information as required is attached

Contractor's Rep:

Verified by:

Engineer's Field Representative:

EI-07: SETTING UP OF STORAGE, WORKSHOP AND DISPOSAL AREAS

Date:

Contract Package:

Name of Contractor:

Location of Storage Area (Ch & offset):

Sl. No.	Item/ Requirement	Details as per Actual
1	Liquid Fuel Storage	
a	The capacity of storage area should be at least 110% of the required storage volume. Give required and proposed storage volume.	
b	Raised impervious base (concrete) with embankment and fencing	
c	Channel all around the edge of the wall leading to a catch pit / oil trap	
d	Marking of content on each drum and warning signs	
2	Workshop Area	
a	Raised impervious base (concrete) with embankment	
b	Channel all around the edge of the wall leading to a catch pit / oil trap	
3	Waste Disposal Site/s	
a	Location of disposal site/s	
b	Type of waste to be disposed and their quantity (cum)	
c	Provision of lining impervious layer to avoid leaching	
d	Provision of top cover with top soil to integrate with surroundings and proposed reinstate plan	
e	Adequate soil erosion measures	

Details to be attached:

- 1) Plan & cross section of storage area
- 2) Plan & cross section of storage area
- 3) Sketch showing disposal details and management plan
- 4) Photographs showing pre-condition of the areas

Certified that the furnished information is correct and all relevant information as required is attached

Contractor's Rep:

Verified by:

Engineer's Field Representative:

Annexure-7.2: Templates For Periodical Inspection Of Environmental Safe Guards

EM-01: INSPECTION CHECKLIST ON ENVIRONMENTAL SAFEGUARDS

Name of the Project:

Name of IA:

Name of the Contractor:

Date of Site Inspection:

Inspected By:

S.L.	Inspection Items	Yes	No	Remarks
I.	Sensitive Locations			
a.	Is there any Ecological sensitive area located in the vicinity (Reserve Forest Area/ Wildlife Sanctuary/ Bird Sanctuary etc.			
II.	Statutory licenses/Permits			
a.	Labour license			
	Consent for borrow area			
	Quarry lease license			
	Permission for tree cutting			
	NOC for Hot-mix/Batching Plant			
III.	Environmental Safeguards Measures			
1.	Air Pollution Control Measures			
a.	Adequate Dust control measures at site, stockpiles			
b.	Are plant and equipment well maintained? (any black smoke observed, please indicate the plant/equipment and location)			
2.	Water pollution Control Measures			
a.	Does silt control measures provided along the stockpiles to prevent water contamination			
b.	Containment of wastewater flow provided to avoid direct discharge of waste water into water body/reservoir			
3.	Erosion Control Measures			
4.	Tree cutting			
5.	Debris disposal			
a.	Availability of waste collection yard/area			
b.	Disposal at designated site			
6.	Labour camp			
a.	Whether labour camp has been provided at site			
b.	In yes, Number of male/female labours residing at camp			
c.	Whether basic facilities such as drinking water, toilet units, sanitation arrangements, waste			

S.L.	Inspection Items	Yes	No	Remarks
	collection and disposal facilities, lighting facilities, etc available at camp			
d.	Is the site kept clean and tidy? (e.g. litter free, good housekeeping)			
7.	Safety at Work			
a.	Safe access to work zone provided and maintained			
b.	PPEs supplied to the workers			
c.	Use of appropriate PPEs by workers (Helmets, glove, nasal masks, safety belt, goggles, etc.)			
d.	First Aid boxes with adequate first aid items			
e.	Are fire fighting facilities properly maintained and not expired? Escape not blocked / obstructed?			
8.	Public Safety & inconvenience			
a.	Warning signboards provided at public access			
b.	Safe access provided for safe movement of public in the public area			
c.	Barricading around work zone			
9.	Debris clearance and Site restoration after completion of work			
Observations/ Corrective Action Required:				
Required Corrective Action		Agreed Timeframe	Observations on Corrective Action Taken	

Name & Signature of Contractor's Representative

Name & Signature of Engineer's Representative

EM-02: CHECKLIST FOR REGULATORY PERMISSIONS AND CONSENTS

Project Name:

Name of the Contractor:

Month:

1. List of Construction activities under progress:
2. Type of plants established:
 - (a) Hot mix plant: Yes/ No (If yes give the type and capacity)
 - (b) Concrete Batching Plant: Yes/ No (If yes give the type and capacity)
 - (c) Stone crusher: Yes/ No (If yes give the type and capacity)
 - (d) Other Plant: (Please specify)

2. Status Statutory Clearances/ Permits for different Plants

S.N.	Plant Type	Capacity	Location	Status of Operation	Status of CtE (A/NA/O)	Reference of CtE			Status of CtO (A/NA/O)	Reference of CtO			Remarks
						Approval No.	Date of issue	Date of Validity		Approval No.	Date of issue	Date of Validity	
1	Concrete Mix Plant												
2	Stone crusher Plant												
3	DG sets												
4	Any other plant pls specify												

CtE= Consent to Establish; CtO= Consent to Operate; Status A = Applied for; NA= Not Applied; O = Obtained

A. Forest Clearance and permission of Tree Cutting:

Construction Packages				
(i) Forest Clearance				
Does Project involves acquisition of Forest Land in the Construction Package				
Area of Forest Land to be diverted in the Construction Package				
Status of Permission from Forest department for the Construction Package				
(ii) Is Project located in Wildlife Sanctuary, National Parks, Tiger reserve, Bird Sanctuary or other ecological Sensitive area				
If yes, status of Wildlife Clearance/Permission for proposed construction works				
(ii) Permission for Tree Cutting				
Number of trees proposed to be felled in the Construction Package				
Status of Permission for tree felling and the section for which tree permission is obtained				
Proposed No. of Trees to be Planted under Compensatory Plantation				
Status of tree cutting				
Status of tree plantation till date				

B. Other Licenses & Approvals

Sl. No.	Permits/Approvals/ Licenses for	Numbers of locations/ labours	Type of Permit/License	Reference No.	Date of Issue	Date of Validity	Remarks
1	Stone Quarry/Borrow Areas		Lease License				
			Environmental Clearance				
2	Blasting activities		Explosive License from District Authority/Chief Controller of Explosives,				
3	Labour		Labour License				
4.	Borewells for abstraction of Ground Water for Construction		Permit from Ground Water Authority				

EM-03: MONTHLY STATEMENT OF LABOURS ENGAGED**Project Name :****Construction Package:****Month:**

Construction Package	Local Labour Employed (Man Days)			Migrated Labours (Man days)			Total Local and Migrated Labours (Man days) (C)	Percentage of Local Labours (A/C*100)
	Male Labours	Female labours	Total Labours (A)	Male Labours	Female labours	Total Labours (B)		

Note: Skilled / Unskilled labour hired from Project influence area (about 10 km on either side of the project alignment) are called Local Labour. They are hired on daily wages basis and generally does not required any accommodation at work place.

EM- 04: STATUS OF BORROW AREA OPERATIONS & REHABILITATION

Name of the Project:

Construction Package:

Name of Contractor:

Reporting Month :

BA No.	Location (Village Name)	Survey No. & Total Area	Direction / Offsets from Project	Existing Land use AL/UAL/BL/Pond/ Others Please specify	Quantity Available	Environmental Features					Proposed Redevelopment plan	Status of operation	Status of Rehabilitation Plan for completed Borrow area	Status of Written Consent of Landowner
						Water bodies within 500m	Settlement within 800m	Ecologically sensitive areas (Forest/ Wildlife Sanctuary/ National Parks or any other designated area) within 500m	School/hospital/ archaeological sites within 500m	No. of trees (>30cm girth) affected				
BA-1														
BA-2														
BA-3														
BA-4														
BA-5														

AL = Agriculture Land; UAL = Unirrigated Agriculture Land; BL = Barren Land;

EM-05: ENVIRONMENTAL MANAGEMENT AT CAMPSITE

Project:

Construction Packages:

Location of Construction/Labour Camp:

Total Area of Construction/ Labour Camp:

Reporting Month:

S.N.	Items	Details	Maintenance of the facilities	Remarks
1.	Number of dwelling Units Provided			
2.	Number of Labours Residing			
3.	Number of female labourers and children living in camp			
5.	Facilities provided in the camp			
	(a) Drinking water			
	(b) Cooking facility			
	(c) Toilets separately for Male and Female workers			
	(d) Separate Bathrooms for Male and Female workers			
	(e) First Aid Facility			
	(f) Lighting			
	(g) Drainage and Sanitation facilities			
	(h) Garbage collection and disposal			
	(i) Other welfare facilities as per norms			
	(j) Provision of application of Insecticides & pesticides			
	(k) Periodical Health Check-ups			
	(l) AIDS/HIV/ STD Awareness activities			

Please fill the checklist separately for each camp site.

Mention Status as "Very Good", "Good", "Satisfactory" "Poor" . Please give specific area requiring attention in Remarks Column.

EM-06: PROGRESS RATING ON EMP IMPLEMENTATION**Name of the Project:****Name of the Contractor:****Reporting Month:**

Sl. No.	Activity	Performance Rating	Remarks
Pre-Construction Compliance			
1	Construction Programme Integrating Environmental Management Plan		
2	Licenses and Permits for plants and equipments and Quarry		
3	Labour Licenses		
4	Site Selection / Clearance		
Construction Stage Compliance			
5	Traffic Safety Measures		
6	Construction Camps		
7	Labour Camps and Facilities		
8	Child Labour		
9	Employment for Local Villagers / Residents		
10	Medical facilities and health checkups of workers		
11	Air Pollution Control Measures		
	(A) Dust Control at Plant Site		
	(B) Dust Control at Construction Sites		
	(C) Emission from DG sets/ Plants/Vehicles		
12	Stock Piling of Topsoil		
13	Sanitation and Waste Management		
14	Proper storage and handling of chemicals and waste oils		
15	Water Pollution Control Measures		
	(a) Measures to Control of discharge into water body		
	(b) Clearing of vents and water ways prior to monsoon		
	(c) Storing of materials away from waterways/waterbody		
	(d) Is silt trap provided along reservoir to protect siltation in Reservoir		
16	Noise Control Measure		
	• Enclosures at DG sets		
	• Ear Plugs to Workers working near Noise Generating Equipments		
17	Safety Provisions		
a.	Safety Measures During Execution of Works		
b.	Safety Equipment for Labour and Other Staff		
c.	Safety Barricading deep excavation (including onsite and borrow areas)		
d.	First Aid Facilities (to be provided at all the work site, plant site and camp site)		
e.	Emergency Response System		
18	Borrow Area operation and Rehabilitation		
19	Debris Clearance from Site		
20	Monitoring of Environmental Quality		

This page has been left blank intentionally.

Annexure-7.3: Annual Environmental Statement (as per MOEFCC)

FORM V (See Rule 14)

Environmental Statement for the financial year ending on 31st March on or before 30th of September every year.

PART A

- (i) Name and address of the owner/ occupier of the industry operation or process.
- (ii) Industry category Primary-(STC Code) Secondary-(STC Code).
- (iii) Production capacity- Units__
- (iv) Year of establishment
- (v) Date of the last environmental statement submitted.

PART B

Water and Raw Material Consumption

1. Water consumption m3/ d

Process

Cooling

Domestic

Name of products	Process water consumption per unit of product output	
	During the previous financial year	During the current financial year
	(1)	(2)
(1)		
(2)		
(3)		

(2) Raw material consumption

*Name of raw materials	Name of products	Consumption of raw material per unit	
		During the previous financial year	During the current financial year

*Industry may use codes if disclosing details of raw materials would violate contractual obligations, otherwise all industries have to name the raw material used.

PART C

Pollution discharged to environment/ unit of output.

(Parameter as specified in the consent issued)

Pollution	Quantity of pollutants Discharged (mass/ day)	Concentration of pollutants in discharges (mass/ volume)	Percentage of variation from prescribed standards with reasons
–			
(a) Water			
(b) Air			

PART D**Hazardous Wastes**

(as specified under Hazardous Wastes (Management and Handling) Rules, 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
(a) From process		
(b) From pollution control facilities.		

PART E**Solid Wastes**

	Total Quantity	
	During the previous financial year	During the current financial year
(a) From process		
(b) From pollution control facility		
(c) (1) Quantity recycled or re-utilised within the unit		
(2) Sold		
(3) Disposed		

PART F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

PART G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

PART H

Additional measures/ investment proposal for environmental protection abatement of pollution, prevention of pollution.

PART I

Any other particulars for improving the quality of the environment.

This page has been left blank intentionally.

Appendix-I: Gazette Notification of TOR Validity

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 17th February, 2020

S.O. 751(E).—WHEREAS, the Central Government in the erstwhile Ministry of Environment and Forests, in exercise of its powers under sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 has published the Environment Impact Assessment Notification, 2006 (hereinafter referred to as the EIA Notification, 2006) *vide* number S.O.1533 (E), dated the 14th September, 2006, mandating Prior Environmental Clearance for certain category of projects;

AND WHEREAS, the Prior Environmental Clearance process involves four stages namely, screening; scoping; public consultation; and appraisal. The scoping is the process to determine detailed and comprehensive Terms of Reference (hereinafter referred to as ToR) addressing all relevant environmental concerns for the preparation of an Environmental Impact Assessment and Environment Management Report in respect of the project or activity for which Prior Environmental Clearance is sought;

AND WHEREAS, in order to streamline the process of scoping and bring the uniformity across the proposals, as a standard operating procedure, the Ministry has developed sector specific Standard Terms of References for all 39 class of projects or activities listed in the Schedule to the EIA Notification, 2006;

AND WHEREAS, the Expert Appraisal Committee constituted under the provisions of EIA Notification, 2006 can modify standard ToR and prescribe additional ToR based on examination of alternative sites proposed and the project specific requirements in respect of green field projects or activities;

AND WHEREAS, to expedite the process of granting standard Terms of Reference (ToR) in respect of expansion proposals and projects located within notified Industrial Estates, where there is no examination of alternative sites involved, the Ministry proposes to introduce the concept of issuance of an online Standard Terms of Reference (ToR) after acceptance of the proposal in Form-1 by the Regulatory Authority, automatically through the web portal developed by the Ministry to the Project Proponent;

AND WHEREAS, a draft notification further to amend the EIA Notification, 2006 was published in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 *vide* number S.O. 4085 (E), dated the 11th November, 2019, inviting objections and suggestions from all persons likely to be affected thereby, within a period of sixty days from the date on which copies of Gazette containing the said notification were made available to the public;

AND WHEREAS, copies of the said notification were made available to the public on 13th November, 2019;

AND WHEREAS, no objections or suggestions were received in response to the above-mentioned draft notification;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following further amendments in the EIA Notification, 2006, namely:-

In the said notification, in paragraph 7, in sub-paragraph 7(i), for sub-heading II Stage (2)-Scoping and entries relating thereto, the following shall be substituted, namely:-

"II. Stage (2)-Scoping:

- (i) "Scoping" refers to the process to determine detailed and comprehensive Terms of Reference (ToR) addressing all relevant environmental concerns for the preparation of an Environmental Impact Assessment and Environment Management Report in respect of the project or activity for which Prior Environmental Clearance is sought.
- (ii) All projects or activities listed under Category "B2" of the schedule shall not require Scoping.
- (iii) Sector specific Standard Terms of References developed by the Ministry of Environment, Forest and Climate Change, from time to time shall be displayed on its website.
- (iv) The Standard Terms of References shall be issued to the following projects or activities through online mode, on acceptance of application within 7 working days, without referring to EAC or SEAC by the Ministry or SEIAA, as the case may be:
 - (a) All Highway projects in Border States covered under entry (i) and (ii) of column (3) and (4) against item 7(f) of the Schedule;
 - (b) All projects or activities proposed to be located in industrial estates or parks (item 7(c) of the Schedule) approved by the concerned authorities, and which are not disallowed in such approvals; and
 - (c) All expansion proposals of existing projects having earlier Prior Environmental Clearance:

Provided that EAC or SEAC may recommend additional specific Terms of Reference in addition to the Standard ToR, if found necessary, for a project or activity, within 30 days from the date of acceptance of application.

- (v) All new projects or activities other than specified in sub-paragraph (iv) above, shall be referred to the EAC or SEAC by the Regulatory Authority, as the case may be, within 30 days from the date of application, for recommending the specific ToR in addition to the Standard ToR, deemed necessary. In case, the regulatory authority does not refer the matter to the EAC or SEAC, as the case may be, within 30 days of date of application in Form-I, sector specific Standard ToR shall be issued, online, on 30th day, by the Regulatory Authority.
- (vi) Applications for Terms of Reference may be rejected by the regulatory authority concerned on the recommendation of the EAC or SEAC concerned. In case of such rejection, the decision together with reasons for the same after due personal hearing shall be communicated to the applicant in writing within sixty days of the receipt of the application.
- (vii) The project proponent shall prepare the EIA report based on the sector specific Standard ToR as well as additional specific ToR, if any, stipulated by the EAC or SEAC.
- (viii) The Terms of Reference for the projects or activities except for River valley and Hydro-electric projects, issued by the regulatory authority concerned, shall have the validity of four years from the date of issue. In case of the River valley and Hydro-electric projects, the validity will be for five years.

[F. No. 22-1/2019-IA.III]

GEETA MENON, Jt. Secy.

Appendix-II: Standard Terms Of Reference For EIA Study Of River Valley Projects

(1) Scope of EIA Study

The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.

(2) Details of the Project and Site

- General introduction about the proposed project.
- Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
- A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.
- Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz. location of dam, Head works, main canal, branch canals, quarrying etc.) shall bedepicted in a scaled map.
- Layout details and map of the project along with contours with project components clearly marked with proper scale maps of at least 1:50,000 scale and printed at least on A3 scale for clarity.
- Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
- Drainage pattern and map of the river catchment up to the proposed project site.
- Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of Soil and Land use Survey of India.
- Soil characteristics and map of the project area.
- Geological and Seismo-tectonic details and maps of the area surrounding the proposed project site showing location of dam site and canal sites.
- Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color Composite (FCC) generated from satellite data of project area. Land details including forests, private and other land.
- Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability.

(3) Description of Environment and Baseline Data

To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:

- Catchment area up to the dam/barrage site.
- Submergence Area.
- Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
- Downstream upto 10 km from the tip of the reservoir.

(4) Details of the Methodology

The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.

(5) Methodology for Collection of Biodiversity Data

- The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
- The entire area should be divided in grids of 5kmX5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, dam, powerhouse, tunnel, canal etc.) and the remaining in the rest of the area (areas of influence in 10 km radius form project components). At such chosen location, the size and number of sampling units (e.g. quadrates in case of flora/transects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number,
- The conventional sampling is likely to miss the presence of rare, endangered and threatened (R.E.T.) species since they often occur in low densities and in case of faunal species are usually secretive in behavior. Reaching the conclusion about the

absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature from the entire state can be referred to. Once a listing of possible r.e.t. species from the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of R.E.T. species should be provided in the EIA reports.

- The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).

(6) Components of the EIA Study

Various aspects to be studied and provided in the EIA/EMP report are as follows:

A. Physical and Chemical Environment

Geological & Geophysical Aspects and Seismo- Tectonics:

- Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
- Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.
- Landslide zone or area prone to landslide existing in the study area should be examined.
- Presence of important economic mineral deposit, if any.
- Justification for location & execution of the project in relation to structural components (dam / barrage height).
- Impact of project on geological environment.

Meteorology, Air and Noise

- Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
- Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials

< 10 microns, Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) in the study area at 5-6 Locations.

- Existing Noise Levels and traffic density in the study area at 5-6 Locations.

Soil Characteristics

- Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one sample/ha of command area.

Remote Sensing and GIS Studies:

- Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
- New configuration map to be given in the EIA Report.

Water Quality

- History of the ground water table fluctuation in the study area.
- Water Quality for both surface water and ground water for [i] Physical parameters (pH, Temperature, Electrical Conductivity, TSS); [ii] Chemical parameters (Alkalinity, Hardness, BOD, COD, NO₃, PO₄, Cl, So₄, Na, K, Ca, Mg, Silica, Oil & grease, phenolic compounds, residual sodium carbonate); [iii] Bacteriological parameter (MPN, Total coliform); and [iv] Heavy Metals (Pb, As, Hg, Cd, Cr- 6, Total Cr, Cu, Zn, Fe) at minimum 10 Locations, however, the sampling numbers should be increased depending on the command area.
- Delineation of sub and micro watersheds, their locations and extent based on the Soil and Land Use Survey of India (SLUSOI), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through Silt Yield Index (SYI) method of SLUSOI.

B. Water Environment & Hydrology

- Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
- Run off, discharge, water availability for the project, sedimentation rate, etc.
- Basin Characteristics.
- Catastrophic events like cloud bursts and flash floods, if any, should be documented.
- For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km⁻² year⁻¹.

- Set-up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
- Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
- Environmental flow release should be 20% of the average of the 4 lean months of 90% dependable year during the lean season and 30% of Monsoon flow during monsoon season. For remaining months, the flow shall be decided by the Committee based on the hydrology and available discharge.
- A site specific study on minimum environment flow should be carried out.

C. Biological Environment Flora

- Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
- General vegetation profile and floral diversity covering all groups of flora including Bryophytes, Pteridophytes, Lichens and Orchids. A species wise list may be provided.
- Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index [IVI], Shannon Weiner Index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrats, size of quadrats etc. to be reported within the study area in different ecosystems.
- Existence of National Park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
- Economically important species like medicinal plants, timber, fuel wood etc.
- Details of endemic species found in the project area.
- Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along with economic significance. Species diversity curve for RET species should be given.

Fauna

- Fauna study and inventorisation should be carried out for all groups of animals including reptiles and nocturnal animals in the study area. Their present status along with Schedule of the species.
- Information (authenticated) on Avi-fauna and wild life in the study area.
- Status of avifauna their resident/migratory/ passage migrants etc. Details of endemic species found in the project area.
- RET species- voucher specimens should be collected along with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
- Existence of barriers and corridors, if any, for wild animals.

- Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
- For categorization of sub-catchments into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catchment.

D. Aquatic Ecology

- Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
- Fish and fisheries, their migration and breeding grounds.
- Fish diversity, composition and maximum length & weight of the measured populations to be studied for estimation of environmental flow.
- Conservation status of aquatic fauna.

E. Irrigation and Cropping Pattern

- Cropping pattern and Horticultural practices in the study area.
- Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities component.
- Component of pressurized/drip irrigation and micro irrigation.
- Details of Conjunctive use of water for irrigation.

F. Socio-Economic

- Collection of Baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surrounding population.
- Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
- Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
- The Socio-economic survey/profile within 10 Km of the study area for Demographic profile; Economic Structure; Development Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
- Documentation of Demographic, Ethnographic, Economic structure and development profile of the area
- Information on Agricultural practices, Cultural and aesthetic sites, Infrastructure facilities etc

- Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land. List of all the Project Affected Families with their names, education, land holdings, other properties, occupation, source of income, land and other properties to be acquired, etc.
- In addition to Socio-economic aspects of the study area, a separate chapter on socio-cultural aspects based upon study on Ethnography of the area should be provided.

(7) Impact Prediction and Mitigation Measures

The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.

Air Environment

- Changes in ambient and ground level concentrations due to total emissions from point, line and area sources
- Effect on soils, material, vegetation and human health
- Impact of emissions from DG sets used for power during the construction, if any, on air environment.
- Pollution due to fuel combustions in equipments & vehicles
- Fugitive emissions from various sources. Impact on micro climate.

Water Environment

- Changes in surface & ground water quality.
- Steps to develop pisci-culture and recreational facilities.
- Changes in hydraulic regime and down stream flow.
- Water pollution due to disposal of sewage.
- Water pollution from labour colony/camps and washing equipment.

Land Environment

- Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow(if any) [a] due to considerable road construction/widening activity [b] interference of reservoir with the inflowing streams [c] blasting for excavation of canals and some other structures immigration of labour population.
- Quarrying operation and muck disposal.
- Changes in land quality including effects of waste disposal
- River bank and their stability
- Impact due to submergence.

Biological Environment

- Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
- Pressure on existing natural resources
- Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
- Compensatory afforestation-Identification of suitable native tree species for compensatory afforestation & green belt.
- Impact on fish migration and habitat degradation due to decreased flow of water
- Impact on breeding and nesting grounds of animals and fish

Socio-economic Aspects

- Impact on local community including demographic profile.
- Impact on socio-economic status.
- Impact on economic status.
- Impact on human health due to water / vector borne disease.
- Impact on increases traffic.
- Impact on Holy Places and Tourism.
- Impacts of blasting activity during project construction which generally destabilize the land mass and lead to landslides, damage to properties and drying up of natural springs and cause noise pollution, will be studied. Proper record shall be maintained of the base line information in the post project period.
- Positive as well as negative impacts likely to be accrued due to the project are to be listed.

(8) Environment Impact Analysis

Environmental Impact Analysis due to the project on the above mentioned components should be carried out for construction and operation phases using qualitative or quantitative methods.

(9) Environment Management Plan (EMP)

Environmental Management Plan aimed at minimizing the negative impacts of the project should be given in detail. The mitigation measures are to be presented for all the likely adverse impacts on the environment. The following suggestive mitigating plans should be included:

- Catchment Area Treatment (CAT) Plan should be prepared micro-watershed wise. Identification of area for treatment based upon Remote Sensing & GIS methodology and Silt Yield Index (SYI) method of SLUSOI coupled with ground survey. Areas/watersheds falling under 'very severe' and 'severe' erosion categories are

required to be treated. Both biological and engineering measures should be proposed in consultation with State Forest Department. Year-wise schedule of work and monetary allocation should be provided. CAT plan is to be completed prior to reservoir impoundment. Mitigations measures to check shifting cultivation in the catchment area with provision for alternative and better agricultural practices should be included.

- Command Area Development (CAD) Plan giving details of implementation schedule with a sample CAD plan.
- Compensatory Afforestation in lieu of the forest land required for the project needs to be proposed. Choice of plants should be made in consultation with State Forest Department including native and RET species, if any.
- Biodiversity and Wild Life Conservation & Management Plan for conservation and preservation of endemic, rare and endangered species of flora and fauna to be prepared in consultation with State Forest Department.
- Resettlement and Rehabilitation (R&R) Plan need to be prepared with due consultation with Project Affected Families (PAFs). The provision of the R&R plan should be according to the Right to Fair Compensation and Transparency in Land Acquisition, Resettlement and Rehabilitation Act, 2013 as well as State Resettlement and Rehabilitation Policy. Detailed budgetary estimates are to be provided. Resettlements sites should be identified.
- Plan for Green Belt Development along the periphery of reservoir, colonies, approach road, canals etc. to be prepared in consultation with the State Forest Department. Local plant species suitable for greenbelt development should be selected.
- Reservoir Rim Treatment Plan for stabilization of land slide/land slip zones if any, around the reservoir periphery to be prepared. Suitable engineering and biological measures for treatment of the identified slip zones to be provided with physical and financial schedule.
- Plan for Land Restoration and Landscaping of project sites.
- Fisheries Conservation & Management Plan-Fish fauna inhabiting the affected stretch of river, a specific fisheries management plan should be prepared for river and reservoir.
- Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L-section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately.
- Plan for Restoration of quarry sites and landscaping of colony areas, working areas, roads, etc.
- Study of Design Earthquake Parameters: A site specific study of earthquake parameters should be done. The results of the site specific earth quake design

parameters should be approval by National Committee of Seismic Design Parameters, Central Water Commission (NCSDP), New Delhi.

- Dam Break Analysis and Disaster Management Plan: The outputs of Dam Break Model should be illustrated with appropriate graphs and maps clearly bringing out the impact of Dam break scenario. Provision for early warning systems should be provided.
- Water and Air Quality & Noise Management Plans to be implemented during construction and post-construction periods.
- Mitigating measures for impacts due to Blasting on the structures in the vicinity.
- Ground Water Management Plan.
- Public Health Delivery Plan including the provisions for drinking water facility for the local community.
- Labour Management Plan for their Health and Safety.
- Sanitation and Solid Waste Management Plan for domestic waste from colonies and labour camps etc.
- Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Panchayats. Local skill development schemes should be given. Details of various activities to be undertaken along with its financial out lay should be provided.
- Environmental safeguards during construction activities including Road Construction.
- Energy Conservation Measures.

Environmental Monitoring Programme with physical & financial details covering all the aspects of EMP. A summary of cost estimate for all the plans, cost for implementing all Environmental Management Plans including the cost for implementing environmental monitoring programme should be given. Provision for an Environmental Management Cell should be made.

In the EMP, also include a sample CAD plan for a distributary outlet command. Such a plan is to show the alignment of irrigation and drainage channels. The components of the OFD works to be undertaken may be clearly mentioned along with a time schedule for their completion vis-à-vis the progress of irrigation development.

Appendix-III: Gazette Notification of Environmental Clearance of Borrow Area

16

THE GAZETTE OF INDIA : EXTRAORDINARY

[PART II—SEC. 3(ii)]

- 10 का.आ. 562(अ) तारीख 26 फरवरी 2014;
11. का.आ. 637(अ) तारीख 28 फरवरी 2014;
12. का.आ. 1599(अ) तारीख 25 जून 2014;
13. का.आ. 2601(अ) तारीख 7 अक्टूबर 2014;
14. का.आ. 2600(अ) तारीख 9 अक्टूबर 2014
15. का.आ. 3252(अ) तारीख 22 दिसम्बर 2014;
16. का.आ. 382(अ) तारीख 3 फरवरी, 2015;
17. का.आ. 811(अ) तारीख 23 मार्च, 2015;
18. का.आ. 996(अ) तारीख 10 अप्रैल 2015;
19. का.आ. 1142(अ) तारीख 17 अप्रैल 2015;
20. का.आ. 1141(अ) तारीख 29 अप्रैल 2015;
21. का.आ. 1834(अ) तारीख 6 जुलाई 2015;

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE NOTIFICATION

New Delhi, the 15th January, 2016

S.O. 141(E).—Whereas in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), a draft notification for making certain amendments in the Environment Impact Assessment Notification, 2006, issued *vide* number S.O. 1533(E), dated the 14th September 2006, was published under sub-rule (3) of rule (5) of the Environment (Protection) Rules, 1986, *vide* number S.O. 2588(E), dated 22nd September, 2015, inviting objections and suggestions from all persons likely to be affected thereby, within a period of sixty days from the date of publication on which copies of Gazette containing the said notification were available to the public;

And whereas, copies of said notification were made available to the public on 22nd September 2015;

And whereas, all objections and suggestions received in response to the above mentioned draft notification have been duly considered by the Central Government;

And whereas, in pursuance to the order of Hon'ble Supreme Court dated the 27th February, 2012 in I.A. No.12-13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., prior environmental clearance has now become mandatory for mining of minor minerals irrespective of the area of mining lease;

And whereas, as a result of the above said Order of Hon'ble Supreme Court, the number of cases which are now required to obtain prior environmental clearance has increased substantially;

And whereas, the Hon'ble National Green Tribunal, *vide* its order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor minerals;

And whereas, the State Governments have represented for streamlining the process of environmental clearance for mining of minor mineral;

And whereas, the Ministry of Environment, Forest and Climate Change in consultation with State Governments has prepared Guidelines on Sustainable Sand Mining detailing the provisions on environmental clearance for cluster, creation of District Environment Impact Assessment Authority and proper monitoring of sand mining using information technology and information technology enabled services to track the mined out material from source to destination;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification, namely:-

In the said notification,-

(a) in paragraph 2, after the words “in the said Schedule”, the following words shall be inserted, namely:-
“and at District level, the District Environment Impact Assessment Authority (DEIAA) for matters falling under Category ‘B2’ for mining of minor minerals in the said Schedule”;

(b) after paragraph 3, the following paragraph shall be inserted, namely:-

“3 A. District Level Environment Impact Assessment Authority:-

- (1) A District Level Environment Impact Assessment Authority hereinafter referred to as the DEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of four members including a Chairperson and a Member-Secretary.
- (2) The District Magistrate or District Collector shall be the Chairperson of the DEIAA.
- (3) The Sub-Divisional Magistrate or Sub-Divisional Officer of the district head quarter of the concerned district of the State shall be the Member-Secretary of the DEIAA.
- (4) The other two members of the DEIAA shall be the senior most Divisional Forest Officer and one expert. The expert shall be nominated by the Divisional Commissioner of the Division or Chief Conservator of Forest, as the case may be. The term and qualifications of the expert fulfilling the eligibility criteria are given in Appendix VII to this notification.
- (5) The members of the DEIAA who are serving officers of the concerned State Government or the Union territory Administration shall be *ex-officio* members except the expert member.
- (6) The District Level Expert Appraisal Committee hereinafter referred to as the DEAC shall comprise of eleven members, including a Chairman and a Member-Secretary.
- (7) The senior most Executive Engineer, Irrigation Department in the district of respective State Governments or Union territory Administration shall be the Chairperson of the DEAC.
- (8) The Assistant Director or Deputy Director of the Department of Mines and Geology or District Mines Officer or Geologist of the district shall be the Member-Secretary of the DEAC in that order.
- (9) A representative of the State Pollution Control Board or Committee, senior most Sub-Divisional Officer (Forest) in the district, representative of Remote Sensing Department or Geology Department or State Ground Water Department, one occupational health expert or Medical Officer to be nominated by the District Magistrate or District Collector, Engineer from Zila Parishad, and three expert members to be nominated by the Divisional Commissioner or Chief Conservator of Forest, as the case may be, shall be the other members of the DEAC. The term and qualifications of the experts fulfilling the eligibility criteria are given in Appendix VII to this notification.
- (10) The members of the DEAC who are serving officers of the concerned State Government or the Union territory Administration shall be *ex-officio* members except the expert members.
- (11) The District Magistrate or District Collector shall notify an agency to act as Secretariat for the DEIAA and the DEAC and shall provide all financial and logistic support for their statutory functions.
- (12) The DEIAA and DEAC shall exercise the powers and follow the procedure as specified in the said notification, as amended from time to time.
- (13) The DEAC shall function on the principle of collective responsibility and the Chairman shall endeavor to reach a consensus in each case and if consensus cannot be reached, the view of the majority shall prevail.”;
- (c) in paragraph 4, after sub-paragraph (iii), the following sub-paragraph shall be inserted, namely:-
“(iv) The ‘B2’ Category projects pertaining to mining of minor mineral of lease area less than or equal to five hectare shall require prior environmental clearance from DEIAA. The DEIAA shall base its decision on the recommendations of DEAC, as constituted for this notification.”;
- (d) for paragraph 5, the following paragraph shall be substituted, namely:-

“5. Screening, Scoping and Appraisal Committees:-

The same Expert Appraisal Committees (EACs) at the Central Government, SEACs at the State or Union territory level and DEAC at the district level shall screen, scope and appraise projects or activity in category ‘A’, ‘B1 and B2’ and ‘B2’ projects for mining of minor minerals of lease area less than and equal to five hectare respectively. EAC, SEACs and DEACs shall meet at least once every month.

(a) The composition of the EAC shall be as given in Appendix VI. The SEAC at the State or the Union territory level shall be constituted by the Central Government in consultation with the concerned State Government or the Union

territory Administration with identical composition. DEAC at the district level shall be constituted by the Central Government as per the composition given in paragraph 3 A.

(b) The Central Government may with the prior concurrence of the concerned State Governments or the Union territory Administration constitute one SEAC for more than one State or Union territory for reasons of administrative convenience and cost.

(c) The EAC and SEAC shall be reconstituted after every three years.

(d) The authorised members of the EAC, SEACs and DEACs concerned, may inspect any site connected with the project or activity in respect of which the prior environmental clearance is sought for the purpose of screening or scoping or appraisal with prior notice of at least seven days to the project proponent who shall provide necessary facilities for the inspection.

(e) The EAC, SEACs and DEACs shall function on the principle of collective responsibility. The Chairperson shall endeavor to reach a consensus in each case and if consensus cannot be reached the view of the majority shall prevail.”;

(e) for paragraph 6, the following paragraph shall be substituted, namely:-

“6. Application for Prior Environmental Clearance (EC):-

An application seeking prior environmental clearance in all cases shall be made by the project proponent in the prescribed Form 1 annexed herewith and Supplementary Form 1A, if applicable, as given in Appendix II after the identification of prospective site (s) for the project and/or activities to which the application relates; and in Form 1M for mining of minor minerals up to five hectare under Category ‘B2’ projects, as given in Appendix VIII, before commencing any construction activity, or preparation of land, or mining at the site by the project proponent. The project proponent shall furnish along with the application, a copy of the pre-feasibility project report, in addition to Form 1, Form 1A, and Form 1M; and in case of construction projects or activities (item 8 of the Schedule), a copy of the conceptual plan shall be provided instead of pre-feasibility report.”;

(f) in paragraph 7,-

(i) in sub-paragraph (i), under the heading “I. Stage (1)- Screening:”, the existing sub-paragraph shall be lettered as sub-paragraph “(A)” and after sub-paragraph as so lettered, the following sub-paragraph shall be inserted, namely:-

“(B) The cases as specified in Appendix IX shall be exempted from prior environmental clearance.” ;

(ii) after sub-paragraph 7 (ii), the following sub-paragraph shall be inserted, namely:-

“7 (iii) Preparation of District Survey Report for Sand Mining or River Bed Mining and Mining of other Minor Minerals:

(a) The prescribed procedure for preparation of District Survey Report for sand mining or river bed mining and mining of other minor minerals is given in Appendix X.

(b) The prescribed procedure for environmental clearance for mining of minor minerals including cluster situation is given in Appendix XI.”;

(g) in paragraph 8,-

(i) for the letters and word “EAC or SEAC”, the words and letters “EAC or SEAC or DEAC” shall be substituted;

(ii) for the words “Expert Appraisal Committee or State Level Expert Appraisal Committee” wherever they occur, the words “Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee” shall be substituted;

(h) in paragraph 9, in sub-paragraph (i),-

for the words “Expert Appraisal Committee or State Level Expert Appraisal Committee”, the words “Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee” shall be substituted;

(i) in paragraph 10, after sub-paragraph (iii), the following sub-paragraph shall be inserted, namely:-

“(iv) The prescribed procedure for sand mining or river bed mining and monitoring is given in Appendix XII.”;

(j) in paragraph 11, -

for the words “Expert Appraisal Committee or State Level Expert Appraisal Committee”, the words “Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee” shall be substituted;

(k) in the Schedule,-

(i) for item 1 (a) and the entries relating thereto, the following item and entries shall be substituted, namely:-

(1)	(2)	(3)	(4)	(5)
“1(a)	(i) Mining of minerals	<p>≥50 ha of mining lease area in respect of non-coal mine lease</p> <p>>150 ha of mining lease area in respect of coal mine lease</p> <p>Asbestos mining</p>	<p><50 ha of mining lease area in respect of non-coal mine lease</p> <p>≤150 ha of mining lease area in respect of coal mine lease</p>	<p>General Conditions shall apply except:</p> <p>(i) for project or activity of mining of minor minerals of Category ‘B2’ (up to 25 ha of mining lease area);</p> <p>(ii) River bed mining projects on account of inter-state boundary.</p>

[भाग II-खण्ड 3 (ii)]

भारत का राजपत्र : असाधारण

19

		irrespective of mining area		<p>Note:</p> <p>(1) Mineral prospecting is exempted. ”;</p> <p>(2) The prescribed procedure for environmental clearance for mining of minor minerals including cluster situation is given in Appendix XI.”;</p> <p>(3) The mining leases which have obtained environmental clearance under Environment Impact Assessment Notification, 1994 and Environment Impact Assessment Notification, 2006 shall not require fresh environmental clearance during renewal provided the project has valid and subsisting environmental clearance.</p>
	(ii) Slurry pipelines (coal lignite and other ores) passing through national parks or sanctuaries or coral reefs, ecologically sensitive areas.	All projects.		

(i) after Appendix VI, the following appendices shall be inserted, namely:-

“APPENDIX VII
(See paragraph 3 A)

Qualifications and terms for the Experts in DEIAA and DEAC

1. **Qualification:** The person should have at least (i) 5 years of formal University training in the concerned discipline leading to a MA or M Sc Degree or (ii) in case of Engineering/ Technology/ Architectural discipline, 4 years formal training course together with prescribed practical training in the field leading to a B. Tech/ B.E./ B. Arch. Degree, or (iii) Other professional degree (e.g. MBA etc.) involving a total of 5 years of formal University training and prescribed practical training, or (iv) Prescribed apprenticeship/ article ship and pass examinations conducted by the concerned professional associations (e.g. Chartered Accountancy) or (v) a University degree, followed by two years of formal training in a University or Service Academy (e.g. MBA/MPA etc.). In selecting the individual professionals, experience gained by them in their respective fields will be taken note of.
2. **Expert:** A professional fulfilling the above eligibility criteria with at least 10 years of relevant experience in the field or with an advanced degree (e.g. Ph. D) in a concerned field with at least 5 years of relevant experience.
3. **Age:** Below 70 years. However, in the event of non-availability of paucity of experts in a given field, the maximum age of a member may be allowed up to 75 years.
4. **Fields:** Experts in Mining, Geology, Hydrology, Remote Sensing, Environment Quality, Environment Impact Assessment Process, Risk Assessment, Life Sciences, Marine Sciences, Forestry and Wildlife, Environmental Economics, Bio-diversity, and River Ecology.

5. **Tenure:** The maximum tenure of expert members shall be for two terms of three years each.
6. The Expert Members may not be removed prior to expiry of the tenure without cause and proper enquiry.

APPENDIX VIII**(See paragraph 6)****FORM 1 M****APPLICATION FOR MINING OF MINOR MINERALS UNDER CATEGORY 'B2' FOR LESS THAN AND EQUAL TO FIVE HECTARE****(II) Basic Information**

- (viii) Name of the Mining Lease site:
- (ix) Location / site (GPS Co-ordinates):
- (x) Size of the Mining Lease (Hectare):
- (xi) Capacity of Mining Lease (TPA):
- (xii) Period of Mining Lease:
- (xiii) Expected cost of the Project:
- (xiv) Contact Information:

Environmental Sensitivity

Sl. No.	Areas	Distance in kilometer / Details
1.	Distance of project site from nearest rail or road bridge over the concerned River, Rivulet, Nallah etc.	
2.	Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	
3.	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	
4.	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	
5.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	
6.	Inland, coastal, marine or underground waters	
7.	State, National boundaries	
8.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	
9.	Defence installations	
10.	Densely populated or built-up area, distance from nearest human habitation	
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	
12.	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	
13.	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	
14.	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	

15.	Is proposed mining site located over or near fissure / fracture for ground water recharge	
16.	Whether the proposal involves approval or clearance under the following Regulations or Acts, namely:- (a) The Forest (Conservation) Act, 1980; (b) The Wildlife (Protection) Act, 1972; (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status to be given.	
17.	Forest land involved (hectares)	
18.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders or directions of the Court, if any, and its relevance with the proposed project.	

(Signature of Project Proponent
Along with name and address)

APPENDIX – IX

[See paragraph 7(i) (B)]

EXEMPTION OF CERTAIN CASES FROM REQUIREMENT OF ENVIRONMENTAL CLEARANCE

The following cases shall not require prior environmental clearance, namely:-

1. Extraction of ordinary clay or sand, manually, by the Kumhars (Potter) to prepare earthen pots, lamp, toys, etc. as per their customs.
2. Extraction of ordinary clay or sand, manually, by earthen tile makers who prepare earthen tiles.
3. Removal of sand deposits on agricultural field after flood by farmers.
4. Customary extraction of sand and ordinary earth from sources situated in Gram Panchayat for personal use or community work in village.
5. Community works like de-silting of village ponds or tanks, construction of village roads, ponds, bunds undertaken in Mahatma Gandhi National Rural Employment and Guarantee Schemes, other Government sponsored schemes, and community efforts.
6. Dredging and de-silting of dams, reservoirs, weirs, barrages, river, and canals for the purpose of their maintenance, upkeep and disaster management.
7. Traditional occupational work of sand by Vanjara and Oads in Gujarat *vide* notification number GU/90(16)/MCR-2189(68)/5-CHH, dated the 14th February, 1990 of the Government of Gujarat.
8. Digging of well for irrigation or drinking water.
9. Digging of foundation for buildings not requiring prior environmental clearance.
10. Excavation of ordinary earth or clay for plugging of any breach caused in canal, nala, drain, water body, etc., to deal with any disaster or flood like situation upon orders of District Collector or District Magistrate.
11. Activities declared by State Government under legislations or rules as non-mining activity with concurrence of the Ministry of Environment, Forest and Climate Change, Government of India.

APPENDIX - X

[See paragraph 7 (iii) (a)]

PROCEDURE FOR PREPARATION OF DISTRICT SURVEY REPORT

The main objective of the preparation of District Survey Report (as per the Sustainable Sand Mining Guideline) is to ensure the following:

Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area.

The report shall have the following structure:

1. Introduction
2. Overview of Mining Activity in the District
3. The List of Mining Leases in the District with location, area and period of validity
4. Details of Royalty or Revenue received in last three years
5. Detail of Production of Sand or Bajari or minor mineral in last three years
6. Process of Deposition of Sediments in the rivers of the District
7. General Profile of the District
8. Land Utilization Pattern in the district: Forest, Agriculture, Horticulture, Mining etc.

9. Physiography of the District
10. Rainfall: month-wise
11. Geology and Mineral Wealth

In addition to the above, the report shall contain the following:

- (a) District wise detail of river or stream and other sand source.
- (b) District wise availability of sand or gravel or aggregate resources.
- (c) District wise detail of existing mining leases of sand and aggregates.

A survey shall be carried out by the DEIAA with the assistance of Geology Department or Irrigation Department or Forest Department or Public Works Department or Ground Water Boards or Remote Sensing Department or Mining Department etc. in the district.

Drainage system with description of main rivers

S. No.	Name of the River	Area drained (Sq. Km)	% Area drained in the District

Salient Features of Important Rivers and Streams:

S. No.	Name of the River or Stream	Total Length in the District (in Km)	Place of origin	Altitude at Origin

Portion of the River or Stream Recommended for Mineral Concession	Length of area recommended for mineral concession (in kilometer)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in metric tonne) (60% of total mineral potential)

Mineral Potential

Boulder (MT)	Bajari (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)

Annual Deposition

S. No.	River or Stream	Portion of the river or stream recommended for mineral concession	Length of area recommended for mineral concession (in kilometer)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in metric tonne) (60% of total mineral potential)
Total for the District						

A Sub-Divisional Committee comprising of Sub-Divisional Magistrate, Officers from Irrigation department, State Pollution Control Board or Committee, Forest department, Geology or mining officer shall visit each site for which environmental clearance has been applied for and make recommendation on suitability of site for mining or prohibition thereof.

Methodology adopted for calculation of Mineral Potential:

The mineral potential is calculated based on field investigation and geology of the catchment area of the river or streams. As per the site conditions and location, depth of minable mineral is defined. The area for removal of the mineral in a river or stream can be decided depending on geo-morphology and other factors, it can be 50 % to 60 % of the area of a particular river or stream. For example in some hill States mineral constituents like boulders, river born Bajri, sand up

to a depth of one meter are considered as resource mineral. Other constituents like clay and silt are excluded as waste while calculating the mineral potential of particular river or stream.

The District Survey Report shall be prepared for each minor mineral in the district separately and its draft shall be placed in the public domain by keeping its copy in Collectorate and posting it on district's website for twenty one days. The comments received shall be considered and if found fit, shall be incorporated in the final Report to be finalised within six months by the DEIAA.

The District Survey Report shall form the basis for application for environmental clearance, preparation of reports and appraisal of projects. The Report shall be updated once every five years.

APPENDIX - XI

[See paragraph 7 (iii) (b)]

PROCEDURE FOR ENVIRONMENTAL CLEARANCE FOR MINING OF MINOR MINERALS INCLUDING CLUSTER

The following policy shall be followed for environmental clearance of mining of minor minerals including cluster situation:-

- (1). The data provided by the States (Sustainable Sand Mining Guidelines) shows that most of the mining leases for minor minerals are of lease area less than 5 hectare. It is also reported that in hill States getting a stretch in river with area more than 5 hectare is very uncommon. So the size of lease for minor minerals including river sand mining will be determined by the States as per their circumstances.
- (2). The mining of minor minerals is mostly in clusters. The Environment Impact Assessment or Environment Management Plan are required to be prepared for the entire cluster in order to capture all the possible externalities. These reports shall capture carrying capacity of the cluster, transportation and related issues, replenishment and recharge issues, geo-hydrological study of the cluster area. The Environment Impact Assessment or Environment Management Plan shall be prepared by the State or State nominated Agency or group of project proponents in the Cluster or the project proponent in the cluster.
- (3). There shall be one public consultation for entire cluster after which the final Environment Impact Assessment or Environment Management Plan report for the cluster shall be prepared.
- (4). Environmental clearance shall be applied for and issued to the individual project proponent. The individual lease holders in cluster can use the same Environment Impact Assessment or Environment Management Plan for application for environmental clearance. The cluster Environment Impact Assessment or Environment Management Plan shall be updated as per need keeping in view any significant change.
- (5). The details of cluster Environment Impact Assessment or Environment Management Plan shall be reflected in each environmental clearance in that cluster and DEAC, SEAC, and EAC shall ensure that the mitigative measures emanating from the Environment Impact Assessment or Environment Management Plan study are fully reflected as environmental clearance conditions in the environmental clearance's of individual project proponents in that cluster.
- (6). A cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of other lease in a homogeneous mineral area.
- (7). Form 1M, Pre-Feasibility Report and mine plan for Category 'B2' projects for mining of minor minerals shall be prepared by the Registered Qualified Person or Accredited Consultants of Quality Council of India, National Accreditation Board for Education and Training. The Environment Impact Assessment or Environment Management Plan for Category 'A' and Category 'B1' projects shall be prepared by the accredited consultants of Quality Council of India, National Accreditation Board for Education and Training.
- (8). The SEIAAs shall have supervisory jurisdiction over the DEIAAs and decisions of DEIAA shall be reviewed by the SEIAA without prejudice to any provisions under any existing law.

Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation

Area of Lease (Hectare)	Category of Project	Requirement of EIA / EMP	Requirement of Public Hearing	Requirement of EC	Who can prepare EIA/ EMP	Who will apply for EC	Authority to appraise/ grant EC	Authority to monitor EC compliance
EC Proposal of Sand Mining and other Minor Mineral Mining on the basis of individual mine lease								
0 – 5ha	'B2'	Form -1M, PFR and Approved Mine Plan	No	Yes	Project Proponent	Project Proponent	DEAC/ DEIAA	DEIAA SEIAA SPCB CPCB MoEFCC Agency

24

THE GAZETTE OF INDIA : EXTRAORDINARY

[PART II—SEC. 3(ii)]

> 5 ha and < 25 ha	‘B2’	Form –I, PFR and Approved Mine Plan and EMP	No	Yes	Project Proponent	Project Proponent	SEAC / SEIAA	nominated by MoEFCC
≥ 25ha and < 50ha	‘B1’	Yes	Yes	Yes	Project Proponent	Project Proponent	SEAC/ SEIAA	
≥ 50 ha	‘A’	Yes	Yes	Yes	Project Proponent	Project Proponent	EAC/ MoEFCC	
EC Proposal of Sand Mining and other Minor Mineral Mining in cluster situation								
Cluster area of mine leases up to 5 ha	‘B2’	Form –IM, PFR and Approved Mine Plan	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	DEIAA SEIAA SPCB CPCB MoEFCC Agency nominated by MoEFCC
Cluster area of Mine leases > 5 ha and < 25 ha with no individual lease > 5 ha	‘B2’	Form –I, PFR and Approved Mine Plan and one EMP for all leases in the Cluster	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	
Cluster of mine leases of area ≥ 25 hectares with individual lease size < 50ha	‘B1’	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	SEAC/ SEIAA	
Cluster of any size with any of the individual lease ≥ 50ha	‘A’	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	EAC/ MoEFCC	

APPENDIX - XII**[See paragraph 10 (iv)]****PROCEDURE FOR MONITORING OF SAND MINING OR RIVER BED MINING**

1. The security feature of Transport Permit shall be as under:

- (a) Printed on Indian Banks’ Association (IBA) approved Magnetic Ink Character Recognition (MICR) Code paper.
- (b) Unique Barcode.
- (c) Unique Quick Response (QR) code.
- (d) Fugitive Ink Background.
- (e) Invisible Ink Mark.
- (f) Void Pantograph.
- (g) Watermark.

2. Requirement at Mine Lease Site:

- (a) Small Size Plot (Up to 5 hectare): Android Based Smart Phone.

- (b) Large Size Plots (More than 5 hectare): CCTV camera, Personal Computer (PC), Internet Connection, Power Back up.
 - (c) Access control of mine lease site.
 - (d) Arrangement for weight or approximation of weight of mined out mineral on basis of volume of the trailer of vehicle used.
3. Scanning of Transport Permit or Receipt and Uploading on Server:
- (a) Website: Scanning of receipt on mining site can be done through barcode scanner and computer using the software;
 - (b) Android Application: Scanning on mining site can be done using Android Application using smart phone. It will require internet availability on SIM card;
 - (c) SMS: Transport Permit or Receipt shall be uploaded on server even by sending SMS through mobile. Once Transport Permit or Receipt get uploaded, an unique invoice code gets generated with its validity period.
4. Proposed working of the system:
- The State Mining Department should print the Transport Permit or Receipt with security features enumerated at Paragraph 1 above and issue them to the mine lease holder through the District Collector. Once these Transport Permits or Receipts are issued, they would be uploaded on the server against that mine lease area. Each receipt should be preferably with pre-fixed quantity, so the total quantity gets determined for the receipts issued.
- When the Transport Permit or Receipt barcode gets scanned and invoice is generated, that particular barcode gets used and its validity time is recorded on the server. So all the details of transporting of mined out material can be captured on the server and the Transport Permit or Receipt cannot be reused.
5. Checking On Route:
- The staff deployed for the purpose of checking of vehicles carrying mined mineral should be in a position to check the validity of Transport Permit or Receipt by scanning them using website, Android Application and SMS.
6. Breakdown of Vehicle:
- In case the Vehicle breakdown, the validity of Transport Permit or Receipt shall be extended by sending SMS by driver in specific format to report breakdown of vehicle. The server will register this information and register the breakdown. The State can also establish a call centre, which can register breakdowns of such vehicles and extend the validity period. The subsequent restart of the vehicle also should be similarly reported to the server or call centre.
7. Tracking of Vehicles:
- The route of vehicle from source to destination can be tracked through the system using check points, RFID Tags, and GPS tracking.
8. Alerts or Report Generation and Action Review:
- The system will enable the authorities to develop periodic report on different parameters like daily lifting report, vehicle log or history, lifting against allocation, and total lifting. The system can be used to generate auto mails or SMS. This will enable the District Collector or District Magistrate to get all the relevant details and shall enable the authority to block the scanning facility of any site found to be indulged in irregularity. Whenever any authority intercepts any vehicle transporting illegal sand, it shall get registered on the server and shall be mandatory for the officer to fill in the report on action taken. Every intercepted vehicle shall be tracked.
- The monitoring of mined out mineral, environmental clearance conditions and enforcement of Environment Management Plan will be ensured by the DEIAA, SEIAA and the State Pollution Control Board or Committee. The monitoring arrangements envisaged above shall be put in place not later than three months. The monitoring of enforcement of environmental clearance conditions shall be done by the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change and the agency nominated by the Ministry for the purpose.”.

[No. Z-11013/98/2014-IA-II (M)]

MANOJ KUMAR SINGH, Jt. Secy.

Note: The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) *vide* number S.O. 1533 (E), dated the 14th September, 2006 and subsequently amended *vide* the following numbers :-

1. S.O. 1737 (E) dated the 11th October, 2007;
2. S.O. 3067 (E) dated the 1st December, 2009;
3. S.O. 695 (E) dated the 4th April, 2011;
4. S.O. 2896 (E) dated the 13th December, 2012;
5. S.O. 674 (E) dated the 13th March, 2013;
6. S.O. 2204 (E) dated the 19th July 2013;
7. S.O. 2555 (E) dated the 21st August, 2013;
8. S.O. 2559 (E) dated the 22nd August, 2013;
9. S.O. 2731 (E) dated the 9th September, 2013;
10. S.O. 562 (E) dated the 26th February, 2014;
11. S.O. 637 (E) dated the 28th February, 2014;
12. S.O. 1599 (E) dated the 25th June, 2014;
13. S.O. 2601 (E) dated the 7th October, 2014;
14. S.O. 2600 (E) dated the 9th October, 2014
15. S.O. 3252 (E) dated the 22nd December, 2014;
16. S.O. 382 (E) dated the 3rd. February, 2015;
17. S.O. 811 (E) dated the 23rd March, 2015;
18. S.O. 996 (E) dated the 10th April, 2015;
19. S.O. 1142 (E) dated the 17th April, 2015;
20. S.O. 1141 (E) dated the 29th April, 2015;
21. S.O. 1834 (E) dated the 6th July, 2015.

This page has been left blank intentionally.

Appendix-IV: MOEFCC OM Regarding Standardisation of Environmental Clearance Conditions for River Valley & Hydro-Electric Project

F. No. 22-34/2018-IA.III

Government of India

Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan
Aliganj, Jorbagh Road
New Delhi-110 003

Dated: 9th August, 2018

Office Memorandum

Sub.: Standardization of Environment Clearance conditions – reg.

The Ministry of Environment, Forest and Climate Change has notified the Environmental Impact Assessment (EIA) Notification, 2006 imposing certain restrictions and prohibitions on new projects or activities, or on the expansion or modernization of existing projects or activities based on their potential environmental impacts as indicated in the Schedule to the notification, being undertaken in any part of India, unless prior environmental clearance has been accorded in accordance with the provisions of the Environment (Protection) Act, 1986.

2.0 The process, *inter alia*, includes screening, scoping, public consultation and appraisal by Expert Appraisal Committee (EAC). Expert Appraisal Committee concerned shall make categorical recommendations to the regulatory authority concerned either for grant of prior environmental clearance on stipulated terms and conditions, or rejection of the application for prior environmental clearance, together with reasons for the same.

3.0 In order to bring uniformity on stipulated terms and conditions across the projects and sectors and as a general guidance to the EAC as well as project proponents, the Ministry has prepared standard conditions for the following sectors:


- i. Integrated Iron and Steel Plants
- ii. Coke Oven plants
- iii. Sponge Iron Plants
- iv. Induction Furnace and Rolling Mills
- v. Pellet Plants
- vi. Aluminium Smelters
- vii. Aluminium Refineries
- viii. Asbestos Based Industries
- ix. Mineral beneficiation plants
- x. Integrated cement plants
- xi. Standalone Cement Grinding Units with captive power plants
- xii. Standalone Cement Grinding Units without captive power plants



- xiii. Tanneries / Hide processing industries
- xiv. Paper and Pulp Industries
- xv. Open Cast Coal Mines
- xvi. Underground Coal Mines
- xvii. Coal Washeries
- xviii. Petroleum Refineries Industry, Petro Chemical Complexes and Petro Chemicals Products and Petro Chemical based processing.
- xix. Distilleries & Sugar
- xx. Pharmaceuticals and chemical industries
- xxi. Off-shore and On-shore oil and gas exploration, development and production
- xxii. Oil and gas transportation,
- xxiii. Isolated storage and handling of hazardous chemicals.
- xxiv. River Valley and Hydro-electric projects
- xxv. Industrial Estates

4.0 The standard EC conditions enclosed herewith shall be considered by Expert Appraisal Committee at the time of appraisal of the proposals. EAC after due diligence, can modify, delete and add conditions based on the project specific requirements. The recommended conditions by the EAC shall be brought in the minutes of the meeting of the Expert Appraisal Committee.

This issues with the approval of competent authority.


(Sharath Kumar Pallerla)
Director (IA-Policy)

To,

1. Chairman, CPCB
2. Chairmen of all the Expert Appraisal Committees
3. Chairperson/Member Secretaries of all the SEIAA/SEACs
4. Chairpersons/Member Secretaries of all SPCBs/UTPCCs
5. All the officers of IA Division

Copy for information to:

1. PS to Minister for Environment, Forest and Climate Change
2. PS to MoS (EF&CC)
3. PPS to Secretary (EF&CC)
4. PPS to AS(AKJ) / AS(AKM)
5. PPS to JS(GB) / JS(JT)
6. Website, MoEF&CC
7. Guard File.

ANNEXURE - XXIV**Standard EC Conditions for River Valley and Hydroelectric projects****I. Statutory compliance:**

- i. The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
- ii. The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
- iii. The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (incase of the presence of schedule-I species in the study area)
- iv. The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee.
- v. NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDS) of CWC.
- vi. Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs. 1,000 crore.

II. Air quality monitoring and preservation

- i. Regular monitoring of various environmental parameters viz., Water Quality, Ambient Air Quality and Noise levels as per the CPCB guidelines at designated locations shall be carried out on monthly basis and a detailed database of the same shall be prepared and recorded. This shall be used as a baseline data for post construction EIA / Monitoring purposes.
- ii. Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed standards.
- iii. Necessary control measures such as water sprinkling arrangements, etc. be taken up to arrest fugitive dust at all the construction sites.

III. Water quality monitoring and preservation

- i. Conjunctive use of surface water to be planned in the project to check water logging as well as to increase crops productivity. The field drains shall be connected with natural drainage system.

- ii. Remodelling of existing natural drains (link drains) and connecting them with irrigated land through constructed field drains, collector drains, etc. are to be ensured on priority basis..
- iii. Before impounding of the water, Cofferdams for both at the upstream and downstream are to be decommissioned as per EIA/EMP report so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used for the Cofferdam.
- iv. As the reservoir will be acting as balancing reservoir and there would be fluctuation of water level during peaking period, efforts be made to reduce impact on aquatic life including impacts during spawning period both at the upstream and downstream of the project
- v. Water depth sensors shall be installed at suitable locations to monitor e-flow. Hourly data to be collected and converted to discharge data. The Gauge and Discharge data in the form of Excel Sheet be submitted to the Regional Office, MoEF & CC and to the CWC on weekly basis.
- vi. Mixed irrigation shall be practised and necessary awareness be given to all the farmers and trained in the use of such systems. Proper crops selection shall be carried out for making irrigation facility more effective.
- vii. On Farm Development (OFD) works like landscaping, land levelling, drainage facilities, field irrigation channels and farm roads, etc. should be taken up in phased manner prior to the start of irrigation in the entire command area. The Command Area Development Plan should be strictly implemented as proposed in the EIA/EMP report

IV. Noise monitoring and prevention

- i. All the equipment likely to generate high noise shall be appropriately enclosed or inbuilt noise enclosures be provided so as to meet the ambient noise standards as notified under the Noise Pollution (Regulation and Control) Rules, 2000, as amended in 2010 under the Environment Protection Act (EPA), 1986.
- ii. The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time

V. Catchment Area Treatment Plan

- i. Catchment Area Treatment (CAT) Plan as proposed in the EIA/EMP report shall be implemented in consultation with the State Forest Department and shall be implemented in synchronization with the construction of the project.

VI. Waste management

- i. Muck disposal be carried out only in the approved and earmarked sites. The dumping sites shall be located sufficiently away from the HFL of the river. Efforts be made to reuse the muck for construction and other filling purposes and balanced be disposed of at the designated disposal sites. Once the muck disposal sites are inactive, proper treatment measures like both engineering and biological measures be carried out so that sites are stabilized quickly.

- ii. Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead be used for various purposes as envisaged in the EIA/EMP reports. Efforts be made to avoid one time use of plastics.

VII. Green Belt, EMP Cost, Fisheries and Wildlife Management

- i. Based on the recommendation of Cumulative Impact Assessment and Carrying capacity study of river basin or as per the ToR conditions or minimum 15% of the average flow of four consecutive leanest months, whichever value is higher, shall be released as environmental flow.
- ii. Detailed information on species composition particular to fish species from previous study/literature be inventorized and proper management plan shall be prepared for in-situ conservation in the streams, tributaries of river and the main river itself for which adequate budget provision be made and followed strictly.
- iii. Wildlife Conservation Plan prepared for both core and buffer zones shall be implemented in consultation with the local State Forest Department.
- iv. To enrich the habitat of the project site, plantation shall be raised as envisaged in the EIA/EMP report. Plantation to be developed along the periphery of the reservoir in multi-layers with local indigenous species in consultation with the local State Forest Department.
- v. Compensatory afforestation programme shall be implemented as per the plan approved.
- vi. Fish ladder/pass as envisaged in the EIA/EMP report shall be provided for migration of fishes. Regular monitoring of this facility be carried out to ensure its effectiveness.

VIII. Public hearing and Human health issues

- i. Resettlement & Rehabilitation plan be implemented in consultation with the State Govt. as approved by the State Govt
- ii. Budget provisions made for the community and social development plan including community welfare schemes shall be implemented in toto.
- iii. Preventive measures viz. fuming and spraying of mosquito control shall be done in and around the labour colonies, affected villages, stagnated pools, etc. Provisions be made to not to create any stagnated pools to avoid creation of breeding grounds of the vector borne diseases
- iv. Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
- v. Labourforce to be engaged for construction works shall be examined thoroughly and adequately treated before issuing them work permit. Medical facilities shall be provided at the construction sites.

- vi. Early Warning Telemetric system shall be installed in the upper catchment area of the project for advance intimation of flood forecast.
- vii. Emergency preparedness plan be made for any eventuality of the dam failure and shall be implemented as per the Dam Break Analysis

IX. Corporate Environment Responsibility

- i. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
- ii. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their long time livelihood generation
- iii. The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.
- iv. A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
- v. Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
- vi. Post EIA and SIA be prepared for the project through a third party and evaluation report be submitted to the Ministry after five years of commissioning of the project.
- vii. Multi Disciplinary Committee (MDC) be constituted with experts from Ecology, Forestry, Wildlife, Sociology, Soil Conservation, Fisheries, NGO, etc. to oversee implementation of various environmental safeguards proposed in EIA/EMP report during construction of the project. The monitoring report of the Committee shall be uploaded in the website of the Company.
- viii. Formation of Water User Association/Co-operative be made involment of the whole community be ensured for discipline use of available water for irrigation purposes

X. Miscellaneous

- i. The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by

prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.

- ii. The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
- iii. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
- iv. The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
- v. The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
- vi. The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.
- vii. The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
- viii. The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
- vii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).
- viii. Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- ix. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
- x. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
- xi. The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

- xii. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
 - xiii. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
-

This page has been left blank intentionally.

Central Dam Safety Organisation Central Water Commission

Vision

To remain as a premier organisation with best technical and managerial expertise for providing advisory services on matters relating to dam safety.

Mission

To provide expert services to State Dam Safety Organisations, dam owners, dam operating agencies and others concerned for ensuring safe functioning of dams with a view to protect human life, property and the environment.

Values

Integrity: Act with integrity and honesty in all our actions and practices.

Commitment: Ensure good working conditions for employees and encourage professional excellence.

Transparency: Ensure clear, accurate and complete information in communications with stakeholders and take all decisions openly based on reliable information.

Quality of service: Provide state-of-the-art technical and managerial services within agreed time frame.

Striving towards excellence: Promote continual improvement as an integral part of our working and strive towards excellence in all our endeavours.

Quality Policy

We provide technical and managerial assistance to dam owners and State Dam Safety Organisations for proper surveillance, inspection, operation and maintenance of all dams and appurtenant works in India to ensure safe functioning of dams and protecting human life, property and the environment.

We develop and nurture competent manpower and equip ourselves with state of the art technical infrastructure to provide expert services to all stakeholders.

We continually improve our systems, processes and services to ensure satisfaction of our customers.

